Method Blank Outlier Report

Lab Reporting Batch ID: PH220 **Laboratory: LL**

EDD Filename: PH220 **eQAPP Name: CDM_SSFL_140617_Lan**

Method: **1613B**
Matrix: **AQ**

Method Blank Sample ID	Analysis Date	Analyte	Result	Associated Samples
BLK1620B370256	6/13/2014 2:56:00 AM	1,2,3,4,6,7,8-HPCDD	0.811 pg/L	EB-060514
		1,2,3,4,6,7,8-HPCDF	0.621 pg/L	
		1,2,3,4,7,8,9-HPCDF	0.299 pg/L	
		1,2,3,4,7,8-HxCDD	0.280 pg/L	
		1,2,3,4,7,8-HXCDF	0.176 pg/L	
		1,2,3,6,7,8-HXCDF	0.258 pg/L	
		1,2,3,7,8,9-HXCDD	0.251 pg/L	
		1,2,3,7,8,9-HXCDF	0.465 pg/L	
		1,2,3,7,8-PECDD	0.241 pg/L	
		1,2,3,7,8-PECDF	0.172 pg/L	
		2,3,4,6,7,8-HXCDF	0.399 pg/L	
		2,3,4,7,8-PECDF	0.109 pg/L	
		OCDD	1.29 pg/L	
		OCDF	1.27 pg/L	

The following samples and their listed target analytes were qualified due to contamination reported in this blank

Sample ID	Analyte	Reported Result	Modified Final Result
EB-060514(RES)	1,2,3,4,6,7,8-HPCDD	0.193 pg/L	0.193U pg/L
EB-060514(RES)	1,2,3,4,6,7,8-HPCDF	0.444 pg/L	0.444U pg/L
EB-060514(RES)	1,2,3,4,7,8,9-HPCDF	0.245 pg/L	0.245U pg/L
EB-060514(RES)	1,2,3,4,7,8-HXCDF	0.395 pg/L	0.395U pg/L
EB-060514(RES)	1,2,3,6,7,8-HXCDF	0.313 pg/L	0.313U pg/L
EB-060514(RES)	1,2,3,7,8,9-HXCDD	0.141 pg/L	0.141U pg/L
EB-060514(RES)	1,2,3,7,8,9-HXCDF	0.154 pg/L	0.154U pg/L
EB-060514(RES)	1,2,3,7,8-PECDD	0.218 pg/L	0.218U pg/L
EB-060514(RES)	1,2,3,7,8-PECDF	0.544 pg/L	0.544U pg/L
EB-060514(RES)	2,3,4,6,7,8-HXCDF	0.225 pg/L	0.225U pg/L
EB-060514(RES)	OCDD	1.75 pg/L	1.75U pg/L
EB-060514(RES)	OCDF	0.765 pg/L	0.765U pg/L

Method: **6010C**
Matrix: **AQ**

Method Blank Sample ID	Analysis Date	Analyte	Result	Associated Samples
P16435AB222233	6/16/2014 10:33:00 PM	MANGANESE	0.0014 mg/L	EB-060514
		NICKEL	0.0016 mg/L	
		ZINC	0.0047 mg/L	
		Zirconium	0.0094 mg/L	

The following samples and their listed target analytes were qualified due to contamination reported in this blank

Sample ID	Analyte	Reported Result	Modified Final Result
EB-060514(REA2)	MANGANESE	0.0013 mg/L	0.0013U mg/L
EB-060514(REA2)	Zirconium	0.0109 mg/L	0.0109U mg/L

Method Blank Outlier Report

Lab Reporting Batch ID: PH220 **Laboratory: LL**

EDD Filename: PH220 **eQAPP Name: CDM_SSFL_140617_Lan**

Method: **6010C**
Matrix: **SO**

Method Blank Sample ID	Analysis Date	Analyte	Result	Associated Samples
P16037AB220830	6/11/2014 8:30:00 AM	CALCIUM TIN ZINC	9.52 mg/Kg 1.47 mg/Kg 0.541 mg/Kg	FDG2-SL-631-SA8-SB-7.0-8.0

The following samples and their listed target analytes were qualified due to contamination reported in this blank

Sample ID	Analyte	Reported Result	Modified Final Result
FDG2-SL-631-SA8-SB-7.0-8.0(RES)	TIN	3.74 mg/Kg	3.74U mg/Kg

Method: **8270D SIM**
Matrix: **AQ**

Method Blank Sample ID	Analysis Date	Analyte	Result	Associated Samples
PLKWH16B262347	6/11/2014 11:47:00 PM	BIS(2-ETHYLHEXYL)PHTHALATE Diethylphthalate	0.096 ug/L 0.069 ug/L	EB-060514

The following samples and their listed target analytes were qualified due to contamination reported in this blank

Sample ID	Analyte	Reported Result	Modified Final Result
EB-060514(RES)	Diethylphthalate	0.090 ug/L	1.1U ug/L

Matrix Spike/Matrix Spike Duplicate Outlier Report

Lab Reporting Batch ID: PH220 **Laboratory: LL**

EDD Filename: PH220 **eQAPP Name: CDM_SSFL_140617_Lan**

***Method:* 8015M**
***Matrix:* SO**

QC Sample ID (Associated Samples)	*Compound*	*MS %R*	*MSD %R*	*%R Limits*	*RPD (Limits)*	*Affected Compounds*	*Flag*
FDG2-SL-631-SA8-SB-0.0-0.5MS **FDG2-SL-631-SA8-SB-0.0-0.5MSD** (FDG2-SL-631-SA8-SB-0.0-0.5)	EFH (C30-C40)	134	156	49.00-123.00	-	EFH (C30-C40)	J (all detects)

Lab Control Spike/Lab Control Spike Duplicate Outlier Report

Lab Reporting Batch ID: PH220 **Laboratory: LL**

EDD Filename: PH220 **eQAPP Name: CDM_SSFL_140617_Lan**

Method: 8015M
Matrix: AQ

QC Sample ID (Associated Samples)	Compound	LCS %R	LCSD %R	%R Limits	RPD (Limits)	Affected Compounds	Flag
P41602AQ321429A P41602AY321451A (EB-060514)	EFH (C12-C14) EFH (C8-C11)	59 21	50 15	67.00-109.00 55.00-86.00	- 32 (30.00)	EFH (C12-C14) EFH (C8-C11)	J(all detects) UJ(all non-detects)
P41603AQ320358A P41603AY320420A (EB-060514)	EFH (C12-C14) SG EFH (C8-C11) SG	52 16	44 12	67.00-109.00 55.00-86.00	- 34 (30.00)	EFH (C12-C14) SG EFH (C8-C11) SG	J(all detects) UJ(all non-detects)

Method: 8270D SIM
Matrix: AQ

QC Sample ID (Associated Samples)	Compound	LCS %R	LCSD %R	%R Limits	RPD (Limits)	Affected Compounds	Flag
P1WHLCSY260042 (EB-060514)	BIS(2-ETHYLHEXYL)PHTHALAT	-	639	70.00-143.00	149 (30.00)	BIS(2-ETHYLHEXYL)PHTHALA	J(all detects) UJ(all non-detects)

Method: 8015M
Matrix: SO

QC Sample ID (Associated Samples)	Compound	LCS %R	LCSD %R	%R Limits	RPD (Limits)	Affected Compounds	Flag
P41608AQ320608A (FDG2-SL-624-SA8-SB-0.0-0.5 FDG2-SL-625-SA8-SB-0.0-0.5 FDG2-SL-631-SA8-SB-0.0-0.5 FDG2-SL-631-SA8-SB-4.5-5.0 FDG2-SL-631-SA8-SB-7.0-8.0)	EFH (C12-C14) SG EFH (C15-C20) SG EFH (C8-C11) SG	74 77 56	- - -	76.00-115.00 78.00-127.00 60.00-115.00	- - -	EFH (C12-C14) SG EFH (C15-C20) SG EFH (C8-C11) SG	J (all detects) UJ (all non-detects)

Method: 8270D SIM
Matrix: SO

QC Sample ID (Associated Samples)	Compound	LCS %R	LCSD %R	%R Limits	RPD (Limits)	Affected Compounds	Flag
P3LBLCSQ260734 (FDG2-SL-631-SA8-SB-7.0-8.0)	N-NITROSODIMETHYLAMINE	68	-	71.00-124.00	-	N-NITROSODIMETHYLAMINE	J(all detects) UJ(all non-detects)

Reporting Limit Outliers

Lab Reporting Batch ID: PH220 **Laboratory: LL**

EDD Filename: PH220 **eQAPP Name: CDM_SSFL_140617_Lan**

Method: 1613B

Matrix: AQ

SampleID	Analyte	Lab Qual	Result	Reporting Limit	RL Type	Units	Flag
EB-060514	1,2,3,4,6,7,8-HPCDD	JBQ	0.193	9.72	PQL	pg/L	J (all detects)
	1,2,3,4,6,7,8-HPCDF	JBQ	0.444	9.72	PQL	pg/L	
	1,2,3,4,7,8,9-HPCDF	JBQ	0.245	9.72	PQL	pg/L	
	1,2,3,4,7,8-HXCDF	JBQ	0.395	9.72	PQL	pg/L	
	1,2,3,6,7,8-HXCDF	JB	0.313	9.72	PQL	pg/L	
	1,2,3,7,8,9-HXCDD	JBQ	0.141	9.72	PQL	pg/L	
	1,2,3,7,8,9-HXCDF	JBQ	0.154	9.72	PQL	pg/L	
	1,2,3,7,8-PECDD	JBQ	0.218	9.72	PQL	pg/L	
	1,2,3,7,8-PECDF	JBQ	0.544	9.72	PQL	pg/L	
	2,3,4,6,7,8-HXCDF	JBQ	0.225	9.72	PQL	pg/L	
	OCDD	JB	1.75	19.4	PQL	pg/L	
	OCDF	JBQ	0.765	19.4	PQL	pg/L	

Method: 6010C

Matrix: AQ

SampleID	Analyte	Lab Qual	Result	Reporting Limit	RL Type	Units	Flag
EB-060514	MANGANESE	J	0.0013	0.0100	PQL	mg/L	J (all detects)
	Zirconium	J	0.0109	0.100	PQL	mg/L	

Method: 8270D SIM

Matrix: AQ

SampleID	Analyte	Lab Qual	Result	Reporting Limit	RL Type	Units	Flag
EB-060514	1-METHYLNAPHTHALENE	J	0.024	0.053	PQL	ug/L	J (all detects)
	2-METHYLNAPHTHALENE	J	0.034	0.053	PQL	ug/L	
	BIS(2-ETHYLHEXYL)PHTHALATE	J	1.0	1.1	PQL	ug/L	
	Diethylphthalate	J	0.090	1.1	PQL	ug/L	
	Di-n-butylphthalate	J	0.098	1.1	PQL	ug/L	

Method: 6010C

Matrix: SO

SampleID	Analyte	Lab Qual	Result	Reporting Limit	RL Type	Units	Flag
FDG2-SL-631-SA8-SB-7.0-8.0	ARSENIC	J	4.09	4.80	PQL	mg/Kg	J (all detects)
	BERYLLIUM	J	0.911	1.20	PQL	mg/Kg	
	BORON	J	11.1	12.0	PQL	mg/Kg	
	CADMIUM	J	0.380	1.20	PQL	mg/Kg	
	TIN	J	3.74	12.0	PQL	mg/Kg	
	Zirconium	J	5.77	6.00	PQL	mg/Kg	

Method: 6020A

Matrix: SO

SampleID	Analyte	Lab Qual	Result	Reporting Limit	RL Type	Units	Flag
FDG2-SL-631-SA8-SB-7.0-8.0	SELENIUM	J	0.288	0.480	PQL	mg/Kg	J (all detects)
	SILVER	J	0.0633	0.240	PQL	mg/Kg	

Project Name and Number: 1204-002-001-AL - SSFL Area IV Phase 3

Reporting Limit Outliers

Lab Reporting Batch ID: PH220 **Laboratory: LL**

EDD Filename: PH220 **eQAPP Name: CDM_SSFL_140617_Lan**

Method: 7471B
Matrix: SO

SampleID	Analyte	Lab Qual	Result	Reporting Limit	RL Type	Units	Flag
FDG2-SL-631-SA8-SB-7.0-8.0	MERCURY	J	0.0161	0.0188	PQL	mg/Kg	J (all detects)

Method: 8015M
Matrix: SO

SampleID	Analyte	Lab Qual	Result	Reporting Limit	RL Type	Units	Flag
FDG2-SL-624-SA8-SB-0.0-0.5	EFH (C15-C20)	J	2.1	5.1	PQL	mg/Kg	J (all detects)
FDG2-SL-625-SA8-SB-0.0-0.5	EFH (C21-C30) SG	J	3.9	5.1	PQL	mg/Kg	J (all detects)
	EFH (C30-C40) SG	J	8.3	10	PQL	mg/Kg	
	EFH (C8-C11)	J	3.8	5.1	PQL	mg/Kg	
FDG2-SL-631-SA8-SB-0.0-0.5	EFH (C15-C20)	J	4.5	5.3	PQL	mg/Kg	J (all detects)
	EFH (C21-C30) SG	J	2.3	5.3	PQL	mg/Kg	
	EFH (C30-C40) SG	J	4.6	11	PQL	mg/Kg	
FDG2-SL-631-SA8-SB-4.5-5.0	EFH (C21-C30) SG	J	3.0	5.5	PQL	mg/Kg	J (all detects)
	EFH (C30-C40) SG	J	7.4	11	PQL	mg/Kg	
FDG2-SL-631-SA8-SB-7.0-8.0	EFH (C15-C20)	J	2.9	6.0	PQL	mg/Kg	J (all detects)

Method: 8270D SIM
Matrix: SO

SampleID	Analyte	Lab Qual	Result	Reporting Limit	RL Type	Units	Flag
FDG2-SL-631-SA8-SB-7.0-8.0	CHRYSENE	J	0.55	2.0	PQL	ug/Kg	J (all detects)

LDC #: 32181C4
SDG #: PH220
Laboratory: Eurofins Lancaster Laboratories

VALIDATION COMPLETENESS WORKSHEET

ADR

Date: 7/28/14
Page: 1 of 1
Reviewer: KL
2nd Reviewer: AV

METHOD: Metals (EPA SW 846 Method 6010C/6020A/~~7000~~ ~~7471B~~/7471A)

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

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 6/5/14
II.	ICP/MS Tune	N	
III.	Calibration	—	
IV.	Blanks	SW	
V.	ICP Interference Check Sample (ICS) Analysis	—	
VI.	Matrix Spike Analysis	N	
VII.	Duplicate Sample Analysis	N	
VIII.	Laboratory Control Samples (LCS)	~~A~~ ~~N~~ N	LCS/LCSD
IX.	Internal Standard (ICP-MS)	N	
X.	Furnace Atomic Absorption QC	N	
XI.	ICP Serial Dilution	~~N~~ ~~SW~~	
XII.	Sample Result Verification	N	
XIII.	Overall Assessment of Data	N	
XIV.	Field Duplicates	N	
XV	Field Blanks	SW	FB - 052114 SDG# PH191, EB=1

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

1	EB-060514 Water	11		21		31	
2	FDG2-SL-631-SA8-SB-7.0-8.0	12		22		32	
3		13		23		33	
4		14		24		34	
5		15		25		35	
6		16		26		36	
7		17		27		37	
8		18		28		38	
9		19		29		39	
10		20		30		40	

Notes: _____

LDC #: 32181CH

VALIDATION FINDINGS WORKSHEET
Sample Specific Element Reference

Reviewer: KK
2nd reviewer: AV

All circled elements are applicable to each sample.

Sample ID	Matrix	Target Analyte List (TAL)
1 ~~2~~	W	Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti, U, Li, P, Zr, Sr
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti, U, ____
2	S	Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti, U, Li, P, Zr, Sr
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti, U, ____

LDC #: 32181C4

VALIDATION FINDINGS WORKSHEET
PB/ICB/CCB QUALIFIED SAMPLES

Reviewer: KK
2nd Reviewer:

METHOD: Trace metals (EPA SW 864 Method 6010C/6020A/7471A)
Soil preparation factor applied: NA
Sample Concentration units, unless otherwise noted: Ug/L
Associated Samples: 1

					Sample Identification										
Analyte	Maximum PB[a] (mg/Kg)	Maximum PB[a] (mg/L)	Maximum ICB/CCB[a] (ug/L)	Action Level	1										
Zr			9.0	45	10.9										

Samples with analyte concentrations within five times the associated ICB, CCB or PB concentration are listed above with the identifications from the Validation Completeness Worksheet. These sample results were qualified as not detected, "U".
Note : a - The listed analyte concentration is the highest ICB, CCB, or PB detected in the analysis of each element.

LDC #: 32181C4

VALIDATION FINDINGS WORKSHEET
Field Blanks

Reviewer: KK
2nd Reviewer: AL

METHOD: Trace Metals (EPA SW846 6010C/6020A/7471A)

Blank units: ug/L **Associated sample units:** mg/kg
Sampling date: 6/5/14 and 5/21/14 Soil factor applied 100
Field blank type: (circle one) Field Blank / Rinsate / Other: EB Associated Samples: ~~All~~ 1 or 2

Analyte	Blank ID	Blank ID	Sample Identification								
	1	FB-052114 SDG# PH191	Action Limit (mg/kg)	~~1~~ NoQual							
Zr	10.9	11.0	5.50	10.9 ug/l							
Mn	1.3		0.65	~~1.3 ug/l~~ or							

CIRCLED RESULTS WERE NOT QUALIFIED. ALL RESULTS NOT CIRCLED WERE QUALIFIED BY THE FOLLOWING STATEMENT:
Samples with analyte concentrations within five times the associated field blank concentration are listed above, these sample results were qualified as not detected, "U".

Data Validation Report
Santa Susana Field Laboratory

Go Backs, Subgroup FDG Block 2

SDG: PH221

Prepared for

CDM Smith
555 17th Street, Suite 1100
Denver, CO 80202

Prepared by

Laboratory Data Consultants, Inc.
2701 Loker Ave West, Suite 220
Carlsbad, CA 92010

August 7, 2014

INTRODUCTION

This Data Validation Report (DVR) presents Level III data validation results for samples collected on June 6, 2014. Data validation was performed in accordance with the Quality Assurance Project Plan (QAPP) for Santa Susana Field Laboratory (SSFL), RCRA Facility Investigation, Surficial Media Operable Unit (March 2009, Revision 4) and a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines (CLPNFGs) for Superfund Organic Methods Data Review (June 2008). Where specific guidance is not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following methods:

Total Petroleum Hydrocarbons (TPH) as Gasoline by Environmental Protection Agency (EPA) SW 846 Method 8015M
TPH as Extractables with and without Silica Gel Clean Up by EPA SW 846 Method 8015M

The sample identification and methods of analyses performed on each sample is presented in Attachment 1. Overall data qualification summary is presented in Attachment 2. Level III Automated Data Review outliers are presented in Enclosure I.

All sample results were subjected to Level III data validation, which comprises an evaluation of quality control (QC) summary results for sample holding times, surrogates, laboratory control sample/laboratory control sample duplicates (LCS/LCSD), method blanks, trip blanks, equipment blanks, and field blanks. No samples in this SDG were subjected to Level IV evaluation.

Automated data review was performed on all QC summary results using the Automated Data Review (ADR) software program (LDC, 2013). Quality assurance (QA)/QC criteria specified in the QAPP and CLPNFGs were incorporated with the program's reference library to assess compliance with project requirements.

The following are definitions of the data qualifiers:

U Indicates the compound or analyte was analyzed for but not detected.

J Indicates an estimated value.

R Quality control indicates the data is not usable.

NJ Presumptive evidence of presence of the compound at an estimated quantity.

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

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 QC criteria.

II. Initial Calibration

Initial Calibration data were not reviewed for level III.

III. Continuing Calibration

Continuing calibration data were not reviewed for level III.

IV. Blanks

Method blanks were performed at the required frequencies. No contaminant concentrations were detected in the method or preparation blanks.

V. Surrogate Spikes

Surrogate percent recoveries (%R) were within QC limits.

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.

VII. Laboratory Duplicates Sample

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

VIII. Laboratory Control Samples (LCS)

Laboratory control samples were reviewed for each matrix as applicable. Percent recoveries (%R) and relative percent differences (RPD) were within QC limits with the exception of one LCS/LCSD pair for TPH as extractables. The associated sample results were qualified as detected estimated (J) or non-detected estimated (UJ) as applicable. The details regarding the qualification of data are provided in Enclosure I.

IX. Internal Standards

Internal standards were not reviewed for level III.

X. Compound Quantitation

The laboratory reporting limits were evaluated. All laboratory reporting limits met the specified requirements.

All compounds reported below the RL as detected were qualified as follows:

Sample	Finding	Flag	A or P
All samples in SDG PH221	All compounds reported as detected below the RL.	J (all detects)	A

XI. Field Duplicate Samples

No field duplicates were identified in this SDG.

XII. Field Blank Samples

One trip blank was collected and analyzed for TPH as gasoline. No contaminant concentrations were found in the trip blank.

One equipment blank (from SDG PH220) was collected and analyzed for TPH as gasoline and TPH as extractables with and without silica gel clean up. No contaminant concentrations were found in the equipment blank.

One field blank (from SDG PH191) was collected and analyzed for TPH as gasoline and TPH as extractables with and without silica gel clean up. No contaminant concentrations were found in the field blank.

XIII. Overall Assessment of Data

The overall assessment of QA/QC data review by automated and manual validation of this sampling event met project requirements and analytical completeness levels with the exceptions noted in the above sections. The remainder of the data are deemed useable for the intended use.

Data flags are summarized and are presented as Attachment 2.

Attachment 1

Sample Cross Reference

Sample Cross Reference

Date Collected	Field Sample ID	Lab Sample ID	Sample Type	Prep Method	Analytical Method	Review Level
06-Jun-2014	FDG2-SL-626-SA8-SB-0.0-0.	7491483	N	3546	8015M	III
06-Jun-2014	TB1-060614	7491482	TB	5030B	8015M	III
06-Jun-2014	FDG2-SL-626-SA8-SB-4.0-5.	7491484	N	3546	8015M	III
06-Jun-2014	FDG2-SL-626-SA8-SB-4.0-5.	7491484	N	5035A	8015M	III
06-Jun-2014	FDG2-SL-691-SA6-SB-0.0-0.	7491485	N	3546	8015M	III
06-Jun-2014	FDG2-SL-693-SA6-SB-0.0-0.	7491487	N	3546	8015M	III
06-Jun-2014	FDG2-SL-692-SA6-SB-0.0-0.	7491486	N	3546	8015M	III

III = EPA Level 3 Data Review *N = Normal Sample* *TB = Trip Blank* *MS = Matrix Spike*
IV = EPA Level 4 Data Validation *FD = Field Duplicate* *FB = Field Blank* *MSD = Matrix Spike Duplicate*

Attachment 2
Overall Data Qualification Summary

Data Qualifier Summary

Lab Reporting Batch ID: PH221 **Laboratory: LL**

EDD Filename: PH221_v1. **eQAPP Name: CDM_SSFL_140617_Lan**

Method Category: SVOA

Method: 8015M **Matrix: SO**

Sample ID: **FDG2-SL-626-SA8-SB-0.0-0.5** ***Collected:*** **6/6/2014 7:45:00 AM** ***Analysis Type:*** **REA** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
EFH (C15-C20) SG	5.1	U	2.0	MDL	5.1	PQL	mg/Kg	UJ	L
EFH (C8-C11) SG	5.1	U	2.0	MDL	5.1	PQL	mg/Kg	UJ	L
EFH (C12-C14) SG	5.1	U	2.0	MDL	5.1	PQL	mg/Kg	UJ	L

Sample ID: **FDG2-SL-626-SA8-SB-0.0-0.5** ***Collected:*** **6/6/2014 7:45:00 AM** ***Analysis Type:*** **RES** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
EFH (C15-C20)	2.3	J	2.0	MDL	5.1	PQL	mg/Kg	J	Z

Sample ID: **FDG2-SL-626-SA8-SB-4.0-5.0** ***Collected:*** **6/6/2014 8:20:00 AM** ***Analysis Type:*** **REA** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
EFH (C12-C14) SG	3.3	J	2.1	MDL	5.3	PQL	mg/Kg	J	Z, L
EFH (C15-C20) SG	5.1	J	2.1	MDL	5.3	PQL	mg/Kg	J	Z, L
EFH (C8-C11) SG	5.3	U	2.1	MDL	5.3	PQL	mg/Kg	UJ	L

Sample ID: **FDG2-SL-691-SA6-SB-0.0-0.5** ***Collected:*** **6/6/2014 9:35:00 AM** ***Analysis Type:*** **REA** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
EFH (C12-C14) SG	5.0	U	2.0	MDL	5.0	PQL	mg/Kg	UJ	L
EFH (C15-C20) SG	5.0	U	2.0	MDL	5.0	PQL	mg/Kg	UJ	L
EFH (C8-C11) SG	5.0	U	2.0	MDL	5.0	PQL	mg/Kg	UJ	L

Sample ID: **FDG2-SL-691-SA6-SB-0.0-0.5** ***Collected:*** **6/6/2014 9:35:00 AM** ***Analysis Type:*** **RES** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
EFH (C15-C20)	2.2	J	2.0	MDL	5.0	PQL	mg/Kg	J	Z

Sample ID: **FDG2-SL-692-SA6-SB-0.0-0.5** ***Collected:*** **6/6/2014 11:40:00** ***Analysis Type:*** **REA** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
EFH (C12-C14) SG	5.1	U	2.0	MDL	5.1	PQL	mg/Kg	UJ	L
EFH (C15-C20) SG	5.1	U	2.0	MDL	5.1	PQL	mg/Kg	UJ	L
EFH (C8-C11) SG	5.1	U	2.0	MDL	5.1	PQL	mg/Kg	UJ	L

* denotes a non-reportable result

Project Name and Number: 1204-002-001-AL - SSFL Area IV Phase 3

Data Qualifier Summary

Lab Reporting Batch ID: PH221 **Laboratory: LL**

EDD Filename: PH221_v1. **eQAPP Name: CDM_SSFL_140617_Lan**

Method Category: **SVOA**

Method: **8015M** ***Matrix:*** **SO**

Sample ID: **FDG2-SL-693-SA6-SB-0.0-0.5** ***Collected:*** **6/6/2014 10:30:00** ***Analysis Type:*** **REA** ***Dilution:*** **1**

Analyte	*Lab Result*	*Lab Qual*	*DL*	*DL Type*	*RL*	*RL Type*	*Units*	*Data Review Qual*	*Reason Code*
EFH (C12-C14) SG	5.0	U	2.0	MDL	5.0	PQL	mg/Kg	UJ	L
EFH (C15-C20) SG	5.0	U	2.0	MDL	5.0	PQL	mg/Kg	UJ	L
EFH (C21-C30) SG	3.4	J	2.0	MDL	5.0	PQL	mg/Kg	J	Z
EFH (C8-C11) SG	5.0	U	2.0	MDL	5.0	PQL	mg/Kg	UJ	L

* denotes a non-reportable result

Project Name and Number: 1204-002-001-AL - SSFL Area IV Phase 3

Data Qualifier Summary

Lab Reporting Batch ID: PH221 **Laboratory: LL**

EDD Filename: PH221_v1. **eQAPP Name: CDM_SSFL_140617_Lan**

Reason Code Legend

Reason Code	*Description*
L	Laboratory Control Spike Lower Estimation
Z	Reporting Limit Trace Value

* denotes a non-reportable result

Project Name and Number: 1204-002-001-AL - SSFL Area IV Phase 3

Enclosure I

Level III ADR Outliers

Quality Control
Outlier Reports

PH221

Lab Control Spike/Lab Control Spike Duplicate Outlier Report

Lab Reporting Batch ID: PH221 **Laboratory: LL**

EDD Filename: PH221_v1. **eQAPP Name: CDM_SSFL_140617_Lan**

Method: **8015M**
Matrix: **SO**

QC Sample ID (Associated Samples)	*Compound*	*LCS %R*	*LCSD %R*	*%R Limits*	*RPD (Limits)*	*Affected Compounds*	*Flag*
P41608AQ320608A	EFH (C12-C14) SG	74	-	76.00-115.00	-	EFH (C12-C14) SG	
(FDG2-SL-626-SA8-SB-0.0-0.5	EFH (C15-C20) SG	77	-	78.00-127.00	-	EFH (C15-C20) SG	
FDG2-SL-626-SA8-SB-4.0-5.0	EFH (C8-C11) SG	56	-	60.00-115.00	-	EFH (C8-C11) SG	J (all detects)
FDG2-SL-691-SA6-SB-0.0-0.5							UJ (all non-detects)
FDG2-SL-692-SA6-SB-0.0-0.5							
FDG2-SL-693-SA6-SB-0.0-0.5)							

Reporting Limit Outliers

Lab Reporting Batch ID: PH221 **Laboratory: LL**

EDD Filename: PH221_v1. **eQAPP Name: CDM_SSFL_140617_Lan**

Method: **8015M**

Matrix: **SO**

SampleID	*Analyte*	*Lab Qual*	*Result*	*Reporting Limit*	*RL Type*	*Units*	*Flag*
FDG2-SL-626-SA8-SB-0.0-0.5	EFH (C15-C20)	J	2.3	5.1	PQL	mg/Kg	J (all detects)
FDG2-SL-626-SA8-SB-4.0-5.0	EFH (C12-C14) SG EFH (C15-C20) SG	J J	3.3 5.1	5.3 5.3	PQL PQL	mg/Kg mg/Kg	J (all detects)
FDG2-SL-691-SA6-SB-0.0-0.5	EFH (C15-C20)	J	2.2	5.0	PQL	mg/Kg	J (all detects)
FDG2-SL-693-SA6-SB-0.0-0.5	EFH (C21-C30) SG	J	3.4	5.0	PQL	mg/Kg	J (all detects)

Data Validation Report
Santa Susana Field Laboratory

Go Backs, Subgroup FDG Block 2

SDG: PH224

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August 7, 2014

INTRODUCTION

This Data Validation Report (DVR) presents Level III and IV data validation results for samples collected on June 9, 2014. Data validation was performed in accordance with the Quality Assurance Project Plan (QAPP) for Santa Susana Field Laboratory (SSFL), RCRA Facility Investigation, Surficial Media Operable Unit (March 2009, Revision 4) and a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines (CLPNFGs) for Superfund Organic Methods Data Review (June 2008), Polychlorinated Dioxins/Dibenzofurans Data Review (September 2005) and for Inorganic Data Review (January 2010). Where specific guidance is not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following methods:

Semivolatiles (SVOCs) by Environmental Protection Agency (EPA) SW 846 Method 8270D utilizing Selective Ion Monitoring (SIM)
Pesticides by EPA SW 846 Method 8081B
Polychlorinated Biphenyls (PCBs) by EPA SW 846 Method 8082A
Metals by EPA SW 846 Method 6010C, 6020A, and 7471B
Herbicides by EPA SW 846 Method 1613B
Total Petroleum Hydrocarbons (TPH) as Extractables with and without Silica Gel Clean Up by EPA SW 846 Method 8015M
Dioxins and Dibenzofurans by EPA Method 1613B

The sample identification and methods of analyses performed on each sample is presented in Attachment 1. Please note that field sample IDs have been truncated due to database limitations. Overall data qualification summary is presented in Attachment II. Level III Automated Data Review outliers are presented in Enclosure I. DVRs for samples on which EPA Level IV validation was performed are presented in Enclosure II.

All sample results were subjected to Level III data validation, which comprises an evaluation of quality control (QC) summary results for sample holding times, initial and continuing calibration blanks (ICB/CCBs), surrogates, internal standards (dioxins only), matrix spike/matrix spike duplicates (MS/MSD), laboratory duplicates (DUP), laboratory control sample/laboratory control sample duplicates (LCS/LCSD), ICP serial dilutions, method blanks, equipment blanks, field blanks, field duplicate samples. Herbicide results were subjected to EPA Level IV evaluation as indicated in Attachment I, which comprised of the QC summary forms, including initial and continuing calibrations and internal standards, as well as the raw data, to confirm sample quantitation and identification.

Automated data review was performed on all QC summary results using the Automated Data Review (ADR) software program (LDC, 2013) with exception of the initial and continuing calibrations, ICB/CCBs, internal standards (herbicides only), and ICP serial dilutions, which were validated manually. Quality assurance (QA)/QC criteria specified in the QAPP and CLPNFGs were incorporated with the program's reference library to assess compliance with project requirements.

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.

NJ Presumptive evidence of presence of the compound at an estimated quantity.

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

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 QC criteria.

II. Initial Calibration

All criteria for the initial calibration for herbicides were met.

Initial calibration data were not reviewed for Level III.

III. Continuing Calibration

All criteria for the initial calibration verifications and continuing calibration for herbicides were met with the exception of several compounds. The associated sample results were qualified as detected estimated (J) or non-detected estimated (UJ) as applicable. The details regarding the qualification of data are provided in Enclosure II.

Continuing calibration data were not reviewed for Level III.

IV. Blanks

Method blanks were performed at the required frequencies. No contaminant concentrations were detected in the method or preparation blanks with the exception of two blanks for metals and dioxins and dibenzofurans. The associated sample results were qualified as non-detected (U) due to method blank contamination as applicable. The sample results that were not detected or were significantly greater than the concentrations found in the associated blanks were not qualified. The details regarding the qualification of data are provided in Enclosure I.

No contaminant concentrations were detected in the initial or continuing calibration blanks.

V. Surrogate Spikes

Surrogates were added to all samples and blanks as required by the method. All surrogate recoveries (%R) were within QC limits with the exception of several samples for TPH as extractables with silica gel clean up. The associated sample results were qualified as detected estimated (J) or non-detected estimated (UJ) as applicable. The details regarding the qualification of data are provided in Enclosure I.

VI. ICP Interference Check Sample (ICS) Analysis

ICP interference check data were not reviewed for level III.

VII. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) samples were performed at the required frequency. Percent recoveries (%R) and relative percent differences (RPD) were within QC limits with the exception of one MS/MSD pair for herbicides, TPH as extractables, and metals. The 2,4,5-T, 2,4,5-TP, 2,4-D, 2,4-DB, dichloroprop, and dinoseb results in sample FDG2-SL-558-NBZ-SB-0.0-0.5 were qualified as rejected (R) due to MS/MSD %Rs grossly outside QC

limits (i.e., ≤ 0%). The remainder of the associated sample results were qualified as detected estimated (J) or non-detected estimated (UJ) as applicable. The details regarding the qualification of data are provided in Enclosures I and II.

VIII. Laboratory Duplicates Sample

Laboratory duplicates (DUP) sample analyses were reviewed for each matrix as applicable. Results were within QC limits with the exception of one DUP for metals. The associated sample results were qualified as detected estimated (J) or non-detected estimated (UJ) as applicable. The details regarding the qualification of data are provided in Enclosure I.

IX. Laboratory Control Samples (LCS)

Laboratory control samples were reviewed for each matrix as applicable. Percent recoveries (%R) and relative percent differences (RPD) were within QC limits with the exception of two LCS/LCSD pairs for SVOCs and TPH as extractables. The associated sample results were qualified as detected estimated (J) or non-detected estimated (UJ) as applicable. The details regarding the qualification of data are provided in Enclosure I.

X. Internal Standards

Internal standards were reviewed for herbicides and dioxins/dibenzofurans. All internal standard areas and retention times (herbicides) and percent recoveries (dioxins and dibenzofurans) were within QC limits.

XI. ICP Serial Dilution

ICP serial dilution analysis was performed by the laboratory. The analysis criteria were met.

XII. Compound Quantitation

The laboratory reporting limits were evaluated. All laboratory reporting limits met the specified requirements.

The RPD between columns for 2,4-DB for one sample was not within QC limits. The sample results were qualified as detected estimated (J). The details regarding the qualification of data are provided in Enclosure II.

All compounds reported below the RL as detected were qualified as follows:

Sample	Finding	Flag
All samples in SDG PH224	All compounds reported as detected below the RL.	J (all detects)

XIII. Field Duplicate Samples

One field duplicate pair was collected and analyzed for SVOCs, herbicides, pesticides, PCBs, metals, TPH as extractables with and without silica gel clean up, and dioxins and dibenzofurans. All RPDs were within QC limits with the exception of SVOCs, herbicides, pesticides, TPH as extractables with and without silica gel cleanup, and dioxins and dibenzofurans. The associated

sample results were qualified as detected estimated (J) or non-detected estimated (UJ) as applicable. The field duplicate result comparisons are provided in Enclosures I and II.

XIV. Field Blank Samples

No trip blank was collected or analyzed for this SDG.

One equipment blank (from SDG 231) was collected and analyzed for SVOCs, herbicides, pesticides, PCBs, metals, TPH as extractables with and without silica gel clean up, and dioxins and dibenzofurans. The equipment blank had detections for SVOCs, herbicides, pesticides, metals, and dioxins and dibenzofurans. The associated sample results were qualified as non-detected (U) due to equipment blank contamination as applicable. The sample results that were not detected or were significantly greater than the concentrations found in the equipment blanks were not qualified. The equipment blank outlier reports are presented in Enclosures I and II.

One field blank (from SDG PH191) was collected and analyzed for SVOCs, herbicides, pesticides, PCBs, metals, TPH as extractables with and without silica gel cleanup, and dioxins and dibenzofurans. The field blank had detections for SVOCs, metals and dioxins and dibenzofurans. The associated sample results were qualified as non-detected (U) due to field blank contamination as applicable. The sample results that were not detected or were significantly greater than the concentrations found in the field blanks were not qualified. The field blank outlier reports are presented in Enclosures I and II.

XV. Overall Assessment of Data

Six herbicide results were rejected due to MS/MSD %Rs grossly outside of QC limits. These results are not useable for all purposes.

The overall assessment of QA/QC data review by automated and manual validation of this sampling event met project requirements and analytical completeness levels with the exceptions noted in the above sections. The remainder of the data are deemed useable for the intended use.

Data flags are summarized and are presented as Attachment 2.

Attachment 1

Sample Cross Reference

Sample Cross Reference

Date Collected	Field Sample ID	Lab Sample ID	Sample Type	Prep Method	Analytical Method	Review Level
09-Jun-2014	SL-558-NBZ-SB-0.0-0.5	7492863	N	3050B	6010C	III
09-Jun-2014	SL-558-NBZ-SB-0.0-0.5	7492863	N	3050B	6020A	III
09-Jun-2014	SL-558-NBZ-SB-0.0-0.5	7492863	N	3546	8015M	III
09-Jun-2014	SL-558-NBZ-SB-0.0-0.5	7492863	N	3546	8081B	III
09-Jun-2014	SL-558-NBZ-SB-0.0-0.5	7492863	N	3546	8082A	III
09-Jun-2014	SL-558-NBZ-SB-0.0-0.5	7492863	N	3546	8270D SIM	III
09-Jun-2014	SL-558-NBZ-SB-0.0-0.5	7492863	N	3550B	8151A	IV
09-Jun-2014	SL-558-NBZ-SB-0.0-0.5	7492863	N	METHOD	1613B	III
09-Jun-2014	SL-558-NBZ-SB-0.0-0.5	7492863	N	METHOD	7471B	III
09-Jun-2014	SL-558-NBZ-SB-0.0-0.5MS	7492864	MS	3050B	6010C	III
09-Jun-2014	SL-558-NBZ-SB-0.0-0.5MS	7492864	MS	3050B	6020A	III
09-Jun-2014	SL-558-NBZ-SB-0.0-0.5MS	7492864	MS	3546	8015M	III
09-Jun-2014	SL-558-NBZ-SB-0.0-0.5MS	7492864	MS	3546	8081B	III
09-Jun-2014	SL-558-NBZ-SB-0.0-0.5MS	7492864	MS	3546	8082A	III
09-Jun-2014	SL-558-NBZ-SB-0.0-0.5MS	7492864	MS	3546	8270D SIM	III
09-Jun-2014	SL-558-NBZ-SB-0.0-0.5MS	7492864	MS	3550B	8151A	IV
09-Jun-2014	SL-558-NBZ-SB-0.0-0.5MS	7492864	MS	METHOD	1613B	III
09-Jun-2014	SL-558-NBZ-SB-0.0-0.5MS	7492864	MS	METHOD	7471B	III
09-Jun-2014	SL-558-NBZ-SB-0.0-0.5MSD	7492865	MSD	3050B	6010C	III
09-Jun-2014	SL-558-NBZ-SB-0.0-0.5MSD	7492865	MSD	3050B	6020A	III
09-Jun-2014	SL-558-NBZ-SB-0.0-0.5MSD	7492865	MSD	3546	8015M	III
09-Jun-2014	SL-558-NBZ-SB-0.0-0.5MSD	7492865	MSD	3546	8081B	III
09-Jun-2014	SL-558-NBZ-SB-0.0-0.5MSD	7492865	MSD	3546	8082A	III
09-Jun-2014	SL-558-NBZ-SB-0.0-0.5MSD	7492865	MSD	3546	8270D SIM	III
09-Jun-2014	SL-558-NBZ-SB-0.0-0.5MSD	7492865	MSD	3550B	8151A	IV
09-Jun-2014	SL-558-NBZ-SB-0.0-0.5MSD	7492865	MSD	METHOD	1613B	III

III = EPA Level 3 Data Review *N = Normal Sample* *TB = Trip Blank* *MS = Matrix Spike*
IV = EPA Level 4 Data Validation *FD = Field Duplicate* *FB = Field Blank* *MSD = Matrix Spike Duplicate*

Sample Cross Reference

Date Collected	Field Sample ID	Lab Sample ID	Sample Type	Prep Method	Analytical Method	Review Level
09-Jun-2014	SL-558-NBZ-SB-0.0-0.5MSD	7492865	MSD	METHOD	7471B	III
09-Jun-2014	SL-558-NBZ-SB-0.0-0.5DUP	7492866	DUP	3050B	6010C	III
09-Jun-2014	SL-558-NBZ-SB-0.0-0.5DUP	7492866	DUP	3050B	6020A	III
09-Jun-2014	SL-558-NBZ-SB-0.0-0.5DUP	7492866	DUP	METHOD	7471B	III
09-Jun-2014	SL-858-NBZ-SB-0.0-0.5	7492869	FD	3050B	6010C	III
09-Jun-2014	SL-858-NBZ-SB-0.0-0.5	7492869	FD	3050B	6020A	III
09-Jun-2014	SL-858-NBZ-SB-0.0-0.5	7492869	FD	3546	8015M	III
09-Jun-2014	SL-858-NBZ-SB-0.0-0.5	7492869	FD	3546	8081B	III
09-Jun-2014	SL-858-NBZ-SB-0.0-0.5	7492869	FD	3546	8082A	III
09-Jun-2014	SL-858-NBZ-SB-0.0-0.5	7492869	FD	3546	8270D SIM	III
09-Jun-2014	SL-858-NBZ-SB-0.0-0.5	7492869	FD	3550B	8151A	IV
09-Jun-2014	SL-858-NBZ-SB-0.0-0.5	7492869	FD	METHOD	1613B	III
09-Jun-2014	SL-858-NBZ-SB-0.0-0.5	7492869	FD	METHOD	7471B	III
09-Jun-2014	SL-559-NBZ-SB-0.0-0.5	7492867	N	3050B	6010C	III
09-Jun-2014	SL-559-NBZ-SB-0.0-0.5	7492867	N	3050B	6020A	III
09-Jun-2014	SL-559-NBZ-SB-0.0-0.5	7492867	N	3546	8015M	III
09-Jun-2014	SL-559-NBZ-SB-0.0-0.5	7492867	N	3546	8082A	III
09-Jun-2014	SL-559-NBZ-SB-0.0-0.5	7492867	N	3546	8270D SIM	III
09-Jun-2014	SL-559-NBZ-SB-0.0-0.5	7492867	N	3550B	8151A	IV
09-Jun-2014	SL-559-NBZ-SB-0.0-0.5	7492867	N	METHOD	1613B	III
09-Jun-2014	SL-559-NBZ-SB-0.0-0.5	7492867	N	METHOD	7471B	III
09-Jun-2014	SL-632-NBZ-SB-0.0-0.5	7492868	N	3546	8015M	III

III = EPA Level 3 Data Review *N = Normal Sample* *TB = Trip Blank* *MS = Matrix Spike*
IV = EPA Level 4 Data Validation *FD = Field Duplicate* *FB = Field Blank* *MSD = Matrix Spike Duplicate*

Attachment 2
Overall Data Qualification Summary

Data Qualifier Summary

Lab Reporting Batch ID: PH224 **Laboratory: LL**

EDD Filename: PrepPH224 **eQAPP Name: CDM_SSFL_140617_Lan**

Method Category: METALS

Method: 6010C **Matrix: SO**

Sample ID: FDG2-SL-558-NBZ-SB-0.0-0.5 **Collected: 6/9/2014 8:30:00 AM** **Analysis Type: RES** **Dilution: 1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
ANTIMONY	4.08	U	0.754	MDL	4.08	PQL	mg/Kg	UJ	Q
ARSENIC	3.91	J	0.714	MDL	4.08	PQL	mg/Kg	J	Z
BARIUM	106		0.0336	MDL	1.02	PQL	mg/Kg	J	E
BERYLLIUM	0.672	J	0.0683	MDL	1.02	PQL	mg/Kg	J	Z
BORON	8.75	J	0.856	MDL	10.2	PQL	mg/Kg	J	Z
CADMIUM	0.356	J	0.0775	MDL	1.02	PQL	mg/Kg	J	Z
CALCIUM	3950		3.40	MDL	20.4	PQL	mg/Kg	J	E
MAGNESIUM	4570		1.70	MDL	10.2	PQL	mg/Kg	J	E
MOLYBDENUM	0.661	J	0.173	MDL	2.04	PQL	mg/Kg	J	Z
NICKEL	14.4		0.133	MDL	2.04	PQL	mg/Kg	J	E
POTASSIUM	4310		8.50	MDL	102	PQL	mg/Kg	J	E
SODIUM	80.3	J	17.0	MDL	102	PQL	mg/Kg	J	Z
TIN	2.92	J	0.224	MDL	10.2	PQL	mg/Kg	U	B
Zirconium	3.98	J	0.856	MDL	5.10	PQL	mg/Kg	U	F, F
ALUMINUM	15700		7.35	MDL	40.8	PQL	mg/Kg	J	E

Sample ID: FDG2-SL-559-NBZ-SB-0.0-0.5 **Collected: 6/9/2014 9:25:00 AM** **Analysis Type: RES** **Dilution: 1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
ALUMINUM	11500		7.31	MDL	40.6	PQL	mg/Kg	J	E
ANTIMONY	4.06	U	0.751	MDL	4.06	PQL	mg/Kg	UJ	Q
ARSENIC	3.52	J	0.710	MDL	4.06	PQL	mg/Kg	J	Z
BARIUM	75.1		0.0335	MDL	1.01	PQL	mg/Kg	J	E
BERYLLIUM	0.504	J	0.0680	MDL	1.01	PQL	mg/Kg	J	Z
BORON	6.92	J	0.852	MDL	10.1	PQL	mg/Kg	J	Z
CADMIUM	0.220	J	0.0771	MDL	1.01	PQL	mg/Kg	J	Z
CALCIUM	3110		3.39	MDL	20.3	PQL	mg/Kg	J	E
MAGNESIUM	5750		1.69	MDL	10.1	PQL	mg/Kg	J	E
MOLYBDENUM	0.287	J	0.172	MDL	2.03	PQL	mg/Kg	J	Z
NICKEL	10.4		0.132	MDL	2.03	PQL	mg/Kg	J	E
POTASSIUM	2660		8.46	MDL	101	PQL	mg/Kg	J	E
SODIUM	91.5	J	16.9	MDL	101	PQL	mg/Kg	J	Z
TIN	2.86	J	0.223	MDL	10.1	PQL	mg/Kg	U	B
Zirconium	3.45	J	0.852	MDL	5.07	PQL	mg/Kg	U	F, F

* denotes a non-reportable result

Project Name and Number: 1204-002-001-AL - SSFL Area IV Phase 3

Data Qualifier Summary

Lab Reporting Batch ID: PH224 **Laboratory: LL**

EDD Filename: PrepPH224 **eQAPP Name: CDM_SSFL_140617_Lan**

Method Category: METALS

Method: 6010C **Matrix: SO**

Sample ID: FDG2-SL-858-NBZ-SB-0.0-0.5 **Collected: 6/9/2014 8:35:00 AM** **Analysis Type: RES** **Dilution: 1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
ALUMINUM	15600		7.14	MDL	39.6	PQL	mg/Kg	J	E
ANTIMONY	3.96	U	0.733	MDL	3.96	PQL	mg/Kg	UJ	Q
BARIUM	111		0.0327	MDL	0.991	PQL	mg/Kg	J	E
BERYLLIUM	0.674	J	0.0664	MDL	0.991	PQL	mg/Kg	J	Z
BORON	9.83	J	0.832	MDL	9.91	PQL	mg/Kg	J	Z
CADMIUM	0.382	J	0.0753	MDL	0.991	PQL	mg/Kg	J	Z
CALCIUM	4790		3.31	MDL	19.8	PQL	mg/Kg	J	E
MAGNESIUM	4760		1.65	MDL	9.91	PQL	mg/Kg	J	E
MOLYBDENUM	0.453	J	0.168	MDL	1.98	PQL	mg/Kg	J	Z
NICKEL	14.8		0.129	MDL	1.98	PQL	mg/Kg	J	E
POTASSIUM	4500		8.26	MDL	99.1	PQL	mg/Kg	J	E
SODIUM	81.5	J	16.5	MDL	99.1	PQL	mg/Kg	J	Z
TIN	2.78	J	0.218	MDL	9.91	PQL	mg/Kg	U	B
Zirconium	3.67	J	0.832	MDL	4.95	PQL	mg/Kg	U	F, F

Method Category: METALS

Method: 6020A **Matrix: SO**

Sample ID: FDG2-SL-558-NBZ-SB-0.0-0.5 **Collected: 6/9/2014 8:30:00 AM** **Analysis Type: REA** **Dilution: 2**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
SELENIUM	0.351	J	0.102	MDL	0.408	PQL	mg/Kg	J	Z

Sample ID: FDG2-SL-558-NBZ-SB-0.0-0.5 **Collected: 6/9/2014 8:30:00 AM** **Analysis Type: RES** **Dilution: 2**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
SILVER	0.0524	J	0.0265	MDL	0.204	PQL	mg/Kg	J	Z
STRONTIUM	27.2		0.0693	MDL	0.408	PQL	mg/Kg	J	Q, E
THALLIUM	0.277		0.0306	MDL	0.204	PQL	mg/Kg	J	Q

Sample ID: FDG2-SL-559-NBZ-SB-0.0-0.5 **Collected: 6/9/2014 9:25:00 AM** **Analysis Type: REA** **Dilution: 2**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
SELENIUM	0.344	J	0.101	MDL	0.406	PQL	mg/Kg	J	Z

* denotes a non-reportable result

Project Name and Number: 1204-002-001-AL - SSFL Area IV Phase 3

Data Qualifier Summary

Lab Reporting Batch ID: PH224 **Laboratory: LL**

EDD Filename: PrepPH224 **eQAPP Name: CDM_SSFL_140617_Lan**

Method Category: METALS

Method: 6020A **Matrix: SO**

Sample ID: FDG2-SL-559-NBZ-SB-0.0-0.5 **Collected: 6/9/2014 9:25:00 AM** **Analysis Type: RES** **Dilution: 2**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
SILVER	0.0329	J	0.0264	MDL	0.203	PQL	mg/Kg	J	Z
STRONTIUM	14.3		0.0690	MDL	0.406	PQL	mg/Kg	J	Q, E
THALLIUM	0.248		0.0304	MDL	0.203	PQL	mg/Kg	J	Q

Sample ID: FDG2-SL-858-NBZ-SB-0.0-0.5 **Collected: 6/9/2014 8:35:00 AM** **Analysis Type: REA** **Dilution: 2**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
SELENIUM	0.361	J	0.0991	MDL	0.396	PQL	mg/Kg	J	Z

Sample ID: FDG2-SL-858-NBZ-SB-0.0-0.5 **Collected: 6/9/2014 8:35:00 AM** **Analysis Type: RES** **Dilution: 2**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
SILVER	0.0691	J	0.0258	MDL	0.198	PQL	mg/Kg	J	Z
STRONTIUM	32.9		0.0674	MDL	0.396	PQL	mg/Kg	J	Q, E
THALLIUM	0.297		0.0297	MDL	0.198	PQL	mg/Kg	J	Q

Method Category: SVOA

Method: 1613B **Matrix: SO**

Sample ID: FDG2-SL-558-NBZ-SB-0.0-0.5 **Collected: 6/9/2014 8:30:00 AM** **Analysis Type: RES** **Dilution: 1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
1,2,3,4,6,7,8-HPCDF	1.05	JB	0.0392	MDL	5.00	PQL	ng/Kg	J	Z
1,2,3,4,7,8,9-HPCDF	0.194	JB	0.0620	MDL	5.00	PQL	ng/Kg	U	B
1,2,3,4,7,8-HxCDD	0.164	JBQ	0.0528	MDL	5.00	PQL	ng/Kg	J	Z
1,2,3,4,7,8-HXCDF	0.213	JBQ	0.0489	MDL	5.00	PQL	ng/Kg	U	B
1,2,3,6,7,8-HXCDD	0.359	JB	0.0549	MDL	5.00	PQL	ng/Kg	J	Z
1,2,3,6,7,8-HXCDF	0.209	JBQ	0.0418	MDL	5.00	PQL	ng/Kg	UJ	B, FD
1,2,3,7,8,9-HXCDD	0.248	JBQ	0.0517	MDL	5.00	PQL	ng/Kg	J	Z, FD
1,2,3,7,8,9-HXCDF	0.170	JB	0.0546	MDL	5.00	PQL	ng/Kg	U	B
1,2,3,7,8-PECDD	5.00	U	0.0585	MDL	5.00	PQL	ng/Kg	UJ	FD
1,2,3,7,8-PECDF	0.313	JB	0.0428	MDL	5.00	PQL	ng/Kg	U	B
2,3,4,6,7,8-HXCDF	0.186	JB	0.0443	MDL	5.00	PQL	ng/Kg	UJ	B, FD
2,3,4,7,8-PECDF	0.406	JB	0.0436	MDL	5.00	PQL	ng/Kg	U	B
2,3,7,8-TCDD	1.00	U	0.0762	MDL	1.00	PQL	ng/Kg	UJ	FD

* denotes a non-reportable result

Project Name and Number: 1204-002-001-AL - SSFL Area IV Phase 3

Data Qualifier Summary

Lab Reporting Batch ID: PH224 **Laboratory: LL**

EDD Filename: PrepPH224 **eQAPP Name: CDM_SSFL_140617_Lan**

Method Category: SVOA

Method: 1613B **Matrix: SO**

***Sample ID:* FDG2-SL-558-NBZ-SB-0.0-0.5** ***Collected:* 6/9/2014 8:30:00 AM** ***Analysis Type:* RES** ***Dilution:* 1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
2,3,7,8-TCDF	0.192	JQ	0.103	MDL	1.00	PQL	ng/Kg	J	Z
OCDF	2.14	JB	0.0527	MDL	10.0	PQL	ng/Kg	J	Z, FD

***Sample ID:* FDG2-SL-559-NBZ-SB-0.0-0.5** ***Collected:* 6/9/2014 9:25:00 AM** ***Analysis Type:* RES** ***Dilution:* 1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
1,2,3,4,6,7,8-HPCDD	2.77	JB	0.0353	MDL	5.05	PQL	ng/Kg	J	Z
1,2,3,4,6,7,8-HPCDF	0.558	JB	0.0269	MDL	5.05	PQL	ng/Kg	J	Z
1,2,3,4,7,8,9-HPCDF	0.0830	JB	0.0410	MDL	5.05	PQL	ng/Kg	U	B
1,2,3,4,7,8-HxCDD	0.0786	JBQ	0.0386	MDL	5.05	PQL	ng/Kg	U	B
1,2,3,4,7,8-HXCDF	0.172	JBQ	0.0399	MDL	5.05	PQL	ng/Kg	U	B
1,2,3,6,7,8-HXCDD	0.195	JB	0.0402	MDL	5.05	PQL	ng/Kg	U	B
1,2,3,6,7,8-HXCDF	0.212	JB	0.0356	MDL	5.05	PQL	ng/Kg	U	B
1,2,3,7,8,9-HXCDD	0.180	JBQ	0.0366	MDL	5.05	PQL	ng/Kg	J	Z
1,2,3,7,8,9-HXCDF	0.119	JBQ	0.0425	MDL	5.05	PQL	ng/Kg	U	B
1,2,3,7,8-PECDD	0.0817	JB	0.0477	MDL	5.05	PQL	ng/Kg	U	B
1,2,3,7,8-PECDF	0.185	JB	0.0320	MDL	5.05	PQL	ng/Kg	U	B
2,3,4,6,7,8-HXCDF	0.161	JBQ	0.0379	MDL	5.05	PQL	ng/Kg	U	B
2,3,4,7,8-PECDF	0.178	JBQ	0.0309	MDL	5.05	PQL	ng/Kg	U	B
2,3,7,8-TCDF	0.0786	JQ	0.0712	MDL	1.01	PQL	ng/Kg	J	Z
OCDF	1.04	JBQ	0.0385	MDL	10.1	PQL	ng/Kg	U	B

***Sample ID:* FDG2-SL-858-NBZ-SB-0.0-0.5** ***Collected:* 6/9/2014 8:35:00 AM** ***Analysis Type:* RES** ***Dilution:* 1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
1,2,3,4,6,7,8-HPCDF	1.69	JB	0.0335	MDL	4.92	PQL	ng/Kg	J	Z
1,2,3,4,7,8,9-HPCDF	0.223	JB	0.0551	MDL	4.92	PQL	ng/Kg	U	B
1,2,3,4,7,8-HxCDD	0.255	JBQ	0.0656	MDL	4.92	PQL	ng/Kg	J	Z
1,2,3,4,7,8-HXCDF	0.322	JBQ	0.0530	MDL	4.92	PQL	ng/Kg	U	B
1,2,3,6,7,8-HXCDD	0.442	JBQ	0.0672	MDL	4.92	PQL	ng/Kg	J	Z
1,2,3,6,7,8-HXCDF	0.372	JB	0.0478	MDL	4.92	PQL	ng/Kg	UJ	B, FD
1,2,3,7,8,9-HXCDD	0.448	JBQ	0.0603	MDL	4.92	PQL	ng/Kg	J	Z, FD
1,2,3,7,8,9-HXCDF	0.230	JB	0.0562	MDL	4.92	PQL	ng/Kg	U	B
1,2,3,7,8-PECDD	0.297	JBQ	0.0705	MDL	4.92	PQL	ng/Kg	J	Z, FD
1,2,3,7,8-PECDF	0.360	JBQ	0.0454	MDL	4.92	PQL	ng/Kg	U	B

* denotes a non-reportable result

Project Name and Number: 1204-002-001-AL - SSFL Area IV Phase 3

Data Qualifier Summary

Lab Reporting Batch ID: PH224 **Laboratory: LL**

EDD Filename: PrepPH224 **eQAPP Name: CDM_SSFL_140617_Lan**

Method Category: SVOA

Method: 1613B **Matrix: SO**

Sample ID: **FDG2-SL-858-NBZ-SB-0.0-0.5** ***Collected:*** **6/9/2014 8:35:00 AM** ***Analysis Type:*** **RES** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
2,3,4,6,7,8-HXCDF	0.347	JB	0.0514	MDL	4.92	PQL	ng/Kg	UJ	B, FD
2,3,4,7,8-PECDF	0.537	JBQ	0.0484	MDL	4.92	PQL	ng/Kg	U	B
2,3,7,8-TCDD	0.0957	JQ	0.0774	MDL	0.984	PQL	ng/Kg	J	Z, FD
2,3,7,8-TCDF	0.135	J	0.112	MDL	0.984	PQL	ng/Kg	J	Z
OCDF	3.67	JB	0.0523	MDL	9.84	PQL	ng/Kg	J	Z, FD

Method Category: SVOA

Method: 8015M **Matrix: SO**

Sample ID: **FDG2-SL-558-NBZ-SB-0.0-0.5** ***Collected:*** **6/9/2014 8:30:00 AM** ***Analysis Type:*** **REA** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
EFH (C12-C14) SG	5.1	U	2.0	MDL	5.1	PQL	mg/Kg	UJ	L, S
EFH (C15-C20) SG	5.1	U	2.0	MDL	5.1	PQL	mg/Kg	UJ	L, S
EFH (C21-C30) SG	4.1	J	2.0	MDL	5.1	PQL	mg/Kg	J	Z, L, S
EFH (C30-C40) SG	10	U	4.1	MDL	10	PQL	mg/Kg	UJ	S, FD
EFH (C8-C11) SG	5.1	U	2.0	MDL	5.1	PQL	mg/Kg	UJ	Q, L, S

Sample ID: **FDG2-SL-558-NBZ-SB-0.0-0.5** ***Collected:*** **6/9/2014 8:30:00 AM** ***Analysis Type:*** **RES** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
EFH (C15-C20)	3.4	J	2.0	MDL	5.1	PQL	mg/Kg	J	Z
EFH (C21-C30)	28		2.0	MDL	5.1	PQL	mg/Kg	J	Q
EFH (C30-C40)	47		4.1	MDL	10	PQL	mg/Kg	J	Q

Sample ID: **FDG2-SL-559-NBZ-SB-0.0-0.5** ***Collected:*** **6/9/2014 9:25:00 AM** ***Analysis Type:*** **REA** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
EFH (C12-C14) SG	5.1	U	2.0	MDL	5.1	PQL	mg/Kg	UJ	L
EFH (C15-C20) SG	5.1	U	2.0	MDL	5.1	PQL	mg/Kg	UJ	L
EFH (C21-C30) SG	5.1	U	2.0	MDL	5.1	PQL	mg/Kg	UJ	L
EFH (C8-C11) SG	5.1	U	2.0	MDL	5.1	PQL	mg/Kg	UJ	L

* denotes a non-reportable result

Project Name and Number: 1204-002-001-AL - SSFL Area IV Phase 3

Data Qualifier Summary

Lab Reporting Batch ID: PH224 **Laboratory: LL**

EDD Filename: PrepPH224 **eQAPP Name: CDM_SSFL_140617_Lan**

Method Category: SVOA

Method: 8015M **Matrix: SO**

Sample ID: **FDG2-SL-559-NBZ-SB-0.0-0.5** *Collected:* **6/9/2014 9:25:00 AM** *Analysis Type:* **RES** *Dilution:* **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
EFH (C21-C30)	4.4	J	2.0	MDL	5.1	PQL	mg/Kg	J	Z

Sample ID: **FDG2-SL-632-NBZ-SB-0.0-0.5** *Collected:* **6/9/2014 10:50:00** *Analysis Type:* **REA** *Dilution:* **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
EFH (C12-C14) SG	5.1	U	2.0	MDL	5.1	PQL	mg/Kg	UJ	L, S
EFH (C15-C20) SG	5.1	U	2.0	MDL	5.1	PQL	mg/Kg	UJ	L, S
EFH (C21-C30) SG	4.2	J	2.0	MDL	5.1	PQL	mg/Kg	J	Z, L, S
EFH (C30-C40) SG	4.3	J	4.1	MDL	10	PQL	mg/Kg	J	Z, S
EFH (C8-C11) SG	5.1	U	2.0	MDL	5.1	PQL	mg/Kg	UJ	L, S

Sample ID: **FDG2-SL-858-NBZ-SB-0.0-0.5** *Collected:* **6/9/2014 8:35:00 AM** *Analysis Type:* **REA** *Dilution:* **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
EFH (C12-C14) SG	5.1	U	2.0	MDL	5.1	PQL	mg/Kg	UJ	L, S
EFH (C15-C20) SG	5.1	U	2.0	MDL	5.1	PQL	mg/Kg	UJ	L, S
EFH (C21-C30) SG	5.0	J	2.0	MDL	5.1	PQL	mg/Kg	J	Z, L, S
EFH (C30-C40) SG	5.4	J	4.1	MDL	10	PQL	mg/Kg	J	Z, S, FD
EFH (C8-C11) SG	5.1	U	2.0	MDL	5.1	PQL	mg/Kg	UJ	L, S

Method Category: SVOA

Method: 8081B **Matrix: SO**

Sample ID: **FDG2-SL-558-NBZ-SB-0.0-0.5** *Collected:* **6/9/2014 8:30:00 AM** *Analysis Type:* **RES** *Dilution:* **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
4,4'-DDD	1.7	U	0.33	MDL	1.7	PQL	ug/Kg	UJ	FD
4,4'-DDE	0.99	J	0.33	MDL	1.7	PQL	ug/Kg	J	Z
4,4'-DDT	1.6	J	0.35	MDL	1.7	PQL	ug/Kg	J	Z
ENDRIN ALDEHYDE	0.79	J	0.33	MDL	1.7	PQL	ug/Kg	J	Z
MIREX	1.7	U	0.35	MDL	1.7	PQL	ug/Kg	UJ	FD

* denotes a non-reportable result

Project Name and Number: 1204-002-001-AL - SSFL Area IV Phase 3

Data Qualifier Summary

Lab Reporting Batch ID: PH224 **Laboratory: LL**

EDD Filename: PrepPH224 **eQAPP Name: CDM_SSFL_140617_Lan**

Method Category: SVOA

Method: 8081B **Matrix: SO**

Sample ID: **FDG2-SL-858-NBZ-SB-0.0-0.5** ***Collected:*** **6/9/2014 8:35:00 AM** ***Analysis Type:*** **RES** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
4,4'-DDD	0.58	J	0.34	MDL	1.7	PQL	ug/Kg	J	Z, FD
4,4'-DDE	1.2	J	0.34	MDL	1.7	PQL	ug/Kg	J	Z
ENDRIN ALDEHYDE	0.87	J	0.34	MDL	1.7	PQL	ug/Kg	J	Z
MIREX	0.53	J	0.36	MDL	1.7	PQL	ug/Kg	J	Z, FD

Method Category: SVOA

Method: 8151A **Matrix: SO**

Sample ID: **FDG2-SL-558-NBZ-SB-0.0-0.5** ***Collected:*** **6/9/2014 8:30:00 AM** ***Analysis Type:*** **RES** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
2,4,5-T	1.7	U	0.84	MDL	1.7	PQL	ug/Kg	R	Q
2,4,5-TP (Silvex)	1.7	U	0.76	MDL	1.7	PQL	ug/Kg	R	Q
2,4-D	37	U	12	MDL	37	PQL	ug/Kg	R	Q
2,4-DB	20	U	20	MDL	20	PQL	ug/Kg	R	Q
DICHLOROPROP	17	U	9.2	MDL	17	PQL	ug/Kg	R	Q
DINOSEB	24	U	9.2	MDL	24	PQL	ug/Kg	R	Q

Sample ID: **FDG2-SL-559-NBZ-SB-0.0-0.5** ***Collected:*** **6/9/2014 9:25:00 AM** ***Analysis Type:*** **RES** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
2,4-DB	16	J	6.3	MDL	17	PQL	ug/Kg	J	Z, *IX

Sample ID: **FDG2-SL-858-NBZ-SB-0.0-0.5** ***Collected:*** **6/9/2014 8:35:00 AM** ***Analysis Type:*** **RES** ***Dilution:*** **5**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
2,4-DB	100		32	MDL	87	PQL	ug/Kg	J	FD, C
MCPP	13000	U	3800	MDL	13000	PQL	ug/Kg	UJ	C

* denotes a non-reportable result

Project Name and Number: 1204-002-001-AL - SSFL Area IV Phase 3

Data Qualifier Summary

Lab Reporting Batch ID: PH224 **Laboratory: LL**

EDD Filename: PrepPH224 **eQAPP Name: CDM_SSFL_140617_Lan**

Method Category: SVOA

Method: 8270D SIM **Matrix:** SO

Sample ID: **FDG2-SL-558-NBZ-SB-0.0-0.5** ***Collected:*** **6/9/2014 8:30:00 AM** ***Analysis Type:*** **RES-BASE/NEUTRAL** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
1-METHYLNAPHTHALENE	0.77	J	0.68	MDL	1.7	PQL	ug/Kg	J	Z, FD
2-METHYLNAPHTHALENE	0.83	J	0.68	MDL	1.7	PQL	ug/Kg	J	Z, FD
ANTHRACENE	1.7	U	0.34	MDL	1.7	PQL	ug/Kg	UJ	FD
BENZO(A)ANTHRACENE	1.7	U	0.68	MDL	1.7	PQL	ug/Kg	UJ	FD
BENZO(A)PYRENE	0.76	J	0.68	MDL	1.7	PQL	ug/Kg	J	Z, FD
BENZO(B)FLUORANTHENE	1.5	J	0.68	MDL	1.7	PQL	ug/Kg	J	Z, FD
BENZO(G,H,I)PERYLENE	1.7	U	0.68	MDL	1.7	PQL	ug/Kg	UJ	FD
BENZO(K)FLUORANTHENE	7.3		0.68	MDL	1.7	PQL	ug/Kg	J	FD
Butylbenzylphthalate	8.2	J	6.1	MDL	18	PQL	ug/Kg	J	Z, FD
CHRYSENE	1.5	J	0.34	MDL	1.7	PQL	ug/Kg	J	Z, Q, FD
FLUORANTHENE	1.7		0.68	MDL	1.7	PQL	ug/Kg	J	FD
FLUORENE	1.7	U	0.68	MDL	1.7	PQL	ug/Kg	UJ	FD
INDENO(1,2,3-CD)PYRENE	1.7	U	0.68	MDL	1.7	PQL	ug/Kg	UJ	FD
NAPHTHALENE	1.4	J	0.68	MDL	1.7	PQL	ug/Kg	J	Z, FD
N-NITROSODIMETHYLAMINE	1.7	U	0.68	MDL	1.7	PQL	ug/Kg	UJ	L
PHENANTHRENE	1.4	J	0.68	MDL	1.7	PQL	ug/Kg	J	Z, FD
PYRENE	1.4	J	0.68	MDL	1.7	PQL	ug/Kg	J	Z, FD

Sample ID: **FDG2-SL-559-NBZ-SB-0.0-0.5** ***Collected:*** **6/9/2014 9:25:00 AM** ***Analysis Type:*** **RES-BASE/NEUTRAL** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
CHRYSENE	1.0	J	0.34	MDL	1.7	PQL	ug/Kg	J	Z, L
FLUORANTHENE	0.80	J	0.68	MDL	1.7	PQL	ug/Kg	J	Z
FLUORENE	1.2	J	0.68	MDL	1.7	PQL	ug/Kg	J	Z

Sample ID: **FDG2-SL-858-NBZ-SB-0.0-0.5** ***Collected:*** **6/9/2014 8:35:00 AM** ***Analysis Type:*** **RES-BASE/NEUTRAL** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
1-METHYLNAPHTHALENE	1.8		0.68	MDL	1.7	PQL	ug/Kg	J	FD
2-METHYLNAPHTHALENE	2.5		0.68	MDL	1.7	PQL	ug/Kg	J	FD
ANTHRACENE	0.65	J	0.34	MDL	1.7	PQL	ug/Kg	J	Z, FD
BENZO(A)ANTHRACENE	0.97	J	0.68	MDL	1.7	PQL	ug/Kg	J	Z, FD
BENZO(A)PYRENE	1.5	J	0.68	MDL	1.7	PQL	ug/Kg	J	Z, FD
BENZO(B)FLUORANTHENE	3.0		0.68	MDL	1.7	PQL	ug/Kg	J	FD
BENZO(G,H,I)PERYLENE	0.84	J	0.68	MDL	1.7	PQL	ug/Kg	J	Z, FD

* denotes a non-reportable result

Project Name and Number: 1204-002-001-AL - SSFL Area IV Phase 3

Data Qualifier Summary

Lab Reporting Batch ID: PH224 **Laboratory: LL**

EDD Filename: PrepPH224 **eQAPP Name: CDM_SSFL_140617_Lan**

Method Category: **SVOA**

Method: **8270D SIM** ***Matrix:*** **SO**

Sample ID: **FDG2-SL-858-NBZ-SB-0.0-0.5** ***Collected:*** **6/9/2014 8:35:00 AM** ***Analysis Type:*** **RES-BASE/NEUTRAL** ***Dilution:*** **1**

Analyte	*Lab Result*	*Lab Qual*	*DL*	*DL Type*	*RL*	*RL Type*	*Units*	*Data Review Qual*	*Reason Code*
BENZO(K)FLUORANTHENE	15		0.68	MDL	1.7	PQL	ug/Kg	J	FD
Butylbenzylphthalate	32		6.1	MDL	18	PQL	ug/Kg	J	FD
CHRYSENE	3.1		0.34	MDL	1.7	PQL	ug/Kg	J	FD
FLUORANTHENE	3.4		0.68	MDL	1.7	PQL	ug/Kg	J	FD
FLUORENE	1.5	J	0.68	MDL	1.7	PQL	ug/Kg	J	Z, FD
INDENO(1,2,3-CD)PYRENE	0.76	J	0.68	MDL	1.7	PQL	ug/Kg	J	Z, FD
NAPHTHALENE	5.9		0.68	MDL	1.7	PQL	ug/Kg	J	FD
N-NITROSODIMETHYLAMINE	1.7	U	0.68	MDL	1.7	PQL	ug/Kg	UJ	L
PHENANTHRENE	2.8		0.68	MDL	1.7	PQL	ug/Kg	J	FD
PYRENE	3.1		0.68	MDL	1.7	PQL	ug/Kg	J	FD

* denotes a non-reportable result

Project Name and Number: 1204-002-001-AL - SSFL Area IV Phase 3

Data Qualifier Summary

Lab Reporting Batch ID: PH224 **Laboratory: LL**

EDD Filename: PrepPH224 **eQAPP Name: CDM_SSFL_140617_Lan**

Reason Code Legend

Reason Code	*Description*
*IX	RPD Between Columns
A	Professional Judgment
B	Method Blank Contamination
C	Continuing Calibration Verification Percent Difference Lower Estimation
E	Laboratory Duplicate Precision
E	Matrix Spike Precision
F	Equipment Blank Contamination
F	Field Blank Contamination
FD	Field Duplicate Precision
L	Laboratory Control Spike Lower Estimation
L	Laboratory Control Spike Upper Estimation
Q	Laboratory Duplicate Precision
Q	Matrix Spike Lower Estimation
Q	Matrix Spike Lower Rejection
Q	Matrix Spike Precision
Q	Matrix Spike Upper Estimation
S	Surrogate/Tracer Recovery Lower Estimation
Z	Reporting Limit Trace Value

* denotes a non-reportable result

Project Name and Number: 1204-002-001-AL - SSFL Area IV Phase 3

Enclosure I

Level III ADR Outliers

(Including Manual Review Outliers)

Quality Control
Outlier Reports

PH224

Method Blank Outlier Report

Lab Reporting Batch ID: PH224 **Laboratory: LL**

EDD Filename: PH224 **eQAPP Name: CDM_SSFL_140617_Lan**

Method: **1613B**
Matrix: **SO**

Method Blank Sample ID	Analysis Date	Analyte	Result	Associated Samples
BLK1630B371755	6/13/2014 5:55:00 PM	1,2,3,4,6,7,8-HPCDD	0.162 ng/Kg	FDG2-SL-558-NBZ-SB-0.0-0.5
		1,2,3,4,6,7,8-HPCDF	0.0880 ng/Kg	FDG2-SL-559-NBZ-SB-0.0-0.5
		1,2,3,4,7,8,9-HPCDF	0.131 ng/Kg	FDG2-SL-858-NBZ-SB-0.0-0.5
		1,2,3,4,7,8-HxCDD	0.0257 ng/Kg	
		1,2,3,4,7,8-HXCDF	0.120 ng/Kg	
		1,2,3,6,7,8-HXCDD	0.0407 ng/Kg	
		1,2,3,6,7,8-HXCDF	0.182 ng/Kg	
		1,2,3,7,8,9-HXCDD	0.0354 ng/Kg	
		1,2,3,7,8,9-HXCDF	0.124 ng/Kg	
		1,2,3,7,8-PECDD	0.0467 ng/Kg	
		1,2,3,7,8-PECDF	0.208 ng/Kg	
		2,3,4,6,7,8-HXCDF	0.176 ng/Kg	
		2,3,4,7,8-PECDF	0.226 ng/Kg	
		OCDD	0.275 ng/Kg	
		OCDF	0.207 ng/Kg	

The following samples and their listed target analytes were qualified due to contamination reported in this blank

Sample ID	Analyte	Reported Result	Modified Final Result
FDG2-SL-558-NBZ-SB-0.0-0.5(RES)	1,2,3,4,7,8,9-HPCDF	0.194 ng/Kg	0.194U ng/Kg
FDG2-SL-558-NBZ-SB-0.0-0.5(RES)	1,2,3,4,7,8-HXCDF	0.213 ng/Kg	0.213U ng/Kg
FDG2-SL-558-NBZ-SB-0.0-0.5(RES)	1,2,3,6,7,8-HXCDF	0.209 ng/Kg	0.209U ng/Kg
FDG2-SL-558-NBZ-SB-0.0-0.5(RES)	1,2,3,7,8,9-HXCDF	0.170 ng/Kg	0.170U ng/Kg
FDG2-SL-558-NBZ-SB-0.0-0.5(RES)	1,2,3,7,8-PECDF	0.313 ng/Kg	0.313U ng/Kg
FDG2-SL-558-NBZ-SB-0.0-0.5(RES)	2,3,4,6,7,8-HXCDF	0.186 ng/Kg	0.186U ng/Kg
FDG2-SL-558-NBZ-SB-0.0-0.5(RES)	2,3,4,7,8-PECDF	0.406 ng/Kg	0.406U ng/Kg
FDG2-SL-559-NBZ-SB-0.0-0.5(RES)	1,2,3,4,7,8,9-HPCDF	0.0830 ng/Kg	0.0830U ng/Kg
FDG2-SL-559-NBZ-SB-0.0-0.5(RES)	1,2,3,4,7,8-HxCDD	0.0786 ng/Kg	0.0786U ng/Kg
FDG2-SL-559-NBZ-SB-0.0-0.5(RES)	1,2,3,4,7,8-HXCDF	0.172 ng/Kg	0.172U ng/Kg
FDG2-SL-559-NBZ-SB-0.0-0.5(RES)	1,2,3,6,7,8-HXCDD	0.195 ng/Kg	0.195U ng/Kg
FDG2-SL-559-NBZ-SB-0.0-0.5(RES)	1,2,3,6,7,8-HXCDF	0.212 ng/Kg	0.212U ng/Kg
FDG2-SL-559-NBZ-SB-0.0-0.5(RES)	1,2,3,7,8,9-HXCDF	0.119 ng/Kg	0.119U ng/Kg
FDG2-SL-559-NBZ-SB-0.0-0.5(RES)	1,2,3,7,8-PECDD	0.0817 ng/Kg	0.0817U ng/Kg
FDG2-SL-559-NBZ-SB-0.0-0.5(RES)	1,2,3,7,8-PECDF	0.185 ng/Kg	0.185U ng/Kg
FDG2-SL-559-NBZ-SB-0.0-0.5(RES)	2,3,4,6,7,8-HXCDF	0.161 ng/Kg	0.161U ng/Kg
FDG2-SL-559-NBZ-SB-0.0-0.5(RES)	2,3,4,7,8-PECDF	0.178 ng/Kg	0.178U ng/Kg
FDG2-SL-559-NBZ-SB-0.0-0.5(RES)	OCDF	1.04 ng/Kg	1.04U ng/Kg
FDG2-SL-858-NBZ-SB-0.0-0.5(RES)	1,2,3,4,7,8,9-HPCDF	0.223 ng/Kg	0.223U ng/Kg
FDG2-SL-858-NBZ-SB-0.0-0.5(RES)	1,2,3,4,7,8-HXCDF	0.322 ng/Kg	0.322U ng/Kg
FDG2-SL-858-NBZ-SB-0.0-0.5(RES)	1,2,3,6,7,8-HXCDF	0.372 ng/Kg	0.372U ng/Kg
FDG2-SL-858-NBZ-SB-0.0-0.5(RES)	1,2,3,7,8,9-HXCDF	0.230 ng/Kg	0.230U ng/Kg
FDG2-SL-858-NBZ-SB-0.0-0.5(RES)	1,2,3,7,8-PECDF	0.360 ng/Kg	0.360U ng/Kg
FDG2-SL-858-NBZ-SB-0.0-0.5(RES)	2,3,4,6,7,8-HXCDF	0.347 ng/Kg	0.347U ng/Kg
FDG2-SL-858-NBZ-SB-0.0-0.5(RES)	2,3,4,7,8-PECDF	0.537 ng/Kg	0.537U ng/Kg

Method Blank Outlier Report

Lab Reporting Batch ID: PH224 **Laboratory: LL**

EDD Filename: PH224 **eQAPP Name: CDM_SSFL_140617_Lan**

Method: **6010C**
Matrix: **SO**

Method Blank Sample ID	Analysis Date	Analyte	Result	Associated Samples
P16137AB220432	6/12/2014 4:32:00 AM	TIN ZINC	1.54 mg/Kg 0.790 mg/Kg	FDG2-SL-558-NBZ-SB-0.0-0.5 FDG2-SL-559-NBZ-SB-0.0-0.5 FDG2-SL-858-NBZ-SB-0.0-0.5

The following samples and their listed target analytes were qualified due to contamination reported in this blank

Sample ID	Analyte	Reported Result	Modified Final Result
FDG2-SL-558-NBZ-SB-0.0-0.5(RES)	TIN	2.92 mg/Kg	2.92U mg/Kg
FDG2-SL-559-NBZ-SB-0.0-0.5(RES)	TIN	2.86 mg/Kg	2.86U mg/Kg
FDG2-SL-858-NBZ-SB-0.0-0.5(RES)	TIN	2.78 mg/Kg	2.78U mg/Kg

Surrogate Outlier Report

Lab Reporting Batch ID: PH224 **Laboratory: LL**

EDD Filename: PH224 **eQAPP Name: CDM_SSFL_140617_Lan**

Method: **8015M**
Matrix: **SO**

Sample ID (Analysis Type)	*Surrogate*	*Sample % Recovery*	*% Recovery Limits*	*Affected Compounds*	*Flag*
FDG2-SL-558-NBZ-SB-0.0-0.5 (REA)	O-TERPHENYL	65	66.00-123.00	All Target Analytes	J (all detects) UJ (all non-detects)
FDG2-SL-632-NBZ-SB-0.0-0.5 (REA)	O-TERPHENYL	63	66.00-123.00	All Target Analytes	J(all detects) UJ(all non-detects)
FDG2-SL-858-NBZ-SB-0.0-0.5 (REA)	O-TERPHENYL	61	66.00-123.00	All Target Analytes	J(all detects) UJ(all non-detects)

Matrix Spike/Matrix Spike Duplicate Outlier Report

Lab Reporting Batch ID: PH224 **Laboratory: LL**

EDD Filename: PH224 **eQAPP Name: CDM_SSFL_140617_Lan**

Method: 8151A
Matrix: SO

QC Sample ID (Associated Samples)	Compound	MS %R	MSD %R	%R Limits	RPD (Limits)	Affected Compounds	Flag
FDG2-SL-558-NBZ-SB-0.0-0.5MS (FDG2-SL-558-NBZ-SB-0.0-0.5)	MCPA	156	-	54.00-138.00	-	MCPA	J (all detects)
FDG2-SL-558-NBZ-SB-0.0-0.5MS FDG2-SL-558-NBZ-SB-0.0-0.5MSD (FDG2-SL-558-NBZ-SB-0.0-0.5)	2,4,5-T 2,4,5-TP (Silvex) 2,4-D 2,4-DB DICHLOROPROP DINOSEB	- - - 0 - 0	0 0 0 0 0 0	12.00-172.00 65.00-156.00 42.00-143.00 10.00-179.00 32.00-171.00 10.00-115.00	200 (35.00) 200 (35.00) 200 (35.00) - 200 (50.00) -	2,4,5-T 2,4,5-TP (Silvex) 2,4-D 2,4-DB DICHLOROPROP DINOSEB	J(all detects) R(all non-detects)

Method: 8015M
Matrix: SO

QC Sample ID (Associated Samples)	Compound	MS %R	MSD %R	%R Limits	RPD (Limits)	Affected Compounds	Flag
FDG2-SL-558-NBZ-SB-0.0-0.5MS FDG2-SL-558-NBZ-SB-0.0-0.5MSD (FDG2-SL-558-NBZ-SB-0.0-0.5)	EFH (C12-C14) EFH (C21-C30) EFH (C30-C40)	146 137 163	135 130 195	49.00-123.00 49.00-123.00 49.00-123.00	- - -	EFH (C12-C14) EFH (C21-C30) EFH (C30-C40)	J(all detects)
FDG2-SL-558-NBZ-SB-0.0-0.5MSD (FDG2-SL-558-NBZ-SB-0.0-0.5)	EFH (C12-C14) SG	-	-	49.00-123.00	21 (20.00)	EFH (C12-C14)	J(all detects)
FDG2-SL-558-NBZ-SB-0.0-0.5MSD (FDG2-SL-558-NBZ-SB-0.0-0.5)	EFH (C8-C11) SG	-	47	49.00-123.00	-	EFH (C8-C11)	J(all detects) UJ(all non-detects)

Method: 6010C
Matrix: SO

QC Sample ID (Associated Samples)	Compound	MS %R	MSD %R	%R Limits	RPD (Limits)	Affected Compounds	Flag
FDG2-SL-558-NBZ-SB-0.0-0.5MS (TOT) FDG2-SL-558-NBZ-SB-0.0-0.5MSD (TOT) (FDG2-SL-558-NBZ-SB-0.0-0.5 FDG2-SL-559-NBZ-SB-0.0-0.5 FDG2-SL-858-NBZ-SB-0.0-0.5)	ALUMINUM CALCIUM MAGNESIUM POTASSIUM TITANIUM	2006 154 379 170 395	1087 186 - 128 305	75.00-125.00 75.00-125.00 75.00-125.00 75.00-125.00 75.00-125.00	- - - - -	ALUMINUM CALCIUM MAGNESIUM POTASSIUM TITANIUM	No Qual, >4x
FDG2-SL-558-NBZ-SB-0.0-0.5MS (TOT) FDG2-SL-558-NBZ-SB-0.0-0.5MSD (TOT) (FDG2-SL-558-NBZ-SB-0.0-0.5 FDG2-SL-559-NBZ-SB-0.0-0.5 FDG2-SL-858-NBZ-SB-0.0-0.5)	IRON	2333	-506	75.00-125.00	-	IRON	No Qual, >4x
FDG2-SL-558-NBZ-SB-0.0-0.5MS (TOT) FDG2-SL-558-NBZ-SB-0.0-0.5MSD (TOT) (FDG2-SL-558-NBZ-SB-0.0-0.5 FDG2-SL-559-NBZ-SB-0.0-0.5 FDG2-SL-858-NBZ-SB-0.0-0.5)	ANTIMONY MANGANESE	38 131	42 66	75.00-125.00 75.00-125.00	- -	ANTIMONY MANGANESE	J(all detects) UJ(all non-detects) Mn, No Qual, >4x

Project Name and Number: 1204-002-001-AL - SSFL Area IV Phase 3

Matrix Spike/Matrix Spike Duplicate Outlier Report

Lab Reporting Batch ID: PH224 **Laboratory: LL**

EDD Filename: PH224 **eQAPP Name: CDM_SSFL_140617_Lan**

Method: **6020A**
Matrix: **SO**

QC Sample ID (Associated Samples)	Compound	MS %R	MSD %R	%R Limits	RPD (Limits)	Affected Compounds	Flag
FDG2-SL-558-NBZ-SB-0.0-0.5MSD (TOT) (FDG2-SL-558-NBZ-SB-0.0-0.5 FDG2-SL-559-NBZ-SB-0.0-0.5 FDG2-SL-858-NBZ-SB-0.0-0.5)	STRONTIUM	-	217	75.00-125.00	-	STRONTIUM	J(all detects)
	THALLIUM	-	132	75.00-125.00	-	THALLIUM	

Lab Duplicate Outlier Report

Lab Reporting Batch ID: PH224 **Laboratory: LL**

EDD Filename: PH224 **eQAPP Name: CDM_SSFL_140617_Lan**

Method: 6010C
Matrix: SO

QC Sample ID (Associated Sample ID)	Analyte	Sample RPD	eQAPP RPD	Flag
FDG2-SL-558-NBZ-SB-0.0-0.5DUP (TOT) (FDG2-SL-558-NBZ-SB-0.0-0.5 FDG2 -SL-559-NBZ-SB-0.0-0.5 FDG2 -SL-858-NBZ-SB-0.0-0.5)	ALUMINUM	24	20.00	
	BARIUM	31	20.00	
	BORON	69	20.00	J (all detects) UJ (all non-detects)
	CADMIUM	65	20.00	
	CALCIUM	30	20.00	
	LEAD	83	20.00	B, Cd, Pb, Mo, No Qual, OK by Difference
	MAGNESIUM	31	20.00	
	MOLYBDENUM	41	20.00	
	NICKEL	25	20.00	
	POTASSIUM	56	20.00	

Method: 6020A
Matrix: SO

QC Sample ID (Associated Sample ID)	Analyte	Sample RPD	eQAPP RPD	Flag
FDG2-SL-558-NBZ-SB-0.0-0.5DUP (TOT) (FDG2-SL-558-NBZ-SB-0.0-0.5 FDG2 -SL-559-NBZ-SB-0.0-0.5 FDG2 -SL-858-NBZ-SB-0.0-0.5)	SILVER	200	20.00	J(all detects) UJ(all non-detects)
	STRONTIUM	83	20.00	Ag, No Qual, OK by Difference

Method: 7471B
Matrix: SO

QC Sample ID (Associated Sample ID)	Analyte	Sample RPD	eQAPP RPD	Flag
FDG2-SL-558-NBZ-SB-0.0-0.5DUP (TOT) (FDG2-SL-558-NBZ-SB-0.0-0.5 FDG2 -SL-559-NBZ-SB-0.0-0.5 FDG2 -SL-858-NBZ-SB-0.0-0.5)	MERCURY	200	20.00	No Qual, OK by Difference

Lab Control Spike/Lab Control Spike Duplicate Outlier Report

Lab Reporting Batch ID: PH224 **Laboratory: LL**

EDD Filename: PH224 **eQAPP Name: CDM_SSFL_140617_Lan**

Method: 8015M
Matrix: SO

QC Sample ID (Associated Samples)	Compound	LCS %R	LCSD %R	%R Limits	RPD (Limits)	Affected Compounds	Flag
P41675AQ321921A (FDG2-SL-558-NBZ-SB-0.0-0.5 FDG2-SL-559-NBZ-SB-0.0-0.5 FDG2-SL-632-NBZ-SB-0.0-0.5 FDG2-SL-858-NBZ-SB-0.0-0.5)	EFH (C12-C14) SG	68	-	76.00-115.00	-	EFH (C12-C14)	J (all detects) UJ (all non-detects)
	EFH (C15-C20) SG	71	-	78.00-127.00	-	EFH (C15-C20)	
	EFH (C21-C30) SG	70	-	77.00-127.00	-	EFH (C21-C30)	
	EFH (C8-C11) SG	52	-	60.00-115.00	-	EFH (C8-C11)	

Method: 8270D SIM
Matrix: SO

QC Sample ID (Associated Samples)	Compound	LCS %R	LCSD %R	%R Limits	RPD (Limits)	Affected Compounds	Flag
P3LBLCSQ260734 (FDG2-SL-558-NBZ-SB-0.0-0.5 FDG2-SL-858-NBZ-SB-0.0-0.5)	N-NITROSODIMETHYLAMINE	68	-	71.00-124.00	-	N-NITROSODIMETHYLAMINE	J(all detects) UJ(all non-detects)
P9LALCSQ260036 (FDG2-SL-559-NBZ-SB-0.0-0.5)	CHRYSENE	114	-	84.00-113.00	-	CHRYSENE	J(all detects)

Field Duplicate RPD Report

Lab Reporting Batch ID: PH224 **Laboratory: LL**

EDD Filename: PH224 **eQAPP Name: CDM_SSFL_140617_Lan**

Method: 160.3M
Matrix: SO

Analyte	Concentration (%)		Sample RPD	eQAPP RPD	Flag
	FDG2-SL-558-NBZ-SB-0.0-0.5	FDG2-SL-858-NBZ-SB-0.0-0.5			
MOISTURE	1.9	2.0	5		Not Validated

Method: 1613B
Matrix: SO

Analyte	Concentration (ng/Kg)		Sample RPD	eQAPP RPD	Flag
	FDG2-SL-558-NBZ-SB-0.0-0.5	FDG2-SL-858-NBZ-SB-0.0-0.5			
1,2,3,4,6,7,8-HPCDD	5.59	8.57	42	50.00	
1,2,3,4,6,7,8-HPCDF	1.05	1.69	47	50.00	
1,2,3,4,7,8,9-HPCDF	0.194	0.223	14	50.00	
1,2,3,4,7,8-HxCDD	0.164	0.255	43	50.00	
1,2,3,4,7,8-HXCDF	0.213	0.322	41	50.00	
1,2,3,6,7,8-HXCDD	0.359	0.442	21	50.00	
1,2,3,7,8,9-HXCDF	0.170	0.230	30	50.00	No Qualifiers Applied
1,2,3,7,8-PECDF	0.313	0.360	14	50.00	
2,3,4,7,8-PECDF	0.406	0.537	28	50.00	
2,3,7,8-TCDF	0.192	0.135	35	50.00	
OCDD	50.1	70.2	33	50.00	
1,2,3,6,7,8-HXCDF	0.209	0.372	56	50.00	
1,2,3,7,8,9-HXCDD	0.248	0.448	57	50.00	
1,2,3,7,8-PECDD	5.00 U	0.297	200	50.00	J(all detects)
2,3,4,6,7,8-HXCDF	0.186	0.347	60	50.00	UJ(all non-detects)
2,3,7,8-TCDD	1.00 U	0.0957	200	50.00	
OCDF	2.14	3.67	53	50.00	

Method: 6010C
Matrix: SO

Analyte	Concentration (mg/Kg)		Sample RPD	eQAPP RPD	Flag
	FDG2-SL-558-NBZ-SB-0.0-0.5 (TOT)	FDG2-SL-858-NBZ-SB-0.0-0.5 (TOT)			
ALUMINUM	15700	15600	1	50.00	
ARSENIC	3.91	4.19	7	50.00	
BARIUM	106	111	5	50.00	
BERYLLIUM	0.672	0.674	0	50.00	
BORON	8.75	9.83	12	50.00	
CADMIUM	0.356	0.382	7	50.00	
CALCIUM	3950	4790	19	50.00	
CHROMIUM	19.2	19.5	2	50.00	
COBALT	5.60	5.77	3	50.00	
COPPER	9.55	10.4	9	50.00	
IRON	21600	22500	4	50.00	
LEAD	9.97	12.5	23	50.00	
LITHIUM	33.2	34.0	2	50.00	No Qualifiers Applied
MAGNESIUM	4570	4760	4	50.00	
MANGANESE	387	403	4	50.00	
MOLYBDENUM	0.661	0.453	37	50.00	
NICKEL	14.4	14.8	3	50.00	
PHOSPHORUS	421	480	13	50.00	
POTASSIUM	4310	4500	4	50.00	
SODIUM	80.3	81.5	1	50.00	
TIN	2.92	2.78	5	50.00	
TITANIUM	1030	1060	3	50.00	
VANADIUM	36.3	37.1	2	50.00	
ZINC	62.2	70.8	13	50.00	
Zirconium	3.98	3.67	8	50.00	

Project Name and Number: 1204-002-001-AL - SSFL Area IV Phase 3

Field Duplicate RPD Report

Lab Reporting Batch ID: PH224 **Laboratory: LL**

EDD Filename: PH224 **eQAPP Name: CDM_SSFL_140617_Lan**

Method: 6020A
Matrix: SO

Analyte	Concentration (mg/Kg)		Sample RPD	eQAPP RPD	Flag
	FDG2-SL-558-NBZ-SB-0.0-0.5 (TOT)	FDG2-SL-858-NBZ-SB-0.0-0.5 (TOT)			
SELENIUM	0.351	0.361	3	50.00	No Qualifiers Applied
SILVER	0.0524	0.0691	27	50.00	
STRONTIUM	27.2	32.9	19	50.00	
THALLIUM	0.277	0.297	7	50.00	

Method: 7471B
Matrix: SO

Analyte	Concentration (mg/Kg)		Sample RPD	eQAPP RPD	Flag
	FDG2-SL-558-NBZ-SB-0.0-0.5 (TOT)	FDG2-SL-858-NBZ-SB-0.0-0.5 (TOT)			
MERCURY	0.0199	0.0280	34	50.00	No Qualifiers Applied

Method: 8015M
Matrix: SO

Analyte	Concentration (mg/Kg)		Sample RPD	eQAPP RPD	Flag
	FDG2-SL-558-NBZ-SB-0.0-0.5	FDG2-SL-858-NBZ-SB-0.0-0.5			
EFH (C15-C20)	3.4	5.3	44	50.00	No Qualifiers Applied
EFH (C21-C30) SG	4.1	5.0	20	50.00	
EFH (C21-C30)	28	42	40	50.00	
EFH (C30-C40)	47	66	34	50.00	
EFH (C30-C40) SG	10 U	5.4	200	50.00	J(all detects) UJ(all non-detects)

Method: 8081B
Matrix: SO

Analyte	Concentration (ug/Kg)		Sample RPD	eQAPP RPD	Flag
	FDG2-SL-558-NBZ-SB-0.0-0.5	FDG2-SL-858-NBZ-SB-0.0-0.5			
4,4'-DDE	0.99	1.2	19	50.00	No Qualifiers Applied
4,4'-DDT	1.6	1.9	17	50.00	
ENDRIN ALDEHYDE	0.79	0.87	10	50.00	
4,4'-DDD	1.7 U	0.58	200	50.00	J(all detects) UJ(all non-detects)
MIREX	1.7 U	0.53	200	50.00	

Method: 8151A
Matrix: SO

Analyte	Concentration (ug/Kg)		Sample RPD	eQAPP RPD	Flag
	FDG2-SL-558-NBZ-SB-0.0-0.5	FDG2-SL-858-NBZ-SB-0.0-0.5			
2,4-DB	20 U	100	200	50.00	J(all detects) UJ(all non-detects)

Method: 8270D SIM
Matrix: SO

Analyte	Concentration (ug/Kg)		Sample RPD	eQAPP RPD	Flag
	FDG2-SL-558-NBZ-SB-0.0-0.5	FDG2-SL-858-NBZ-SB-0.0-0.5			
BIS(2-ETHYLHEXYL)PHTHALATE	21	20	5	50.00	No Qualifiers Applied

Project Name and Number: 1204-002-001-AL - SSFL Area IV Phase 3

Field Duplicate RPD Report

Lab Reporting Batch ID: PH224 **Laboratory: LL**

EDD Filename: PH224 **eQAPP Name: CDM_SSFL_140617_Lan**

Method: 8270D SIM Matrix: SO					
1-METHYLNAPHTHALENE	0.77	1.8	80	50.00	
2-METHYLNAPHTHALENE	0.83	2.5	100	50.00	
ANTHRACENE	1.7 U	0.65	200	50.00	
BENZO(A)ANTHRACENE	1.7 U	0.97	200	50.00	
BENZO(A)PYRENE	0.76	1.5	65	50.00	
BENZO(B)FLUORANTHENE	1.5	3.0	67	50.00	
BENZO(G,H,I)PERYLENE	1.7 U	0.84	200	50.00	
BENZO(K)FLUORANTHENE	7.3	15	69	50.00	J(all detects)
Butylbenzylphthalate	8.2	32	118	50.00	UJ(all non-detects)
CHRYSENE	1.5	3.1	70	50.00	
FLUORANTHENE	1.7	3.4	67	50.00	
FLUORENE	1.7 U	1.5	200	50.00	
INDENO(1,2,3-CD)PYRENE	1.7 U	0.76	200	50.00	
NAPHTHALENE	1.4	5.9	123	50.00	
PHENANTHRENE	1.4	2.8	67	50.00	
PYRENE	1.4	3.1	76	50.00	

Method: 9045M Matrix: SO					
	Concentration (pH unit)				
Analyte	FDG2-SL-558-NBZ-SB-0.0-0.5	FDG2-SL-858-NBZ-SB-0.0-0.5	Sample RPD	eQAPP RPD	Flag
PH	6.29	6.26	0	50.00	Not Validated

Project Name and Number: 1204-002-001-AL - SSFL Area IV Phase 3

Reporting Limit Outliers

Lab Reporting Batch ID: PH224 **Laboratory: LL**

EDD Filename: PH224 **eQAPP Name: CDM_SSFL_140617_Lan**

Method: 1613B

Matrix: SO

SampleID	Analyte	Lab Qual	Result	Reporting Limit	RL Type	Units	Flag
FDG2-SL-558-NBZ-SB-0.0-0.5	1,2,3,4,6,7,8-HPCDF	JB	1.05	5.00	PQL	ng/Kg	
	1,2,3,4,7,8,9-HPCDF	JB	0.194	5.00	PQL	ng/Kg	
	1,2,3,4,7,8-HxCDD	JBQ	0.164	5.00	PQL	ng/Kg	
	1,2,3,4,7,8-HXCDF	JBQ	0.213	5.00	PQL	ng/Kg	
	1,2,3,6,7,8-HXCDD	JB	0.359	5.00	PQL	ng/Kg	
	1,2,3,6,7,8-HXCDF	JBQ	0.209	5.00	PQL	ng/Kg	
	1,2,3,7,8,9-HXCDD	JBQ	0.248	5.00	PQL	ng/Kg	J (all detects)
	1,2,3,7,8,9-HXCDF	JB	0.170	5.00	PQL	ng/Kg	
	1,2,3,7,8-PECDF	JB	0.313	5.00	PQL	ng/Kg	
	2,3,4,6,7,8-HXCDF	JB	0.186	5.00	PQL	ng/Kg	
	2,3,4,7,8-PECDF	JB	0.406	5.00	PQL	ng/Kg	
	2,3,7,8-TCDF	JQ	0.192	1.00	PQL	ng/Kg	
	OCDF	JB	2.14	10.0	PQL	ng/Kg	
FDG2-SL-559-NBZ-SB-0.0-0.5	1,2,3,4,6,7,8-HPCDD	JB	2.77	5.05	PQL	ng/Kg	
	1,2,3,4,6,7,8-HPCDF	JB	0.558	5.05	PQL	ng/Kg	
	1,2,3,4,7,8,9-HPCDF	JB	0.0830	5.05	PQL	ng/Kg	
	1,2,3,4,7,8-HxCDD	JBQ	0.0786	5.05	PQL	ng/Kg	
	1,2,3,4,7,8-HXCDF	JBQ	0.172	5.05	PQL	ng/Kg	
	1,2,3,6,7,8-HXCDD	JB	0.195	5.05	PQL	ng/Kg	
	1,2,3,6,7,8-HXCDF	JB	0.212	5.05	PQL	ng/Kg	
	1,2,3,7,8,9-HXCDD	JBQ	0.180	5.05	PQL	ng/Kg	J (all detects)
	1,2,3,7,8,9-HXCDF	JBQ	0.119	5.05	PQL	ng/Kg	
	1,2,3,7,8-PECDD	JB	0.0817	5.05	PQL	ng/Kg	
	1,2,3,7,8-PECDF	JB	0.185	5.05	PQL	ng/Kg	
	2,3,4,6,7,8-HXCDF	JBQ	0.161	5.05	PQL	ng/Kg	
	2,3,4,7,8-PECDF	JBQ	0.178	5.05	PQL	ng/Kg	
	2,3,7,8-TCDF	JQ	0.0786	1.01	PQL	ng/Kg	
	OCDF	JBQ	1.04	10.1	PQL	ng/Kg	
FDG2-SL-858-NBZ-SB-0.0-0.5	1,2,3,4,6,7,8-HPCDF	JB	1.69	4.92	PQL	ng/Kg	
	1,2,3,4,7,8,9-HPCDF	JB	0.223	4.92	PQL	ng/Kg	
	1,2,3,4,7,8-HxCDD	JBQ	0.255	4.92	PQL	ng/Kg	
	1,2,3,4,7,8-HXCDF	JBQ	0.322	4.92	PQL	ng/Kg	
	1,2,3,6,7,8-HXCDD	JBQ	0.442	4.92	PQL	ng/Kg	
	1,2,3,6,7,8-HXCDF	JB	0.372	4.92	PQL	ng/Kg	
	1,2,3,7,8,9-HXCDD	JBQ	0.448	4.92	PQL	ng/Kg	
	1,2,3,7,8,9-HXCDF	JB	0.230	4.92	PQL	ng/Kg	J (all detects)
	1,2,3,7,8-PECDD	JBQ	0.297	4.92	PQL	ng/Kg	
	1,2,3,7,8-PECDF	JBQ	0.360	4.92	PQL	ng/Kg	
	2,3,4,6,7,8-HXCDF	JB	0.347	4.92	PQL	ng/Kg	
	2,3,4,7,8-PECDF	JBQ	0.537	4.92	PQL	ng/Kg	
	2,3,7,8-TCDD	JQ	0.0957	0.984	PQL	ng/Kg	
	2,3,7,8-TCDF	J	0.135	0.984	PQL	ng/Kg	
	OCDF	JB	3.67	9.84	PQL	ng/Kg	

Reporting Limit Outliers

Lab Reporting Batch ID: PH224 **Laboratory: LL**

EDD Filename: PH224 **eQAPP Name: CDM_SSFL_140617_Lan**

Method: 6010C

Matrix: SO

SampleID	Analyte	Lab Qual	Result	Reporting Limit	RL Type	Units	Flag
FDG2-SL-558-NBZ-SB-0.0-0.5	ARSENIC	J	3.91	4.08	PQL	mg/Kg	J (all detects)
	BERYLLIUM	J	0.672	1.02	PQL	mg/Kg	
	BORON	J	8.75	10.2	PQL	mg/Kg	
	CADMIUM	J	0.356	1.02	PQL	mg/Kg	
	MOLYBDENUM	J	0.661	2.04	PQL	mg/Kg	
	SODIUM	J	80.3	102	PQL	mg/Kg	
	TIN	J	2.92	10.2	PQL	mg/Kg	
	Zirconium	J	3.98	5.10	PQL	mg/Kg	
FDG2-SL-559-NBZ-SB-0.0-0.5	ARSENIC	J	3.52	4.06	PQL	mg/Kg	J (all detects)
	BERYLLIUM	J	0.504	1.01	PQL	mg/Kg	
	BORON	J	6.92	10.1	PQL	mg/Kg	
	CADMIUM	J	0.220	1.01	PQL	mg/Kg	
	MOLYBDENUM	J	0.287	2.03	PQL	mg/Kg	
	SODIUM	J	91.5	101	PQL	mg/Kg	
	TIN	J	2.86	10.1	PQL	mg/Kg	
	Zirconium	J	3.45	5.07	PQL	mg/Kg	
FDG2-SL-858-NBZ-SB-0.0-0.5	BERYLLIUM	J	0.674	0.991	PQL	mg/Kg	J (all detects)
	BORON	J	9.83	9.91	PQL	mg/Kg	
	CADMIUM	J	0.382	0.991	PQL	mg/Kg	
	MOLYBDENUM	J	0.453	1.98	PQL	mg/Kg	
	SODIUM	J	81.5	99.1	PQL	mg/Kg	
	TIN	J	2.78	9.91	PQL	mg/Kg	
	Zirconium	J	3.67	4.95	PQL	mg/Kg	

Method: 6020A

Matrix: SO

SampleID	Analyte	Lab Qual	Result	Reporting Limit	RL Type	Units	Flag
FDG2-SL-558-NBZ-SB-0.0-0.5	SELENIUM	J	0.351	0.408	PQL	mg/Kg	J (all detects)
	SILVER	J	0.0524	0.204	PQL	mg/Kg	
FDG2-SL-559-NBZ-SB-0.0-0.5	SELENIUM	J	0.344	0.406	PQL	mg/Kg	J (all detects)
	SILVER	J	0.0329	0.203	PQL	mg/Kg	
FDG2-SL-858-NBZ-SB-0.0-0.5	SELENIUM	J	0.361	0.396	PQL	mg/Kg	J (all detects)
	SILVER	J	0.0691	0.198	PQL	mg/Kg	

Method: 8015M

Matrix: SO

SampleID	Analyte	Lab Qual	Result	Reporting Limit	RL Type	Units	Flag
FDG2-SL-558-NBZ-SB-0.0-0.5	EFH (C15-C20)	J	3.4	5.1	PQL	mg/Kg	J (all detects)
	EFH (C21-C30) SG	J	4.1	5.1	PQL	mg/Kg	
FDG2-SL-559-NBZ-SB-0.0-0.5	EFH (C21-C30)	J	4.4	5.1	PQL	mg/Kg	J (all detects)
FDG2-SL-632-NBZ-SB-0.0-0.5	EFH (C21-C30) SG	J	4.2	5.1	PQL	mg/Kg	J (all detects)
	EFH (C30-C40) SG	J	4.3	10	PQL	mg/Kg	
FDG2-SL-858-NBZ-SB-0.0-0.5	EFH (C21-C30) SG	J	5.0	5.1	PQL	mg/Kg	J (all detects)
	EFH (C30-C40) SG	J	5.4	10	PQL	mg/Kg	

Reporting Limit Outliers

Lab Reporting Batch ID: PH224 **Laboratory: LL**

EDD Filename: PH224 **eQAPP Name: CDM_SSFL_140617_Lan**

Method: 8015M

Matrix: SO

SampleID	Analyte	Lab Qual	Result	Reporting Limit	RL Type	Units	Flag

Method: 8081B

Matrix: SO

SampleID	Analyte	Lab Qual	Result	Reporting Limit	RL Type	Units	Flag
FDG2-SL-558-NBZ-SB-0.0-0.5	4,4'-DDE	J	0.99	1.7	PQL	ug/Kg	J (all detects)
	4,4'-DDT	J	1.6	1.7	PQL	ug/Kg	
	ENDRIN ALDEHYDE	J	0.79	1.7	PQL	ug/Kg	
FDG2-SL-858-NBZ-SB-0.0-0.5	4,4'-DDD	J	0.58	1.7	PQL	ug/Kg	J (all detects)
	4,4'-DDE	J	1.2	1.7	PQL	ug/Kg	
	ENDRIN ALDEHYDE	J	0.87	1.7	PQL	ug/Kg	
	MIREX	J	0.53	1.7	PQL	ug/Kg	

Method: 8151A

Matrix: SO

SampleID	Analyte	Lab Qual	Result	Reporting Limit	RL Type	Units	Flag
FDG2-SL-559-NBZ-SB-0.0-0.5	2,4-DB	J	16	17	PQL	ug/Kg	J (all detects)

Method: 8270D SIM

Matrix: SO

SampleID	Analyte	Lab Qual	Result	Reporting Limit	RL Type	Units	Flag
FDG2-SL-558-NBZ-SB-0.0-0.5	1-METHYLNAPHTHALENE	J	0.77	1.7	PQL	ug/Kg	J (all detects)
	2-METHYLNAPHTHALENE	J	0.83	1.7	PQL	ug/Kg	
	BENZO(A)PYRENE	J	0.76	1.7	PQL	ug/Kg	
	BENZO(B)FLUORANTHENE	J	1.5	1.7	PQL	ug/Kg	
	Butylbenzylphthalate	J	8.2	18	PQL	ug/Kg	
	CHRYSENE	J	1.5	1.7	PQL	ug/Kg	
	NAPHTHALENE	J	1.4	1.7	PQL	ug/Kg	
	PHENANTHRENE	J	1.4	1.7	PQL	ug/Kg	
	PYRENE	J	1.4	1.7	PQL	ug/Kg	
FDG2-SL-559-NBZ-SB-0.0-0.5	CHRYSENE	J	1.0	1.7	PQL	ug/Kg	J (all detects)
	FLUORANTHENE	J	0.80	1.7	PQL	ug/Kg	
	FLUORENE	J	1.2	1.7	PQL	ug/Kg	
FDG2-SL-858-NBZ-SB-0.0-0.5	ANTHRACENE	J	0.65	1.7	PQL	ug/Kg	J (all detects)
	BENZO(A)ANTHRACENE	J	0.97	1.7	PQL	ug/Kg	
	BENZO(A)PYRENE	J	1.5	1.7	PQL	ug/Kg	
	BENZO(G,H,I)PERYLENE	J	0.84	1.7	PQL	ug/Kg	
	FLUORENE	J	1.5	1.7	PQL	ug/Kg	
	INDENO(1,2,3-CD)PYRENE	J	0.76	1.7	PQL	ug/Kg	

LDC #: 32181E4
SDG #: PH224
Laboratory: Eurofins Lancaster Laboratories

VALIDATION COMPLETENESS WORKSHEET

ADR

Date: 7/28/14
Page: 1 of 1
Reviewer: VK
2nd Reviewer: CN

METHOD: Metals (EPA SW 846 Method 6010C/6020A/~~7000~~) 7471A

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: 10/9/14
II.	ICP/MS Tune	N	
III.	Calibration	—	
IV.	Blanks	A	
V.	ICP Interference Check Sample (ICS) Analysis	—	
VI.	Matrix Spike Analysis	SW ~~N~~	MS/D
VII.	Duplicate Sample Analysis	SW ~~N~~	DUP
VIII.	Laboratory Control Samples (LCS)	N	LCS
IX.	Internal Standard (ICP-MS)	N	
X.	Furnace Atomic Absorption QC	N	
XI.	ICP Serial Dilution	A	
XII.	Sample Result Verification	N	
XIII.	Overall Assessment of Data	N	
XIV.	Field Duplicates	- ~~N~~	(1,3)
XV	Field Blanks	SW	EB= EB1-061214 SDG# PH231 FB= FB-052114 SDG# PH191

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

1	FDG2-SL-558-NBZ-SB-0.0-0.5	11		21		31	
2	FDG2-SL-559-NBZ-SB-0.0-0.5	12		22		32	
3	FDG2-SL-858-NBZ-SB-0.0-0.5	13		23		33	
4	FDG2-SL-558-NBZ-SB-0.0-0.5MS	14		24		34	
5	FDG2-SL-558-NBZ-SB-0.0-0.5MSD	15		25		35	
6	FDG2-SL-558-NBZ-SB-0.0-0.5DUP	16		26		36	
7		17		27		37	
8		18		28		38	
9		19		29		39	
10		20		30		40	

Notes: _____

LDC #: 32181E4

VALIDATION FINDINGS WORKSHEET
Sample Specific Element Reference

Reviewer: VK
2nd reviewer: GV

All circled elements are applicable to each sample.

Sample ID	Matrix	Target Analyte List (TAL)
1-3	S	Al, Sb, As, Ba, Be, B, Cd, Ca, Cr, Co, Cu, Fe, Pb, Li, Mg, Mo, Mn, Hg, Ni, P, K, Se, Ag, Na, Sr, Tl, Sn, Ti, V, Zn, Zr
	↓	Al, Sb, As, Ba, Be, B, Cd, Ca, Cr, Co, Cu, Fe, Pb, Li, Mg, Mo, Mn, Hg, Ni, P, K, Se, Ag, Na, Sr, Tl, Sn, Ti, V, Zn, Zr
QC 4-0	↓	Al, Sb, As, Ba, Be, B, Cd, Ca, Cr, Co, Cu, Fe, Pb, Li, Mg, Mo, Mn, Hg, Ni, P, K, Se, Ag, Na, Sr, Tl, Sn, Ti, V, Zn, Zr
		Al, Sb, As, Ba, Be, B, Cd, Ca, Cr, Co, Cu, Fe, Pb, Li, Mg, Mo, Mn, Hg, Ni, P, K, Se, Ag, Na, Sr, Tl, Sn, Ti, V, Zn, Zr
		Al, Sb, As, Ba, Be, B, Cd, Ca, Cr, Co, Cu, Fe, Pb, Li, Mg, Mo, Mn, Hg, Ni, P, K, Se, Ag, Na, Sr, Tl, Sn, Ti, V, Zn, Zr
		Al, Sb, As, Ba, Be, B, Cd, Ca, Cr, Co, Cu, Fe, Pb, Li, Mg, Mo, Mn, Hg, Ni, P, K, Se, Ag, Na, Sr, Tl, Sn, Ti, V, Zn, Zr
		Al, Sb, As, Ba, Be, B, Cd, Ca, Cr, Co, Cu, Fe, Pb, Li, Mg, Mo, Mn, Hg, Ni, P, K, Se, Ag, Na, Sr, Tl, Sn, Ti, V, Zn, Zr
		Al, Sb, As, Ba, Be, B, Cd, Ca, Cr, Co, Cu, Fe, Pb, Li, Mg, Mo, Mn, Hg, Ni, P, K, Se, Ag, Na, Sr, Tl, Sn, Ti, V, Zn, Zr
		Al, Sb, As, Ba, Be, B, Cd, Ca, Cr, Co, Cu, Fe, Pb, Li, Mg, Mo, Mn, Hg, Ni, P, K, Se, Ag, Na, Sr, Tl, Sn, Ti, V, Zn, Zr
		Al, Sb, As, Ba, Be, B, Cd, Ca, Cr, Co, Cu, Fe, Pb, Li, Mg, Mo, Mn, Hg, Ni, P, K, Se, Ag, Na, Sr, Tl, Sn, Ti, V, Zn, Zr
		Al, Sb, As, Ba, Be, B, Cd, Ca, Cr, Co, Cu, Fe, Pb, Li, Mg, Mo, Mn, Hg, Ni, P, K, Se, Ag, Na, Sr, Tl, Sn, Ti, V, Zn, Zr
		Al, Sb, As, Ba, Be, B, Cd, Ca, Cr, Co, Cu, Fe, Pb, Li, Mg, Mo, Mn, Hg, Ni, P, K, Se, Ag, Na, Sr, Tl, Sn, Ti, V, Zn, Zr
		Al, Sb, As, Ba, Be, B, Cd, Ca, Cr, Co, Cu, Fe, Pb, Li, Mg, Mo, Mn, Hg, Ni, P, K, Se, Ag, Na, Sr, Tl, Sn, Ti, V, Zn, Zr
		Al, Sb, As, Ba, Be, B, Cd, Ca, Cr, Co, Cu, Fe, Pb, Li, Mg, Mo, Mn, Hg, Ni, P, K, Se, Ag, Na, Sr, Tl, Sn, Ti, V, Zn, Zr
		Al, Sb, As, Ba, Be, B, Cd, Ca, Cr, Co, Cu, Fe, Pb, Li, Mg, Mo, Mn, Hg, Ni, P, K, Se, Ag, Na, Sr, Tl, Sn, Ti, V, Zn, Zr
		Al, Sb, As, Ba, Be, B, Cd, Ca, Cr, Co, Cu, Fe, Pb, Li, Mg, Mo, Mn, Hg, Ni, P, K, Se, Ag, Na, Sr, Tl, Sn, Ti, V, Zn, Zr
		Al, Sb, As, Ba, Be, B, Cd, Ca, Cr, Co, Cu, Fe, Pb, Li, Mg, Mo, Mn, Hg, Ni, P, K, Se, Ag, Na, Sr, Tl, Sn, Ti, V, Zn, Zr
		Al, Sb, As, Ba, Be, B, Cd, Ca, Cr, Co, Cu, Fe, Pb, Li, Mg, Mo, Mn, Hg, Ni, P, K, Se, Ag, Na, Sr, Tl, Sn, Ti, V, Zn, Zr
		Al, Sb, As, Ba, Be, B, Cd, Ca, Cr, Co, Cu, Fe, Pb, Li, Mg, Mo, Mn, Hg, Ni, P, K, Se, Ag, Na, Sr, Tl, Sn, Ti, V, Zn, Zr
		Al, Sb, As, Ba, Be, B, Cd, Ca, Cr, Co, Cu, Fe, Pb, Li, Mg, Mo, Mn, Hg, Ni, P, K, Se, Ag, Na, Sr, Tl, Sn, Ti, V, Zn, Zr
		Al, Sb, As, Ba, Be, B, Cd, Ca, Cr, Co, Cu, Fe, Pb, Li, Mg, Mo, Mn, Hg, Ni, P, K, Se, Ag, Na, Sr, Tl, Sn, Ti, V, Zn, Zr
		Al, Sb, As, Ba, Be, B, Cd, Ca, Cr, Co, Cu, Fe, Pb, Li, Mg, Mo, Mn, Hg, Ni, P, K, Se, Ag, Na, Sr, Tl, Sn, Ti, V, Zn, Zr
Analysis Method		
ICP		Al, Sb, As, Ba, Be, B, Cd, Ca, Cr, Co, Cu, Fe, Pb, Li, Mg, Mo, Mn, Hg, Ni, P, K, Se, Ag, Na, Sr, Tl, Sn, Ti, V, Zn, Zr
ICP-MS		Al, Sb, As, Ba, Be, B, Cd, Ca, Cr, Co, Cu, Fe, Pb, Li, Mg, Mo, Mn, Hg, Ni, P, K, Se, Ag, Na, Sr, Tl, Sn, Ti, V, Zn, Zr

Comments: ~~Mercury by CVAA if performed~~

LDC #: 32181E4

VALIDATION FINDINGS WORKSHEET
Field Blanks

Reviewer: KK
2nd Reviewer:

METHOD: Trace Metals (EPA SW846 6010C/6020A/7471A)

Blank units: ug/L **Associated sample units:** mg/kg
Sampling date: 5/21/14 and 6/12/14 Soil factor applied 100
Field blank type: (circle one) Field Blank / Rinsate / Other: EB Associated Samples: All

Analyte	Blank ID	Blank ID	Sample Identification								
	EB1-061214 SDG#PH231	FB-052114 SDG# PH191	Action Limit (mg/kg)	1	2	3					
Zr	9.9	11.0	5.50	3.98	3.45	3.67					
Mn	1.3		0.65								

CIRCLED RESULTS WERE NOT QUALIFIED. ALL RESULTS NOT CIRCLED WERE QUALIFIED BY THE FOLLOWING STATEMENT:
Samples with analyte concentrations within five times the associated field blank concentration are listed above, these sample results were qualified as not detected, "U".

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QUALITY ASSURANCE SUMMARY
FORM 5A(MS/MSD)
MATRIX SPIKE/MATRIX SPIKE DUPLICATE
SDG No.: PH224
Matrix: SOIL Level (low/med): LOW

Background Lab Sample ID: 7492863BKG Matrix Spike Lab Sample ID: 7492864MS Matrix Spike Duplicate Lab Sample ID: 7492865MSD
Batch Id(s): P16137A, P16138A

Analyte	Mass	BKG Sample Result	C	MS Sample Result	C	MSD Sample Result	C	MS Spike Added	MSD Spike Added	Units	MS %R	Q	MSD %R	Q	RPD	Q	Control Limit %R	Control Limit RPD	M
Aluminum		15424.7290		19319.7592		17535.6437		194.1748	194.1748	MG/KG	2006		1087		10			20	P
Antimony		0.7400	U	18.4922		20.3825		48.5437	48.5437	MG/KG	38	N	42	N	10		75 - 125	20	P
Arsenic		3.8330	B	19.3165		19.4136		14.5631	14.5631	MG/KG	106		107		1		75 - 125	20	P
Barium		103.5030		299.5641		295.0184		194.1748	194.1748	MG/KG	101		99		2		75 - 125	20	P
Beryllium		0.6590	B	5.6485		5.6524		4.8544	4.8544	MG/KG	103		103		0		75 - 125	20	P
Boron		8.5800	B	188.8602		194.9126		194.1748	194.1748	MG/KG	93		96		3		75 - 125	20	P
Cadmium		0.3490	B	4.9689		5.0165		4.8544	4.8544	MG/KG	95		96		1		75 - 125	20	P
Calcium		3873.1670		4471.8136		4594.5495		388.3495	388.3495	MG/KG	154		186		3			20	P
Chromium		18.8190		40.5922		39.0369		19.4175	19.4175	MG/KG	112		104		4		75 - 125	20	P
Cobalt		5.4980		52.0951		51.9311		48.5437	48.5437	MG/KG	96		96		0		75 - 125	20	P
Copper		9.3720		34.9874		34.7515		24.2718	24.2718	MG/KG	106		105		1		75 - 125	20	P
Iron		21200.9410		23466.0029		20709.4660		97.0874	97.0874	MG/KG	2333		-506		12			20	P
Lead		9.7850		25.3874		24.1767		14.5631	14.5631	MG/KG	107		99		5		75 - 125	20	P
Lithium		32.6080		133.4553		130.6029		97.0874	97.0874	MG/KG	104		101		2		75 - 125	20	P
Magnesium		4484.2600		5220.4728		4716.2029		194.1748	194.1748	MG/KG	379		119		10			20	P
Manganese		380.1070		443.5476		412.2456		48.5437	48.5437	MG/KG	131		66		7			20	P
Mercury		0.0195		0.1879		0.1874		0.1621	0.1605	MG/KG	104		105		0		65 - 135	20	CV
Molybdenum		0.6480	B	181.5563		184.8214		194.1748	194.1748	MG/KG	93		95		2		75 - 125	20	P
Nickel		14.1590		62.5786		61.7534		48.5437	48.5437	MG/KG	100		98		1		75 - 125	20	P
Phosphorus		412.7370		495.8379		495.7854		97.0874	97.0874	MG/KG	86		86		0			20	P
Potassium		4227.3690		5879.8417		5466.1107		970.8738	970.8738	MG/KG	170		128		7			20	P
Selenium	78	0.3448	B	2.4311		2.5507		1.9417	1.9417	MG/KG	107		114		5		75 - 125	20	MS
Silver	107	0.0514	B	10.7775		12.0348		9.7087	9.7087	MG/KG	110		123		11		75 - 125	20	MS
Sodium		78.7910	B	1057.0330		1054.0184		970.8738	970.8738	MG/KG	101		100		0		75 - 125	20	P
Strontium	88	26.7236		36.4272		43.5915		7.7670	7.7670	MG/KG	125		217	N	18		75 - 125	20	MS
Thallium	203	0.2720		0.7328		0.7858		0.3883	0.3883	MG/KG	119		132	N	7		75 - 125	20	MS
Tin		2.8660	B	340.9049		347.4078		388.3495	388.3495	MG/KG	87		89		2		75 - 125	20	P
Titanium		1007.8060		1391.6990		1303.6592		97.0874	97.0874	MG/KG	395		305		7			20	P
Vanadium		35.6280		91.0010		87.4524		48.5437	48.5437	MG/KG	114		107		4		75 - 125	20	P
Zinc		61.0090		113.0223		107.9612		48.5437	48.5437	MG/KG	107		97		5		75 - 125	20	P
Zirconium		3.9010	B	90.7922		92.4097		97.0874	97.0874	MG/KG	89		91		2		75 - 125	20	P

> 4X

Note: Results shown are reported on an as-received basis.

METHODS:
P = ICP Atomic Emission Spectrometer CV = Cold Vapor
MS = ICP Mass Spectrometry AF = Cold Vapor Atomic Fluorescence

CONCENTRATION QUALIFIERS:
U= Below MDL, B= Below LOQ
FLAGS:
N = Matrix Spike OOS, * = Duplicate OOS

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QUALITY ASSURANCE SUMMARY
FORM 6
DUPLICATES
SDG No.: PH224
Matrix: SOIL Level (low/med): LOW

Background Lab Sample ID: 7492863BKG
Duplicate Lab Sample ID: 7492866DUP
Batch ID(s): P16137A, P16138A
Concentration Units: MG/KG

Analyte	Mass	Control Limit	Samples (S)	C	Duplicate (D)	C	RPD	Q	M
Aluminum			15424.7290		12082.6149		24	*	P
Antimony			0.7400	U	0.7327	U			P
Arsenic		4.0	3.8330	B	4.5327		17		P
Barium			103.5030		75.8733		31	*	P
Beryllium			0.6590	B	0.5584	B	17		P
Boron			8.5800	B	4.1832	B	69		P
Cadmium			0.3490	B	0.1772	B	65		P
Calcium			3873.1670		2862.1535		30	*	P
Chromium			18.8190		19.4624		3		P
Cobalt			5.4980		6.5228		17		P
Copper		2.0	9.3720		8.3050		12		P
Iron			21200.9410		23856.3495		12		P
Lead		3.0	9.7850		4.0693		83	*	P
Lithium			32.6080		28.7505		13		P
Magnesium			4484.2600		6101.9099		31	*	P
Manganese			380.1070		371.1485		2		P
Mercury		0.0	0.0195		0.0097	U	200		CV
Molybdenum			0.6480	B	0.4297	B	41		P
Nickel			14.1590		11.0218		25	*	P
Phosphorus			412.7370		489.3099		17		P
Potassium			4227.3690		2389.6515		56	*	P
Selenium	78		0.3448	B	0.3283	B	5		MS
Silver	107		0.0514	B	0.0257	U	200		MS
Sodium			78.7910	B	72.8535	B	8		P
Strontium	88		26.7236		10.9848		83	*	MS
Thallium	203	0.2	0.2720		0.2614		4		MS
Tin			2.8660	B	2.8337	B	1		P
Titanium			1007.8060		1095.7406		8		P
Vanadium			35.6280		40.2743		12		P
Zinc			61.0090		54.5238		11		P
Zirconium			3.9010	B	4.0168	B	3		P

ok

NOTE: An asterisk (*) in column "Q" indicates poor duplicate precision (RPD > 20% OR |(S) - (D)| > LOQ for values < 5x LOQ).
The data are considered to be valid because the laboratory control sample is within the control limits. See the Laboratory Control Sample.

OK by diff.

Note: Results shown are reported on an as-received basis.

METHODS:
P = ICP Atomic Emission Spectrometer
MS = ICP Mass Spectrometry
CV = Cold Vapor
AF = Cold Vapor Atomic Fluorescence

CONCENTRATION QUALIFIERS:
U= Below MDL
B= Below LOQ

FLAGS:
* = Duplicate Out of Spec

Enclosure II

Level IV Data Validation Reports

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: Santa Susana Field Laboratory

Collection Date: June 9, 2014

LDC Report Date: August 5, 2014

Matrix: Soil

Parameters: Herbicides

Validation Level: Level IV

Laboratory: Eurofins

Sample Delivery Group (SDG): PH224

Sample Identification

FDG2-SL-558-NBZ-SB-0.0-0.5
FDG2-SL-559-NBZ-SB-0.0-0.5
FDG2-SL-858-NBZ-SB-0.0-0.5
FDG2-SL-558-NBZ-SB-0.0-0.5MS
FDG2-SL-558-NBZ-SB-0.0-0.5MSD

Introduction

This data review covers 5 soil samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA SW 846 Method 8151A for Herbicides.

This review follows the Quality Assurance Project Plan for Santa Susana Field Laboratory (SSFL), RCRA Facility Investigation, Surficial Media Operable Unit (March 2009, Revision 4) and a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Superfund Organic Methods Data Review (June 2008).

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.

The following are definitions of the data qualifiers:

U Indicates the compound or analyte was analyzed for but not detected.

J Indicates an estimated value.

R Quality control indicates the data is not usable.

NJ Presumptive evidence of presence of the compound at an estimated quantity.

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. Initial Calibration

Initial calibration was performed as required by the method.

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

In the case where the laboratory used a calibration curve to evaluate the compounds, all coefficients of determination (r^2) were greater than or equal to 0.990.

Retention time windows were evaluated and considered technically acceptable.

III. Continuing Calibration

Continuing calibration was performed at the required frequencies.

The percent differences (%D) were less than or equal to 20.0% for all compounds with the following exceptions:

Date	Standard	Column	Compound	%D	Associated Samples	Flag	A or P
6/13/14	CCV-HERB3NY	ZBXLB	2,4-DB	21	FDG2-SL-858-NBZ-SB-0.0-0.5	J (all detects) UJ (all non-detects)	A
6/13/14	CCV-HERB3NY	ZB35	MCPP	46	FDG2-SL-858-NBZ-SB-0.0-0.5	J (all detects) UJ (all non-detects)	A

The percent differences (%D) of the second source calibration standard were less than or equal to 20.0% for all compounds.

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

IV. Blanks

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

Sample EB1-061214 (from SDG PH231) was identified as an equipment blank. No herbicide contaminants were found with the following exceptions:

Blank ID	Sampling Date	Compound	Concentration	Associated Samples
EB1-061214	6/9/14	2,4-DB	0.59 ug/L	All samples in SDG PH224

Sample FB-052114 (from SDG PH191) was identified as a field blank. No herbicide contaminants were found.

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

V. Surrogate Recovery

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

VI. Matrix Spike/Matrix Spike Duplicate

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

Spike ID (Associated Samples)	Compound	MS (%R) (Limits)	MSD (%R) (Limits)	RPD (Limits)	Flag	A or P
FDG2-SL-558-NBZ-SB-0.0-0.5MS/MSD (FDG2-SL-558-NBZ-SB-0.0-0.5)	MCPA	156 (54-138)	-	-	J (all detects)	A
FDG2-SL-558-NBZ-SB-0.0-0.5MS/MSD (FDG2-SL-558-NBZ-SB-0.0-0.5)	Dichlorprop 2,4-D 2,4,5-TP 2,4,5-T Dinoseb 2,4-DB	- - - - 0 (10-115) 0 (10-179)	0 (32-171) 0 (42-143) 0 (65-156) 0 (12-172) 0 (10-113) 0 (10-179)	200 (≤50) 200 (≤50) 200 (≤50) 200 (≤50) - -	J (all detects) R (all non-detects)	A

VII. Laboratory Control Samples (LCS)

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

VIII. Target Compound Identification

All target compound identifications were within validation criteria.

IX. Compound Quantitation

All compound quantitations were within validation criteria.

The sample results for detected compounds from the two columns were within 40% relative percent difference (RPD) with the following exceptions:

Sample	Compound	RPD	Flag	A or P
FDG2-SL-559-NBZ-SB-0.0-0.5	2,4-DB	54	J (all detects)	A

All compounds reported below the RL were qualified as follows:

Sample	Finding	Flag	A or P
All samples in SDG PH224	All compounds reported below the RL.	J (all detects)	A

X. System Performance

The system performance was acceptable.

XI. Overall Assessment of Data

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

XII. Field Duplicates

Samples FDG2-SL-558-NBZ-SB-0.0-0.5 and FDG2-SL-858-NBZ-SB-0.0-0.5 were identified as field duplicates. No herbicides were detected in any of the samples with the following exceptions:

Compound	Concentration (ug/L)		RPD (Limits)	Flag	A or P
	FDG2-SL-558-NBZ-SB-0.0-0.5	FDG2-SL-858-NBZ-SB-0.0-0.5			
2,4-DB	20U	100	200 (≤50)	J (all detects) UJ (all non-detects)	A

Santa Susana Field Laboratory, FDG Block 2
Herbicides - Data Qualification Summary - SDG PH224

SDG	Sample	Compound	Flag	A or P	Reason (Code)
PH224	FDG2-SL-858-NBZ-SB-0.0-0.5	2,4-DB MCPP	J (all detects) UJ (all non-detects) J (all detects) UJ (all non-detects)	A	Continuing calibration (%D) (C)
PH224	FDG2-SL-558-NBZ-SB-0.0-0.5	MCPA	J (all detects)	A	Matrix spike/Matrix spike duplicate (%R) (Q)
PH224	FDG2-SL-558-NBZ-SB-0.0-0.5	Dichlorprop 2,4-D 2,4,5-TP 2,4,5-T	J (all detects) R (all non-detects)	A	Matrix spike/Matrix spike duplicate (%R)(RPD) (Q)
PH224	FDG2-SL-558-NBZ-SB-0.0-0.5	Dinoseb 2,4-DB	J (all detects) R (all non-detects)	A	Matrix spike/Matrix spike duplicate (%R) (Q)
PH224	FDG2-SL-559-NBZ-SB-0.0-0.5	2,4-DB	J (all detects)	A	Compound quantitation (RPD) (*IX)
PH224	FDG2-SL-558-NBZ-SB-0.0-0.5 FDG2-SL-559-NBZ-SB-0.0-0.5 FDG2-SL-858-NBZ-SB-0.0-0.5	All compounds reported below the RL.	J (all detects)	A	Compound quantitation (*IX)
PH224	FDG2-SL-558-NBZ-SB-0.0-0.5 FDG2-SL-858-NBZ-SB-0.0-0.5	2,4-DB	J (all detects) UJ (all non-detects)	A	Field duplicates (RPD) (FD)

Santa Susana Field Laboratory, FDG Block 2
Herbicides - Laboratory Blank Data Qualification Summary - SDG PH224

No Sample Data Qualified in this SDG

Santa Susana Field Laboratory, FDG Block 2
Herbicides - Field Blank Data Qualification Summary - SDG PH224

No Sample Data Qualified in this SDG

LDC #: 32181E5
SDG #: PH224
Laboratory: Eurofins

VALIDATION COMPLETENESS WORKSHEET
Level IV

Date: 7/31/14
Page: 1 of 1
Reviewer: BK
2nd Reviewer: SW

METHOD: GC Herbicides (EPA SW 846 Method 8151A)

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: ~~5/21/14~~ 6/9/14
II	Initial calibration	A	RSD ≤ 20%, r²
III.	Calibration verification/ICV	SW	ICV/CCV ≤ 20%
IV.	Blanks	A	
V	Surrogate recovery	A	
VI.	Matrix spike/Matrix spike duplicates	SW	
VII.	Laboratory control samples	A	LCS
VIII.	Target compound identification	A	
IX.	Compound quantitation/RL/LOQ/LODs	SW ~~A~~ N	
X.	System Performance	A	
XI.	Overall assessment of data	A	
XII.	Field duplicates	SW	FD = 1 + 3
XIII.	Field blanks	SW	EB = EB1 - 061214 (PH231) FB = FB-052114 (SDG # ~~PH151~~ 191)

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

1	FDG2-SL-558-NBZ-SB-0.0-0.5	11		21		31	PBLK24162
2	FDG2-SL-559-NBZ-SB-0.0-0.5	12		22		32	
3	FDG2-SL-858-NBZ-SB-0.0-0.5	13		23		33	
4	FDG2-SL-558-NBZ-SB-0.0-0.5MS	14		24		34	
5	FDG2-SL-558-NBZ-SB-0.0-0.5MSD	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 #: 32181E5

VALIDATION FINDINGS CHECKLIST

Reviewer: BR
2nd Reviewer: SM

Method: ✓ GC _____ HPLC

Validation Area	Yes	No	NA	Findings/Comments
I. Technical holding times				
All technical holding times were met.	✓			
Cooler temperature criteria was met.	✓			
II. Initial calibration				
Did the laboratory perform a 5 point calibration prior to sample analysis?	✓			
Was a linear fit used for evaluation? If yes, were all percent relative standard deviations (%RSD) ≤ 20%?	✓			
Was a curve fit used for evaluation? If Yes, what was the acceptance criteria used?	✓			
Did the initial calibration meet the curve fit acceptance criteria?	✓			
Were the RT windows properly established?	✓			
IV. Continuing calibration				
What type of continuing calibration calculation was performed? ✓ %D or __%R	✓			
Was a continuing calibration analyzed daily?	✓			
Were all percent differences (%D) ≤ 20%.0 or percent recoveries 80-120%?	✓			
Were all the retention times within the acceptance windows?		✓		
V. Blanks				
Was a method blank associated with every sample in this SDG?	✓			
Was a method blank analyzed for each matrix and concentration?	✓			
Was there contamination in the method blanks? If yes, please see the Blanks validation completeness worksheet.		✓		
VI. Surrogate spikes				
Were all surrogate %R within the QC limits?	✓			
If the percent recovery (%R) of one or more surrogates was outside QC limits, was a reanalysis performed to confirm %R?			✓	
If any %R was less than 10 percent, was a reanalysis performed to confirm %R?			✓	
VII. Matrix spike/Matrix spike duplicates				
Were a matrix spike (MS) and matrix spike duplicate (MSD) analyzed for each matrix in this SDG? If no, indicate which matrix does not have an associated MS/MSD. Soil / Water.	✓			
Was a MS/MSD analyzed every 20 samples of each matrix?	✓			
Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?		✓		
VIII. Laboratory control samples				
Was an LCS analyzed for this SDG?	✓			
Was an LCS analyzed per extraction batch?	✓			
Were the LCS percent recoveries (%R) and relative percent difference (RPD) within the QC limits?	✓			

Validation Area	Yes	No	NA	Findings/Comments
IX. Regional Quality Assurance and Quality Control				
Were performance evaluation (PE) samples performed?		✓		
Were the performance evaluation (PE) samples within the acceptance limits?			✓	
X. Target compound identification				
Were the retention times of reported detects within the RT windows?	✓			
XI. Compound quantitation/CRQLs				
Were compound quantitation and CRQLs adjusted to reflect all sample dilutions and dry weight factors applicable to level IV validation?	✓			
XII. System performance				
System performance was found to be acceptable.	✓			
XIII. Overall assessment of data				
Overall assessment of data was found to be acceptable.	✓			
XIV. Field duplicates				
Field duplicate pairs were identified in this SDG.	✓			
Target compounds were detected in the field duplicates.	✓			
XV. Field blanks				
Field blanks were identified in this SDG.	✓			
Target compounds were detected in the field blanks.	✓			

VALIDATION FINDINGS WORKSHEET

METHOD: X **GC** ___ **HPLC**

8310	8330	8151	8141	8141 (Con't)	8021B
A. Acenaphthene	A. HMX	A. 2,4-D	A. Dichlorvos	V. Fensulfothion	V. Benzene
B. Acenaphthylene	B. RDX	B. 2,4-DB	B. Mevinphos	W. Bolstar	CC. Toluene
C. Anthracene	C. 1,3,5-Trinitrobenzene	C. 2,4,5-T	C. Demeton-O	X. EPN	EE. Ethylbenzene
D. Benzo(a)anthracene	D. 1,3-Dinitrobenzene	D. 2,4,5-TP	D. Demeton-S	Y. Azinphos-methyl	SSS. o-Xylene
E. Benzo(a)pyrene	E. Tetryl	E. Dinoseb	E. Ethoprop	Z. Coumaphos	RRR. m,p-Xylenes
F. Benzo(b)fluoranthene	F. Nitrobenzene	F. Dichlorprop	F. Naled	AA. Parathion	GG. Total xylenes
G. Benzo(g,h,i)perylene	G. 2.4.6-Trinitrotoluene	G. Dicamba	G. Sulfotepp	BB. Famphur	
H. Benzo(k)fluoranthene	H. 4-Amino-2,6-dinitrotoluene	H. Dalapon	H. Phorate	CC. Phosmet	
I. Chrysene	I. 2-Amino-4,6-dinitrotoluene	I. MCPP	I. Dimethoate	DD. Trifluralin	
J. Dibenz(a,h)anthracene	J. 2,4-Dinitrotolune	J. MCPA	J. Diazinon	EE. Def	
K. Fluoranthene	K. 2,6-Dinitrotoluene	K. Pentachlorophenol	K. Disulfoton	FF. Prowl	Krone
L. Fluorene	L. 2-Nitrotoluene	L.. 2,4,5-TP (silvex)	L. Parathion-methyl	GG. Ethion	A. Tetra-n-butyltin
M. Indeno(1,2,3-cd)pyrene	M. 3-Nitrotoluene	M. Silvex	M. Ronnel	HH. Tetrachlorvinphos	B. Tri-n-butyltin Cation
N. Naphthalene	N. 4-Nitrotoluene		N. Malathion	II. Sulprofos	C. Di-n-butyltin Cation
O. Phenanthrene	O.		O. Chlorpyrifos		D. N-Butyltin Cation
P. Pyrene	P.		P. Fenthion		
Q.	Q		Q. Parathion-ethyl		
R.			R. Trichloronate		
S.			S. Merphos		
			T. Stirophos		
			U. Tokuthion		

Notes: _____

LDC #: 32181E5

VALIDATION FINDINGS WORKSHEET
Continuing Calibration

Page: 1 of 1
Reviewer: BR
2nd Reviewer: DM

METHOD: X GC ___ HPLC

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

Y N N/A Were continuing calibration standards analyzed at the required frequencies?

Y N N/A Did the continuing calibration standards meet the %D validation criteria of ≤20.0%?

Level IV Only

Y N N/A Were the retention times for all calibrated compounds within their respective acceptance windows?

#	Date	Standard ID	Detector/ Column	Compound	%D (Limit)	RT (limit)	Associated Samples	Code: C Qualifications
	5/21	CCV-HERB3NY	ZB XLB	B	21	( )	3	J (UJ/B
	6/13/14		ZB 35	I	46	( )		J
						( )		
						( )		
						( )		
						( )		
						( )		
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LDC #: 32181E5

VALIDATION FINDINGS WORKSHEET
Field Blanks

Reviewer: BL
2nd Reviewer: SM

METHOD: X GC __ HPLC

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

EB = EB1-061214 Code: F
SDG # P#231

Blank units: ug/L **Associated sample units:** ug/kg
Sampling date:
Field blank type: (circle one) Field Blank / Trip Blank / Atmospheric Blank / Ambient Blank
Rinsate / Equipment Rinsate / Equipment Blank / Source Blank / Other:

Associated Samples: All (NP + 7SX)

Compound	Blank ID	Blank ID	Sample Identification							
	EB									
B	0.59									
CRQL										

Blank units: **Associated sample units:**
Sampling date:
Field blank type: (circle one) Field Blank / Trip Blank/ Atmospheric Blank/ Ambient Blank
Rinsate / Equipment Rinsate / Equipment Blank / Source Blank / Other:

Associated Samples:

Compound	Blank ID	Blank ID	Sample Identification							
CRQL										

CIRCLED RESULTS WERE NOT QUALIFIED. ALL RESULTS NOT CIRCLED WERE QUALIFIED BY THE FOLLOWING STATEMENT:
Samples with compound concentrations within five times the associated field blank concentration are listed above, these sample results were qualified as not detected, "U".

LDC #: 32181E5

VALIDATION FINDINGS WORKSHEET
Matrix Spike/Matrix Spike Duplicates

Page: 1 of 1
Reviewer: BR
2nd Reviewer: SM

METHOD: X GC ___ HPLC

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

Y N N/A Were a matrix spike (MS) and matrix spike duplicate (MSD) analyzed for each matrix in this SDG?
Y N N/A Was an MS/MSD analyzed every 20 samples for each matrix or whenever a sample extraction was performed?
Y N N/A Were the MS/MSD percent recoveries (%R) and relative percent differences (RPD) within QC limits?

#	MS/MSD ID	Compound	MS %R (Limits)	MSD %R (Limits)	RPD (Limits)	Associated Samples	Qualifications
	4/5	J	156 (54-138)	( )	( )	1	J det 1A (Q)
		F	( )	0 (32-171)	200 (50)		J/R/A (Q)
		A	( )	0 (42-143)	200 (~~50~~) 35		
		~~E~~ D	( )	0 (65-156)	200 (~~50~~ 35		
		C	( )	0 (12-172)	200 (~~50~~ 35		
		E	0 (D-115)	0 (10-115)	~~NC 0 35~~ K		
		B	0 (10-179)	0 (10-179)	~~0 50~~ A		J
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
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			( )	( )	( )		
			( )	( )	( )		

LDC #: 32481E3

VALIDATION FINDINGS WORKSHEET
Compound Quantitation and Reported CRQLs

Reviewer: SR
2nd Reviewer: [illegible]

METHOD: X GC ___ HPLC

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

Level IV/D Only

Y N N/A Were CRQLs adjusted for sample dilutions, dry weight factors, etc.?
Y N N/A Did the reported results for detected target compounds agree within 10.0% of the recalculated results?
Y N N/A Did the percent difference of detected compounds between two columns./detectors ≤40%?
If no, please see findings bellow.

#	Compound Name	Sample ID	%RPD/%D Between Two Columns/Detectors Limit (≤ 40%)	Qualifications
	B	2	54	J det / A

Comments: See sample calculation verification worksheet for recalculations

LDC #: 32181E5

VALIDATION FINDINGS WORKSHEET
Field Duplicates

Reviewer: BR
2nd reviewer: SM

METHOD: X **GC** ___ **HPLC**

(Y) N N/A Were field duplicate pairs identified in this SDG?
(Y) N N/A Were target compounds detected in the field duplicate pairs?

Compound	Concentration ( )		%RPD Limit 50	Qualification Parent only / All Samples
	1	3		
B	20U	100	200	J (UJ/A (FD)

Compound	Concentration ( )		%RPD Limit _____	Qualification Parent only / All Samples

LDC#: 32181E5

VALIDATION FINDINGS WORKSHEET
Initial Calibration Calculation Verification

Reviewer: BR
2nd Reviewer:

METHOD: GC Herbicides (EPA SW 846 Method 8151A)

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

$RRF = (A_x)(C_{is})/(A_{is})(C_x)$ A_x = Area of Compound A_{is} = Area of associated internal standard

average RRF = sum of the RRFs/number of standards C_x = Concentration of compound, C_{is} = Concentration of internal standard

%RSD = 100 * (S/X) S= Standard deviation of the RRF X = Mean of the RRFs

#	Standard ID	Calibration Date	Compound	Reported RRF (RRF 176 std)	Recalculated RRF (RRF 176 std)	Reported Average RRF (Initial)	Recalculated Average RRF (Initial)	Reported %RSD	Recalculated %RSD
1	ICAL	5/29/2014	2,4-D (ZB XLB)	9.97E-04	9.97E-04	1.05E-03	1.05E-03	10	10
	19850A		Dinoseb (ZB XLB)	2.50E-03	2.50E-03	2.51E-03	2.51E-03	3	3
			2,4-D (ZB 35)	1.11E-03	1.11E-03	1.13E-03	1.13E-03	12	12
			Dinoseb (ZB 35)	1.72E-03	1.72E-03	1.74E-03	1.74E-03	3	3

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

LDC#: 32181E5

VALIDATION FINDINGS WORKSHEET

Initial Calibration Calculation Verification

Page: 2of 2
Reviewer: BR
2nd Reviewer: [signature]

METHOD: GC Herbicides (EPA SW 846 Method 8151A)

Calibration Date	Instrument	Compound	Standard	(Y) Response	(X) Concentration		CF
5/29/2014	19850B ZB35	2,4-DB	1	0.022641705	50.1		0.0005
			2	0.048411622	100.1		0.0005
			3	0.107705831	200.1		0.0005
			4	0.248541253	400.4		0.0006
			5	7.35E-01	1001.0		0.0007
			6	1.46E+00	2002.0		0.0007
						Ave	0.0006

Regression Output		*Calculated*	*Reported*
Constant	c =	*-0.02955882*	*-0.02957791*
Std Err of Y Est			
R Squared	r2 =	*0.9993*	*0.9993*
Degrees of Freedom			
X Coefficient(s)	m =	*0.0007455255*	*0.0007455362*
Std Err of Coef.			
Correlation Coefficient		*1.000*	
Coefficient of Determination (r^2)		*0.999*	*0.999*

LDC#: 32181E5

VALIDATION FINDINGS WORKSHEET
Continuing Calibration Calculation Verification

Reviewer: BR
2nd Reviewer:

METHOD: GC Herbicides (EPA SW 846 Method 8151A)

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

% Difference = 100 * (ave. RRF - RRF)/ave. RRF
RRF = (Ax)(Cis)/(Ais)(Cx)

Where: ave. RRF = initial calibration average RRF
RRF = continuing calibration RRF
Ax = Area of compound,
Cx = Concentration of compound,
Ais = Area of associated internal standard
Cis = Concentration of internal standard

#	Standard ID	Calibration Date	Compound	Average RRF (Initial)	Reported RRF (CC)	Recalculated RRF (CC)	Reported % D	Recalculated %D
1	HERB3NW	6/13/2014	2,4-D (ZB XLB)	176.00	166.52	166.52	5	5
		3:16	Dinoseb (ZB XLB)	100.10	99.26	99.26	1	1
			2,4-D (ZB 35)	176.00	151.06	151.06	14	14
			Dinoseb (ZB 35)	100.10	113.15	113.15	13	13
2	HERB3NY	6/13/2014	2,4-D (ZB XLB)	176.00	150.21	150.21	15	15
		17:38	Dinoseb (ZB XLB)	100.10	100.06	100.06	0	0
			2,4-D (ZB 35)	176.00	151.96	151.96	14	14
			Dinoseb (ZB 35)	100.10	92.01	92.01	8	8

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

LDC #: 32181E5

VALIDATION FINDINGS WORKSHEET
Surrogate Results Verification

Reviewer: BR
2nd reviewer: [signature]

METHOD: X **GC** ___ **HPLC**

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

% Recovery: SF/SS * 100

Where: SF = Surrogate Found
SS = Surrogate Spiked

Sample ID: 1

Surrogate	Column/Detector	Surrogate Spiked	Surrogate Found	Percent Recovery	Percent Recovery	Percent Difference
				Reported	Recalculated	
2,4-Dichlorophenylacetic acid	ZBxLB	66.7	61.13855	92	92	0

Sample ID: _____

Surrogate	Column/Detector	Surrogate Spiked	Surrogate Found	Percent Recovery	Percent Recovery	Percent Difference
				Reported	Recalculated	

Sample ID: _____

Surrogate	Column/Detector	Surrogate Spiked	Surrogate Found	Percent Recovery	Percent Recovery	Percent Difference
				Reported	Recalculated	

LDC #: 32181E5

VALIDATION FINDINGS WORKSHEET
Matrix Spike/Matrix Spike Duplicates Results Verification

Page: 1 of 1
Reviewer: BR
2nd Reviewer: SM

METHOD: X GC ___HPLC

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

%Recovery = 100 * (SSC - SC)/SA

Where SSC = Spiked sample concentration; SC = Sample concentration; SA = Spike added; MS = Matrix spike; MSD = Matrix spike duplicate

RPD =(({SSCMS - SSCMSD} * 2) / (SSCMS + SSCMSD))*100

MS/MSD samples: 415

Compound	Spike Added (ug/kg)		Sample Conc. (ug/kg)	Spike Sample Concentration (ug/kg)		Matrix spike Percent Recovery		Matrix Spike Duplicate Percent Recovery		MS/MSD RPD	
	MS	MSD	---	MS	MSD	Reported	Recalc.	Reported	Recalc.	Reported	Recalc.
Gasoline (8015)											
Diesel (8015)											
Benzene (8021B)											
Methane (RSK-175)											
2,4-D (8151)	83.5	~~83.5~~ 82.5	0	107.21		128	128				
~~Dinoseb~~ Dalapon (8151)	209	209	0	78.33	85.84	37	37	41	41	9	9
Naphthalene (8310)											
Anthracene (8310)											
HMX (8330)											
2,4,6-Trinitrotoluene (8330)											

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

LDC #: 32181E5

VALIDATION FINDINGS WORKSHEET

Laboratory Control Sample/Laboratory Control Sample Duplicates Results Verification

Reviewer: BR

2nd Reviewer: SM

METHOD: X GC __HPLC

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

%Recovery = 100 * (SSC - SC)/SA

Where SSC = Spiked sample concentration; SA = Spike added; SC = Sample concentration

RPD =(({SSCLCS - SSCLCSD} * 2) / (SSCLCS + SSCLCSD))*100

LCS = Laboratory Control Sample; LCSD = Laboratory Control Sample duplicate

LCS/LCSD samples: LCS24162

Compound	Spike Added (ug/kg)		Spike Sample Concentration (ug/kg)		LCS Percent Recovery		LCSD Percent Recovery		LCS/LCSD RPD	
	LCS	LCSD	LCS	LCSD	Reported	Recalc.	Reported	Recalc.	Reported	Recalc.
Gasoline (8015)										
Diesel (8015)										
Benzene (8021B)										
Methane (RSK-175)										
2,4-D (8151)	83.5	—	90.64	—	109	109	—	—	—	—
Dinoseb (8151)	142	—	21.09	—	15	15	—	—	—	—
Naphthalene (8310)										
Anthracene (8310)										
HMX (8330)										
2,4,6-Trinitrotoluene (8330)										

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

LDC #: 32181C5

VALIDATION FINDINGS WORKSHEET
Sample Calculation Verification

Reviewer: KR
2nd Reviewer: SM

METHOD: X **GC** __ **HPLC**

Y N N/A Were all reported results recalculated and verified for all level IV samples?
Y N N/A Were all recalculated results for detected target compounds within 10% of the reported results?

Concentration= (A)(Fv)(Df) / (RF)(Vs or Ws)(%S/100)

A= Area or height of the compound to be measured
Fv= Final Volume of extract
Df= Dilution Factor
RF= Average response factor of the compound In the initial calibration
Vs= Initial volume of the sample
Ws= Initial weight of the sample
%S= Percent Solid

Example:

Sample ID. 2 Compound Name 2,4-DB

Concentration = $\dfrac{\left[\dfrac{(61933)(1)}{(13161640)}\right] + 0.02957791}{\dfrac{0.0007455362}{(30)(0.986)}}\ 10$

#	Sample ID	Compound	Reported Concentrations ( )	Recalculated Results Concentrations ( )	Qualifications
			= 15.54597754 ug/kg		

Comments:

Data Validation Report
Santa Susana Field Laboratory

Go Backs, Subgroup FDG Block 2

SDG: PH227

Prepared for

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Prepared by

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August 7, 2014

INTRODUCTION

This Data Validation Report (DVR) presents Level III data validation results for samples collected on June 10, 2014. Data validation was performed in accordance with the Quality Assurance Project Plan (QAPP) for Santa Susana Field Laboratory (SSFL), RCRA Facility Investigation, Surficial Media Operable Unit (March 2009, Revision 4) and a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines (CLPNFGs) for Superfund Organic Methods Data Review (June 2008) and for Inorganic Data Review (January 2010). Where specific guidance is not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following methods:

Semivolatiles (SVOCs) by Environmental Protection Agency (EPA) SW 846 Method 8270D utilizing Selective Ion Monitoring (SIM)
Polychlorinated Biphenyls (PCBs) by EPA SW 846 Method 8082A
Metals by EPA SW 846 Method 6010C, 6020A, and 7471B.
Total Petroleum Hydrocarbons (TPH) as Gasoline by EPA SW 846 Method 8015M
TPH as Extractables with and without Silica Gel Clean Up by EPA SW 846 Method 8015M

The sample identification and methods of analyses performed on each sample is presented in Attachment 1. Please note that field sample IDs have been truncated due to database limitations. Overall data qualification summary is presented in Attachment 2. Level III Automated Data Review outliers are presented in Enclosure I.

All sample results were subjected to Level III data validation, which comprises an evaluation of quality control (QC) summary results for sample holding times, initial and continuing calibration blanks (ICB/CCBs), surrogates, matrix spike/matrix spike duplicates (MS/MSD), laboratory control sample/laboratory control sample duplicates (LCS/LCSD), method blanks, trip blanks, equipment blanks, field blanks, and field duplicate samples. No samples in this SDG were subjected to Level IV evaluation.

Automated data review was performed on all QC summary results using the Automated Data Review (ADR) software program (LDC, 2013) with the exception of ICB/CCBs which were validated manually. Quality assurance (QA)/QC criteria specified in the QAPP and CLPNFGs were incorporated with the program's reference library to assess compliance with project requirements.

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.

NJ Presumptive evidence of presence of the compound at an estimated quantity.

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

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 QC criteria.

II. Initial Calibration

Initial Calibration data were not reviewed for level III.

III. Continuing Calibration

Continuing calibration data were not reviewed for level III.

IV. Blanks

Method blanks were performed at the required frequencies. No contaminant concentrations were detected in the method or preparation blanks with the exception of one blanks for several metals. The associated sample results were qualified as non-detected (U) due to method blank contamination as applicable. The sample results that were not detected or were significantly greater than the concentrations found in the associated blanks were not qualified. The details regarding the qualification of data are provided in Enclosure I.

No contaminant concentrations were detected in the initial or continuing calibration blanks

V. Surrogate Spikes

Surrogate percent recoveries (%R) were within QC limits.

VI. ICP Interference Check Sample (ICS) Analysis

ICP interference check data were not reviewed for level III.

VII. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) samples were performed at the required frequency. Percent recoveries (%R) and relative percent differences (RPD) were within QC limits with the exception of one MS/MSD pair for TPH as extractables with and without silica gel clean up. The associated sample results were qualified as detected estimated (J) or non-detected estimated (UJ) as applicable. The details regarding the qualification of data are provided in Enclosure I.

VIII. Laboratory Duplicates Sample

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

IV. Laboratory Control Samples (LCS)

Laboratory control samples were reviewed for each matrix as applicable. Percent recoveries

(%R) and relative percent differences (RPD) were within QC limits with the exception of several LCS samples for SVOCs and TPH as extractables with silica gel clean up. The associated sample results were qualified as detected estimated (J) or non-detected estimated (UJ) as applicable. The details regarding the qualification of data are provided in Enclosure I.

X. Internal Standards

Internal standards were not reviewed for Level III.

XI. ICP Serial Dilution

ICP serial dilution was not performed for this SDG.

XII. Compound Quantitation

The laboratory reporting limits were evaluated. All laboratory reporting limits met the specified requirements.

All compounds reported below the RL as detected were qualified as follows:

Sample	Finding	Flag	A or P
All samples in SDG PH227	All compounds reported as detected below the RL.	J (all detects)	A

XIII. Field Duplicate Samples

One field duplicate pair was collected and analyzed for TPH as gasoline and TPH as extractables with and without silica gel clean up. All RPDs were within QC limits. The field duplicate result comparisons are provided in Enclosure I.

XIV. Field Blank Samples

One trip blank was collected and analyzed for TPH as gasoline. No contaminant concentrations were found in the trip blank.

Two equipment blanks (from SDG PH231) were collected and analyzed for SVOCs, PCBs, metals, TPH as gasoline, and TPH as extractables with and without silica gel clean up. The equipment blanks had detections for SVOCs and metals. The associated sample results were qualified as non-detected (U) due to equipment blank contamination as applicable. The sample results that were not detected or were significantly greater than the concentrations found in the equipment blanks were not qualified. The equipment blank outlier reports are presented in Enclosure I.

One field blank (from SDG PH191) was collected and analyzed for SVOCs, PCBs, metals, TPH as gasoline and TPH as extractables with and without silica gel clean up. The field blank had detections for SVOCs and metals. The associated sample results were qualified as non-detected (U) due to field blank contamination as applicable. The sample results that were not detected or were significantly greater than the concentrations found in the field blank were not qualified. The field blank outlier reports are presented in Enclosure I.

XV. Overall Assessment of Data

The overall assessment of QA/QC data review by automated and manual validation of this sampling event met project requirements and analytical completeness levels with the exceptions noted in the above sections. The remainder of the data are deemed useable for the intended use.

Data flags are summarized and are presented as Attachment 2.

Attachment 1

Sample Cross Reference

Sample Cross Reference

Date Collected	Field Sample ID	Lab Sample ID	Sample Type	Prep Method	Analytical Method	Review Level
10-Jun-2014	SL-630-SA8-SB-0.0-0.5	7494362	N	3546	8015M	III
10-Jun-2014	TB1-061014	7494361	TB	5030B	8015M	III
10-Jun-2014	SL-630-SA8-SB-4.0-5.0	7494363	N	3546	8015M	III
10-Jun-2014	SL-630-SA8-SB-4.0-5.0	7494363	N	5035A	8015M	III
10-Jun-2014	SL-630-SA8-SB-4.0-5.0MS	7494364	MS	3546	8015M	III
10-Jun-2014	SL-630-SA8-SB-4.0-5.0MS	7494364	MS	5035A	8015M	III
10-Jun-2014	SL-630-SA8-SB-4.0-5.0MSD	7494365	MSD	3546	8015M	III
10-Jun-2014	SL-630-SA8-SB-4.0-5.0MSD	7494365	MSD	5035A	8015M	III
10-Jun-2014	SL-930-SA8-SB-4.0-5.0	7494366	FD	3546	8015M	III
10-Jun-2014	SL-930-SA8-SB-4.0-5.0	7494366	FD	5035A	8015M	III
10-Jun-2014	SL-566-NBZ-SB-0.0-0.5	7494371	N	3050B	6010C	III
10-Jun-2014	SL-566-NBZ-SB-0.0-0.5	7494371	N	3050B	6020A	III
10-Jun-2014	SL-566-NBZ-SB-0.0-0.5	7494371	N	3546	8015M	III
10-Jun-2014	SL-566-NBZ-SB-0.0-0.5	7494371	N	3546	8082A	III
10-Jun-2014	SL-566-NBZ-SB-0.0-0.5	7494371	N	METHOD	7471B	III
10-Jun-2014	SL-630-SA8-SB-7.0-8.0	7494367	N	3546	8015M	III
10-Jun-2014	SL-630-SA8-SB-7.0-8.0	7494367	N	5035A	8015M	III
10-Jun-2014	SL-565-NBZ-SB-0.0-0.5	7494370	N	3050B	6010C	III
10-Jun-2014	SL-565-NBZ-SB-0.0-0.5	7494370	N	3050B	6020A	III
10-Jun-2014	SL-565-NBZ-SB-0.0-0.5	7494370	N	3546	8015M	III
10-Jun-2014	SL-565-NBZ-SB-0.0-0.5	7494370	N	3546	8082A	III
10-Jun-2014	SL-565-NBZ-SB-0.0-0.5	7494370	N	3546	8270D SIM	III
10-Jun-2014	SL-565-NBZ-SB-0.0-0.5	7494370	N	METHOD	7471B	III
10-Jun-2014	SL-564-NBZ-SB-0.0-0.5	7494369	N	3050B	6010C	III
10-Jun-2014	SL-564-NBZ-SB-0.0-0.5	7494369	N	3050B	6020A	III
10-Jun-2014	SL-564-NBZ-SB-0.0-0.5	7494369	N	3546	8015M	III

III = EPA Level 3 Data Review *N = Normal Sample* *TB = Trip Blank* *MS = Matrix Spike*
IV = EPA Level 4 Data Validation *FD = Field Duplicate* *FB = Field Blank* *MSD = Matrix Spike Duplicate*

Sample Cross Reference

Date Collected	Field Sample ID	Lab Sample ID	Sample Type	Prep Method	Analytical Method	Review Level
10-Jun-2014	SL-564-NBZ-SB-0.0-0.5	7494369	N	3546	8082A	III
10-Jun-2014	SL-564-NBZ-SB-0.0-0.5	7494369	N	3546	8270D SIM	III
10-Jun-2014	SL-564-NBZ-SB-0.0-0.5	7494369	N	METHOD	7471B	III
10-Jun-2014	SL-564-NBZ-SB-0.0-0.5MSD	P494369M241118A	MSD	3546	8082A	III
10-Jun-2014	SL-564-NBZ-SB-0.0-0.5MS	P494369R241919A	MS	3546	8082A	III
10-Jun-2014	SL-612-SA5D-SB-0.0-0.5	7494368	N	3546	8015M	III
10-Jun-2014	SL-576-NBZ-SB-0.0-0.5	7494372	N	3546	8015M	III
10-Jun-2014	SL-576-NBZ-SB-0.0-0.5	7494372	N	3546	8082A	III
10-Jun-2014	SL-614-SA5D-SB-0.0-0.5	7494375	N	3546	8015M	III
10-Jun-2014	SL-576-NBZ-SB-2.0-3.0	7494373	N	3546	8015M	III
10-Jun-2014	SL-576-NBZ-SB-2.0-3.0	7494373	N	3546	8082A	III
10-Jun-2014	SL-576-NBZ-SB-2.0-3.0	7494373	N	5035A	8015M	III
10-Jun-2014	SL-613-SA5D-SB-0.0-0.5	7494374	N	3546	8015M	III

III = EPA Level 3 Data Review *N = Normal Sample* *TB = Trip Blank* *MS = Matrix Spike*
IV = EPA Level 4 Data Validation *FD = Field Duplicate* *FB = Field Blank* *MSD = Matrix Spike Duplicate*

Attachment 2
Overall Data Qualification Summary

Data Qualifier Summary

Lab Reporting Batch ID: PH227 **Laboratory: LL**

EDD Filename: PH227 **eQAPP Name: CDM_SSFL_140617_Lan**

Method Category: METALS

Method: 6010C **Matrix: SO**

Sample ID: FDG2-SL-564-NBZ-SB-0.0-0.5 **Collected: 6/10/2014 10:05:00** **Analysis Type: RES** **Dilution: 1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
BERYLLIUM	0.580	J	0.0676	MDL	1.01	PQL	mg/Kg	J	Z
BORON	3.95	J	0.847	MDL	10.1	PQL	mg/Kg	U	B
SODIUM	73.1	J	16.8	MDL	101	PQL	mg/Kg	J	Z
TIN	2.76	J	0.222	MDL	10.1	PQL	mg/Kg	U	B
Zirconium	2.96	J	0.847	MDL	5.04	PQL	mg/Kg	U	F, F
MOLYBDENUM	0.298	J	0.171	MDL	2.02	PQL	mg/Kg	J	Z

Sample ID: FDG2-SL-565-NBZ-SB-0.0-0.5 **Collected: 6/10/2014 9:35:00** **Analysis Type: RES** **Dilution: 1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
BERYLLIUM	0.519	J	0.0657	MDL	0.980	PQL	mg/Kg	J	Z
BORON	3.99	J	0.823	MDL	9.80	PQL	mg/Kg	U	B
MOLYBDENUM	0.345	J	0.167	MDL	1.96	PQL	mg/Kg	J	Z
SODIUM	77.3	J	16.4	MDL	98.0	PQL	mg/Kg	J	Z
TIN	2.64	J	0.216	MDL	9.80	PQL	mg/Kg	U	B
Zirconium	2.66	J	0.823	MDL	4.90	PQL	mg/Kg	U	F, F

Sample ID: FDG2-SL-566-NBZ-SB-0.0-0.5 **Collected: 6/10/2014 8:50:00** **Analysis Type: RES** **Dilution: 1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
BERYLLIUM	0.436	J	0.0654	MDL	0.976	PQL	mg/Kg	J	Z
BORON	4.09	J	0.820	MDL	9.76	PQL	mg/Kg	U	B
MOLYBDENUM	0.382	J	0.166	MDL	1.95	PQL	mg/Kg	J	Z
SODIUM	60.0	J	16.3	MDL	97.6	PQL	mg/Kg	J	Z
TIN	2.34	J	0.215	MDL	9.76	PQL	mg/Kg	U	B
Zirconium	1.86	J	0.820	MDL	4.88	PQL	mg/Kg	U	F, F

Method Category: METALS

Method: 6020A **Matrix: SO**

Sample ID: FDG2-SL-564-NBZ-SB-0.0-0.5 **Collected: 6/10/2014 10:05:00** **Analysis Type: RES** **Dilution: 2**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
SILVER	0.0534	J	0.0262	MDL	0.202	PQL	mg/Kg	J	Z

* denotes a non-reportable result

Project Name and Number: 1204-002-001-AL - SSFL Area IV Phase 3

Data Qualifier Summary

Lab Reporting Batch ID: PH227 **Laboratory: LL**

EDD Filename: PH227 **eQAPP Name: CDM_SSFL_140617_Lan**

Method Category: METALS

Method: 6020A **Matrix: SO**

Sample ID: **FDG2-SL-565-NBZ-SB-0.0-0.5** *Collected:* **6/10/2014 9:35:00** *Analysis Type:* **RES** *Dilution:* **2**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
SILVER	0.0588	J	0.0255	MDL	0.196	PQL	mg/Kg	J	Z

Sample ID: **FDG2-SL-566-NBZ-SB-0.0-0.5** *Collected:* **6/10/2014 8:50:00** *Analysis Type:* **REA** *Dilution:* **2**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
SELENIUM	0.324	J	0.0976	MDL	0.390	PQL	mg/Kg	J	Z

Method Category: SVOA

Method: 8015M **Matrix: SO**

Sample ID: **FDG2-SL-564-NBZ-SB-0.0-0.5** *Collected:* **6/10/2014 10:05:00** *Analysis Type:* **REA** *Dilution:* **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
EFH (C12-C14) SG	5.1	U	2.0	MDL	5.1	PQL	mg/Kg	UJ	L
EFH (C15-C20) SG	5.1	U	2.0	MDL	5.1	PQL	mg/Kg	UJ	L
EFH (C21-C30) SG	2.5	J	2.0	MDL	5.1	PQL	mg/Kg	J	Z, L
EFH (C30-C40) SG	4.4	J	4.1	MDL	10	PQL	mg/Kg	J	Z
EFH (C8-C11) SG	5.1	U	2.0	MDL	5.1	PQL	mg/Kg	UJ	L

Sample ID: **FDG2-SL-564-NBZ-SB-0.0-0.5** *Collected:* **6/10/2014 10:05:00** *Analysis Type:* **RES** *Dilution:* **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
EFH (C15-C20)	3.6	J	2.0	MDL	5.1	PQL	mg/Kg	J	Z

Sample ID: **FDG2-SL-565-NBZ-SB-0.0-0.5** *Collected:* **6/10/2014 9:35:00** *Analysis Type:* **REA** *Dilution:* **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
EFH (C12-C14) SG	5.1	U	2.0	MDL	5.1	PQL	mg/Kg	UJ	L
EFH (C15-C20) SG	5.1	U	2.0	MDL	5.1	PQL	mg/Kg	UJ	L
EFH (C21-C30) SG	3.3	J	2.0	MDL	5.1	PQL	mg/Kg	J	Z, L
EFH (C30-C40) SG	4.8	J	4.1	MDL	10	PQL	mg/Kg	J	Z
EFH (C8-C11) SG	5.1	U	2.0	MDL	5.1	PQL	mg/Kg	UJ	L

* denotes a non-reportable result

Project Name and Number: 1204-002-001-AL - SSFL Area IV Phase 3

Data Qualifier Summary

Lab Reporting Batch ID: PH227 **Laboratory: LL**

EDD Filename: PH227 **eQAPP Name: CDM_SSFL_140617_Lan**

Method Category: SVOA

Method: 8015M **Matrix: SO**

Sample ID: **FDG2-SL-565-NBZ-SB-0.0-0.5** *Collected:* **6/10/2014 9:35:00** *Analysis Type:* **RES** *Dilution:* **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
EFH (C12-C14)	2.4	J	2.0	MDL	5.1	PQL	mg/Kg	J	Z

Sample ID: **FDG2-SL-566-NBZ-SB-0.0-0.5** *Collected:* **6/10/2014 8:50:00** *Analysis Type:* **DL** *Dilution:* **5**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
EFH (C15-C20)	23	J	10	MDL	25	PQL	mg/Kg	J	Z

Sample ID: **FDG2-SL-566-NBZ-SB-0.0-0.5** *Collected:* **6/10/2014 8:50:00** *Analysis Type:* **RES** *Dilution:* **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
EFH (C12-C14)	5.1	U	2.0	MDL	5.1	PQL	mg/Kg	UJ	L
EFH (C15-C20)	5.5		2.0	MDL	5.1	PQL	mg/Kg	J	L
EFH (C21-C30)	61		2.0	MDL	5.1	PQL	mg/Kg	J	L
EFH (C8-C11)	5.1	U	2.0	MDL	5.1	PQL	mg/Kg	UJ	L

Sample ID: **FDG2-SL-576-NBZ-SB-0.0-0.5** *Collected:* **6/10/2014 12:35:00** *Analysis Type:* **REA** *Dilution:* **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
EFH (C12-C14) SG	5.1	U	2.1	MDL	5.1	PQL	mg/Kg	UJ	L
EFH (C15-C20) SG	5.1	U	2.1	MDL	5.1	PQL	mg/Kg	UJ	L
EFH (C21-C30) SG	3.1	J	2.1	MDL	5.1	PQL	mg/Kg	J	Z, L
EFH (C8-C11) SG	5.1	U	2.1	MDL	5.1	PQL	mg/Kg	UJ	L

Sample ID: **FDG2-SL-576-NBZ-SB-0.0-0.5** *Collected:* **6/10/2014 12:35:00** *Analysis Type:* **RES** *Dilution:* **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
EFH (C15-C20)	2.8	J	2.1	MDL	5.1	PQL	mg/Kg	J	Z

Sample ID: **FDG2-SL-576-NBZ-SB-2.0-3.0** *Collected:* **6/10/2014 1:15:00** *Analysis Type:* **REA2** *Dilution:* **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
EFH (C12-C14) SG	5.2	U	2.1	MDL	5.2	PQL	mg/Kg	UJ	L
EFH (C15-C20) SG	5.2	U	2.1	MDL	5.2	PQL	mg/Kg	UJ	L
EFH (C21-C30) SG	5.2	U	2.1	MDL	5.2	PQL	mg/Kg	UJ	L
EFH (C8-C11) SG	5.2	U	2.1	MDL	5.2	PQL	mg/Kg	UJ	L

* denotes a non-reportable result

Project Name and Number: 1204-002-001-AL - SSFL Area IV Phase 3

Data Qualifier Summary

Lab Reporting Batch ID: PH227 **Laboratory: LL**

EDD Filename: PH227 **eQAPP Name: CDM_SSFL_140617_Lan**

Method Category: SVOA

Method: 8015M **Matrix: SO**

Sample ID: **FDG2-SL-612-SA5D-SB-0.0-0.5** ***Collected:*** **6/10/2014 11:00:00** ***Analysis Type:*** **DL** ***Dilution:*** **5**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
EFH (C15-C20)	20	J	10	MDL	26	PQL	mg/Kg	J	Z
EFH (C8-C11)	13	J	10	MDL	26	PQL	mg/Kg	J	Z

Sample ID: **FDG2-SL-612-SA5D-SB-0.0-0.5** ***Collected:*** **6/10/2014 11:00:00** ***Analysis Type:*** **RES** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
EFH (C12-C14)	5.1	U	2.1	MDL	5.1	PQL	mg/Kg	UJ	L
EFH (C15-C20)	5.1	U	2.1	MDL	5.1	PQL	mg/Kg	UJ	L
EFH (C21-C30)	10		2.1	MDL	5.1	PQL	mg/Kg	J	L
EFH (C8-C11)	5.1	U	2.1	MDL	5.1	PQL	mg/Kg	UJ	L

Sample ID: **FDG2-SL-613-SA5D-SB-0.0-0.5** ***Collected:*** **6/10/2014 1:25:00** ***Analysis Type:*** **REA** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
EFH (C12-C14) SG	5.2	U	2.1	MDL	5.2	PQL	mg/Kg	UJ	L
EFH (C15-C20) SG	5.2	U	2.1	MDL	5.2	PQL	mg/Kg	UJ	L
EFH (C21-C30) SG	2.2	J	2.1	MDL	5.2	PQL	mg/Kg	J	Z, L
EFH (C30-C40) SG	4.2	J	4.2	MDL	10	PQL	mg/Kg	J	Z
EFH (C8-C11) SG	5.2	U	2.1	MDL	5.2	PQL	mg/Kg	UJ	L

Sample ID: **FDG2-SL-613-SA5D-SB-0.0-0.5** ***Collected:*** **6/10/2014 1:25:00** ***Analysis Type:*** **RES** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
EFH (C8-C11)	2.1	J	2.1	MDL	5.2	PQL	mg/Kg	J	Z

Sample ID: **FDG2-SL-614-SA5D-SB-0.0-0.5** ***Collected:*** **6/10/2014 12:45:00** ***Analysis Type:*** **REA** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
EFH (C12-C14) SG	5.1	U	2.1	MDL	5.1	PQL	mg/Kg	UJ	L
EFH (C15-C20) SG	5.1	U	2.1	MDL	5.1	PQL	mg/Kg	UJ	L
EFH (C21-C30) SG	2.8	J	2.1	MDL	5.1	PQL	mg/Kg	J	Z, L
EFH (C30-C40) SG	8.2	J	4.1	MDL	10	PQL	mg/Kg	J	Z
EFH (C8-C11) SG	5.1	U	2.1	MDL	5.1	PQL	mg/Kg	UJ	L

* denotes a non-reportable result

Project Name and Number: 1204-002-001-AL - SSFL Area IV Phase 3

Data Qualifier Summary

Lab Reporting Batch ID: PH227 **Laboratory: LL**

EDD Filename: PH227 **eQAPP Name: CDM_SSFL_140617_Lan**

Method Category: SVOA

Method: 8015M **Matrix: SO**

Sample ID: **FDG2-SL-614-SA5D-SB-0.0-0.5** *Collected:* **6/10/2014 12:45:00** *Analysis Type:* **RES** *Dilution:* **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
EFH (C15-C20)	2.1	J	2.1	MDL	5.1	PQL	mg/Kg	J	Z

Sample ID: **FDG2-SL-630-SA8-SB-0.0-0.5** *Collected:* **6/10/2014 7:55:00** *Analysis Type:* **REA** *Dilution:* **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
EFH (C12-C14) SG	5.2	U	2.1	MDL	5.2	PQL	mg/Kg	UJ	L
EFH (C15-C20) SG	5.2	U	2.1	MDL	5.2	PQL	mg/Kg	UJ	L
EFH (C21-C30) SG	3.3	J	2.1	MDL	5.2	PQL	mg/Kg	J	Z, L
EFH (C30-C40) SG	5.2	J	4.2	MDL	10	PQL	mg/Kg	J	Z
EFH (C8-C11) SG	5.2	U	2.1	MDL	5.2	PQL	mg/Kg	UJ	L

Sample ID: **FDG2-SL-630-SA8-SB-0.0-0.5** *Collected:* **6/10/2014 7:55:00** *Analysis Type:* **RES** *Dilution:* **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
EFH (C15-C20)	3.3	J	2.1	MDL	5.2	PQL	mg/Kg	J	Z

Sample ID: **FDG2-SL-630-SA8-SB-4.0-5.0** *Collected:* **6/10/2014 8:30:00** *Analysis Type:* **REA** *Dilution:* **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
EFH (C15-C20)	3.7	J	2.2	MDL	5.5	PQL	mg/Kg	J	Z, Q
EFH (C21-C30)	26		2.2	MDL	5.5	PQL	mg/Kg	J	Q, Q
EFH (C30-C40)	42		4.4	MDL	11	PQL	mg/Kg	J	Q, Q

Sample ID: **FDG2-SL-630-SA8-SB-4.0-5.0** *Collected:* **6/10/2014 8:30:00** *Analysis Type:* **REA2** *Dilution:* **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
EFH (C12-C14) SG	5.5	U	2.2	MDL	5.5	PQL	mg/Kg	UJ	L
EFH (C15-C20) SG	5.5	U	2.2	MDL	5.5	PQL	mg/Kg	UJ	L
EFH (C21-C30) SG	14		2.2	MDL	5.5	PQL	mg/Kg	J	Q, Q, L
EFH (C30-C40) SG	14		4.4	MDL	11	PQL	mg/Kg	J	Q, Q
EFH (C8-C11) SG	5.5	U	2.2	MDL	5.5	PQL	mg/Kg	UJ	L

* denotes a non-reportable result

Project Name and Number: 1204-002-001-AL - SSFL Area IV Phase 3

Data Qualifier Summary

Lab Reporting Batch ID: PH227 **Laboratory: LL**

EDD Filename: PH227 **eQAPP Name: CDM_SSFL_140617_Lan**

Method Category: SVOA

Method: 8015M **Matrix: SO**

Sample ID: **FDG2-SL-630-SA8-SB-7.0-8.0** *Collected:* **6/10/2014 9:05:00** *Analysis Type:* **REA** *Dilution:* **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
EFH (C15-C20)	3.4	J	2.2	MDL	5.4	PQL	mg/Kg	J	Z

Sample ID: **FDG2-SL-630-SA8-SB-7.0-8.0** *Collected:* **6/10/2014 9:05:00** *Analysis Type:* **REA2** *Dilution:* **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
EFH (C12-C14) SG	5.4	U	2.2	MDL	5.4	PQL	mg/Kg	UJ	L
EFH (C15-C20) SG	5.4	U	2.2	MDL	5.4	PQL	mg/Kg	UJ	L
EFH (C21-C30) SG	8.8		2.2	MDL	5.4	PQL	mg/Kg	J	L
EFH (C8-C11) SG	5.4	U	2.2	MDL	5.4	PQL	mg/Kg	UJ	L

Sample ID: **FDG2-SL-930-SA8-SB-4.0-5.0** *Collected:* **6/10/2014 8:40:00** *Analysis Type:* **REA** *Dilution:* **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
EFH (C15-C20)	4.8	J	2.2	MDL	5.5	PQL	mg/Kg	J	Z

Sample ID: **FDG2-SL-930-SA8-SB-4.0-5.0** *Collected:* **6/10/2014 8:40:00** *Analysis Type:* **REA2** *Dilution:* **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
EFH (C12-C14) SG	5.5	U	2.2	MDL	5.5	PQL	mg/Kg	UJ	L
EFH (C15-C20) SG	5.5	U	2.2	MDL	5.5	PQL	mg/Kg	UJ	L
EFH (C21-C30) SG	19		2.2	MDL	5.5	PQL	mg/Kg	J	L
EFH (C8-C11) SG	5.5	U	2.2	MDL	5.5	PQL	mg/Kg	UJ	L

Method Category: SVOA

Method: 8082A **Matrix: SO**

Sample ID: **FDG2-SL-565-NBZ-SB-0.0-0.5** *Collected:* **6/10/2014 9:35:00** *Analysis Type:* **RES** *Dilution:* **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
AROCLOR 1254	7.5	J	4.4	MDL	17	PQL	ug/Kg	J	Z

* denotes a non-reportable result

Project Name and Number: 1204-002-001-AL - SSFL Area IV Phase 3

Data Qualifier Summary

Lab Reporting Batch ID: PH227 **Laboratory: LL**

EDD Filename: PH227 **eQAPP Name: CDM_SSFL_140617_Lan**

Method Category: SVOA

Method: 8270D SIM **Matrix: SO**

Sample ID: **FDG2-SL-564-NBZ-SB-0.0-0.5** *Collected:* **6/10/2014 10:05:00** *Analysis Type:* **RES** *Dilution:* **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
1-METHYLNAPHTHALENE	0.74	J	0.68	MDL	1.7	PQL	ug/Kg	J	Z

Sample ID: **FDG2-SL-564-NBZ-SB-0.0-0.5** *Collected:* **6/10/2014 10:05:00** *Analysis Type:* **RES-BASE/NEUTRAL** *Dilution:* **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
2-METHYLNAPHTHALENE	1.1	J	0.68	MDL	1.7	PQL	ug/Kg	J	Z
BENZO(B)FLUORANTHENE	1.6	J	0.68	MDL	1.7	PQL	ug/Kg	J	Z
N-NITROSODIMETHYLAMINE	1.7	U	0.68	MDL	1.7	PQL	ug/Kg	UJ	L
PHENANTHRENE	1.5	J	0.68	MDL	1.7	PQL	ug/Kg	J	Z
PYRENE	1.4	J	0.68	MDL	1.7	PQL	ug/Kg	J	Z

Sample ID: **FDG2-SL-565-NBZ-SB-0.0-0.5** *Collected:* **6/10/2014 9:35:00** *Analysis Type:* **RES-BASE/NEUTRAL** *Dilution:* **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
2-METHYLNAPHTHALENE	0.95	J	0.67	MDL	1.7	PQL	ug/Kg	J	Z
BENZO(A)PYRENE	0.81	J	0.67	MDL	1.7	PQL	ug/Kg	J	Z
CHRYSENE	2.9		0.34	MDL	1.7	PQL	ug/Kg	J	L
FLUORENE	1.3	J	0.67	MDL	1.7	PQL	ug/Kg	J	Z
PHENANTHRENE	1.1	J	0.67	MDL	1.7	PQL	ug/Kg	J	Z
PYRENE	1.5	J	0.67	MDL	1.7	PQL	ug/Kg	J	Z

* denotes a non-reportable result

Project Name and Number: 1204-002-001-AL - SSFL Area IV Phase 3

Data Qualifier Summary

Lab Reporting Batch ID: PH227 **Laboratory: LL**

EDD Filename: PH227 **eQAPP Name: CDM_SSFL_140617_Lan**

Reason Code Legend

Reason Code	*Description*
B	Method Blank Contamination
E	Matrix Spike Precision
F	Equipment Blank Contamination
F	Field Blank Contamination
L	Laboratory Control Spike Lower Estimation
L	Laboratory Control Spike Upper Estimation
Q	Matrix Spike Lower Estimation
Q	Matrix Spike Precision
Q	Matrix Spike Upper Estimation
Z	Reporting Limit Trace Value

* denotes a non-reportable result

Project Name and Number: 1204-002-001-AL - SSFL Area IV Phase 3

Enclosure I

Level III ADR Outliers

(Including Manual Review Outliers)

Quality Control
Outlier Reports

PH227

Method Blank Outlier Report

Lab Reporting Batch ID: PH227 **Laboratory: LL**

EDD Filename: PH227 **eQAPP Name: CDM_SSFL_140617_Lan**

Method: 6010C
Matrix: SO

Method Blank Sample ID	Analysis Date	Analyte	Result	Associated Samples
P16837BB221618	6/19/2014 4:18:00 PM	ALUMINUM BORON CALCIUM TIN ZINC	10.0 mg/Kg 1.76 mg/Kg 24.6 mg/Kg 1.46 mg/Kg 0.386 mg/Kg	FDG2-SL-564-NBZ-SB-0.0-0.5 FDG2-SL-565-NBZ-SB-0.0-0.5 FDG2-SL-566-NBZ-SB-0.0-0.5

The following samples and their listed target analytes were qualified due to contamination reported in this blank

Sample ID	Analyte	Reported Result	Modified Final Result
FDG2-SL-564-NBZ-SB-0.0-0.5(RES)	BORON	3.95 mg/Kg	3.95U mg/Kg
FDG2-SL-564-NBZ-SB-0.0-0.5(RES)	TIN	2.76 mg/Kg	2.76U mg/Kg
FDG2-SL-565-NBZ-SB-0.0-0.5(RES)	BORON	3.99 mg/Kg	3.99U mg/Kg
FDG2-SL-565-NBZ-SB-0.0-0.5(RES)	TIN	2.64 mg/Kg	2.64U mg/Kg
FDG2-SL-566-NBZ-SB-0.0-0.5(RES)	BORON	4.09 mg/Kg	4.09U mg/Kg
FDG2-SL-566-NBZ-SB-0.0-0.5(RES)	TIN	2.34 mg/Kg	2.34U mg/Kg

Method: 6020A
Matrix: SO

Method Blank Sample ID	Analysis Date	Analyte	Result	Associated Samples
P16837BB220645A	6/19/2014 6:45:00 AM	STRONTIUM	0.134 mg/Kg	FDG2-SL-564-NBZ-SB-0.0-0.5 FDG2-SL-565-NBZ-SB-0.0-0.5 FDG2-SL-566-NBZ-SB-0.0-0.5

Matrix Spike/Matrix Spike Duplicate Outlier Report

Lab Reporting Batch ID: PH227 **Laboratory: LL**

EDD Filename: PH227 **eQAPP Name: CDM_SSFL_140617_Lan**

***Method:* 8015M**
***Matrix:* SO**

QC Sample ID (Associated Samples)	*Compound*	*MS %R*	*MSD %R*	*%R Limits*	*RPD (Limits)*	*Affected Compounds*	*Flag*
FDG2-SL-630-SA8-SB-4.0-5.0MSD (FDG2-SL-630-SA8-SB-4.0-5.0)	EFH (C15-C20) EFH (C21-C30) EFH (C30-C40)	- - -	126 217 218	49.00-123.00 49.00-123.00 49.00-123.00	- 28 (20.00) 26 (20.00)	EFH (C15-C20) EFH (C21-C30) EFH (C30-C40)	J (all detects)
FDG2-SL-630-SA8-SB-4.0-5.0MS FDG2-SL-630-SA8-SB-4.0-5.0MSD (FDG2-SL-630-SA8-SB-4.0-5.0)	EFH (C21-C30) SG EFH (C30-C40) SG	46 47	- -	49.00-123.00 49.00-123.00	36 (20.00) 36 (20.00)	EFH (C21-C30) SG EFH (C30-C40) SG	J(all detects) UJ(all non-detects)

Lab Control Spike/Lab Control Spike Duplicate Outlier Report

Lab Reporting Batch ID: PH227 **Laboratory: LL**

EDD Filename: PH227 **eQAPP Name: CDM_SSFL_140617_Lan**

Method: 8015M
Matrix: SO

QC Sample ID (Associated Samples)	Compound	LCS %R	LCSD %R	%R Limits	RPD (Limits)	Affected Compounds	Flag
P41688AQ321840A (FDG2-SL-564-NBZ-SB-0.0-0.5 FDG2-SL-565-NBZ-SB-0.0-0.5 FDG2-SL-566-NBZ-SB-0.0-0.5 FDG2-SL-576-NBZ-SB-0.0-0.5 FDG2-SL-576-NBZ-SB-2.0-3.0 FDG2-SL-612-SA5D-SB-0.0-0.5 FDG2-SL-613-SA5D-SB-0.0-0.5 FDG2-SL-614-SA5D-SB-0.0-0.5 FDG2-SL-630-SA8-SB-0.0-0.5 FDG2-SL-630-SA8-SB-4.0-5.0 FDG2-SL-630-SA8-SB-7.0-8.0 FDG2-SL-930-SA8-SB-4.0-5.0)	EFH (C12-C14) SG EFH (C15-C20) SG EFH (C21-C30) SG EFH (C8-C11) SG	71 75 76 53	- - - -	76.00-115.00 78.00-127.00 77.00-127.00 60.00-115.00	- - - -	EFH (C12-C14) SG EFH (C15-C20) SG EFH (C21-C30) SG EFH (C8-C11) SG	J (all detects) UJ (all non-detects)

Method: 8270D SIM
Matrix: SO

QC Sample ID (Associated Samples)	Compound	LCS %R	LCSD %R	%R Limits	RPD (Limits)	Affected Compounds	Flag
P3LBLCSQ260734 (FDG2-SL-564-NBZ-SB-0.0-0.5)	N-NITROSODIMETHYLAMINE	68	-	71.00-124.00	-	N-NITROSODIMETHYLAMINE	J(all detects) UJ(all non-detects)
P9LALCSQ260036 (FDG2-SL-565-NBZ-SB-0.0-0.5)	CHRYSENE	114	-	78.00-111.00	-	CHRYSENE	J(all detects)

Field Duplicate RPD Report

Lab Reporting Batch ID: PH227 **Laboratory: LL**

EDD Filename: PH227 **eQAPP Name: CDM_SSFL_140617_Lan**

Method: 160.3M
Matrix: SO

Analyte	Concentration (%)		Sample RPD	eQAPP RPD	Flag
	FDG2-SL-630-SA8-SB-4.0-5.0	FDG2-SL-930-SA8-SB-4.0-5.0			
MOISTURE	8.5	8.8	3		Not Validated

Method: 8015M
Matrix: SO

Analyte	Concentration (mg/Kg)		Sample RPD	eQAPP RPD	Flag
	FDG2-SL-630-SA8-SB-4.0-5.0	FDG2-SL-930-SA8-SB-4.0-5.0			
EFH (C15-C20)	3.7	4.8	26	50.00	
EFH (C21-C30)	26	35	30	50.00	
EFH (C21-C30) SG	14	19	30	50.00	No Qualifiers Applied
EFH (C30-C40)	42	61	37	50.00	
EFH (C30-C40) SG	14	21	40	50.00	

Reporting Limit Outliers

Lab Reporting Batch ID: PH227 **Laboratory: LL**

EDD Filename: PH227 **eQAPP Name: CDM_SSFL_140617_Lan**

Method: 6010C

Matrix: SO

SampleID	Analyte	Lab Qual	Result	Reporting Limit	RL Type	Units	Flag
FDG2-SL-564-NBZ-SB-0.0-0.5	BERYLLIUM	J	0.580	1.01	PQL	mg/Kg	J (all detects)
	BORON	J	3.95	10.1	PQL	mg/Kg	
	MOLYBDENUM	J	0.298	2.02	PQL	mg/Kg	
	SODIUM	J	73.1	101	PQL	mg/Kg	
	TIN	J	2.76	10.1	PQL	mg/Kg	
	Zirconium	J	2.96	5.04	PQL	mg/Kg	
FDG2-SL-565-NBZ-SB-0.0-0.5	BERYLLIUM	J	0.519	0.980	PQL	mg/Kg	J (all detects)
	BORON	J	3.99	9.80	PQL	mg/Kg	
	MOLYBDENUM	J	0.345	1.96	PQL	mg/Kg	
	SODIUM	J	77.3	98.0	PQL	mg/Kg	
	TIN	J	2.64	9.80	PQL	mg/Kg	
	Zirconium	J	2.66	4.90	PQL	mg/Kg	
FDG2-SL-566-NBZ-SB-0.0-0.5	BERYLLIUM	J	0.436	0.976	PQL	mg/Kg	J (all detects)
	BORON	J	4.09	9.76	PQL	mg/Kg	
	MOLYBDENUM	J	0.382	1.95	PQL	mg/Kg	
	SODIUM	J	60.0	97.6	PQL	mg/Kg	
	TIN	J	2.34	9.76	PQL	mg/Kg	
	Zirconium	J	1.86	4.88	PQL	mg/Kg	

Method: 6020A

Matrix: SO

SampleID	Analyte	Lab Qual	Result	Reporting Limit	RL Type	Units	Flag
FDG2-SL-564-NBZ-SB-0.0-0.5	SILVER	J	0.0534	0.202	PQL	mg/Kg	J (all detects)
FDG2-SL-565-NBZ-SB-0.0-0.5	SILVER	J	0.0588	0.196	PQL	mg/Kg	J (all detects)
FDG2-SL-566-NBZ-SB-0.0-0.5	SELENIUM	J	0.324	0.390	PQL	mg/Kg	J (all detects)

Method: 8015M

Matrix: SO

SampleID	Analyte	Lab Qual	Result	Reporting Limit	RL Type	Units	Flag
FDG2-SL-564-NBZ-SB-0.0-0.5	EFH (C15-C20)	J	3.6	5.1	PQL	mg/Kg	J (all detects)
	EFH (C21-C30) SG	J	2.5	5.1	PQL	mg/Kg	
	EFH (C30-C40)	J	4.4	10	PQL	mg/Kg	
FDG2-SL-565-NBZ-SB-0.0-0.5	EFH (C12-C14)	J	2.4	5.1	PQL	mg/Kg	J (all detects)
	EFH (C21-C30) SG	J	3.3	5.1	PQL	mg/Kg	
	EFH (C30-C40) SG	J	4.8	10	PQL	mg/Kg	
FDG2-SL-566-NBZ-SB-0.0-0.5	EFH (C15-C20)	J	23	25	PQL	mg/Kg	J (all detects)
FDG2-SL-576-NBZ-SB-0.0-0.5	EFH (C15-C20)	J	2.8	5.1	PQL	mg/Kg	J (all detects)
	EFH (C21-C30) SG	J	3.1	5.1	PQL	mg/Kg	
FDG2-SL-612-SA5D-SB-0.0-0.5	EFH (C15-C20)	J	20	26	PQL	mg/Kg	J (all detects)
	EFH (C8-C11)	J	13	26	PQL	mg/Kg	
FDG2-SL-613-SA5D-SB-0.0-0.5	EFH (C21-C30) SG	J	2.2	5.2	PQL	mg/Kg	J (all detects)
	EFH (C30-C40) SG	J	4.2	10	PQL	mg/Kg	
	EFH (C8-C11)	J	2.1	5.2	PQL	mg/Kg	

Project Name and Number: 1204-002-001-AL - SSFL Area IV Phase 3

Reporting Limit Outliers

Lab Reporting Batch ID: PH227 **Laboratory: LL**

EDD Filename: PH227 **eQAPP Name: CDM_SSFL_140617_Lan**

Method: 8015M

Matrix: SO

SampleID	Analyte	Lab Qual	Result	Reporting Limit	RL Type	Units	Flag
FDG2-SL-614-SA5D-SB-0.0 -0.5	EFH (C15-C20)	J	2.1	5.1	PQL	mg/Kg	J (all detects)
	EFH (C21-C30) SG	J	2.8	5.1	PQL	mg/Kg	
	EFH (C30-C40) SG	J	8.2	10	PQL	mg/Kg	
FDG2-SL-630-SA8-SB-0.0-0.5	EFH (C15-C20)	J	3.3	5.2	PQL	mg/Kg	J (all detects)
	EFH (C21-C30) SG	J	3.3	5.2	PQL	mg/Kg	
	EFH (C30-C40) SG	J	5.2	10	PQL	mg/Kg	
FDG2-SL-630-SA8-SB-4.0-5.0	EFH (C15-C20)	J	3.7	5.5	PQL	mg/Kg	J (all detects)
FDG2-SL-630-SA8-SB-7.0-8.0	EFH (C15-C20)	J	3.4	5.4	PQL	mg/Kg	J (all detects)
FDG2-SL-930-SA8-SB-4.0-5.0	EFH (C15-C20)	J	4.8	5.5	PQL	mg/Kg	J (all detects)

Method: 8082A

Matrix: SO

SampleID	Analyte	Lab Qual	Result	Reporting Limit	RL Type	Units	Flag
FDG2-SL-565-NBZ-SB-0.0-0.5	AROCLOR 1254	J	7.5	17	PQL	ug/Kg	J (all detects)

Method: 8270D SIM

Matrix: SO

SampleID	Analyte	Lab Qual	Result	Reporting Limit	RL Type	Units	Flag
FDG2-SL-564-NBZ-SB-0.0-0.5	1-METHYLNAPHTHALENE	J	0.74	1.7	PQL	ug/Kg	J (all detects)
	2-METHYLNAPHTHALENE	J	1.1	1.7	PQL	ug/Kg	
	BENZO(B)FLUORANTHENE	J	1.6	1.7	PQL	ug/Kg	
	PHENANTHRENE	J	1.5	1.7	PQL	ug/Kg	
	PYRENE	J	1.4	1.7	PQL	ug/Kg	
FDG2-SL-565-NBZ-SB-0.0-0.5	2-METHYLNAPHTHALENE	J	0.95	1.7	PQL	ug/Kg	J (all detects)
	BENZO(A)PYRENE	J	0.81	1.7	PQL	ug/Kg	
	FLUORENE	J	1.3	1.7	PQL	ug/Kg	
	PHENANTHRENE	J	1.1	1.7	PQL	ug/Kg	
	PYRENE	J	1.5	1.7	PQL	ug/Kg	

LDC #: 32181F4

VALIDATION COMPLETENESS WORKSHEET

Date: 7/28/14

SDG #: PH227

ADR

Page: 1 of 1

Laboratory: Eurofins Lancaster Laboratories

Reviewer: pvl

2nd Reviewer: CL

METHOD: Metals (EPA SW 846 Method 6010C/6020A/7000)

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

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 6/10/14
II.	ICP/MS Tune	N	
III.	Calibration	—	
IV.	Blanks	A	No qualifying hits
V.	ICP Interference Check Sample (ICS) Analysis	—	
VI.	Matrix Spike Analysis	N	
VII.	Duplicate Sample Analysis	N	
VIII.	Laboratory Control Samples (LCS)	N	LCS
IX.	Internal Standard (ICP-MS)	N	
X.	Furnace Atomic Absorption QC	N	
XI.	ICP Serial Dilution	NA	
XII.	Sample Result Verification	N	
XIII.	Overall Assessment of Data	N	
XIV.	Field Duplicates	N	
XV	Field Blanks	SW	EB = EB2-061214 SDG# PH231 FB= FB-052114 SDG# PH191

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

1	FDG2-SL-564-NBZ-SB-0.0-0.5	11		21		31	
2	FDG2-SL-565-NBZ-SB-0.0-0.5	12		22		32	
3	FDG2-SL-566-NBZ-SB-0.0-0.5	13		23		33	
4		14		24		34	
5		15		25		35	
6		16		26		36	
7		17		27		37	
8		18		28		38	
9		19		29		39	
10		20		30		40	

Notes: _____

LDC #: 32181F4

VALIDATION FINDINGS WORKSHEET
Sample Specific Element Reference

Reviewer: MK
2nd reviewer: AV

All circled elements are applicable to each sample.

Sample ID	Matrix	Target Analyte List (TAL)
1-3	S	Al, Sb, As, Ba, Be, B, Cd, Ca, Cr, Co, Cu, Fe, Pb, Li, Mg, Mo, Mn, Hg, Ni, P, K, Se, Ag, Na, Sr, Tl, Sn, Ti, V, Zn, Zr
		Al, Sb, As, Ba, Be, B, Cd, Ca, Cr, Co, Cu, Fe, Pb, Li, Mg, Mo, Mn, Hg, Ni, P, K, Se, Ag, Na, Sr, Tl, Sn, Ti, V, Zn, Zr
		Al, Sb, As, Ba, Be, B, Cd, Ca, Cr, Co, Cu, Fe, Pb, Li, Mg, Mo, Mn, Hg, Ni, P, K, Se, Ag, Na, Sr, Tl, Sn, Ti, V, Zn, Zr
		Al, Sb, As, Ba, Be, B, Cd, Ca, Cr, Co, Cu, Fe, Pb, Li, Mg, Mo, Mn, Hg, Ni, P, K, Se, Ag, Na, Sr, Tl, Sn, Ti, V, Zn, Zr
		Al, Sb, As, Ba, Be, B, Cd, Ca, Cr, Co, Cu, Fe, Pb, Li, Mg, Mo, Mn, Hg, Ni, P, K, Se, Ag, Na, Sr, Tl, Sn, Ti, V, Zn, Zr
		Al, Sb, As, Ba, Be, B, Cd, Ca, Cr, Co, Cu, Fe, Pb, Li, Mg, Mo, Mn, Hg, Ni, P, K, Se, Ag, Na, Sr, Tl, Sn, Ti, V, Zn, Zr
		Al, Sb, As, Ba, Be, B, Cd, Ca, Cr, Co, Cu, Fe, Pb, Li, Mg, Mo, Mn, Hg, Ni, P, K, Se, Ag, Na, Sr, Tl, Sn, Ti, V, Zn, Zr
		Al, Sb, As, Ba, Be, B, Cd, Ca, Cr, Co, Cu, Fe, Pb, Li, Mg, Mo, Mn, Hg, Ni, P, K, Se, Ag, Na, Sr, Tl, Sn, Ti, V, Zn, Zr
		Al, Sb, As, Ba, Be, B, Cd, Ca, Cr, Co, Cu, Fe, Pb, Li, Mg, Mo, Mn, Hg, Ni, P, K, Se, Ag, Na, Sr, Tl, Sn, Ti, V, Zn, Zr
		Al, Sb, As, Ba, Be, B, Cd, Ca, Cr, Co, Cu, Fe, Pb, Li, Mg, Mo, Mn, Hg, Ni, P, K, Se, Ag, Na, Sr, Tl, Sn, Ti, V, Zn, Zr
		Al, Sb, As, Ba, Be, B, Cd, Ca, Cr, Co, Cu, Fe, Pb, Li, Mg, Mo, Mn, Hg, Ni, P, K, Se, Ag, Na, Sr, Tl, Sn, Ti, V, Zn, Zr
		Al, Sb, As, Ba, Be, B, Cd, Ca, Cr, Co, Cu, Fe, Pb, Li, Mg, Mo, Mn, Hg, Ni, P, K, Se, Ag, Na, Sr, Tl, Sn, Ti, V, Zn, Zr
		Al, Sb, As, Ba, Be, B, Cd, Ca, Cr, Co, Cu, Fe, Pb, Li, Mg, Mo, Mn, Hg, Ni, P, K, Se, Ag, Na, Sr, Tl, Sn, Ti, V, Zn, Zr
		Al, Sb, As, Ba, Be, B, Cd, Ca, Cr, Co, Cu, Fe, Pb, Li, Mg, Mo, Mn, Hg, Ni, P, K, Se, Ag, Na, Sr, Tl, Sn, Ti, V, Zn, Zr
		Al, Sb, As, Ba, Be, B, Cd, Ca, Cr, Co, Cu, Fe, Pb, Li, Mg, Mo, Mn, Hg, Ni, P, K, Se, Ag, Na, Sr, Tl, Sn, Ti, V, Zn, Zr
		Al, Sb, As, Ba, Be, B, Cd, Ca, Cr, Co, Cu, Fe, Pb, Li, Mg, Mo, Mn, Hg, Ni, P, K, Se, Ag, Na, Sr, Tl, Sn, Ti, V, Zn, Zr
		Al, Sb, As, Ba, Be, B, Cd, Ca, Cr, Co, Cu, Fe, Pb, Li, Mg, Mo, Mn, Hg, Ni, P, K, Se, Ag, Na, Sr, Tl, Sn, Ti, V, Zn, Zr
		Al, Sb, As, Ba, Be, B, Cd, Ca, Cr, Co, Cu, Fe, Pb, Li, Mg, Mo, Mn, Hg, Ni, P, K, Se, Ag, Na, Sr, Tl, Sn, Ti, V, Zn, Zr
		Al, Sb, As, Ba, Be, B, Cd, Ca, Cr, Co, Cu, Fe, Pb, Li, Mg, Mo, Mn, Hg, Ni, P, K, Se, Ag, Na, Sr, Tl, Sn, Ti, V, Zn, Zr
		Al, Sb, As, Ba, Be, B, Cd, Ca, Cr, Co, Cu, Fe, Pb, Li, Mg, Mo, Mn, Hg, Ni, P, K, Se, Ag, Na, Sr, Tl, Sn, Ti, V, Zn, Zr
		Al, Sb, As, Ba, Be, B, Cd, Ca, Cr, Co, Cu, Fe, Pb, Li, Mg, Mo, Mn, Hg, Ni, P, K, Se, Ag, Na, Sr, Tl, Sn, Ti, V, Zn, Zr
		Al, Sb, As, Ba, Be, B, Cd, Ca, Cr, Co, Cu, Fe, Pb, Li, Mg, Mo, Mn, Hg, Ni, P, K, Se, Ag, Na, Sr, Tl, Sn, Ti, V, Zn, Zr
		Al, Sb, As, Ba, Be, B, Cd, Ca, Cr, Co, Cu, Fe, Pb, Li, Mg, Mo, Mn, Hg, Ni, P, K, Se, Ag, Na, Sr, Tl, Sn, Ti, V, Zn, Zr
		Al, Sb, As, Ba, Be, B, Cd, Ca, Cr, Co, Cu, Fe, Pb, Li, Mg, Mo, Mn, Hg, Ni, P, K, Se, Ag, Na, Sr, Tl, Sn, Ti, V, Zn, Zr
		Al, Sb, As, Ba, Be, B, Cd, Ca, Cr, Co, Cu, Fe, Pb, Li, Mg, Mo, Mn, Hg, Ni, P, K, Se, Ag, Na, Sr, Tl, Sn, Ti, V, Zn, Zr
		Al, Sb, As, Ba, Be, B, Cd, Ca, Cr, Co, Cu, Fe, Pb, Li, Mg, Mo, Mn, Hg, Ni, P, K, Se, Ag, Na, Sr, Tl, Sn, Ti, V, Zn, Zr
		Al, Sb, As, Ba, Be, B, Cd, Ca, Cr, Co, Cu, Fe, Pb, Li, Mg, Mo, Mn, Hg, Ni, P, K, Se, Ag, Na, Sr, Tl, Sn, Ti, V, Zn, Zr
Analysis Method		
ICP		Al, Sb, As, Ba, Be, B, Cd, Ca, Cr, Co, Cu, Fe, Pb, Li, Mg, Mo, Mn, Hg, Ni, P, K, Se, Ag, Na, Sr, Tl, Sn, Ti, V, Zn, Zr
ICP-MS		Al, Sb, As, Ba, Be, B, Cd, Ca, Cr, Co, Cu, Fe, Pb, Li, Mg, Mo, Mn, Hg, Ni, P, K, Se, Ag, Na, Sr, Tl, Sn, Ti, V, Zn, Zr

Comments: Mercury by CVAA if performed

LDC #: 32181F4

VALIDATION FINDINGS WORKSHEET
Field Blanks

Reviewer: KK
2nd Reviewer:

METHOD: Trace Metals (EPA SW846 6010C/6020A/7471A)

Blank units: ug/l **Associated sample units:** mg/kg
Sampling date: 5/21/14 and 6/12/14 Soil factor applied 100
Field blank type: (circle one) Field Blank / Rinsate / Other: EB Associated Samples: All

Analyte	Blank ID	Blank ID	Sample Identification								
	EB2-061214 SDG: PH231	FB-052114 SDG#191	Action Limit	1	2	3					
Zr	9.7	11	5.5	2.96 ~~3.0~~	2.66 ~~2.7~~	1.86 ~~1.9~~					
Mn	1.3		0.65								

CIRCLED RESULTS WERE NOT QUALIFIED. ALL RESULTS NOT CIRCLED WERE QUALIFIED BY THE FOLLOWING STATEMENT:
Samples with analyte concentrations within five times the associated field blank concentration are listed above, these sample results were qualified as not detected, "U".

LABORATORY DATA CONSULTANTS, INC.

2701 Loker Ave. West, Suite 220, Carlsbad, CA 92010 Bus: 760-827-1100 Fax: 760-827-1099

CDM
555 17th Street, Suite 1100
Denver, CO 80202
ATTN: Mrs. Cherie Zakowski

August 12, 2014

SUBJECT: Santa Susana Field Laboratory, Trench, Data Validation

Dear Mrs. Zakowski,

Enclosed are the final validation reports for the fractions listed below. These SDGs were received on July 11, 2014. Attachment 1 is a summary of the samples that were reviewed for each analysis.

LDC Project #32184:

SDG #	Fraction
PH204 PH209 PH212 PH217	Semivolatiles, Semivolatiles (SIM), Chlorinated Pesticides, Polychlorinated Biphenyls, Metals, Herbicides, Total Petroleum Hydrocarbons as Gasoline, Total Petroleum Hydrocarbons as Extractables, Dioxins/Dibenzofurans, Explosives, Glycols, Terphenyls, Perchlorate, Hexavalent Chromium

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

- Quality Assurance Project Plan for Santa Susana Field Laboratory, RCRA Facility Investigation, Surficial Media Operable Unit, March 2009, Revision 4
- USEPA, Contract Laboratory Program National Functional Guidelines for Superfund Organic Methods Data Review, June 2008
- USEPA, Contract Laboratory Program National Functional Guidelines for Inorganic Data Review, January 2010
- USEPA, Contract Laboratory Program National Functional Guidelines for Polychlorinated Dioxins/Dibenzofurans Data Review, September 2005
- EPA 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; IIIB, November 2004; Update IV, February 2007

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

Sincerely,

Shauna McKellar
Project Manager/Chemist

3,694 pages-CD

Attachment 1

90/10 ADR/IV

LDC #32184 (CDM Federal Programs-Chantilly VA / Santa Susana Field Laboratory, Trench)

LDC	SDG#	DATE REC'D	(4) DATE DUE	SVOA (8270D)		SVOA (8270D -SIM)		Pest. (8081B)		PCBs (8082A)		Metals & Hg (SW846)		Herbs. (8151A)		TPH-G (8015M)		TPH-E (8015M)		Dioxins (1613B)		Expl. (8330A)		Glycols (8015B)		Ter phenyls (8015B)		CLO_4 (6850)		Cr(VI) (7199)									
Matrix:	Water/Soil			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	W	S
A	PH204	07/11/14	08/08/14	-	-	0	8	0	4	0	8	0	8	-	-	1	6	0	16	0	8	-	-	-	-	-	-	-	-	-	-								
B	PH209	07/11/14	08/08/14	0	5	0	5	0	5	0	5	0	5	0	5	1	4	0	10	0	5	0	5	0	5	0	5	0	5	0	5								
C	PH212	07/11/14	08/08/14	0	4	0	4	0	4	0	4	0	4	0	4	1	3	0	8	0	4	0	4	0	4	0	4	0	4	0	4								
D	PH217	07/11/14	08/08/14	1	4	1	4	1	4	1	4	1	4	1	4	2	2	2	8	1	4	1	4	1	4	1	4	1	4	1	4								
Total	T/SM			1	13	1	21	1	17	1	21	1	21	1	13	5	15	2	42	1	21	1	13	1	13	1	13	1	13	1	13	0	0	0	0	0	0	0	268

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

32184ST-Trench.wpd

Data Validation Report
Santa Susana Field Laboratory

Go Backs, Subgroup Trench

SDG: PH204

Prepared for

CDM Smith
555 17th Street, Suite 1100
Denver, CO 80202

Prepared by

Laboratory Data Consultants, Inc.
2701 Loker Ave West, Suite 220
Carlsbad, California 92010

August 11, 2014

INTRODUCTION

This Data Validation Report (DVR) presents Level III data validation results for samples collected on May 28, 2014. Data validation was performed in accordance with the Quality Assurance Project Plan (QAPP) for Santa Susana Field Laboratory (SSFL), RCRA Facility Investigation, Surficial Media Operable Unit (March 2009, Revision 4) and a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines (CLPNFGs) for Superfund Organic Methods Data Review (June 2008), Polychlorinated Dioxins/Dibenzofurans Data Review (September 2005) and for Inorganic Data Review (January 2010). Where specific guidance is not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following methods:

Semivolatiles (SVOCs) by Environmental Protection Agency (EPA) SW 846 Method 8270D utilizing Selective Ion Monitoring (SIM)
Pesticides by EPA SW 846 Method 8081B
Polychlorinated Biphenyls (PCBs) by EPA SW 846 Method 8082A
Metals by EPA SW 846 Method 6010C, 6020A, and 7471B.
Total Petroleum Hydrocarbons (TPH) as Gasoline by EPA SW 846 Method 8015M
TPH as Extractables with and without silica gel clean up by EPA SW 846 Method 8015M
Dioxins and Dibenzofurans by EPA Method 1613B

The sample identification and methods of analyses performed on each sample is presented in Attachment 1. Overall data qualification summary is presented in Attachment 2. Level III Automated Data Review outliers are presented in Enclosure I.

All sample results were subjected to Level III data validation, which comprises an evaluation of quality control (QC) summary results for sample holding times, initial and continuing calibration blanks (ICB/CCBs), surrogates, internal standards (dioxins and dibenzofurans only), matrix spike/matrix spike duplicates (MS/MSD), laboratory duplicate samples (DUPs), laboratory control sample/laboratory control sample duplicates (LCS/LCSD), ICP serial dilutions, method blanks, trip blanks, equipment blanks and field blanks. No samples in this SDG were subjected to Level IV evaluation.

Automated data review was performed on all QC summary results using the Automated Data Review (ADR) software program (LDC, 2013) with the exception of ICB/CCBs and ICP serial dilutions, which were validated manually. Quality assurance (QA)/QC criteria specified in the QAPP and CLPNFGs were incorporated with the program's reference library to assess compliance with project requirements.

The following are definitions of the data qualifiers:

U Indicates the compound or analyte was analyzed for but not detected.

J Indicates an estimated value.

R Quality control indicates the data is not usable.

NJ Presumptive evidence of presence of the compound at an estimated quantity.

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

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 QC criteria.

II. Initial Calibration

Initial Calibration data were not reviewed for level III.

III. Continuing Calibration

Continuing calibration data were not reviewed for level III.

IV. Blanks

Method blanks were performed at the required frequencies. No contaminant concentrations were detected in the method or preparation blanks with the exception of several blanks for metals and dioxins and dibenzofurans. The associated sample results were qualified as non-detected (U) due to method blank contamination as applicable. The sample results that were not detected or were significantly greater than the concentrations found in the associated blanks were not qualified. The details regarding the qualification of data are provided in Enclosure I.

No contaminant concentrations were detected in the initial or continuing calibration blanks.

V. Surrogate Spikes

Surrogates were added to all samples and blanks as required by the method. All surrogate recoveries (%R) were within QC limits with the exception of two samples for TPH as extractables with silica gel clean up. The associated sample results were qualified as detected estimated (J) or non-detected estimated (UJ) as applicable. The details regarding the qualification of data are provided in Enclosure I.

VI. ICP Interference Check Sample (ICS) Analysis

ICP interference check data were not reviewed for level III.

VII. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) samples were performed at the required frequency. Percent recoveries (%R) and relative percent differences (RPD) were within QC limits with the exception of one MS/MSD pair for metals in SDG PH209. The associated sample results were qualified as detected estimated (J) or non-detected estimated (UJ) as applicable. The details regarding the qualification of data are provided in Enclosure I of the DVR for SDG PH209.

VIII. Laboratory Duplicates Sample

Laboratory duplicates (DUP) sample analyses were reviewed for each matrix as applicable. Results were within QC limits.

IV. Laboratory Control Samples (LCS)

Laboratory control samples were reviewed for each matrix as applicable. Percent recoveries (%R) and relative percent differences (RPD) were within QC limits with the exception of two LCS/LCSD pairs for SVOCs and TPH as extractables with silica gel clean up. The associated sample results were qualified as detected estimated (J) or non-detected estimated (UJ) as applicable. The details regarding the qualification of data are provided in Enclosure I.

X. Internal Standards

Internal standards were reviewed for dioxins and dibenzofurans. Percent recoveries (%R) were within QC limits.

XI. ICP Serial Dilution

ICP serial dilution analysis was performed by the laboratory. The analysis criteria were met.

XII. Compound Quantitation

The laboratory reporting limits were evaluated. All laboratory reporting limits met the specified requirements.

All compounds reported below the RL as detected were qualified as follows:

Sample	Finding	Flag	A or P
All samples in SDG PH204	All compounds reported as detected below the RL.	J (all detects)	A

XIII. Field Duplicate Samples

No field duplicate samples were identified in this SDG.

XIV. Field Blank Samples

One trip blank was collected and analyzed for TPH as gasoline. No contaminant concentrations were detected in the trip blank.

One equipment blank (from SDG PH207) was collected and analyzed for SVOCs, pesticides, PCBs, metals, TPH as gasoline, TPH as extractables with and without silica gel clean up, and dioxins and dibenzofurans. The equipment blank had detections for SVOCs, metals, and dioxins and dibenzofurans. The associated sample results were qualified as non-detected (U) due to equipment blank contamination as applicable. The sample results that were not detected or were significantly greater than the concentrations found in the equipment blanks were not qualified. The equipment blank outlier reports are presented in Enclosure I.

One field blank (from SDG PH191) was collected and analyzed for SVOCs, PCBs, metals, TPH as gasoline, TPH as extractables with and without silica gel clean up, and dioxins and dibenzofurans. The field blank had detections for SVOCs, metals and dioxins and dibenzofurans. The associated sample results were qualified as non-detected (U) due to field blank contamination as applicable. The sample results that were not detected or were

significantly greater than the concentrations found in the field blank were not qualified. The field blank outlier reports are presented in Enclosure I.

XV. Overall Assessment of Data

The overall assessment of QA/QC data review by automated and manual validation of this sampling event met project requirements and analytical completeness levels with the exceptions noted in the above sections. The remainder of the data are deemed useable for the intended use.

Data flags are summarized and are presented as Attachment 2.

Attachment 1

Sample Cross Reference

Sample Cross Reference

Date Collected	Field Sample ID	Lab Sample ID	Sample Type	Prep Method	Analytical Method	Review Level
28-May-2014	TB3-052814	7480414	TB	5030B	8015M	III
28-May-2014	SL-693-SA5B-TR-3.0	7480413	N	3050B	6010C	III
28-May-2014	SL-693-SA5B-TR-3.0	7480413	N	3050B	6020A	III
28-May-2014	SL-693-SA5B-TR-3.0	7480413	N	3546	8015M	III
28-May-2014	SL-693-SA5B-TR-3.0	7480413	N	3546	8081B	III
28-May-2014	SL-693-SA5B-TR-3.0	7480413	N	3546	8082A	III
28-May-2014	SL-693-SA5B-TR-3.0	7480413	N	3546	8270D SIM	III
28-May-2014	SL-693-SA5B-TR-3.0	7480413	N	5035A	8015M	III
28-May-2014	SL-693-SA5B-TR-3.0	7480413	N	METHOD	1613B	III
28-May-2014	SL-693-SA5B-TR-3.0	7480413	N	METHOD	7471B	III
28-May-2014	SL-699-SA5B-TR-0.5	7480411	N	3050B	6010C	III
28-May-2014	SL-699-SA5B-TR-0.5	7480411	N	3050B	6020A	III
28-May-2014	SL-699-SA5B-TR-0.5	7480411	N	3546	8015M	III
28-May-2014	SL-699-SA5B-TR-0.5	7480411	N	3546	8081B	III
28-May-2014	SL-699-SA5B-TR-0.5	7480411	N	3546	8082A	III
28-May-2014	SL-699-SA5B-TR-0.5	7480411	N	3546	8270D SIM	III
28-May-2014	SL-699-SA5B-TR-0.5	7480411	N	METHOD	1613B	III
28-May-2014	SL-699-SA5B-TR-0.5	7480411	N	METHOD	7471B	III
28-May-2014	SL-699-SA5B-TR-3.0	7480412	N	3050B	6010C	III
28-May-2014	SL-699-SA5B-TR-3.0	7480412	N	3050B	6020A	III
28-May-2014	SL-699-SA5B-TR-3.0	7480412	N	3546	8015M	III
28-May-2014	SL-699-SA5B-TR-3.0	7480412	N	3546	8081B	III
28-May-2014	SL-699-SA5B-TR-3.0	7480412	N	3546	8082A	III
28-May-2014	SL-699-SA5B-TR-3.0	7480412	N	3546	8270D SIM	III
28-May-2014	SL-699-SA5B-TR-3.0	7480412	N	5035A	8015M	III
28-May-2014	SL-699-SA5B-TR-3.0	7480412	N	METHOD	1613B	III

III = EPA Level 3 Data Review *N = Normal Sample* *TB = Trip Blank* *MS = Matrix Spike*
IV = EPA Level 4 Data Validation *FD = Field Duplicate* *FB = Field Blank* *MSD = Matrix Spike Duplicate*

Sample Cross Reference

Date Collected	Field Sample ID	Lab Sample ID	Sample Type	Prep Method	Analytical Method	Review Level
28-May-2014	SL-699-SA5B-TR-3.0	7480412	N	METHOD	7471B	III
28-May-2014	SL-699-SA5B-TR-8.0	7480929	N	3050B	6010C	III
28-May-2014	SL-699-SA5B-TR-8.0	7480929	N	3050B	6020A	III
28-May-2014	SL-699-SA5B-TR-8.0	7480929	N	3546	8015M	III
28-May-2014	SL-699-SA5B-TR-8.0	7480929	N	3546	8081B	III
28-May-2014	SL-699-SA5B-TR-8.0	7480929	N	3546	8082A	III
28-May-2014	SL-699-SA5B-TR-8.0	7480929	N	3546	8270D SIM	III
28-May-2014	SL-699-SA5B-TR-8.0	7480929	N	5035A	8015M	III
28-May-2014	SL-699-SA5B-TR-8.0	7480929	N	METHOD	1613B	III
28-May-2014	SL-699-SA5B-TR-8.0	7480929	N	METHOD	7471B	III
28-May-2014	SL-529-SA5B-TR-0.5	7480415	N	3050B	6010C	III
28-May-2014	SL-529-SA5B-TR-0.5	7480415	N	3050B	6020A	III
28-May-2014	SL-529-SA5B-TR-0.5	7480415	N	3546	8015M	III
28-May-2014	SL-529-SA5B-TR-0.5	7480415	N	3546	8082A	III
28-May-2014	SL-529-SA5B-TR-0.5	7480415	N	3546	8270D SIM	III
28-May-2014	SL-529-SA5B-TR-0.5	7480415	N	METHOD	1613B	III
28-May-2014	SL-529-SA5B-TR-0.5	7480415	N	METHOD	7471B	III
28-May-2014	SL-529-SA5B-TR-2.0	7480416	N	3050B	6010C	III
28-May-2014	SL-529-SA5B-TR-2.0	7480416	N	3050B	6020A	III
28-May-2014	SL-529-SA5B-TR-2.0	7480416	N	3546	8015M	III
28-May-2014	SL-529-SA5B-TR-2.0	7480416	N	3546	8082A	III
28-May-2014	SL-529-SA5B-TR-2.0	7480416	N	3546	8270D SIM	III
28-May-2014	SL-529-SA5B-TR-2.0	7480416	N	5035A	8015M	III
28-May-2014	SL-529-SA5B-TR-2.0	7480416	N	METHOD	1613B	III
28-May-2014	SL-529-SA5B-TR-2.0	7480416	N	METHOD	7471B	III
28-May-2014	SL-529-SA5B-TR-3.0	7480417	N	3050B	6010C	III

III = EPA Level 3 Data Review *N = Normal Sample* *TB = Trip Blank* *MS = Matrix Spike*
IV = EPA Level 4 Data Validation *FD = Field Duplicate* *FB = Field Blank* *MSD = Matrix Spike Duplicate*

Sample Cross Reference

Date Collected	Field Sample ID	Lab Sample ID	Sample Type	Prep Method	Analytical Method	Review Level
28-May-2014	SL-529-SA5B-TR-3.0	7480417	N	3050B	6020A	III
28-May-2014	SL-529-SA5B-TR-3.0	7480417	N	3546	8015M	III
28-May-2014	SL-529-SA5B-TR-3.0	7480417	N	3546	8082A	III
28-May-2014	SL-529-SA5B-TR-3.0	7480417	N	3546	8270D SIM	III
28-May-2014	SL-529-SA5B-TR-3.0	7480417	N	5035A	8015M	III
28-May-2014	SL-529-SA5B-TR-3.0	7480417	N	METHOD	1613B	III
28-May-2014	SL-529-SA5B-TR-3.0	7480417	N	METHOD	7471B	III
28-May-2014	SL-529-SA5B-TR-11.0	7480418	N	3050B	6010C	III
28-May-2014	SL-529-SA5B-TR-11.0	7480418	N	3050B	6020A	III
28-May-2014	SL-529-SA5B-TR-11.0	7480418	N	3546	8015M	III
28-May-2014	SL-529-SA5B-TR-11.0	7480418	N	3546	8082A	III
28-May-2014	SL-529-SA5B-TR-11.0	7480418	N	3546	8270D SIM	III
28-May-2014	SL-529-SA5B-TR-11.0	7480418	N	5035A	8015M	III
28-May-2014	SL-529-SA5B-TR-11.0	7480418	N	METHOD	1613B	III
28-May-2014	SL-529-SA5B-TR-11.0	7480418	N	METHOD	7471B	III

III = EPA Level 3 Data Review *N = Normal Sample* *TB = Trip Blank* *MS = Matrix Spike*
IV = EPA Level 4 Data Validation *FD = Field Duplicate* *FB = Field Blank* *MSD = Matrix Spike Duplicate*

Attachment 2
Overall Data Qualification Summary

Data Qualifier Summary

Lab Reporting Batch ID: PH204 **Laboratory: LL**

EDD Filename: PrepPH204 **eQAPP Name: CDM_SSFL_140617_Lan**

Method Category: METALS

Method: 6010C **Matrix: SO**

Sample ID: **SL-529-SA5B-TR-0.5** ***Collected:*** **5/28/2014 1:05:00** ***Analysis Type:*** **RES** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
ANTIMONY	4.11	U	0.760	MDL	4.11	PQL	mg/Kg	UJ	Q
ARSENIC	3.56	J	0.719	MDL	4.11	PQL	mg/Kg	J	Z
BERYLLIUM	0.513	J	0.0688	MDL	1.03	PQL	mg/Kg	J	Z
BORON	3.58	J	0.862	MDL	10.3	PQL	mg/Kg	J	Z
CADMIUM	0.103	J	0.0780	MDL	1.03	PQL	mg/Kg	J	Z
CALCIUM	6820		3.43	MDL	20.5	PQL	mg/Kg	J	E
MAGNESIUM	4180		1.71	MDL	10.3	PQL	mg/Kg	J	E
MOLYBDENUM	0.463	J	0.175	MDL	2.05	PQL	mg/Kg	U	F
POTASSIUM	2780		8.56	MDL	103	PQL	mg/Kg	J	Q
TIN	2.84	J	0.226	MDL	10.3	PQL	mg/Kg	U	B
Zirconium	3.47	J	0.862	MDL	5.13	PQL	mg/Kg	U	F
PHOSPHORUS	389		2.97	MDL	10.3	PQL	mg/Kg	J	E, Q

Sample ID: **SL-529-SA5B-TR-11.0** ***Collected:*** **5/28/2014 2:30:00** ***Analysis Type:*** **REA** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
CALCIUM	2730		3.65	MDL	21.9	PQL	mg/Kg	J	E

Sample ID: **SL-529-SA5B-TR-11.0** ***Collected:*** **5/28/2014 2:30:00** ***Analysis Type:*** **RES** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
ANTIMONY	4.38	U	0.810	MDL	4.38	PQL	mg/Kg	UJ	Q
ARSENIC	3.13	J	0.766	MDL	4.38	PQL	mg/Kg	J	Z
BERYLLIUM	0.478	J	0.0733	MDL	1.09	PQL	mg/Kg	J	Z
BORON	3.29	J	0.919	MDL	10.9	PQL	mg/Kg	J	Z
MAGNESIUM	3530		1.83	MDL	10.9	PQL	mg/Kg	J	E
MOLYBDENUM	2.19	U	0.186	MDL	2.19	PQL	mg/Kg	U	F
PHOSPHORUS	310		3.16	MDL	10.9	PQL	mg/Kg	J	E, Q
POTASSIUM	2490		9.12	MDL	109	PQL	mg/Kg	J	Q
TIN	2.76	J	0.241	MDL	10.9	PQL	mg/Kg	U	B
Zirconium	2.54	J	0.919	MDL	5.47	PQL	mg/Kg	U	F

* denotes a non-reportable result

Project Name and Number: 1204-002-001-AL - SSFL Area IV Phase 3

Data Qualifier Summary

Lab Reporting Batch ID: PH204 **Laboratory: LL**

EDD Filename: PrepPH204 **eQAPP Name: CDM_SSFL_140617_Lan**

Method Category: METALS

Method: 6010C **Matrix: SO**

Sample ID: SL-529-SA5B-TR-2.0 **Collected: 5/28/2014 2:05:00** **Analysis Type: REA** **Dilution: 1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
CALCIUM	2390		3.58	MDL	21.5	PQL	mg/Kg	J	E

Sample ID: SL-529-SA5B-TR-2.0 **Collected: 5/28/2014 2:05:00** **Analysis Type: RES** **Dilution: 1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
ANTIMONY	4.29	U	0.794	MDL	4.29	PQL	mg/Kg	UJ	Q
BERYLLIUM	0.662	J	0.0719	MDL	1.07	PQL	mg/Kg	J	Z
BORON	2.98	J	0.901	MDL	10.7	PQL	mg/Kg	J	Z
MAGNESIUM	4060		1.79	MDL	10.7	PQL	mg/Kg	J	E
MOLYBDENUM	0.234	J	0.182	MDL	2.15	PQL	mg/Kg	U	F
PHOSPHORUS	334		3.10	MDL	10.7	PQL	mg/Kg	J	E, Q
POTASSIUM	3010		8.95	MDL	107	PQL	mg/Kg	J	Q
TIN	2.85	J	0.236	MDL	10.7	PQL	mg/Kg	U	B
Zirconium	3.39	J	0.901	MDL	5.36	PQL	mg/Kg	U	F

Sample ID: SL-529-SA5B-TR-3.0 **Collected: 5/28/2014 2:15:00** **Analysis Type: REA** **Dilution: 1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
ANTIMONY	4.16	U	0.769	MDL	4.16	PQL	mg/Kg	UJ	Q
BERYLLIUM	0.631	J	0.0696	MDL	1.04	PQL	mg/Kg	J	Z
BORON	0.940	J	0.873	MDL	10.4	PQL	mg/Kg	J	Z
CALCIUM	4250		3.47	MDL	20.8	PQL	mg/Kg	J	E
MAGNESIUM	4580		1.74	MDL	10.4	PQL	mg/Kg	J	E
PHOSPHORUS	351		3.00	MDL	10.4	PQL	mg/Kg	J	E, Q
POTASSIUM	3050		8.67	MDL	104	PQL	mg/Kg	J	Q
TIN	2.80	J	0.229	MDL	10.4	PQL	mg/Kg	U	B
Zirconium	3.03	J	0.873	MDL	5.20	PQL	mg/Kg	U	F

Sample ID: SL-529-SA5B-TR-3.0 **Collected: 5/28/2014 2:15:00** **Analysis Type: RES** **Dilution: 1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
MOLYBDENUM	2.08	U	0.177	MDL	2.08	PQL	mg/Kg	U	F

* denotes a non-reportable result

Project Name and Number: 1204-002-001-AL - SSFL Area IV Phase 3

Data Qualifier Summary

Lab Reporting Batch ID: PH204 **Laboratory: LL**

EDD Filename: PrepPH204 **eQAPP Name: CDM_SSFL_140617_Lan**

Method Category: METALS

Method: 6010C **Matrix: SO**

Sample ID: SL-693-SA5B-TR-3.0 **Collected: 5/28/2014 8:35:00** **Analysis Type: REA** **Dilution: 1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
CALCIUM	2390		3.43	MDL	20.6	PQL	mg/Kg	J	E

Sample ID: SL-693-SA5B-TR-3.0 **Collected: 5/28/2014 8:35:00** **Analysis Type: RES** **Dilution: 1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
ANTIMONY	4.11	U	0.761	MDL	4.11	PQL	mg/Kg	UJ	Q
BERYLLIUM	0.664	J	0.0689	MDL	1.03	PQL	mg/Kg	J	Z
BORON	3.13	J	0.864	MDL	10.3	PQL	mg/Kg	J	Z
MAGNESIUM	3750		1.72	MDL	10.3	PQL	mg/Kg	J	E
MOLYBDENUM	0.251	J	0.175	MDL	2.06	PQL	mg/Kg	U	F
PHOSPHORUS	254		2.97	MDL	10.3	PQL	mg/Kg	J	E, Q
POTASSIUM	2270		8.57	MDL	103	PQL	mg/Kg	J	Q
SODIUM	86.8	J	17.2	MDL	103	PQL	mg/Kg	J	Z
TIN	2.61	J	0.226	MDL	10.3	PQL	mg/Kg	U	B
Zirconium	3.25	J	0.864	MDL	5.14	PQL	mg/Kg	U	F

Sample ID: SL-699-SA5B-TR-0.5 **Collected: 5/28/2014 10:00:00** **Analysis Type: REA** **Dilution: 1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
CALCIUM	2020		3.31	MDL	19.8	PQL	mg/Kg	J	E

Sample ID: SL-699-SA5B-TR-0.5 **Collected: 5/28/2014 10:00:00** **Analysis Type: RES** **Dilution: 1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
ANTIMONY	3.96	U	0.733	MDL	3.96	PQL	mg/Kg	UJ	Q
BERYLLIUM	0.839	J	0.0663	MDL	0.990	PQL	mg/Kg	J	Z
CADMIUM	0.150	J	0.0753	MDL	0.990	PQL	mg/Kg	J	Z
MAGNESIUM	4390		1.65	MDL	9.90	PQL	mg/Kg	J	E
MOLYBDENUM	0.599	J	0.168	MDL	1.98	PQL	mg/Kg	U	F
PHOSPHORUS	421		2.86	MDL	9.90	PQL	mg/Kg	J	E, Q
POTASSIUM	3730		8.26	MDL	99.0	PQL	mg/Kg	J	Q
TIN	2.78	J	0.218	MDL	9.90	PQL	mg/Kg	U	B
Zirconium	5.03		0.832	MDL	4.95	PQL	mg/Kg	U	F

* denotes a non-reportable result

Project Name and Number: 1204-002-001-AL - SSFL Area IV Phase 3

Data Qualifier Summary

Lab Reporting Batch ID: PH204 **Laboratory: LL**

EDD Filename: PrepPH204 **eQAPP Name: CDM_SSFL_140617_Lan**

Method Category: **METALS**

Method: **6010C** ***Matrix:*** **SO**

Sample ID: **SL-699-SA5B-TR-3.0** ***Collected:*** **5/28/2014 10:30:00** ***Analysis Type:*** **RES** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
ANTIMONY	4.22	U	0.781	MDL	4.22	PQL	mg/Kg	UJ	Q
BORON	5.26	J	0.887	MDL	10.6	PQL	mg/Kg	J	Z
CALCIUM	2910		3.53	MDL	21.1	PQL	mg/Kg	J	E
MAGNESIUM	5560		1.76	MDL	10.6	PQL	mg/Kg	J	E
MOLYBDENUM	0.318	J	0.179	MDL	2.11	PQL	mg/Kg	U	F
PHOSPHORUS	308		3.05	MDL	10.6	PQL	mg/Kg	J	E, Q
POTASSIUM	3240		8.80	MDL	106	PQL	mg/Kg	J	Q
TIN	3.00	J	0.232	MDL	10.6	PQL	mg/Kg	U	B
Zirconium	4.82	J	0.887	MDL	5.28	PQL	mg/Kg	U	F

Sample ID: **SL-699-SA5B-TR-8.0** ***Collected:*** **5/28/2014 11:00:00** ***Analysis Type:*** **RES** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
ANTIMONY	4.20	U	0.777	MDL	4.20	PQL	mg/Kg	UJ	Q
BERYLLIUM	0.826	J	0.0703	MDL	1.05	PQL	mg/Kg	J	Z
BORON	1.23	J	0.882	MDL	10.5	PQL	mg/Kg	J	Z
CALCIUM	2700		3.51	MDL	21.0	PQL	mg/Kg	J	E
MAGNESIUM	5660		1.75	MDL	10.5	PQL	mg/Kg	J	E
MOLYBDENUM	2.10	U	0.178	MDL	2.10	PQL	mg/Kg	U	F
PHOSPHORUS	216		3.03	MDL	10.5	PQL	mg/Kg	J	E, Q
POTASSIUM	2240		8.75	MDL	105	PQL	mg/Kg	J	Q
TIN	3.08	J	0.231	MDL	10.5	PQL	mg/Kg	U	B
Zirconium	3.87	J	0.882	MDL	5.25	PQL	mg/Kg	U	F

Method Category: **METALS**

Method: **6020A** ***Matrix:*** **SO**

Sample ID: **SL-529-SA5B-TR-0.5** ***Collected:*** **5/28/2014 1:05:00** ***Analysis Type:*** **REA** ***Dilution:*** **2**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
SELENIUM	0.164	J	0.103	MDL	0.411	PQL	mg/Kg	J	Z

* denotes a non-reportable result

Project Name and Number: 1204-002-001-AL - SSFL Area IV Phase 3

Data Qualifier Summary

Lab Reporting Batch ID: PH204 **Laboratory: LL**

EDD Filename: PrepPH204 **eQAPP Name: CDM_SSFL_140617_Lan**

Method Category: **METALS**

Method: **6020A** ***Matrix:*** **SO**

Sample ID: **SL-529-SA5B-TR-0.5** ***Collected:*** **5/28/2014 1:05:00** ***Analysis Type:*** **RES** ***Dilution:*** **2**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
SILVER	0.0437	J	0.0267	MDL	0.205	PQL	mg/Kg	J	Z

Sample ID: **SL-529-SA5B-TR-11.0** ***Collected:*** **5/28/2014 2:30:00** ***Analysis Type:*** **REA** ***Dilution:*** **2**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
SELENIUM	0.119	J	0.109	MDL	0.438	PQL	mg/Kg	J	Z

Sample ID: **SL-529-SA5B-TR-11.0** ***Collected:*** **5/28/2014 2:30:00** ***Analysis Type:*** **RES** ***Dilution:*** **2**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
SILVER	0.0379	J	0.0284	MDL	0.219	PQL	mg/Kg	J	Z
THALLIUM	0.205	J	0.0328	MDL	0.219	PQL	mg/Kg	J	Z

Sample ID: **SL-529-SA5B-TR-2.0** ***Collected:*** **5/28/2014 2:05:00** ***Analysis Type:*** **REA** ***Dilution:*** **2**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
SELENIUM	0.126	J	0.107	MDL	0.429	PQL	mg/Kg	J	Z

Sample ID: **SL-529-SA5B-TR-3.0** ***Collected:*** **5/28/2014 2:15:00** ***Analysis Type:*** **REA** ***Dilution:*** **2**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
SELENIUM	0.130	J	0.104	MDL	0.416	PQL	mg/Kg	J	Z

Sample ID: **SL-529-SA5B-TR-3.0** ***Collected:*** **5/28/2014 2:15:00** ***Analysis Type:*** **RES** ***Dilution:*** **2**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
SILVER	0.0532	J	0.0270	MDL	0.208	PQL	mg/Kg	J	Z

Sample ID: **SL-693-SA5B-TR-3.0** ***Collected:*** **5/28/2014 8:35:00** ***Analysis Type:*** **REA** ***Dilution:*** **2**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
SELENIUM	0.148	J	0.103	MDL	0.411	PQL	mg/Kg	J	Z

* denotes a non-reportable result

Project Name and Number: 1204-002-001-AL - SSFL Area IV Phase 3

Data Qualifier Summary

Lab Reporting Batch ID: PH204 **Laboratory: LL**

EDD Filename: PrepPH204 **eQAPP Name: CDM_SSFL_140617_Lan**

Method Category: METALS

Method: 6020A **Matrix: SO**

Sample ID: **SL-699-SA5B-TR-0.5** *Collected:* **5/28/2014 10:00:00** *Analysis Type:* **REA** *Dilution:* **2**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
SELENIUM	0.247	J	0.0990	MDL	0.396	PQL	mg/Kg	J	Z

Sample ID: **SL-699-SA5B-TR-0.5** *Collected:* **5/28/2014 10:00:00** *Analysis Type:* **RES** *Dilution:* **2**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
SILVER	0.0356	J	0.0257	MDL	0.198	PQL	mg/Kg	J	Z

Sample ID: **SL-699-SA5B-TR-3.0** *Collected:* **5/28/2014 10:30:00** *Analysis Type:* **REA** *Dilution:* **2**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
SELENIUM	0.175	J	0.106	MDL	0.422	PQL	mg/Kg	J	Z

Sample ID: **SL-699-SA5B-TR-3.0** *Collected:* **5/28/2014 10:30:00** *Analysis Type:* **RES** *Dilution:* **2**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
SILVER	0.0581	J	0.0274	MDL	0.211	PQL	mg/Kg	J	Z

Sample ID: **SL-699-SA5B-TR-8.0** *Collected:* **5/28/2014 11:00:00** *Analysis Type:* **RES** *Dilution:* **2**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
SILVER	0.0668	J	0.0273	MDL	0.210	PQL	mg/Kg	J	Z

Method Category: METALS

Method: 7471B **Matrix: SO**

Sample ID: **SL-693-SA5B-TR-3.0** *Collected:* **5/28/2014 8:35:00** *Analysis Type:* **RES** *Dilution:* **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
MERCURY	0.0122	J	0.0101	MDL	0.0169	PQL	mg/Kg	J	Z

Sample ID: **SL-699-SA5B-TR-0.5** *Collected:* **5/28/2014 10:00:00** *Analysis Type:* **RES** *Dilution:* **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
MERCURY	0.0153	J	0.0098	MDL	0.0164	PQL	mg/Kg	J	Z

* denotes a non-reportable result

Project Name and Number: 1204-002-001-AL - SSFL Area IV Phase 3

Data Qualifier Summary

Lab Reporting Batch ID: PH204 **Laboratory: LL**

EDD Filename: PrepPH204 **eQAPP Name: CDM_SSFL_140617_Lan**

Method Category: SVOA

Method: 1613B **Matrix:** SO

Sample ID: SL-529-SA5B-TR-0.5 **Collected:** 5/28/2014 1:05:00 **Analysis Type:** RES **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
1,2,3,4,6,7,8-HPCDF	3.45	JB	0.0231	MDL	5.20	PQL	ng/Kg	J	Z
1,2,3,4,7,8,9-HPCDF	0.289	JBQ	0.0313	MDL	5.20	PQL	ng/Kg	U	B
1,2,3,4,7,8-HxCDD	0.275	JBQ	0.0652	MDL	5.20	PQL	ng/Kg	U	B
1,2,3,4,7,8-HXCDF	0.215	JB	0.0445	MDL	5.20	PQL	ng/Kg	U	B
1,2,3,6,7,8-HXCDD	0.943	JB	0.0679	MDL	5.20	PQL	ng/Kg	J	Z
1,2,3,6,7,8-HXCDF	0.279	JBQ	0.0445	MDL	5.20	PQL	ng/Kg	J	Z
1,2,3,7,8,9-HXCDD	0.969	JB	0.0614	MDL	5.20	PQL	ng/Kg	J	Z
1,2,3,7,8,9-HXCDF	0.205	JBQ	0.0442	MDL	5.20	PQL	ng/Kg	U	B
1,2,3,7,8-PECDD	0.263	JB	0.0489	MDL	5.20	PQL	ng/Kg	U	B
1,2,3,7,8-PECDF	0.177	JBQ	0.0254	MDL	5.20	PQL	ng/Kg	U	B
2,3,4,6,7,8-HXCDF	0.338	JB	0.0412	MDL	5.20	PQL	ng/Kg	U	B
2,3,4,7,8-PECDF	0.142	JB	0.0227	MDL	5.20	PQL	ng/Kg	U	B
2,3,7,8-TCDF	0.0494	JQ	0.0399	MDL	1.04	PQL	ng/Kg	J	Z
OCDF	8.53	JB	0.0351	MDL	10.4	PQL	ng/Kg	J	Z

Sample ID: SL-529-SA5B-TR-11.0 **Collected:** 5/28/2014 2:30:00 **Analysis Type:** RES **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
1,2,3,4,6,7,8-HPCDF	1.39	JB	0.0183	MDL	5.30	PQL	ng/Kg	J	Z
1,2,3,4,7,8,9-HPCDF	0.147	JBQ	0.0327	MDL	5.30	PQL	ng/Kg	U	B
1,2,3,4,7,8-HxCDD	0.0624	JBQ	0.0456	MDL	5.30	PQL	ng/Kg	U	B
1,2,3,4,7,8-HXCDF	0.116	JBQ	0.0457	MDL	5.30	PQL	ng/Kg	U	B
1,2,3,6,7,8-HXCDD	0.417	JBQ	0.0456	MDL	5.30	PQL	ng/Kg	U	B
1,2,3,6,7,8-HXCDF	0.162	JBQ	0.0392	MDL	5.30	PQL	ng/Kg	U	B
1,2,3,7,8,9-HXCDD	0.422	JBQ	0.0427	MDL	5.30	PQL	ng/Kg	J	Z
1,2,3,7,8,9-HXCDF	0.146	JB	0.0425	MDL	5.30	PQL	ng/Kg	U	B
1,2,3,7,8-PECDF	0.169	JB	0.0188	MDL	5.30	PQL	ng/Kg	U	B
2,3,4,6,7,8-HXCDF	0.116	JBQ	0.0419	MDL	5.30	PQL	ng/Kg	U	B
2,3,4,7,8-PECDF	0.103	JB	0.0187	MDL	5.30	PQL	ng/Kg	U	B
2,3,7,8-TCDD	0.0435	JBQ	0.0420	MDL	1.06	PQL	ng/Kg	U	B
2,3,7,8-TCDF	0.0457	JQ	0.0350	MDL	1.06	PQL	ng/Kg	J	Z
OCDF	3.83	JB	0.0391	MDL	10.6	PQL	ng/Kg	J	Z

* denotes a non-reportable result

Project Name and Number: 1204-002-001-AL - SSFL Area IV Phase 3

Data Qualifier Summary

Lab Reporting Batch ID: PH204 **Laboratory: LL**

EDD Filename: PrepPH204 **eQAPP Name: CDM_SSFL_140617_Lan**

Method Category: SVOA

Method: 1613B **Matrix: SO**

Sample ID: **SL-529-SA5B-TR-2.0** ***Collected:*** **5/28/2014 2:05:00** ***Analysis Type:*** **RES** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
1,2,3,4,6,7,8-HPCDF	0.674	JBQ	0.0212	MDL	5.41	PQL	ng/Kg	J	Z
1,2,3,4,7,8,9-HPCDF	0.145	JBQ	0.0479	MDL	5.41	PQL	ng/Kg	U	B
1,2,3,4,7,8-HxCDD	0.0529	JB	0.0435	MDL	5.41	PQL	ng/Kg	U	B
1,2,3,4,7,8-HXCDF	0.134	JBQ	0.0401	MDL	5.41	PQL	ng/Kg	U	B
1,2,3,6,7,8-HXCDD	0.402	JB	0.0443	MDL	5.41	PQL	ng/Kg	U	B
1,2,3,6,7,8-HXCDF	0.112	JBQ	0.0341	MDL	5.41	PQL	ng/Kg	U	B
1,2,3,7,8,9-HXCDD	0.319	JBQ	0.0415	MDL	5.41	PQL	ng/Kg	U	B
1,2,3,7,8,9-HXCDF	0.227	JBQ	0.0451	MDL	5.41	PQL	ng/Kg	U	B
1,2,3,7,8-PECDD	0.0879	JB	0.0513	MDL	5.41	PQL	ng/Kg	U	B
1,2,3,7,8-PECDF	0.354	JB	0.0247	MDL	5.41	PQL	ng/Kg	J	Z
2,3,4,6,7,8-HXCDF	0.119	JB	0.0373	MDL	5.41	PQL	ng/Kg	U	B
2,3,4,7,8-PECDF	0.0958	JBQ	0.0253	MDL	5.41	PQL	ng/Kg	U	B
OCDF	1.57	JB	0.0512	MDL	10.8	PQL	ng/Kg	J	Z

Sample ID: **SL-529-SA5B-TR-3.0** ***Collected:*** **5/28/2014 2:15:00** ***Analysis Type:*** **RES** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
1,2,3,4,6,7,8-HPCDF	2.28	JB	0.0159	MDL	5.20	PQL	ng/Kg	J	Z
1,2,3,4,7,8,9-HPCDF	0.333	JB	0.0288	MDL	5.20	PQL	ng/Kg	U	B
1,2,3,4,7,8-HxCDD	0.102	JB	0.0493	MDL	5.20	PQL	ng/Kg	U	B
1,2,3,4,7,8-HXCDF	0.278	JBQ	0.0431	MDL	5.20	PQL	ng/Kg	U	B
1,2,3,6,7,8-HXCDD	0.623	JBQ	0.0489	MDL	5.20	PQL	ng/Kg	J	Z
1,2,3,6,7,8-HXCDF	0.191	JB	0.0367	MDL	5.20	PQL	ng/Kg	U	B
1,2,3,7,8,9-HXCDD	0.459	JBQ	0.0450	MDL	5.20	PQL	ng/Kg	J	Z
1,2,3,7,8,9-HXCDF	0.178	JBQ	0.0397	MDL	5.20	PQL	ng/Kg	U	B
1,2,3,7,8-PECDD	0.125	JBQ	0.0458	MDL	5.20	PQL	ng/Kg	U	B
1,2,3,7,8-PECDF	0.206	JB	0.0196	MDL	5.20	PQL	ng/Kg	U	B
2,3,4,6,7,8-HXCDF	0.201	JBQ	0.0393	MDL	5.20	PQL	ng/Kg	U	B
2,3,4,7,8-PECDF	0.162	JB	0.0195	MDL	5.20	PQL	ng/Kg	U	B
2,3,7,8-TCDD	0.0545	JB	0.0477	MDL	1.04	PQL	ng/Kg	U	B
2,3,7,8-TCDF	0.0527	J	0.0378	MDL	1.04	PQL	ng/Kg	J	Z
OCDF	5.73	JB	0.0359	MDL	10.4	PQL	ng/Kg	J	Z

* denotes a non-reportable result

Project Name and Number: 1204-002-001-AL - SSFL Area IV Phase 3

Data Qualifier Summary

Lab Reporting Batch ID: PH204 **Laboratory: LL**

EDD Filename: PrepPH204 **eQAPP Name: CDM_SSFL_140617_Lan**

Method Category: SVOA

Method: 1613B **Matrix: SO**

Sample ID: SL-693-SA5B-TR-3.0 **Collected: 5/28/2014 8:35:00** **Analysis Type: RES** **Dilution: 1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
1,2,3,4,6,7,8-HPCDD	2.18	JB	0.0318	MDL	5.13	PQL	ng/Kg	J	Z
1,2,3,4,6,7,8-HPCDF	0.524	JB	0.0151	MDL	5.13	PQL	ng/Kg	J	Z
1,2,3,4,7,8,9-HPCDF	0.0886	JBQ	0.0274	MDL	5.13	PQL	ng/Kg	U	B
1,2,3,4,7,8-HxCDD	0.0454	JBQ	0.0320	MDL	5.13	PQL	ng/Kg	U	B
1,2,3,4,7,8-HXCDF	0.0775	JBQ	0.0343	MDL	5.13	PQL	ng/Kg	U	B
1,2,3,6,7,8-HXCDD	0.175	JBQ	0.0330	MDL	5.13	PQL	ng/Kg	U	B
1,2,3,6,7,8-HXCDF	0.100	JBQ	0.0290	MDL	5.13	PQL	ng/Kg	U	B
1,2,3,7,8,9-HXCDD	0.248	JBQ	0.0288	MDL	5.13	PQL	ng/Kg	U	B
1,2,3,7,8,9-HXCDF	0.277	JBQ	0.0318	MDL	5.13	PQL	ng/Kg	U	B
1,2,3,7,8-PECDD	0.0696	JBQ	0.0396	MDL	5.13	PQL	ng/Kg	U	B
1,2,3,7,8-PECDF	0.139	JBQ	0.0218	MDL	5.13	PQL	ng/Kg	U	B
2,3,4,6,7,8-HXCDF	0.149	JBQ	0.0323	MDL	5.13	PQL	ng/Kg	U	B
2,3,4,7,8-PECDF	0.108	JBQ	0.0218	MDL	5.13	PQL	ng/Kg	U	B
OCDF	1.03	JBQ	0.0373	MDL	10.3	PQL	ng/Kg	U	B

Sample ID: SL-699-SA5B-TR-0.5 **Collected: 5/28/2014 10:00:00** **Analysis Type: RES** **Dilution: 1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
1,2,3,4,7,8,9-HPCDF	0.569	JB	0.0376	MDL	4.99	PQL	ng/Kg	U	B
1,2,3,4,7,8-HxCDD	0.360	JB	0.0577	MDL	4.99	PQL	ng/Kg	J	Z
1,2,3,4,7,8-HXCDF	0.456	JB	0.0532	MDL	4.99	PQL	ng/Kg	U	B
1,2,3,6,7,8-HXCDD	1.53	JB	0.0627	MDL	4.99	PQL	ng/Kg	J	Z
1,2,3,6,7,8-HXCDF	0.517	JBQ	0.0502	MDL	4.99	PQL	ng/Kg	J	Z
1,2,3,7,8,9-HXCDD	0.998	JB	0.0582	MDL	4.99	PQL	ng/Kg	J	Z
1,2,3,7,8,9-HXCDF	0.982	JB	0.0516	MDL	4.99	PQL	ng/Kg	J	Z
1,2,3,7,8-PECDD	0.359	JBQ	0.0578	MDL	4.99	PQL	ng/Kg	U	B
1,2,3,7,8-PECDF	0.891	JB	0.0382	MDL	4.99	PQL	ng/Kg	J	Z
2,3,4,6,7,8-HXCDF	0.475	JB	0.0512	MDL	4.99	PQL	ng/Kg	J	Z
2,3,4,7,8-PECDF	0.640	JB	0.0368	MDL	4.99	PQL	ng/Kg	U	B
2,3,7,8-TCDD	0.0931	JBQ	0.0443	MDL	0.999	PQL	ng/Kg	U	B
2,3,7,8-TCDF	0.162	JQ	0.0667	MDL	0.999	PQL	ng/Kg	J	Z

* denotes a non-reportable result

Project Name and Number: 1204-002-001-AL - SSFL Area IV Phase 3

Data Qualifier Summary

Lab Reporting Batch ID: PH204 **Laboratory: LL**

EDD Filename: PrepPH204 **eQAPP Name: CDM_SSFL_140617_Lan**

Method Category: SVOA

Method: 1613B **Matrix:** SO

Sample ID: SL-699-SA5B-TR-3.0 **Collected:** 5/28/2014 10:30:00 **Analysis Type:** RES **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
1,2,3,4,6,7,8-HPCDF	1.72	JB	0.0173	MDL	5.13	PQL	ng/Kg	J	Z
1,2,3,4,7,8,9-HPCDF	0.273	JB	0.0347	MDL	5.13	PQL	ng/Kg	U	B
1,2,3,4,7,8-HxCDD	0.194	JBQ	0.0422	MDL	5.13	PQL	ng/Kg	U	B
1,2,3,4,7,8-HXCDF	0.206	JB	0.0421	MDL	5.13	PQL	ng/Kg	U	B
1,2,3,6,7,8-HXCDD	0.458	JBQ	0.0447	MDL	5.13	PQL	ng/Kg	J	Z
1,2,3,6,7,8-HXCDF	0.129	JBQ	0.0369	MDL	5.13	PQL	ng/Kg	U	B
1,2,3,7,8,9-HXCDD	0.438	JBQ	0.0441	MDL	5.13	PQL	ng/Kg	J	Z
1,2,3,7,8,9-HXCDF	0.222	JB	0.0444	MDL	5.13	PQL	ng/Kg	U	B
1,2,3,7,8-PECDD	0.210	JB	0.0432	MDL	5.13	PQL	ng/Kg	U	B
1,2,3,7,8-PECDF	0.294	JBQ	0.0238	MDL	5.13	PQL	ng/Kg	U	B
2,3,4,6,7,8-HXCDF	0.180	JBQ	0.0399	MDL	5.13	PQL	ng/Kg	U	B
2,3,4,7,8-PECDF	0.260	JB	0.0247	MDL	5.13	PQL	ng/Kg	U	B
2,3,7,8-TCDD	0.0741	JBQ	0.0491	MDL	1.03	PQL	ng/Kg	U	B
2,3,7,8-TCDF	0.108	J	0.0445	MDL	1.03	PQL	ng/Kg	J	Z
OCDF	5.64	JB	0.0405	MDL	10.3	PQL	ng/Kg	J	Z

Sample ID: SL-699-SA5B-TR-8.0 **Collected:** 5/28/2014 11:00:00 **Analysis Type:** RES **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
1,2,3,4,6,7,8-HPCDD	0.128	JBQ	0.0207	MDL	5.33	PQL	ng/Kg	U	B
1,2,3,4,6,7,8-HPCDF	0.0529	JBQ	0.00633	MDL	5.33	PQL	ng/Kg	U	B
1,2,3,4,7,8,9-HPCDF	0.0406	JBQ	0.0170	MDL	5.33	PQL	ng/Kg	U	B
1,2,3,4,7,8-HxCDD	0.0350	JBQ	0.0221	MDL	5.33	PQL	ng/Kg	U	B
1,2,3,4,7,8-HXCDF	0.0385	JBQ	0.0205	MDL	5.33	PQL	ng/Kg	U	B
1,2,3,6,7,8-HXCDD	0.0319	JBQ	0.0226	MDL	5.33	PQL	ng/Kg	U	B
1,2,3,6,7,8-HXCDF	0.0439	JBQ	0.0175	MDL	5.33	PQL	ng/Kg	U	B
1,2,3,7,8,9-HXCDD	0.0661	JBQ	0.0231	MDL	5.33	PQL	ng/Kg	U	B
1,2,3,7,8,9-HXCDF	0.0885	JBQ	0.0262	MDL	5.33	PQL	ng/Kg	U	B
1,2,3,7,8-PECDD	0.0776	JBQ	0.0349	MDL	5.33	PQL	ng/Kg	U	B
1,2,3,7,8-PECDF	0.0726	JBQ	0.0162	MDL	5.33	PQL	ng/Kg	U	B
2,3,4,6,7,8-HXCDF	0.0557	JBQ	0.0194	MDL	5.33	PQL	ng/Kg	U	B
2,3,4,7,8-PECDF	0.0439	JBQ	0.0178	MDL	5.33	PQL	ng/Kg	U	B
2,3,7,8-TCDD	0.0563	JBQ	0.0398	MDL	1.07	PQL	ng/Kg	U	B
OCDD	0.667	JBQ	0.0283	MDL	10.7	PQL	ng/Kg	U	B

* denotes a non-reportable result

Project Name and Number: 1204-002-001-AL - SSFL Area IV Phase 3

Data Qualifier Summary

Lab Reporting Batch ID: PH204 **Laboratory: LL**

EDD Filename: PrepPH204 **eQAPP Name: CDM_SSFL_140617_Lan**

Method Category: SVOA

Method: 1613B **Matrix: SO**

Sample ID: SL-699-SA5B-TR-8.0 **Collected: 5/28/2014 11:00:00** **Analysis Type: RES** **Dilution: 1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
OCDF	0.261	JBQ	0.0548	MDL	10.7	PQL	ng/Kg	U	B

Method Category: SVOA

Method: 8015M **Matrix: SO**

Sample ID: SL-529-SA5B-TR-0.5 **Collected: 5/28/2014 1:05:00** **Analysis Type: REA** **Dilution: 1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
EFH (C12-C14) SG	5.2	U	2.1	MDL	5.2	PQL	mg/Kg	UJ	L
EFH (C15-C20) SG	5.2	U	2.1	MDL	5.2	PQL	mg/Kg	UJ	L
EFH (C21-C30) SG	18		2.1	MDL	5.2	PQL	mg/Kg	J	L
EFH (C8-C11) SG	5.2	U	2.1	MDL	5.2	PQL	mg/Kg	UJ	L

Sample ID: SL-529-SA5B-TR-11.0 **Collected: 5/28/2014 2:30:00** **Analysis Type: DL** **Dilution: 2**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
EFH (C15-C20)	7.9	J	4.4	MDL	11	PQL	mg/Kg	J	Z

Sample ID: SL-529-SA5B-TR-11.0 **Collected: 5/28/2014 2:30:00** **Analysis Type: REA** **Dilution: 1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
EFH (C12-C14) SG	5.5	U	2.2	MDL	5.5	PQL	mg/Kg	UJ	L
EFH (C15-C20) SG	4.6	J	2.2	MDL	5.5	PQL	mg/Kg	J	Z, L
EFH (C21-C30) SG	28		2.2	MDL	5.5	PQL	mg/Kg	J	L
EFH (C8-C11) SG	5.5	U	2.2	MDL	5.5	PQL	mg/Kg	UJ	L

Sample ID: SL-529-SA5B-TR-2.0 **Collected: 5/28/2014 2:05:00** **Analysis Type: REA2** **Dilution: 1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
EFH (C12-C14) SG	5.4	U	2.2	MDL	5.4	PQL	mg/Kg	UJ	L, S
EFH (C15-C20) SG	5.4	U	2.2	MDL	5.4	PQL	mg/Kg	UJ	L, S
EFH (C21-C30) SG	3.2	J	2.2	MDL	5.4	PQL	mg/Kg	J	Z, L, S
EFH (C30-C40) SG	5.2	J	4.3	MDL	11	PQL	mg/Kg	J	Z, S
EFH (C8-C11) SG	5.4	U	2.2	MDL	5.4	PQL	mg/Kg	UJ	L, S

* denotes a non-reportable result

Project Name and Number: 1204-002-001-AL - SSFL Area IV Phase 3

Data Qualifier Summary

Lab Reporting Batch ID: PH204 **Laboratory: LL**

EDD Filename: PrepPH204 **eQAPP Name: CDM_SSFL_140617_Lan**

Method Category: SVOA

Method: 8015M **Matrix: SO**

Sample ID: SL-529-SA5B-TR-3.0 **Collected: 5/28/2014 2:15:00** **Analysis Type: REA2** **Dilution: 1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
EFH (C12-C14) SG	5.4	U	2.1	MDL	5.4	PQL	mg/Kg	UJ	L
EFH (C15-C20) SG	5.4	U	2.1	MDL	5.4	PQL	mg/Kg	UJ	L
EFH (C21-C30) SG	7.7		2.1	MDL	5.4	PQL	mg/Kg	J	L
EFH (C8-C11) SG	5.4	U	2.1	MDL	5.4	PQL	mg/Kg	UJ	L

Sample ID: SL-693-SA5B-TR-3.0 **Collected: 5/28/2014 8:35:00** **Analysis Type: REA2** **Dilution: 1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
EFH (C12-C14) SG	5.2	U	2.1	MDL	5.2	PQL	mg/Kg	UJ	L, S
EFH (C15-C20) SG	5.2	U	2.1	MDL	5.2	PQL	mg/Kg	UJ	L, S
EFH (C21-C30) SG	5.2	U	2.1	MDL	5.2	PQL	mg/Kg	UJ	L, S
EFH (C30-C40) SG	10	U	4.2	MDL	10	PQL	mg/Kg	UJ	S
EFH (C8-C11) SG	5.2	U	2.1	MDL	5.2	PQL	mg/Kg	UJ	L, S

Sample ID: SL-699-SA5B-TR-0.5 **Collected: 5/28/2014 10:00:00** **Analysis Type: REA** **Dilution: 1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
EFH (C12-C14) SG	4.6	J	2.1	MDL	5.1	PQL	mg/Kg	J	Z, L
EFH (C15-C20) SG	16		2.1	MDL	5.1	PQL	mg/Kg	J	L
EFH (C21-C30) SG	23		2.1	MDL	5.1	PQL	mg/Kg	J	L
EFH (C8-C11) SG	5.6		2.1	MDL	5.1	PQL	mg/Kg	J	L

Sample ID: SL-699-SA5B-TR-3.0 **Collected: 5/28/2014 10:30:00** **Analysis Type: REA** **Dilution: 1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
EFH (C15-C20)	3.3	J	2.1	MDL	5.3	PQL	mg/Kg	J	Z

Sample ID: SL-699-SA5B-TR-3.0 **Collected: 5/28/2014 10:30:00** **Analysis Type: REA2** **Dilution: 1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
EFH (C12-C14) SG	5.3	U	2.1	MDL	5.3	PQL	mg/Kg	UJ	L
EFH (C15-C20) SG	5.3	U	2.1	MDL	5.3	PQL	mg/Kg	UJ	L
EFH (C21-C30) SG	5.3	U	2.1	MDL	5.3	PQL	mg/Kg	UJ	L
EFH (C8-C11) SG	5.3	U	2.1	MDL	5.3	PQL	mg/Kg	UJ	L

* denotes a non-reportable result

Project Name and Number: 1204-002-001-AL - SSFL Area IV Phase 3

Data Qualifier Summary

Lab Reporting Batch ID: PH204 **Laboratory: LL**

EDD Filename: PrepPH204 **eQAPP Name: CDM_SSFL_140617_Lan**

Method Category: SVOA

Method: 8015M **Matrix: SO**

Sample ID: **SL-699-SA5B-TR-8.0** *Collected:* **5/28/2014 11:00:00** *Analysis Type:* **REA2** *Dilution:* **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
EFH (C12-C14) SG	5.4	U	2.1	MDL	5.4	PQL	mg/Kg	UJ	L
EFH (C15-C20) SG	5.4	U	2.1	MDL	5.4	PQL	mg/Kg	UJ	L
EFH (C21-C30) SG	5.4	U	2.1	MDL	5.4	PQL	mg/Kg	UJ	L
EFH (C8-C11) SG	5.4	U	2.1	MDL	5.4	PQL	mg/Kg	UJ	L

Method Category: SVOA

Method: 8081B **Matrix: SO**

Sample ID: **SL-693-SA5B-TR-3.0** *Collected:* **5/28/2014 8:35:00** *Analysis Type:* **RES** *Dilution:* **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
4,4'-DDT	0.69	J	0.36	MDL	1.8	PQL	ug/Kg	J	Z

Sample ID: **SL-699-SA5B-TR-0.5** *Collected:* **5/28/2014 10:00:00** *Analysis Type:* **RES** *Dilution:* **5**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
4,4'-DDE	1.8	J	1.7	MDL	8.8	PQL	ug/Kg	J	Z
4,4'-DDT	5.5	J	1.8	MDL	8.8	PQL	ug/Kg	J	Z
ENDOSULFAN I	2.7	J	1.1	MDL	4.3	PQL	ug/Kg	J	Z
ENDOSULFAN SULFATE	4.6	J	1.7	MDL	8.8	PQL	ug/Kg	J	Z
HEPTACHLOR	1.2	J	0.88	MDL	4.3	PQL	ug/Kg	J	Z

Sample ID: **SL-699-SA5B-TR-3.0** *Collected:* **5/28/2014 10:30:00** *Analysis Type:* **RES** *Dilution:* **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
ENDOSULFAN I	0.39	J	0.23	MDL	0.88	PQL	ug/Kg	J	Z
ENDOSULFAN SULFATE	1.1	J	0.35	MDL	1.8	PQL	ug/Kg	J	Z
HEPTACHLOR	0.54	J	0.18	MDL	0.88	PQL	ug/Kg	J	Z
METHOXYCHLOR	3.4	J	1.8	MDL	7.1	PQL	ug/Kg	J	Z

* denotes a non-reportable result

Project Name and Number: 1204-002-001-AL - SSFL Area IV Phase 3

Data Qualifier Summary

Lab Reporting Batch ID: PH204 **Laboratory: LL**

EDD Filename: PrepPH204 **eQAPP Name: CDM_SSFL_140617_Lan**

Method Category: SVOA

Method: 8082A **Matrix: SO**

Sample ID: **SL-529-SA5B-TR-0.5** *Collected:* **5/28/2014 1:05:00** *Analysis Type:* **RES** *Dilution:* **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
AROCLOR 1254	7.6	J	4.6	MDL	18	PQL	ug/Kg	J	Z

Sample ID: **SL-529-SA5B-TR-2.0** *Collected:* **5/28/2014 2:05:00** *Analysis Type:* **RES** *Dilution:* **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
AROCLOR 1254	8.6	J	4.8	MDL	18	PQL	ug/Kg	J	Z
AROCLOR 1260	6.9	J	4.2	MDL	18	PQL	ug/Kg	J	Z

Method Category: SVOA

Method: 8270D SIM **Matrix: SO**

Sample ID: **SL-529-SA5B-TR-0.5** *Collected:* **5/28/2014 1:05:00** *Analysis Type:* **RES-BASE/NEUTRAL** *Dilution:* **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
BENZO(E)PYRENE	4.3	J	3.5	MDL	18	PQL	ug/Kg	J	Z, L
BIS(2-ETHYLHEXYL)PHTHALATE	16	J	6.3	MDL	19	PQL	ug/Kg	J	Z
Butylbenzylphthalate	7.3	J	6.3	MDL	19	PQL	ug/Kg	J	Z
DIBENZO(A,H)ANTHRACENE	0.97	J	0.70	MDL	1.7	PQL	ug/Kg	J	Z
Di-n-octylphthalate	7.9	J	6.3	MDL	19	PQL	ug/Kg	J	Z

Sample ID: **SL-529-SA5B-TR-11.0** *Collected:* **5/28/2014 2:30:00** *Analysis Type:* **RES-BASE/NEUTRAL** *Dilution:* **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
1-METHYLNAPHTHALENE	1.5	J	0.73	MDL	1.8	PQL	ug/Kg	J	Z
2-METHYLNAPHTHALENE	1.3	J	0.73	MDL	1.8	PQL	ug/Kg	J	Z
BENZO(A)ANTHRACENE	1.3	J	0.73	MDL	1.8	PQL	ug/Kg	J	Z
BENZO(A)PYRENE	1.1	J	0.73	MDL	1.8	PQL	ug/Kg	J	Z
BENZO(B)FLUORANTHENE	1.5	J	0.73	MDL	1.8	PQL	ug/Kg	J	Z
BENZO(E)PYRENE	19	U	3.6	MDL	19	PQL	ug/Kg	UJ	L
BENZO(G,H,I)PERYLENE	0.80	J	0.73	MDL	1.8	PQL	ug/Kg	J	Z
BENZO(K)FLUORANTHENE	0.75	J	0.73	MDL	1.8	PQL	ug/Kg	J	Z
BIS(2-ETHYLHEXYL)PHTHALATE	12	J	6.6	MDL	20	PQL	ug/Kg	J	Z
CHRYSENE	1.4	J	0.36	MDL	1.8	PQL	ug/Kg	J	Z
FLUORANTHENE	1.5	J	0.73	MDL	1.8	PQL	ug/Kg	J	Z
NAPHTHALENE	1.0	J	0.73	MDL	1.8	PQL	ug/Kg	J	Z

* denotes a non-reportable result

Project Name and Number: 1204-002-001-AL - SSFL Area IV Phase 3

Data Qualifier Summary

Lab Reporting Batch ID: PH204 **Laboratory: LL**

EDD Filename: PrepPH204 **eQAPP Name: CDM_SSFL_140617_Lan**

Method Category: SVOA

Method: 8270D SIM **Matrix: SO**

Sample ID: SL-529-SA5B-TR-11.0 **Collected: 5/28/2014 2:30:00** **Analysis Type: RES-BASE/NEUTRAL** **Dilution: 1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
PHENANTHRENE	0.99	J	0.73	MDL	1.8	PQL	ug/Kg	J	Z
PYRENE	1.4	J	0.73	MDL	1.8	PQL	ug/Kg	J	Z

Sample ID: SL-529-SA5B-TR-2.0 **Collected: 5/28/2014 2:05:00** **Analysis Type: RES-BASE/NEUTRAL** **Dilution: 1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
2-METHYLNAPHTHALENE	1.1	J	0.72	MDL	1.8	PQL	ug/Kg	J	Z
BENZO(B)FLUORANTHENE	0.73	J	0.72	MDL	1.8	PQL	ug/Kg	J	Z
BENZO(E)PYRENE	18	U	3.6	MDL	18	PQL	ug/Kg	UJ	L
BIS(2-ETHYLHEXYL)PHTHALATE	12	J	6.5	MDL	20	PQL	ug/Kg	J	Z
CHRYSENE	0.78	J	0.36	MDL	1.8	PQL	ug/Kg	J	Z
NAPHTHALENE	0.98	J	0.72	MDL	1.8	PQL	ug/Kg	J	Z
PHENANTHRENE	0.89	J	0.72	MDL	1.8	PQL	ug/Kg	J	Z
PYRENE	0.78	J	0.72	MDL	1.8	PQL	ug/Kg	J	Z

Sample ID: SL-529-SA5B-TR-3.0 **Collected: 5/28/2014 2:15:00** **Analysis Type: RES-BASE/NEUTRAL** **Dilution: 1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
1-METHYLNAPHTHALENE	0.94	J	0.71	MDL	1.8	PQL	ug/Kg	J	Z
2-METHYLNAPHTHALENE	1.5	J	0.71	MDL	1.8	PQL	ug/Kg	J	Z
BENZO(A)ANTHRACENE	1.0	J	0.71	MDL	1.8	PQL	ug/Kg	J	Z
BENZO(A)PYRENE	0.87	J	0.71	MDL	1.8	PQL	ug/Kg	J	Z
BENZO(E)PYRENE	18	U	3.6	MDL	18	PQL	ug/Kg	UJ	L
BENZO(G,H,I)PERYLENE	1.5	J	0.71	MDL	1.8	PQL	ug/Kg	J	Z
BENZO(K)FLUORANTHENE	0.84	J	0.71	MDL	1.8	PQL	ug/Kg	J	Z
CHRYSENE	1.7	J	0.36	MDL	1.8	PQL	ug/Kg	J	Z
FLUORANTHENE	1.6	J	0.71	MDL	1.8	PQL	ug/Kg	J	Z
NAPHTHALENE	1.2	J	0.71	MDL	1.8	PQL	ug/Kg	J	Z
PHENANTHRENE	1.1	J	0.71	MDL	1.8	PQL	ug/Kg	J	Z
PYRENE	1.3	J	0.71	MDL	1.8	PQL	ug/Kg	J	Z

Sample ID: SL-693-SA5B-TR-3.0 **Collected: 5/28/2014 8:35:00** **Analysis Type: RES-BASE/NEUTRAL** **Dilution: 1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
ACENAPHTHENE	1.2	J	0.69	MDL	1.7	PQL	ug/Kg	J	Z

* denotes a non-reportable result

Project Name and Number: 1204-002-001-AL - SSFL Area IV Phase 3

Data Qualifier Summary

Lab Reporting Batch ID: PH204 **Laboratory: LL**

EDD Filename: PrepPH204 **eQAPP Name: CDM_SSFL_140617_Lan**

Method Category: SVOA

Method: 8270D SIM **Matrix: SO**

Sample ID: **SL-693-SA5B-TR-3.0** ***Collected:*** **5/28/2014 8:35:00** ***Analysis Type:*** **RES-BASE/NEUTRAL** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
BENZO(E)PYRENE	18	U	3.5	MDL	18	PQL	ug/Kg	UJ	L
DIBENZO(A,H)ANTHRACENE	0.87	J	0.69	MDL	1.7	PQL	ug/Kg	J	Z

Sample ID: **SL-699-SA5B-TR-0.5** ***Collected:*** **5/28/2014 10:00:00** ***Analysis Type:*** **RES-BASE/NEUTRAL** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
BENZO(E)PYRENE	10	J	3.4	MDL	18	PQL	ug/Kg	J	Z, L
DIBENZO(A,H)ANTHRACENE	1.5	J	0.69	MDL	1.7	PQL	ug/Kg	J	Z
Diethylphthalate	7.2	J	6.2	MDL	19	PQL	ug/Kg	J	Z

Sample ID: **SL-699-SA5B-TR-3.0** ***Collected:*** **5/28/2014 10:30:00** ***Analysis Type:*** **RES-BASE/NEUTRAL** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
ACENAPHTHENE	1.6	J	0.71	MDL	1.8	PQL	ug/Kg	J	Z
BENZO(E)PYRENE	4.1	J	3.6	MDL	18	PQL	ug/Kg	J	Z, L
DIBENZO(A,H)ANTHRACENE	0.88	J	0.71	MDL	1.8	PQL	ug/Kg	J	Z

Sample ID: **SL-699-SA5B-TR-8.0** ***Collected:*** **5/28/2014 11:00:00** ***Analysis Type:*** **RES-BASE/NEUTRAL** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
BENZO(E)PYRENE	18	U	3.6	MDL	18	PQL	ug/Kg	UJ	L

* denotes a non-reportable result

Project Name and Number: 1204-002-001-AL - SSFL Area IV Phase 3

Data Qualifier Summary

Lab Reporting Batch ID: PH204 **Laboratory: LL**

EDD Filename: PrepPH204 **eQAPP Name: CDM_SSFL_140617_Lan**

Reason Code Legend

Reason Code	*Description*
B	Method Blank Contamination
E	Matrix Spike Precision
F	Equipment Blank Contamination
F	Field Blank Contamination
L	Laboratory Control Spike Lower Estimation
Q	Matrix Spike Lower Estimation
Q	Matrix Spike Precision
Q	Matrix Spike Upper Estimation
S	Surrogate/Tracer Recovery Lower Estimation
Z	Reporting Limit Trace Value

* denotes a non-reportable result

Project Name and Number: 1204-002-001-AL - SSFL Area IV Phase 3

Enclosure I

Level III ADR Outliers

(Including Manual Review Outliers)

Quality Control
Outlier Reports

PH204

Method Blank Outlier Report

Lab Reporting Batch ID: PH204 **Laboratory: LL**

EDD Filename: PH204_v2. **eQAPP Name: CDM_SSFL_140617_Lan**

Method: **1613B**
Matrix: **SO**

Method Blank Sample ID	Analysis Date	Analyte	Result	Associated Samples
BLK1550B372241	6/5/2014 10:41:00 PM	1,2,3,4,6,7,8-HPCDD	0.0654 ng/Kg	SL-529-SA5B-TR-0.5
		1,2,3,4,6,7,8-HPCDF	0.0760 ng/Kg	SL-529-SA5B-TR-11.0
		1,2,3,4,7,8,9-HPCDF	0.129 ng/Kg	SL-529-SA5B-TR-2.0
		1,2,3,4,7,8-HxCDD	0.0634 ng/Kg	SL-529-SA5B-TR-3.0
		1,2,3,4,7,8-HXCDF	0.113 ng/Kg	SL-693-SA5B-TR-3.0
		1,2,3,6,7,8-HXCDD	0.0865 ng/Kg	SL-699-SA5B-TR-0.5
		1,2,3,6,7,8-HXCDF	0.0390 ng/Kg	SL-699-SA5B-TR-3.0
		1,2,3,7,8,9-HXCDD	0.0648 ng/Kg	SL-699-SA5B-TR-8.0
		1,2,3,7,8,9-HXCDF	0.0951 ng/Kg	
		1,2,3,7,8-PECDD	0.125 ng/Kg	
		1,2,3,7,8-PECDF	0.0628 ng/Kg	
		2,3,4,6,7,8-HXCDF	0.0944 ng/Kg	
		2,3,4,7,8-PECDF	0.151 ng/Kg	
		2,3,7,8-TCDD	0.0682 ng/Kg	
		OCDD	0.366 ng/Kg	
		OCDF	0.233 ng/Kg	

The following samples and their listed target analytes were qualified due to contamination reported in this blank

Sample ID	Analyte	Reported Result	Modified Final Result
SL-529-SA5B-TR-0.5(RES)	1,2,3,4,7,8,9-HPCDF	0.289 ng/Kg	0.289U ng/Kg
SL-529-SA5B-TR-0.5(RES)	1,2,3,4,7,8-HxCDD	0.275 ng/Kg	0.275U ng/Kg
SL-529-SA5B-TR-0.5(RES)	1,2,3,4,7,8-HXCDF	0.215 ng/Kg	0.215U ng/Kg
SL-529-SA5B-TR-0.5(RES)	1,2,3,7,8,9-HXCDF	0.205 ng/Kg	0.205U ng/Kg
SL-529-SA5B-TR-0.5(RES)	1,2,3,7,8-PECDD	0.263 ng/Kg	0.263U ng/Kg
SL-529-SA5B-TR-0.5(RES)	1,2,3,7,8-PECDF	0.177 ng/Kg	0.177U ng/Kg
SL-529-SA5B-TR-0.5(RES)	2,3,4,6,7,8-HXCDF	0.338 ng/Kg	0.338U ng/Kg
SL-529-SA5B-TR-0.5(RES)	2,3,4,7,8-PECDF	0.142 ng/Kg	0.142U ng/Kg
SL-529-SA5B-TR-11.0(RES)	1,2,3,4,7,8,9-HPCDF	0.147 ng/Kg	0.147U ng/Kg
SL-529-SA5B-TR-11.0(RES)	1,2,3,4,7,8-HxCDD	0.0624 ng/Kg	0.0624U ng/Kg
SL-529-SA5B-TR-11.0(RES)	1,2,3,4,7,8-HXCDF	0.116 ng/Kg	0.116U ng/Kg
SL-529-SA5B-TR-11.0(RES)	1,2,3,6,7,8-HXCDD	0.417 ng/Kg	0.417U ng/Kg
SL-529-SA5B-TR-11.0(RES)	1,2,3,6,7,8-HXCDF	0.162 ng/Kg	0.162U ng/Kg
SL-529-SA5B-TR-11.0(RES)	1,2,3,7,8,9-HXCDF	0.146 ng/Kg	0.146U ng/Kg
SL-529-SA5B-TR-11.0(RES)	1,2,3,7,8-PECDF	0.169 ng/Kg	0.169U ng/Kg
SL-529-SA5B-TR-11.0(RES)	2,3,4,6,7,8-HXCDF	0.116 ng/Kg	0.116U ng/Kg
SL-529-SA5B-TR-11.0(RES)	2,3,4,7,8-PECDF	0.103 ng/Kg	0.103U ng/Kg
SL-529-SA5B-TR-11.0(RES)	2,3,7,8-TCDD	0.0435 ng/Kg	0.0435U ng/Kg
SL-529-SA5B-TR-2.0(RES)	1,2,3,4,7,8,9-HPCDF	0.145 ng/Kg	0.145U ng/Kg
SL-529-SA5B-TR-2.0(RES)	1,2,3,4,7,8-HxCDD	0.0529 ng/Kg	0.0529U ng/Kg
SL-529-SA5B-TR-2.0(RES)	1,2,3,4,7,8-HXCDF	0.134 ng/Kg	0.134U ng/Kg
SL-529-SA5B-TR-2.0(RES)	1,2,3,6,7,8-HXCDD	0.402 ng/Kg	0.402U ng/Kg
SL-529-SA5B-TR-2.0(RES)	1,2,3,6,7,8-HXCDF	0.112 ng/Kg	0.112U ng/Kg
SL-529-SA5B-TR-2.0(RES)	1,2,3,7,8,9-HXCDD	0.319 ng/Kg	0.319U ng/Kg
SL-529-SA5B-TR-2.0(RES)	1,2,3,7,8,9-HXCDF	0.227 ng/Kg	0.227U ng/Kg
SL-529-SA5B-TR-2.0(RES)	1,2,3,7,8-PECDD	0.0879 ng/Kg	0.0879U ng/Kg
SL-529-SA5B-TR-2.0(RES)	2,3,4,6,7,8-HXCDF	0.119 ng/Kg	0.119U ng/Kg
SL-529-SA5B-TR-2.0(RES)	2,3,4,7,8-PECDF	0.0958 ng/Kg	0.0958U ng/Kg
SL-529-SA5B-TR-3.0(RES)	1,2,3,4,7,8,9-HPCDF	0.333 ng/Kg	0.333U ng/Kg

Method Blank Outlier Report

Lab Reporting Batch ID: PH204 **Laboratory: LL**

EDD Filename: PH204_v2. **eQAPP Name: CDM_SSFL_140617_Lan**

Method: **1613B**
Matrix: **SO**

Method Blank Sample ID	Analysis Date	Analyte	Result	Associated Samples

The following samples and their listed target analytes were qualified due to contamination reported in this blank

Sample ID	Analyte	Reported Result	Modified Final Result
SL-529-SA5B-TR-3.0(RES)	1,2,3,4,7,8-HxCDD	0.102 ng/Kg	0.102U ng/Kg
SL-529-SA5B-TR-3.0(RES)	1,2,3,4,7,8-HXCDF	0.278 ng/Kg	0.278U ng/Kg
SL-529-SA5B-TR-3.0(RES)	1,2,3,6,7,8-HXCDF	0.191 ng/Kg	0.191U ng/Kg
SL-529-SA5B-TR-3.0(RES)	1,2,3,7,8,9-HXCDF	0.178 ng/Kg	0.178U ng/Kg
SL-529-SA5B-TR-3.0(RES)	1,2,3,7,8-PECDD	0.125 ng/Kg	0.125U ng/Kg
SL-529-SA5B-TR-3.0(RES)	1,2,3,7,8-PECDF	0.206 ng/Kg	0.206U ng/Kg
SL-529-SA5B-TR-3.0(RES)	2,3,4,6,7,8-HXCDF	0.201 ng/Kg	0.201U ng/Kg
SL-529-SA5B-TR-3.0(RES)	2,3,4,7,8-PECDF	0.162 ng/Kg	0.162U ng/Kg
SL-529-SA5B-TR-3.0(RES)	2,3,7,8-TCDD	0.0545 ng/Kg	0.0545U ng/Kg
SL-693-SA5B-TR-3.0(RES)	1,2,3,4,7,8,9-HPCDF	0.0886 ng/Kg	0.0886U ng/Kg
SL-693-SA5B-TR-3.0(RES)	1,2,3,4,7,8-HxCDD	0.0454 ng/Kg	0.0454U ng/Kg
SL-693-SA5B-TR-3.0(RES)	1,2,3,4,7,8-HXCDF	0.0775 ng/Kg	0.0775U ng/Kg
SL-693-SA5B-TR-3.0(RES)	1,2,3,6,7,8-HXCDD	0.175 ng/Kg	0.175U ng/Kg
SL-693-SA5B-TR-3.0(RES)	1,2,3,6,7,8-HXCDF	0.100 ng/Kg	0.100U ng/Kg
SL-693-SA5B-TR-3.0(RES)	1,2,3,7,8,9-HXCDD	0.248 ng/Kg	0.248U ng/Kg
SL-693-SA5B-TR-3.0(RES)	1,2,3,7,8,9-HXCDF	0.277 ng/Kg	0.277U ng/Kg
SL-693-SA5B-TR-3.0(RES)	1,2,3,7,8-PECDD	0.0696 ng/Kg	0.0696U ng/Kg
SL-693-SA5B-TR-3.0(RES)	1,2,3,7,8-PECDF	0.139 ng/Kg	0.139U ng/Kg
SL-693-SA5B-TR-3.0(RES)	2,3,4,6,7,8-HXCDF	0.149 ng/Kg	0.149U ng/Kg
SL-693-SA5B-TR-3.0(RES)	2,3,4,7,8-PECDF	0.108 ng/Kg	0.108U ng/Kg
SL-693-SA5B-TR-3.0(RES)	OCDF	1.03 ng/Kg	1.03U ng/Kg
SL-699-SA5B-TR-0.5(RES)	1,2,3,4,7,8,9-HPCDF	0.569 ng/Kg	0.569U ng/Kg
SL-699-SA5B-TR-0.5(RES)	1,2,3,4,7,8-HXCDF	0.456 ng/Kg	0.456U ng/Kg
SL-699-SA5B-TR-0.5(RES)	1,2,3,7,8-PECDD	0.359 ng/Kg	0.359U ng/Kg
SL-699-SA5B-TR-0.5(RES)	2,3,4,7,8-PECDF	0.640 ng/Kg	0.640U ng/Kg
SL-699-SA5B-TR-0.5(RES)	2,3,7,8-TCDD	0.0931 ng/Kg	0.0931U ng/Kg
SL-699-SA5B-TR-3.0(RES)	1,2,3,4,7,8,9-HPCDF	0.273 ng/Kg	0.273U ng/Kg
SL-699-SA5B-TR-3.0(RES)	1,2,3,4,7,8-HxCDD	0.194 ng/Kg	0.194U ng/Kg
SL-699-SA5B-TR-3.0(RES)	1,2,3,4,7,8-HXCDF	0.206 ng/Kg	0.206U ng/Kg
SL-699-SA5B-TR-3.0(RES)	1,2,3,6,7,8-HXCDF	0.129 ng/Kg	0.129U ng/Kg
SL-699-SA5B-TR-3.0(RES)	1,2,3,7,8,9-HXCDF	0.222 ng/Kg	0.222U ng/Kg
SL-699-SA5B-TR-3.0(RES)	1,2,3,7,8-PECDD	0.210 ng/Kg	0.210U ng/Kg
SL-699-SA5B-TR-3.0(RES)	1,2,3,7,8-PECDF	0.294 ng/Kg	0.294U ng/Kg
SL-699-SA5B-TR-3.0(RES)	2,3,4,6,7,8-HXCDF	0.180 ng/Kg	0.180U ng/Kg
SL-699-SA5B-TR-3.0(RES)	2,3,4,7,8-PECDF	0.260 ng/Kg	0.260U ng/Kg
SL-699-SA5B-TR-3.0(RES)	2,3,7,8-TCDD	0.0741 ng/Kg	0.0741U ng/Kg
SL-699-SA5B-TR-8.0(RES)	1,2,3,4,6,7,8-HPCDD	0.128 ng/Kg	0.128U ng/Kg
SL-699-SA5B-TR-8.0(RES)	1,2,3,4,6,7,8-HPCDF	0.0529 ng/Kg	0.0529U ng/Kg
SL-699-SA5B-TR-8.0(RES)	1,2,3,4,7,8,9-HPCDF	0.0406 ng/Kg	0.0406U ng/Kg
SL-699-SA5B-TR-8.0(RES)	1,2,3,4,7,8-HxCDD	0.0350 ng/Kg	0.0350U ng/Kg

Method Blank Outlier Report

Lab Reporting Batch ID: PH204 **Laboratory: LL**

EDD Filename: PH204_v2. **eQAPP Name: CDM_SSFL_140617_Lan**

Method: **1613B**
Matrix: **SO**

Method Blank Sample ID	Analysis Date	Analyte	Result	Associated Samples

The following samples and their listed target analytes were qualified due to contamination reported in this blank

Sample ID	Analyte	Reported Result	Modified Final Result
SL-699-SA5B-TR-8.0(RES)	1,2,3,4,7,8-HXCDF	0.0385 ng/Kg	0.0385U ng/Kg
SL-699-SA5B-TR-8.0(RES)	1,2,3,6,7,8-HXCDD	0.0319 ng/Kg	0.0319U ng/Kg
SL-699-SA5B-TR-8.0(RES)	1,2,3,6,7,8-HXCDF	0.0439 ng/Kg	0.0439U ng/Kg
SL-699-SA5B-TR-8.0(RES)	1,2,3,7,8,9-HXCDD	0.0661 ng/Kg	0.0661U ng/Kg
SL-699-SA5B-TR-8.0(RES)	1,2,3,7,8,9-HXCDF	0.0885 ng/Kg	0.0885U ng/Kg
SL-699-SA5B-TR-8.0(RES)	1,2,3,7,8-PECDD	0.0776 ng/Kg	0.0776U ng/Kg
SL-699-SA5B-TR-8.0(RES)	1,2,3,7,8-PECDF	0.0726 ng/Kg	0.0726U ng/Kg
SL-699-SA5B-TR-8.0(RES)	2,3,4,6,7,8-HXCDF	0.0557 ng/Kg	0.0557U ng/Kg
SL-699-SA5B-TR-8.0(RES)	2,3,4,7,8-PECDF	0.0439 ng/Kg	0.0439U ng/Kg
SL-699-SA5B-TR-8.0(RES)	2,3,7,8-TCDD	0.0563 ng/Kg	0.0563U ng/Kg
SL-699-SA5B-TR-8.0(RES)	OCDD	0.667 ng/Kg	0.667U ng/Kg
SL-699-SA5B-TR-8.0(RES)	OCDF	0.261 ng/Kg	0.261U ng/Kg

Method: **6010C**
Matrix: **SO**

Method Blank Sample ID	Analysis Date	Analyte	Result	Associated Samples
P15437AB221115	6/5/2014 11:15:00 AM	CALCIUM	9.64 mg/Kg	SL-529-SA5B-TR-0.5 SL-529-SA5B-TR-11.0 SL-529-SA5B-TR-2.0 SL-529-SA5B-TR-3.0 SL-693-SA5B-TR-3.0 SL-699-SA5B-TR-0.5 SL-699-SA5B-TR-3.0 SL-699-SA5B-TR-8.0
P15437AB222203	6/4/2014 10:03:00 PM	TIN	1.45 mg/Kg	SL-529-SA5B-TR-0.5 SL-529-SA5B-TR-11.0 SL-529-SA5B-TR-2.0 SL-529-SA5B-TR-3.0 SL-693-SA5B-TR-3.0 SL-699-SA5B-TR-0.5 SL-699-SA5B-TR-3.0 SL-699-SA5B-TR-8.0

The following samples and their listed target analytes were qualified due to contamination reported in this blank

Sample ID	Analyte	Reported Result	Modified Final Result
SL-529-SA5B-TR-0.5(RES)	TIN	2.84 mg/Kg	2.84U mg/Kg
SL-529-SA5B-TR-11.0(RES)	TIN	2.76 mg/Kg	2.76U mg/Kg
SL-529-SA5B-TR-2.0(RES)	TIN	2.85 mg/Kg	2.85U mg/Kg
SL-529-SA5B-TR-3.0(REA)	TIN	2.80 mg/Kg	2.80U mg/Kg
SL-693-SA5B-TR-3.0(RES)	TIN	2.61 mg/Kg	2.61U mg/Kg
SL-699-SA5B-TR-0.5(RES)	TIN	2.78 mg/Kg	2.78U mg/Kg
SL-699-SA5B-TR-3.0(RES)	TIN	3.00 mg/Kg	3.00U mg/Kg
SL-699-SA5B-TR-8.0(RES)	TIN	3.08 mg/Kg	3.08U mg/Kg

Equipment Rinsate Blank Outlier Report

Lab Reporting Batch ID: PH204 **Laboratory: LL**

EDD Filename: PrepPH204 **eQAPP Name: CDM_SSFL_140617_Lan**

Method: **6010C**
Matrix: **SO**

Equipment Blank Sample ID	Collected Date	Analyte	Result	Associated Samples
EB1-052914(REA2)	5/29/2014 3:00:00 PM	CALCIUM MAGNESIUM MOLYBDENUM	0.108 mg/L 0.0252 mg/L 0.0054 mg/L	SL-529-SA5B-TR-0.5 SL-529-SA5B-TR-11.0 SL-529-SA5B-TR-2.0 SL-529-SA5B-TR-3.0 SL-693-SA5B-TR-3.0 SL-699-SA5B-TR-0.5 SL-699-SA5B-TR-3.0 SL-699-SA5B-TR-8.0

The following samples and their listed target analytes were qualified due to contamination reported in this blank

Sample ID	Analyte	Reported Result	Modified Final Result
SL-529-SA5B-TR-0.5(RES)	MOLYBDENUM	0.463 mg/Kg	0.463U mg/Kg
SL-529-SA5B-TR-11.0(RES)	MOLYBDENUM	2.19 mg/Kg	2.19U mg/Kg
SL-529-SA5B-TR-2.0(RES)	MOLYBDENUM	0.234 mg/Kg	0.234U mg/Kg
SL-529-SA5B-TR-3.0(RES)	MOLYBDENUM	2.08 mg/Kg	2.08U mg/Kg
SL-693-SA5B-TR-3.0(RES)	MOLYBDENUM	0.251 mg/Kg	0.251U mg/Kg
SL-699-SA5B-TR-0.5(RES)	MOLYBDENUM	0.599 mg/Kg	0.599U mg/Kg
SL-699-SA5B-TR-3.0(RES)	MOLYBDENUM	0.318 mg/Kg	0.318U mg/Kg
SL-699-SA5B-TR-8.0(RES)	MOLYBDENUM	2.10 mg/Kg	2.10U mg/Kg

Surrogate Outlier Report

Lab Reporting Batch ID: PH204 **Laboratory: LL**

EDD Filename: PH204_v2. **eQAPP Name: CDM_SSFL_140617_Lan**

Method: **8015M**
Matrix: **SO**

Sample ID (Analysis Type)	*Surrogate*	*Sample % Recovery*	*% Recovery Limits*	*Affected Compounds*	*Flag*
SL-529-SA5B-TR-2.0 (REA2)	O-TERPHENYL	60	66.00-123.00	All Target Analytes	J (all detects) UJ (all non-detects)
SL-693-SA5B-TR-3.0 (REA2)	O-TERPHENYL	59	66.00-123.00	All Target Analytes	J(all detects) UJ(all non-detects)

Lab Control Spike/Lab Control Spike Duplicate Outlier Report

Lab Reporting Batch ID: PH204 **Laboratory: LL**

EDD Filename: PH204_v2. **eQAPP Name: CDM_SSFL_140617_Lan**

Method: 8015M
Matrix: SO

QC Sample ID (Associated Samples)	Compound	LCS %R	LCSD %R	%R Limits	RPD (Limits)	Affected Compounds	Flag
P41547AQ321653A (SL-529-SA5B-TR-0.5 SL-529-SA5B-TR-11.0 SL-529-SA5B-TR-2.0 SL-529-SA5B-TR-3.0 SL-693-SA5B-TR-3.0 SL-699-SA5B-TR-0.5 SL-699-SA5B-TR-3.0 SL-699-SA5B-TR-8.0)	EFH (C12-C14) SG EFH (C15-C20) SG EFH (C21-C30) SG EFH (C8-C11) SG	66 68 68 54	- - - -	76.00-115.00 78.00-127.00 77.00-127.00 60.00-115.00	- - - -	EFH (C12-C14) SG EFH (C15-C20) SG EFH (C21-C30) SG EFH (C8-C11) SG	J (all detects) UJ (all non-detects)

Method: 8270D SIM
Matrix: SO

QC Sample ID (Associated Samples)	Compound	LCS %R	LCSD %R	%R Limits	RPD (Limits)	Affected Compounds	Flag
P1LELCSQ260406 (SL-529-SA5B-TR-0.5 SL-529-SA5B-TR-11.0 SL-529-SA5B-TR-2.0 SL-529-SA5B-TR-3.0 SL-693-SA5B-TR-3.0 SL-699-SA5B-TR-0.5 SL-699-SA5B-TR-3.0 SL-699-SA5B-TR-8.0)	BENZO(E)PYRENE	79	-	81.00-110.00	-	BENZO(E)PYRENE	J(all detects) UJ(all non-detects)

Reporting Limit Outliers

Lab Reporting Batch ID: PH204 **Laboratory: LL**

EDD Filename: PH204_v2. **eQAPP Name: CDM_SSFL_140617_Lan**

Method: **1613B**

Matrix: **SO**

SampleID	Analyte	Lab Qual	Result	Reporting Limit	RL Type	Units	Flag
SL-529-SA5B-TR-0.5	1,2,3,4,6,7,8-HPCDF	JB	3.45	5.20	PQL	ng/Kg	
	1,2,3,4,7,8,9-HPCDF	JBQ	0.289	5.20	PQL	ng/Kg	
	1,2,3,4,7,8-HxCDD	JBQ	0.275	5.20	PQL	ng/Kg	
	1,2,3,4,7,8-HXCDF	JB	0.215	5.20	PQL	ng/Kg	
	1,2,3,6,7,8-HXCDD	JB	0.943	5.20	PQL	ng/Kg	
	1,2,3,6,7,8-HXCDF	JBQ	0.279	5.20	PQL	ng/Kg	
	1,2,3,7,8,9-HXCDD	JB	0.969	5.20	PQL	ng/Kg	
	1,2,3,7,8,9-HXCDF	JBQ	0.205	5.20	PQL	ng/Kg	J (all detects)
	1,2,3,7,8-PECDD	JB	0.263	5.20	PQL	ng/Kg	
	1,2,3,7,8-PECDF	JBQ	0.177	5.20	PQL	ng/Kg	
	2,3,4,6,7,8-HXCDF	JB	0.338	5.20	PQL	ng/Kg	
	2,3,4,7,8-PECDF	JB	0.142	5.20	PQL	ng/Kg	
	2,3,7,8-TCDF	JQ	0.0494	1.04	PQL	ng/Kg	
	OCDF	JB	8.53	10.4	PQL	ng/Kg	
SL-529-SA5B-TR-11.0	1,2,3,4,6,7,8-HPCDF	JB	1.39	5.30	PQL	ng/Kg	
	1,2,3,4,7,8,9-HPCDF	JBQ	0.147	5.30	PQL	ng/Kg	
	1,2,3,4,7,8-HxCDD	JBQ	0.0624	5.30	PQL	ng/Kg	
	1,2,3,4,7,8-HXCDF	JBQ	0.116	5.30	PQL	ng/Kg	
	1,2,3,6,7,8-HXCDD	JBQ	0.417	5.30	PQL	ng/Kg	
	1,2,3,6,7,8-HXCDF	JBQ	0.162	5.30	PQL	ng/Kg	
	1,2,3,7,8,9-HXCDD	JBQ	0.422	5.30	PQL	ng/Kg	
	1,2,3,7,8,9-HXCDF	JB	0.146	5.30	PQL	ng/Kg	J (all detects)
	1,2,3,7,8-PECDF	JB	0.169	5.30	PQL	ng/Kg	
	2,3,4,6,7,8-HXCDF	JBQ	0.116	5.30	PQL	ng/Kg	
	2,3,4,7,8-PECDF	JB	0.103	5.30	PQL	ng/Kg	
	2,3,7,8-TCDD	JBQ	0.0435	1.06	PQL	ng/Kg	
	2,3,7,8-TCDF	JQ	0.0457	1.06	PQL	ng/Kg	
	OCDF	JB	3.83	10.6	PQL	ng/Kg	
SL-529-SA5B-TR-2.0	1,2,3,4,6,7,8-HPCDF	JBQ	0.674	5.41	PQL	ng/Kg	
	1,2,3,4,7,8,9-HPCDF	JBQ	0.145	5.41	PQL	ng/Kg	
	1,2,3,4,7,8-HxCDD	JB	0.0529	5.41	PQL	ng/Kg	
	1,2,3,4,7,8-HXCDF	JBQ	0.134	5.41	PQL	ng/Kg	
	1,2,3,6,7,8-HXCDD	JB	0.402	5.41	PQL	ng/Kg	
	1,2,3,6,7,8-HXCDF	JBQ	0.112	5.41	PQL	ng/Kg	
	1,2,3,7,8,9-HXCDD	JBQ	0.319	5.41	PQL	ng/Kg	
	1,2,3,7,8,9-HXCDF	JBQ	0.227	5.41	PQL	ng/Kg	J (all detects)
	1,2,3,7,8-PECDD	JB	0.0879	5.41	PQL	ng/Kg	
	1,2,3,7,8-PECDF	JB	0.354	5.41	PQL	ng/Kg	
	2,3,4,6,7,8-HXCDF	JB	0.119	5.41	PQL	ng/Kg	
	2,3,4,7,8-PECDF	JBQ	0.0958	5.41	PQL	ng/Kg	
	OCDF	JB	1.57	10.8	PQL	ng/Kg	
SL-529-SA5B-TR-3.0	1,2,3,4,6,7,8-HPCDF	JB	2.28	5.20	PQL	ng/Kg	
	1,2,3,4,7,8,9-HPCDF	JB	0.333	5.20	PQL	ng/Kg	
	1,2,3,4,7,8-HxCDD	JB	0.102	5.20	PQL	ng/Kg	
	1,2,3,4,7,8-HXCDF	JBQ	0.278	5.20	PQL	ng/Kg	
	1,2,3,6,7,8-HXCDD	JBQ	0.623	5.20	PQL	ng/Kg	
	1,2,3,6,7,8-HXCDF	JB	0.191	5.20	PQL	ng/Kg	
	1,2,3,7,8,9-HXCDD	JBQ	0.459	5.20	PQL	ng/Kg	
	1,2,3,7,8,9-HXCDF	JBQ	0.178	5.20	PQL	ng/Kg	J (all detects)
	1,2,3,7,8-PECDD	JBQ	0.125	5.20	PQL	ng/Kg	
	1,2,3,7,8-PECDF	JB	0.206	5.20	PQL	ng/Kg	
	2,3,4,6,7,8-HXCDF	JBQ	0.201	5.20	PQL	ng/Kg	
	2,3,4,7,8-PECDF	JB	0.162	5.20	PQL	ng/Kg	
	2,3,7,8-TCDD	JB	0.0545	1.04	PQL	ng/Kg	
	2,3,7,8-TCDF	J	0.0527	1.04	PQL	ng/Kg	
	OCDF	JB	5.73	10.4	PQL	ng/Kg	

Reporting Limit Outliers

Lab Reporting Batch ID: PH204 **Laboratory: LL**

EDD Filename: PH204_v2. **eQAPP Name: CDM_SSFL_140617_Lan**

Method: 1613B

Matrix: SO

SampleID	Analyte	Lab Qual	Result	Reporting Limit	RL Type	Units	Flag
SL-693-SA5B-TR-3.0	1,2,3,4,6,7,8-HPCDD	JB	2.18	5.13	PQL	ng/Kg	
	1,2,3,4,6,7,8-HPCDF	JB	0.524	5.13	PQL	ng/Kg	
	1,2,3,4,7,8,9-HPCDF	JBQ	0.0886	5.13	PQL	ng/Kg	
	1,2,3,4,7,8-HxCDD	JBQ	0.0454	5.13	PQL	ng/Kg	
	1,2,3,4,7,8-HXCDF	JBQ	0.0775	5.13	PQL	ng/Kg	
	1,2,3,6,7,8-HXCDD	JBQ	0.175	5.13	PQL	ng/Kg	
	1,2,3,6,7,8-HXCDF	JBQ	0.100	5.13	PQL	ng/Kg	J (all detects)
	1,2,3,7,8,9-HXCDD	JBQ	0.248	5.13	PQL	ng/Kg	
	1,2,3,7,8,9-HXCDF	JBQ	0.277	5.13	PQL	ng/Kg	
	1,2,3,7,8-PECDD	JBQ	0.0696	5.13	PQL	ng/Kg	
	1,2,3,7,8-PECDF	JBQ	0.139	5.13	PQL	ng/Kg	
	2,3,4,6,7,8-HXCDF	JBQ	0.149	5.13	PQL	ng/Kg	
	2,3,4,7,8-PECDF	JBQ	0.108	5.13	PQL	ng/Kg	
	OCDF	JBQ	1.03	10.3	PQL	ng/Kg	
SL-699-SA5B-TR-0.5	1,2,3,4,7,8,9-HPCDF	JB	0.569	4.99	PQL	ng/Kg	
	1,2,3,4,7,8-HxCDD	JB	0.360	4.99	PQL	ng/Kg	
	1,2,3,4,7,8-HXCDF	JB	0.456	4.99	PQL	ng/Kg	
	1,2,3,6,7,8-HXCDD	JB	1.53	4.99	PQL	ng/Kg	
	1,2,3,6,7,8-HXCDF	JBQ	0.517	4.99	PQL	ng/Kg	
	1,2,3,7,8,9-HXCDD	JB	0.998	4.99	PQL	ng/Kg	
	1,2,3,7,8,9-HXCDF	JB	0.982	4.99	PQL	ng/Kg	J (all detects)
	1,2,3,7,8-PECDD	JBQ	0.359	4.99	PQL	ng/Kg	
	1,2,3,7,8-PECDF	JB	0.891	4.99	PQL	ng/Kg	
	2,3,4,6,7,8-HXCDF	JB	0.475	4.99	PQL	ng/Kg	
	2,3,4,7,8-PECDF	JB	0.640	4.99	PQL	ng/Kg	
	2,3,7,8-TCDD	JBQ	0.0931	0.999	PQL	ng/Kg	
	2,3,7,8-TCDF	JQ	0.162	0.999	PQL	ng/Kg	
SL-699-SA5B-TR-3.0	1,2,3,4,6,7,8-HPCDF	JB	1.72	5.13	PQL	ng/Kg	
	1,2,3,4,7,8,9-HPCDF	JB	0.273	5.13	PQL	ng/Kg	
	1,2,3,4,7,8-HxCDD	JBQ	0.194	5.13	PQL	ng/Kg	
	1,2,3,4,7,8-HXCDF	JB	0.206	5.13	PQL	ng/Kg	
	1,2,3,6,7,8-HXCDD	JBQ	0.458	5.13	PQL	ng/Kg	
	1,2,3,6,7,8-HXCDF	JBQ	0.129	5.13	PQL	ng/Kg	
	1,2,3,7,8,9-HXCDD	JBQ	0.438	5.13	PQL	ng/Kg	
	1,2,3,7,8,9-HXCDF	JB	0.222	5.13	PQL	ng/Kg	J (all detects)
	1,2,3,7,8-PECDD	JB	0.210	5.13	PQL	ng/Kg	
	1,2,3,7,8-PECDF	JBQ	0.294	5.13	PQL	ng/Kg	
	2,3,4,6,7,8-HXCDF	JBQ	0.180	5.13	PQL	ng/Kg	
	2,3,4,7,8-PECDF	JB	0.260	5.13	PQL	ng/Kg	
	2,3,7,8-TCDD	JBQ	0.0741	1.03	PQL	ng/Kg	
	2,3,7,8-TCDF	J	0.108	1.03	PQL	ng/Kg	
	OCDF	JB	5.64	10.3	PQL	ng/Kg	
SL-699-SA5B-TR-8.0	1,2,3,4,6,7,8-HPCDD	JBQ	0.128	5.33	PQL	ng/Kg	
	1,2,3,4,6,7,8-HPCDF	JBQ	0.0529	5.33	PQL	ng/Kg	
	1,2,3,4,7,8,9-HPCDF	JBQ	0.0406	5.33	PQL	ng/Kg	
	1,2,3,4,7,8-HxCDD	JBQ	0.0350	5.33	PQL	ng/Kg	
	1,2,3,4,7,8-HXCDF	JBQ	0.0385	5.33	PQL	ng/Kg	
	1,2,3,6,7,8-HXCDD	JBQ	0.0319	5.33	PQL	ng/Kg	
	1,2,3,6,7,8-HXCDF	JBQ	0.0439	5.33	PQL	ng/Kg	
	1,2,3,7,8,9-HXCDD	JBQ	0.0661	5.33	PQL	ng/Kg	
	1,2,3,7,8,9-HXCDF	JBQ	0.0885	5.33	PQL	ng/Kg	J (all detects)
	1,2,3,7,8-PECDD	JBQ	0.0776	5.33	PQL	ng/Kg	
	1,2,3,7,8-PECDF	JBQ	0.0726	5.33	PQL	ng/Kg	
	2,3,4,6,7,8-HXCDF	JBQ	0.0557	5.33	PQL	ng/Kg	
	2,3,4,7,8-PECDF	JBQ	0.0439	5.33	PQL	ng/Kg	
	2,3,7,8-TCDD	JBQ	0.0563	1.07	PQL	ng/Kg	
	OCDD	JBQ	0.667	10.7	PQL	ng/Kg	
	OCDF	JBQ	0.261	10.7	PQL	ng/Kg	

Project Name and Number: 1204-002-001-AL - SSFL Area IV Phase 3

Reporting Limit Outliers

Lab Reporting Batch ID: PH204 **Laboratory: LL**

EDD Filename: PH204_v2. **eQAPP Name: CDM_SSFL_140617_Lan**

Method: 6010C

Matrix: SO

SampleID	Analyte	Lab Qual	Result	Reporting Limit	RL Type	Units	Flag
SL-529-SA5B-TR-0.5	ARSENIC	J	3.56	4.11	PQL	mg/Kg	J (all detects)
	BERYLLIUM	J	0.513	1.03	PQL	mg/Kg	
	BORON	J	3.58	10.3	PQL	mg/Kg	
	CADMIUM	J	0.103	1.03	PQL	mg/Kg	
	MOLYBDENUM	J	0.463	2.05	PQL	mg/Kg	
	TIN	J	2.84	10.3	PQL	mg/Kg	
	Zirconium	J	3.47	5.13	PQL	mg/Kg	
SL-529-SA5B-TR-11.0	ARSENIC	J	3.13	4.38	PQL	mg/Kg	J (all detects)
	BERYLLIUM	J	0.478	1.09	PQL	mg/Kg	
	BORON	J	3.29	10.9	PQL	mg/Kg	
	TIN	J	2.76	10.9	PQL	mg/Kg	
	Zirconium	J	2.54	5.47	PQL	mg/Kg	
SL-529-SA5B-TR-2.0	BERYLLIUM	J	0.662	1.07	PQL	mg/Kg	J (all detects)
	BORON	J	2.98	10.7	PQL	mg/Kg	
	MOLYBDENUM	J	0.234	2.15	PQL	mg/Kg	
	TIN	J	2.85	10.7	PQL	mg/Kg	
	Zirconium	J	3.39	5.36	PQL	mg/Kg	
SL-529-SA5B-TR-3.0	BERYLLIUM	J	0.631	1.04	PQL	mg/Kg	J (all detects)
	BORON	J	0.940	10.4	PQL	mg/Kg	
	TIN	J	2.80	10.4	PQL	mg/Kg	
	Zirconium	J	3.03	5.20	PQL	mg/Kg	
SL-693-SA5B-TR-3.0	BERYLLIUM	J	0.664	1.03	PQL	mg/Kg	J (all detects)
	BORON	J	3.13	10.3	PQL	mg/Kg	
	MOLYBDENUM	J	0.251	2.06	PQL	mg/Kg	
	SODIUM	J	86.8	103	PQL	mg/Kg	
	TIN	J	2.61	10.3	PQL	mg/Kg	
	Zirconium	J	3.25	5.14	PQL	mg/Kg	
SL-699-SA5B-TR-0.5	BERYLLIUM	J	0.839	0.990	PQL	mg/Kg	J (all detects)
	CADMIUM	J	0.150	0.990	PQL	mg/Kg	
	MOLYBDENUM	J	0.599	1.98	PQL	mg/Kg	
	TIN	J	2.78	9.90	PQL	mg/Kg	
SL-699-SA5B-TR-3.0	BORON	J	5.26	10.6	PQL	mg/Kg	J (all detects)
	MOLYBDENUM	J	0.318	2.11	PQL	mg/Kg	
	TIN	J	3.00	10.6	PQL	mg/Kg	
	Zirconium	J	4.82	5.28	PQL	mg/Kg	
SL-699-SA5B-TR-8.0	BERYLLIUM	J	0.826	1.05	PQL	mg/Kg	J (all detects)
	BORON	J	1.23	10.5	PQL	mg/Kg	
	TIN	J	3.08	10.5	PQL	mg/Kg	
	Zirconium	J	3.87	5.25	PQL	mg/Kg	

Method: 6020A

Matrix: SO

SampleID	Analyte	Lab Qual	Result	Reporting Limit	RL Type	Units	Flag
SL-529-SA5B-TR-0.5	SELENIUM	J	0.164	0.411	PQL	mg/Kg	J (all detects)
	SILVER	J	0.0437	0.205	PQL	mg/Kg	
SL-529-SA5B-TR-11.0	SELENIUM	J	0.119	0.438	PQL	mg/Kg	J (all detects)
	SILVER	J	0.0379	0.219	PQL	mg/Kg	
	THALLIUM	J	0.205	0.219	PQL	mg/Kg	
SL-529-SA5B-TR-2.0	SELENIUM	J	0.126	0.429	PQL	mg/Kg	J (all detects)
SL-529-SA5B-TR-3.0	SELENIUM	J	0.130	0.416	PQL	mg/Kg	J (all detects)
	SILVER	J	0.0532	0.208	PQL	mg/Kg	

Project Name and Number: 1204-002-001-AL - SSFL Area IV Phase 3

Reporting Limit Outliers

Lab Reporting Batch ID: PH204 **Laboratory: LL**

EDD Filename: PH204_v2. **eQAPP Name: CDM_SSFL_140617_Lan**

Method: 6020A

Matrix: SO

SampleID	Analyte	Lab Qual	Result	Reporting Limit	RL Type	Units	Flag
SL-693-SA5B-TR-3.0	SELENIUM	J	0.148	0.411	PQL	mg/Kg	J (all detects)
SL-699-SA5B-TR-0.5	SELENIUM	J	0.247	0.396	PQL	mg/Kg	J (all detects)
	SILVER	J	0.0356	0.198	PQL	mg/Kg	
SL-699-SA5B-TR-3.0	SELENIUM	J	0.175	0.422	PQL	mg/Kg	J (all detects)
	SILVER	J	0.0581	0.211	PQL	mg/Kg	
SL-699-SA5B-TR-8.0	SILVER	J	0.0668	0.210	PQL	mg/Kg	J (all detects)

Method: 7471B

Matrix: SO

SampleID	Analyte	Lab Qual	Result	Reporting Limit	RL Type	Units	Flag
SL-693-SA5B-TR-3.0	MERCURY	J	0.0122	0.0169	PQL	mg/Kg	J (all detects)
SL-699-SA5B-TR-0.5	MERCURY	J	0.0153	0.0164	PQL	mg/Kg	J (all detects)

Method: 8015M

Matrix: SO

SampleID	Analyte	Lab Qual	Result	Reporting Limit	RL Type	Units	Flag
SL-529-SA5B-TR-11.0	EFH (C15-C20)	J	7.9	11	PQL	mg/Kg	J (all detects)
	EFH (C15-C20) SG	J	4.6	5.5	PQL	mg/Kg	
SL-529-SA5B-TR-2.0	EFH (C21-C30)	J	3.2	5.4	PQL	mg/Kg	J (all detects)
	EFH (C30-C40) SG	J	5.2	11	PQL	mg/Kg	
SL-699-SA5B-TR-0.5	EFH (C12-C14) SG	J	4.6	5.1	PQL	mg/Kg	J (all detects)
SL-699-SA5B-TR-3.0	EFH (C15-C20)	J	3.3	5.3	PQL	mg/Kg	J (all detects)

Method: 8081B

Matrix: SO

SampleID	Analyte	Lab Qual	Result	Reporting Limit	RL Type	Units	Flag
SL-693-SA5B-TR-3.0	4,4'-DDT	J	0.69	1.8	PQL	ug/Kg	J (all detects)
SL-699-SA5B-TR-0.5	4,4'-DDE	J	1.8	8.8	PQL	ug/Kg	J (all detects)
	4,4'-DDT	J	5.5	8.8	PQL	ug/Kg	
	ENDOSULFAN I	J	2.7	4.3	PQL	ug/Kg	
	ENDOSULFAN SULFATE	J	4.6	8.8	PQL	ug/Kg	
	HEPTACHLOR	J	1.2	4.3	PQL	ug/Kg	
SL-699-SA5B-TR-3.0	ENDOSULFAN I	J	0.39	0.88	PQL	ug/Kg	J (all detects)
	ENDOSULFAN SULFATE	J	1.1	1.8	PQL	ug/Kg	
	HEPTACHLOR	J	0.54	0.88	PQL	ug/Kg	
	METHOXYCHLOR	J	3.4	7.1	PQL	ug/Kg	

Reporting Limit Outliers

Lab Reporting Batch ID: PH204 **Laboratory: LL**

EDD Filename: PH204_v2. **eQAPP Name: CDM_SSFL_140617_Lan**

Method: 8082A

Matrix: SO

SampleID	Analyte	Lab Qual	Result	Reporting Limit	RL Type	Units	Flag
SL-529-SA5B-TR-0.5	AROCLOR 1254	J	7.6	18	PQL	ug/Kg	J (all detects)
SL-529-SA5B-TR-2.0	AROCLOR 1254	J	8.6	18	PQL	ug/Kg	J (all detects)
	AROCLOR 1260	J	6.9	18	PQL	ug/Kg	

Method: 8270D SIM

Matrix: SO

SampleID	Analyte	Lab Qual	Result	Reporting Limit	RL Type	Units	Flag
SL-529-SA5B-TR-0.5	BENZO(E)PYRENE	J	4.3	18	PQL	ug/Kg	
	BIS(2-ETHYLHEXYL)PHTHALATE	J	16	19	PQL	ug/Kg	
	Butylbenzylphthalate	J	7.3	19	PQL	ug/Kg	J (all detects)
	DIBENZO(A,H)ANTHRACENE	J	0.97	1.7	PQL	ug/Kg	
	Di-n-octylphthalate	J	7.9	19	PQL	ug/Kg	
SL-529-SA5B-TR-11.0	1-METHYLNAPHTHALENE	J	1.5	1.8	PQL	ug/Kg	
	2-METHYLNAPHTHALENE	J	1.3	1.8	PQL	ug/Kg	
	BENZO(A)ANTHRACENE	J	1.3	1.8	PQL	ug/Kg	
	BENZO(A)PYRENE	J	1.1	1.8	PQL	ug/Kg	
	BENZO(B)FLUORANTHENE	J	1.5	1.8	PQL	ug/Kg	
	BENZO(G,H,I)PERYLENE	J	0.80	1.8	PQL	ug/Kg	
	BENZO(K)FLUORANTHENE	J	0.75	1.8	PQL	ug/Kg	J (all detects)
	BIS(2-ETHYLHEXYL)PHTHALATE	J	12	20	PQL	ug/Kg	
	CHRYSENE	J	1.4	1.8	PQL	ug/Kg	
	FLUORANTHENE	J	1.5	1.8	PQL	ug/Kg	
	NAPHTHALENE	J	1.0	1.8	PQL	ug/Kg	
	PHENANTHRENE	J	0.99	1.8	PQL	ug/Kg	
	PYRENE	J	1.4	1.8	PQL	ug/Kg	
SL-529-SA5B-TR-2.0	2-METHYLNAPHTHALENE	J	1.1	1.8	PQL	ug/Kg	
	BENZO(B)FLUORANTHENE	J	0.73	1.8	PQL	ug/Kg	
	BIS(2-ETHYLHEXYL)PHTHALATE	J	12	20	PQL	ug/Kg	
	CHRYSENE	J	0.78	1.8	PQL	ug/Kg	J (all detects)
	NAPHTHALENE	J	0.98	1.8	PQL	ug/Kg	
	PHENANTHRENE	J	0.89	1.8	PQL	ug/Kg	
	PYRENE	J	0.78	1.8	PQL	ug/Kg	
SL-529-SA5B-TR-3.0	1-METHYLNAPHTHALENE	J	0.94	1.8	PQL	ug/Kg	
	2-METHYLNAPHTHALENE	J	1.5	1.8	PQL	ug/Kg	
	BENZO(A)ANTHRACENE	J	1.0	1.8	PQL	ug/Kg	
	BENZO(A)PYRENE	J	0.87	1.8	PQL	ug/Kg	
	BENZO(G,H,I)PERYLENE	J	1.5	1.8	PQL	ug/Kg	
	BENZO(K)FLUORANTHENE	J	0.84	1.8	PQL	ug/Kg	J (all detects)
	CHRYSENE	J	1.7	1.8	PQL	ug/Kg	
	FLUORANTHENE	J	1.6	1.8	PQL	ug/Kg	
	NAPHTHALENE	J	1.2	1.8	PQL	ug/Kg	
	PHENANTHRENE	J	1.1	1.8	PQL	ug/Kg	
	PYRENE	J	1.3	1.8	PQL	ug/Kg	
SL-693-SA5B-TR-3.0	ACENAPHTHENE	J	1.2	1.7	PQL	ug/Kg	J (all detects)
	DIBENZO(A,H)ANTHRACENE	J	0.87	1.7	PQL	ug/Kg	
SL-699-SA5B-TR-0.5	BENZO(E)PYRENE	J	10	18	PQL	ug/Kg	
	DIBENZO(A,H)ANTHRACENE	J	1.5	1.7	PQL	ug/Kg	J (all detects)
	Diethylphthalate	J	7.2	19	PQL	ug/Kg	
SL-699-SA5B-TR-3.0	ACENAPHTHENE	J	1.6	1.8	PQL	ug/Kg	
	BENZO(E)PYRENE	J	4.1	18	PQL	ug/Kg	J (all detects)
	DIBENZO(A,H)ANTHRACENE	J	0.88	1.8	PQL	ug/Kg	

LDC #: 32184A4
SDG #: PH204
Laboratory: Eurofins Lancaster Laboratories

VALIDATION COMPLETENESS WORKSHEET

ADR

7471A

Date: 7/31/14
Page: 1 of 1
Reviewer: KK
2nd Reviewer: CL

METHOD: Metals (EPA SW 846 Method 6010C/6020A/~~7000~~)

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

	Validation Area		Comments
I.	Technical holding times	—	Sampling dates: 5/28/14
II.	ICP/MS Tune	—	
III.	Calibration	—	
IV.	Blanks	A	hits but no quals for ICB/CCB
V.	ICP Interference Check Sample (ICS) Analysis	—	
VI.	Matrix Spike Analysis	N	use MS/D (from PH209)
VII.	Duplicate Sample Analysis	N	Dup ↓
VIII.	Laboratory Control Samples (LCS)	N	LCS
IX.	Internal Standard (ICP-MS)	N	
X.	Furnace Atomic Absorption QC	N	
XI.	ICP Serial Dilution	~~N~~A	
XII.	Sample Result Verification	N	
XIII.	Overall Assessment of Data	N	
XIV.	Field Duplicates	N	
XV	Field Blanks	SW	EB = EB1-052914 SDG#PH207 FB = FB-052114 SDG#PH191

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

1	SL-699-SA5B-TR-0.5	11		21		31	
2	SL-699-SA5B-TR-3.0	12		22		32	
3	SL-693-SA5B-TR-3.0	13		23		33	
4	SL-529-SA5B-TR-0.5	14		24		34	
5	SL-529-SA5B-TR-2.0	15		25		35	
6	SL-529-SA5B-TR-3.0	16		26		36	
7	SL-529-SA5B-TR-11.0	17		27		37	
8	SL-699-SA5B-TR-8.0	18		28		38	
9		19		29		39	
10		20		30		40	

Notes: _____

LDC #: 32184A4

VALIDATION FINDINGS WORKSHEET
Sample Specific Element Reference

Reviewer: VR
2nd reviewer: AC

All circled elements are applicable to each sample.

Sample ID	Matrix	Target Analyte List (TAL)
1-8	S	Al, Sb, As, Ba, Be, B, Cd, Ca, Cr, Co, Cu, Fe, Pb, Li, Mg, Mo, Mn, Hg, Ni, P, K, Se, Ag, Na, Sr, Tl, Sn, Ti, V, Zn, Zr
		Al, Sb, As, Ba, Be, B, Cd, Ca, Cr, Co, Cu, Fe, Pb, Li, Mg, Mo, Mn, Hg, Ni, P, K, Se, Ag, Na, Sr, Tl, Sn, Ti, V, Zn, Zr
		Al, Sb, As, Ba, Be, B, Cd, Ca, Cr, Co, Cu, Fe, Pb, Li, Mg, Mo, Mn, Hg, Ni, P, K, Se, Ag, Na, Sr, Tl, Sn, Ti, V, Zn, Zr
		Al, Sb, As, Ba, Be, B, Cd, Ca, Cr, Co, Cu, Fe, Pb, Li, Mg, Mo, Mn, Hg, Ni, P, K, Se, Ag, Na, Sr, Tl, Sn, Ti, V, Zn, Zr
		Al, Sb, As, Ba, Be, B, Cd, Ca, Cr, Co, Cu, Fe, Pb, Li, Mg, Mo, Mn, Hg, Ni, P, K, Se, Ag, Na, Sr, Tl, Sn, Ti, V, Zn, Zr
		Al, Sb, As, Ba, Be, B, Cd, Ca, Cr, Co, Cu, Fe, Pb, Li, Mg, Mo, Mn, Hg, Ni, P, K, Se, Ag, Na, Sr, Tl, Sn, Ti, V, Zn, Zr
		Al, Sb, As, Ba, Be, B, Cd, Ca, Cr, Co, Cu, Fe, Pb, Li, Mg, Mo, Mn, Hg, Ni, P, K, Se, Ag, Na, Sr, Tl, Sn, Ti, V, Zn, Zr
		Al, Sb, As, Ba, Be, B, Cd, Ca, Cr, Co, Cu, Fe, Pb, Li, Mg, Mo, Mn, Hg, Ni, P, K, Se, Ag, Na, Sr, Tl, Sn, Ti, V, Zn, Zr
		Al, Sb, As, Ba, Be, B, Cd, Ca, Cr, Co, Cu, Fe, Pb, Li, Mg, Mo, Mn, Hg, Ni, P, K, Se, Ag, Na, Sr, Tl, Sn, Ti, V, Zn, Zr
		Al, Sb, As, Ba, Be, B, Cd, Ca, Cr, Co, Cu, Fe, Pb, Li, Mg, Mo, Mn, Hg, Ni, P, K, Se, Ag, Na, Sr, Tl, Sn, Ti, V, Zn, Zr
		Al, Sb, As, Ba, Be, B, Cd, Ca, Cr, Co, Cu, Fe, Pb, Li, Mg, Mo, Mn, Hg, Ni, P, K, Se, Ag, Na, Sr, Tl, Sn, Ti, V, Zn, Zr
		Al, Sb, As, Ba, Be, B, Cd, Ca, Cr, Co, Cu, Fe, Pb, Li, Mg, Mo, Mn, Hg, Ni, P, K, Se, Ag, Na, Sr, Tl, Sn, Ti, V, Zn, Zr
		Al, Sb, As, Ba, Be, B, Cd, Ca, Cr, Co, Cu, Fe, Pb, Li, Mg, Mo, Mn, Hg, Ni, P, K, Se, Ag, Na, Sr, Tl, Sn, Ti, V, Zn, Zr
		Al, Sb, As, Ba, Be, B, Cd, Ca, Cr, Co, Cu, Fe, Pb, Li, Mg, Mo, Mn, Hg, Ni, P, K, Se, Ag, Na, Sr, Tl, Sn, Ti, V, Zn, Zr
		Al, Sb, As, Ba, Be, B, Cd, Ca, Cr, Co, Cu, Fe, Pb, Li, Mg, Mo, Mn, Hg, Ni, P, K, Se, Ag, Na, Sr, Tl, Sn, Ti, V, Zn, Zr
		Al, Sb, As, Ba, Be, B, Cd, Ca, Cr, Co, Cu, Fe, Pb, Li, Mg, Mo, Mn, Hg, Ni, P, K, Se, Ag, Na, Sr, Tl, Sn, Ti, V, Zn, Zr
		Al, Sb, As, Ba, Be, B, Cd, Ca, Cr, Co, Cu, Fe, Pb, Li, Mg, Mo, Mn, Hg, Ni, P, K, Se, Ag, Na, Sr, Tl, Sn, Ti, V, Zn, Zr
		Al, Sb, As, Ba, Be, B, Cd, Ca, Cr, Co, Cu, Fe, Pb, Li, Mg, Mo, Mn, Hg, Ni, P, K, Se, Ag, Na, Sr, Tl, Sn, Ti, V, Zn, Zr
		Al, Sb, As, Ba, Be, B, Cd, Ca, Cr, Co, Cu, Fe, Pb, Li, Mg, Mo, Mn, Hg, Ni, P, K, Se, Ag, Na, Sr, Tl, Sn, Ti, V, Zn, Zr
		Al, Sb, As, Ba, Be, B, Cd, Ca, Cr, Co, Cu, Fe, Pb, Li, Mg, Mo, Mn, Hg, Ni, P, K, Se, Ag, Na, Sr, Tl, Sn, Ti, V, Zn, Zr
		Al, Sb, As, Ba, Be, B, Cd, Ca, Cr, Co, Cu, Fe, Pb, Li, Mg, Mo, Mn, Hg, Ni, P, K, Se, Ag, Na, Sr, Tl, Sn, Ti, V, Zn, Zr
		Al, Sb, As, Ba, Be, B, Cd, Ca, Cr, Co, Cu, Fe, Pb, Li, Mg, Mo, Mn, Hg, Ni, P, K, Se, Ag, Na, Sr, Tl, Sn, Ti, V, Zn, Zr
		Al, Sb, As, Ba, Be, B, Cd, Ca, Cr, Co, Cu, Fe, Pb, Li, Mg, Mo, Mn, Hg, Ni, P, K, Se, Ag, Na, Sr, Tl, Sn, Ti, V, Zn, Zr
		Al, Sb, As, Ba, Be, B, Cd, Ca, Cr, Co, Cu, Fe, Pb, Li, Mg, Mo, Mn, Hg, Ni, P, K, Se, Ag, Na, Sr, Tl, Sn, Ti, V, Zn, Zr
Analysis Method		
ICP		Al, Sb, As, Ba, Be, B, Cd, Ca, Cr, Co, Cu, Fe, Pb, Li, Mg, Mo, Mn, Hg, Ni, P, K, Se, Ag, Na, Sr, Tl, Sn, Ti, V, Zn, Zr
ICP-MS		Al, Sb, As, Ba, Be, B, Cd, Ca, Cr, Co, Cu, Fe, Pb, Li, Mg, Mo, Mn, Hg, Ni, P, K, Se, Ag, Na, Sr, Tl, Sn, Ti, V, Zn, Zr

Comments: Mercury by CVAA if performed

LDC #: 32184A4

VALIDATION FINDINGS WORKSHEET
Field Blanks

Reviewer: KK
2nd Reviewer: [signature]

METHOD: Trace Metals (EPA SW846 6010B/6020A/7471A)

Blank units: ug/L **Associated sample units:** mg/kg
Sampling date: 5/21/14 and 5/29/14 Soil factor applied 100
Field blank type: (circle one) Field Blank / Rinsate / Other: EB Associated Samples: All

Analyte	Blank ID	Blank ID	Sample Identification								
	EB1-052914 SDG#PH207	FB-052114 SDG#PH191	Action Limit	1	2	3	4	5	6	7	8
Zr		11	5.65	5.03	4.87	3.25 ~~3.3~~	3.47 ~~3.5~~	3.39 ~~3.4~~	3.03	2.54	3.87 ~~3.9~~
Ca	108		54								
Mg	25.2		12.6								
Mo	5.4		2.7	0.599 ~~0.80~~	0.318 ~~0.32~~	0.251	0.463	0.234	2.08	2.19 ~~2.08~~	2.10
Sr	0.42		~~0.42(@2x)~~ 0.21								

APL 8/6/14

CIRCLED RESULTS WERE NOT QUALIFIED. ALL RESULTS NOT CIRCLED WERE QUALIFIED BY THE FOLLOWING STATEMENT:
Samples with analyte concentrations within five times the associated field blank concentration are listed above, these sample results were qualified as not detected, "U".

Data Validation Report
Santa Susana Field Laboratory

Go Backs, Subgroup Trench

SDG: PH209

Prepared for

CDM Smith
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Denver, CO 80202

Prepared by

Laboratory Data Consultants, Inc.
2701 Loker Ave West, Suite 220
Carlsbad, California 92010

August 11, 2014

INTRODUCTION

This Data Validation Report (DVR) presents Level III data validation results for samples collected on May 30, 2014. Data validation was performed in accordance with the Quality Assurance Project Plan (QAPP) for Santa Susana Field Laboratory (SSFL), RCRA Facility Investigation, Surficial Media Operable Unit (March 2009, Revision 4) and a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines (CLPNFGs) for Superfund Organic Methods Data Review (June 2008), Polychlorinated Dioxins/Dibenzofurans Data Review (September 2005) and for Inorganic Data Review (January 2010). Where specific guidance is not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following methods:

Semivolatiles (SVOCs) by Environmental Protection Agency (EPA) SW 846 Method 8270D
SVOCs by EPA SW 846 Method 8270D utilizing Selective Ion Monitoring (SIM)
Pesticides by EPA SW 846 Method 8081B
Polychlorinated Biphenyls (PCBs) by EPA SW 846 Method 8082A
Metals by EPA SW 846 Method 6010C, 6020A, and 7471B
Herbicides by EPA SW 846 Method 8151A
Perchlorate by EPA SW 846 Method 6850
Total Petroleum Hydrocarbons (TPH) as Gasoline by EPA SW 846 Method 8015M
TPH as Extractables with and without Silica Gel Clean Up by EPA SW 846 Method 8015M
Glycols by EPA SW 846 Method 8015B
Terphenyls by EPA SW 846 Method 8015B
Explosives by EPA SW 846 Method 8330A
Dioxins and Dibenzofurans by EPA Method 1613B
Hexavalent Chromium by EPA method 7199

The sample identification and methods of analyses performed on each sample is presented in Attachment 1. Overall data qualification summary is presented in Attachment 2. Level III Automated Data Review outliers are presented in Enclosure I.

All sample results were subjected to Level III data validation, which comprises an evaluation of quality control (QC) summary results for sample holding times, initial and continuing calibration blanks (ICB/CCBs), surrogates, internal standards (dioxins and dibenzofurans only), matrix spike/matrix spike duplicates (MS/MSD), laboratory duplicate samples (DUPs), laboratory control sample/laboratory control sample duplicates (LCS/LCSD), ICP serial dilutions, method blanks, trip blanks, equipment blanks, field blanks and field duplicates. No samples in this SDG were subjected to Level IV evaluation.

Automated data review was performed on all QC summary results using the Automated Data Review (ADR) software program (LDC, 2013) with the exception of ICB/CCBs and ICP serial dilutions, which were validated manually. Quality assurance (QA)/QC criteria specified in the QAPP and CLPNFGs were incorporated with the program's reference library to assess compliance with project requirements.

The following are definitions of the data qualifiers:

U Indicates the compound or analyte was analyzed for but not detected.

J Indicates an estimated value.

R Quality control indicates the data is not usable.

NJ Presumptive evidence of presence of the compound at an estimated quantity.

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

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 QC criteria.

II. Initial Calibration

Initial Calibration data were not reviewed for level III.

III. Continuing Calibration

Continuing calibration data were not reviewed for level III.

IV. Blanks

Method blanks were performed at the required frequencies. No contaminant concentrations were detected in the method or preparation blanks with the exception of several blanks for metals and dioxins and dibenzofurans. The associated sample results were qualified as non-detected (U) due to method blank contamination as applicable. The sample results that were not detected or were significantly greater than the concentrations found in the associated blanks were not qualified. The details regarding the qualification of data are provided in Enclosure I.

No contaminant concentrations were detected in the initial or continuing calibration blanks.

V. Surrogate Spikes

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

VI. ICP Interference Check Sample (ICS) Analysis

ICP interference check data were not reviewed for level III.

VII. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) samples were performed at the required frequency. Percent recoveries (%R) and relative percent differences (RPD) were within QC limits with the exception of one MS/MSD pair for SVOCs, herbicides, metals, TPH as extractables, glycols, and explosives. The dalapon and 2,6-dichlorophenol results in sample SL-651-SA5C-TR-5.0 were qualified as rejected (R) due to MS/MSD %Rs grossly outside QC limits (i.e., ≤ 0%). The remainder of the associated sample results were qualified as detected estimated (J) or non-detected estimated (UJ) as applicable. The details regarding the qualification of data are provided in Enclosure I.

VIII. Laboratory Duplicates Sample

Laboratory duplicates (DUP) sample analyses were reviewed for each matrix as applicable. Results were within QC limits.

IV. Laboratory Control Samples (LCS)

Laboratory control samples were reviewed for each matrix as applicable. Percent recoveries (%R) and relative percent differences (RPD) were within QC limits with the exception of several LCS/LCSD pairs for SVOCs, explosives, and TPH as extractables with silica gel clean up. The associated sample results were qualified as detected estimated (J) or non-detected estimated (UJ) as applicable. The details regarding the qualification of data are provided in Enclosure I.

X. Internal Standards

Internal standards were reviewed for dioxins and dibenzofurans. Percent recoveries (%R) were within QC limits.

XI. ICP Serial Dilution

ICP serial dilution analysis was performed by the laboratory. The analysis criteria were met.

XII. Compound Quantitation

The laboratory reporting limits were evaluated. All laboratory reporting limits met the specified requirements.

All compounds reported below the RL as detected were qualified as follows:

Sample	Finding	Flag	A or P
All samples in SDG PH209	All compounds reported as detected below the RL.	J (all detects)	A

XIII. Field Duplicate Samples

One field duplicate pair was collected and analyzed for SVOCs, pesticides, PCBs, metals, herbicides, perchlorate, TPH as gasoline, TPH as extractables with and without silica gel clean up, glycols, explosives, terphenyls, hexavalent chromium, and dioxins and dibenzofurans. All RPDs were within QC limits with the exception of SVOCs, TPH as extractables, metals, and dioxins and dibenxofurans. The associated sample results were qualified as detected estimated (J) or non-detected estimated (UJ) as applicable. The field duplicate result comparisons are provided in Enclosure I.

XIV. Field Blank Samples

One trip blank was collected and analyzed for TPH as gasoline. No contaminant concentrations were detected in the trip blank.

One equipment blank (from SDG PH207) was collected and analyzed for SVOCs, pesticides, PCBs, metals, herbicides, perchlorate, TPH as gasoline, TPH as extractables with and without silica gel clean up, glycols, explosives, terphenyls, hexavalent chromium, and dioxins and dibenzofurans. The equipment blank had detections for SVOCs, metals, and dioxins and dibenzofurans. The associated sample results were qualified as non-detected (U) due to equipment blank contamination as applicable. The sample results that were not detected or were significantly greater than the concentrations found in the equipment blanks were not

qualified. The equipment blank outlier reports are presented in Enclosure I.

One field blank (from SDG PH191) was collected and analyzed for SVOCs, pesticides, PCBs, metals, herbicides, perchlorate, TPH as gasoline, TPH as extractables with and without silica gel clean up, glycols, explosives, terphenyls, hexavalent chromium, and dioxins and dibenzofurans. The field blank had detections for SVOCs, metals and dioxins and dibenzofurans. The associated sample results were qualified as non-detected (U) due to field blank contamination as applicable. The sample results that were not detected or were significantly greater than the concentrations found in the field blank were not qualified. The field blank outlier reports are presented in Enclosure I.

XV. Overall Assessment of Data

One SVOC result and one herbicide result were rejected due to MS/MSD %Rs grossly outside of QC limits. These results are not useable for all purposes.

The overall assessment of QA/QC data review by automated and manual validation of this sampling event met project requirements and analytical completeness levels with the exceptions noted in the above sections. The remainder of the data are deemed useable for the intended use.

Data flags are summarized and are presented as Attachment 2.

Attachment 1

Sample Cross Reference

Sample Cross Reference

Date Collected	Field Sample ID	Lab Sample ID	Sample Type	Prep Method	Analytical Method	Review Level
30-May-2014	TB3-053014	7483444	TB	5030B	8015M	III
30-May-2014	SL-651-SA5C-TR-0.5	7483433	N	3050B	6010C	III
30-May-2014	SL-651-SA5C-TR-0.5	7483433	N	3050B	6020A	III
30-May-2014	SL-651-SA5C-TR-0.5	7483433	N	3060A	7199	III
30-May-2014	SL-651-SA5C-TR-0.5	7483433	N	3546	8015M	III
30-May-2014	SL-651-SA5C-TR-0.5	7483433	N	3546	8081B	III
30-May-2014	SL-651-SA5C-TR-0.5	7483433	N	3546	8082A	III
30-May-2014	SL-651-SA5C-TR-0.5	7483433	N	3546	8270D	III
30-May-2014	SL-651-SA5C-TR-0.5	7483433	N	3546	8270D SIM	III
30-May-2014	SL-651-SA5C-TR-0.5	7483433	N	3550B	8015B	III
30-May-2014	SL-651-SA5C-TR-0.5	7483433	N	3550B	8151A	III
30-May-2014	SL-651-SA5C-TR-0.5	7483433	N	3550C	8015B	III
30-May-2014	SL-651-SA5C-TR-0.5	7483433	N	8330	8330A	III
30-May-2014	SL-651-SA5C-TR-0.5	7483433	N	METHOD	1613B	III
30-May-2014	SL-651-SA5C-TR-0.5	7483433	N	METHOD	6850	III
30-May-2014	SL-651-SA5C-TR-0.5	7483433	N	METHOD	7471B	III
30-May-2014	SL-651-SA5C-TR-5.0	7483434	N	3050B	6010C	III
30-May-2014	SL-651-SA5C-TR-5.0	7483434	N	3050B	6020A	III
30-May-2014	SL-651-SA5C-TR-5.0	7483434	N	3060A	7199	III
30-May-2014	SL-651-SA5C-TR-5.0	7483434	N	3546	8015M	III
30-May-2014	SL-651-SA5C-TR-5.0	7483434	N	3546	8081B	III
30-May-2014	SL-651-SA5C-TR-5.0	7483434	N	3546	8082A	III
30-May-2014	SL-651-SA5C-TR-5.0	7483434	N	3546	8270D	III
30-May-2014	SL-651-SA5C-TR-5.0	7483434	N	3546	8270D SIM	III
30-May-2014	SL-651-SA5C-TR-5.0	7483434	N	3550B	8015B	III
30-May-2014	SL-651-SA5C-TR-5.0	7483434	N	3550B	8151A	III

III = EPA Level 3 Data Review *N = Normal Sample* *TB = Trip Blank* *MS = Matrix Spike*
IV = EPA Level 4 Data Validation *FD = Field Duplicate* *FB = Field Blank* *MSD = Matrix Spike Duplicate*

Sample Cross Reference

Date Collected	Field Sample ID	Lab Sample ID	Sample Type	Prep Method	Analytical Method	Review Level
30-May-2014	SL-651-SA5C-TR-5.0	7483434	N	3550C	8015B	III
30-May-2014	SL-651-SA5C-TR-5.0	7483434	N	5035A	8015M	III
30-May-2014	SL-651-SA5C-TR-5.0	7483434	N	8330	8330A	III
30-May-2014	SL-651-SA5C-TR-5.0	7483434	N	METHOD	1613B	III
30-May-2014	SL-651-SA5C-TR-5.0	7483434	N	METHOD	6850	III
30-May-2014	SL-651-SA5C-TR-5.0	7483434	N	METHOD	7471B	III
30-May-2014	SL-651-SA5C-TR-5.0MS	7483435	MS	3060A	7199	III
30-May-2014	SL-651-SA5C-TR-5.0MS	7483436	MS	3060A	7199	III
30-May-2014	SL-651-SA5C-TR-5.0MS	7483438	MS	3050B	6010C	III
30-May-2014	SL-651-SA5C-TR-5.0MS	7483438	MS	3050B	6020A	III
30-May-2014	SL-651-SA5C-TR-5.0MS	7483438	MS	3546	8015M	III
30-May-2014	SL-651-SA5C-TR-5.0MS	7483438	MS	3546	8081B	III
30-May-2014	SL-651-SA5C-TR-5.0MS	7483438	MS	3546	8082A	III
30-May-2014	SL-651-SA5C-TR-5.0MS	7483438	MS	3546	8270D	III
30-May-2014	SL-651-SA5C-TR-5.0MS	7483438	MS	3546	8270D SIM	III
30-May-2014	SL-651-SA5C-TR-5.0MS	7483438	MS	3550B	8015B	III
30-May-2014	SL-651-SA5C-TR-5.0MS	7483438	MS	3550B	8151A	III
30-May-2014	SL-651-SA5C-TR-5.0MS	7483438	MS	3550C	8015B	III
30-May-2014	SL-651-SA5C-TR-5.0MS	7483438	MS	5035A	8015M	III
30-May-2014	SL-651-SA5C-TR-5.0MS	7483438	MS	8330	8330A	III
30-May-2014	SL-651-SA5C-TR-5.0MS	7483438	MS	METHOD	1613B	III
30-May-2014	SL-651-SA5C-TR-5.0MS	7483438	MS	METHOD	6850	III
30-May-2014	SL-651-SA5C-TR-5.0MS	7483438	MS	METHOD	7471B	III
30-May-2014	SL-651-SA5C-TR-5.0MSD	7483439	MSD	3050B	6010C	III
30-May-2014	SL-651-SA5C-TR-5.0MSD	7483439	MSD	3050B	6020A	III
30-May-2014	SL-651-SA5C-TR-5.0MSD	7483439	MSD	3546	8015M	III

III = EPA Level 3 Data Review *N = Normal Sample* *TB = Trip Blank* *MS = Matrix Spike*
IV = EPA Level 4 Data Validation *FD = Field Duplicate* *FB = Field Blank* *MSD = Matrix Spike Duplicate*

Sample Cross Reference

Date Collected	Field Sample ID	Lab Sample ID	Sample Type	Prep Method	Analytical Method	Review Level
30-May-2014	SL-651-SA5C-TR-5.0MSD	7483439	MSD	3546	8081B	III
30-May-2014	SL-651-SA5C-TR-5.0MSD	7483439	MSD	3546	8082A	III
30-May-2014	SL-651-SA5C-TR-5.0MSD	7483439	MSD	3546	8270D	III
30-May-2014	SL-651-SA5C-TR-5.0MSD	7483439	MSD	3546	8270D SIM	III
30-May-2014	SL-651-SA5C-TR-5.0MSD	7483439	MSD	3550B	8015B	III
30-May-2014	SL-651-SA5C-TR-5.0MSD	7483439	MSD	3550B	8151A	III
30-May-2014	SL-651-SA5C-TR-5.0MSD	7483439	MSD	3550C	8015B	III
30-May-2014	SL-651-SA5C-TR-5.0MSD	7483439	MSD	5035A	8015M	III
30-May-2014	SL-651-SA5C-TR-5.0MSD	7483439	MSD	8330	8330A	III
30-May-2014	SL-651-SA5C-TR-5.0MSD	7483439	MSD	METHOD	1613B	III
30-May-2014	SL-651-SA5C-TR-5.0MSD	7483439	MSD	METHOD	6850	III
30-May-2014	SL-651-SA5C-TR-5.0MSD	7483439	MSD	METHOD	7471B	III
30-May-2014	SL-651-SA5C-TR-5.0DUP	7483440	DUP	3050B	6010C	III
30-May-2014	SL-651-SA5C-TR-5.0DUP	7483440	DUP	3050B	6020A	III
30-May-2014	SL-651-SA5C-TR-5.0DUP	7483440	DUP	3060A	7199	III
30-May-2014	SL-651-SA5C-TR-5.0DUP	7483440	DUP	METHOD	7471B	III
30-May-2014	SL-951-SA5C-TR-5.0	7483441	FD	3050B	6010C	III
30-May-2014	SL-951-SA5C-TR-5.0	7483441	FD	3050B	6020A	III
30-May-2014	SL-951-SA5C-TR-5.0	7483441	FD	3060A	7199	III
30-May-2014	SL-951-SA5C-TR-5.0	7483441	FD	3546	8015M	III
30-May-2014	SL-951-SA5C-TR-5.0	7483441	FD	3546	8081B	III
30-May-2014	SL-951-SA5C-TR-5.0	7483441	FD	3546	8082A	III
30-May-2014	SL-951-SA5C-TR-5.0	7483441	FD	3546	8270D	III
30-May-2014	SL-951-SA5C-TR-5.0	7483441	FD	3546	8270D SIM	III
30-May-2014	SL-951-SA5C-TR-5.0	7483441	FD	3550B	8015B	III
30-May-2014	SL-951-SA5C-TR-5.0	7483441	FD	3550B	8151A	III

III = EPA Level 3 Data Review *N = Normal Sample* *TB = Trip Blank* *MS = Matrix Spike*
IV = EPA Level 4 Data Validation *FD = Field Duplicate* *FB = Field Blank* *MSD = Matrix Spike Duplicate*

Sample Cross Reference

Date Collected	Field Sample ID	Lab Sample ID	Sample Type	Prep Method	Analytical Method	Review Level
30-May-2014	SL-951-SA5C-TR-5.0	7483441	FD	3550C	8015B	III
30-May-2014	SL-951-SA5C-TR-5.0	7483441	FD	5035A	8015M	III
30-May-2014	SL-951-SA5C-TR-5.0	7483441	FD	8330	8330A	III
30-May-2014	SL-951-SA5C-TR-5.0	7483441	FD	METHOD	1613B	III
30-May-2014	SL-951-SA5C-TR-5.0	7483441	FD	METHOD	6850	III
30-May-2014	SL-951-SA5C-TR-5.0	7483441	FD	METHOD	7471B	III
30-May-2014	SL-651-SA5C-TR-10.0	7483442	N	3050B	6010C	III
30-May-2014	SL-651-SA5C-TR-10.0	7483442	N	3050B	6020A	III
30-May-2014	SL-651-SA5C-TR-10.0	7483442	N	3060A	7199	III
30-May-2014	SL-651-SA5C-TR-10.0	7483442	N	3546	8015M	III
30-May-2014	SL-651-SA5C-TR-10.0	7483442	N	3546	8081B	III
30-May-2014	SL-651-SA5C-TR-10.0	7483442	N	3546	8082A	III
30-May-2014	SL-651-SA5C-TR-10.0	7483442	N	3546	8270D	III
30-May-2014	SL-651-SA5C-TR-10.0	7483442	N	3546	8270D SIM	III
30-May-2014	SL-651-SA5C-TR-10.0	7483442	N	3550B	8015B	III
30-May-2014	SL-651-SA5C-TR-10.0	7483442	N	3550B	8151A	III
30-May-2014	SL-651-SA5C-TR-10.0	7483442	N	3550C	8015B	III
30-May-2014	SL-651-SA5C-TR-10.0	7483442	N	5035A	8015M	III
30-May-2014	SL-651-SA5C-TR-10.0	7483442	N	8330	8330A	III
30-May-2014	SL-651-SA5C-TR-10.0	7483442	N	METHOD	1613B	III
30-May-2014	SL-651-SA5C-TR-10.0	7483442	N	METHOD	6850	III
30-May-2014	SL-651-SA5C-TR-10.0	7483442	N	METHOD	7471B	III
30-May-2014	SL-651-SA5C-TR-15.0	7483443	N	3050B	6010C	III
30-May-2014	SL-651-SA5C-TR-15.0	7483443	N	3050B	6020A	III
30-May-2014	SL-651-SA5C-TR-15.0	7483443	N	3060A	7199	III
30-May-2014	SL-651-SA5C-TR-15.0	7483443	N	3546	8015M	III

III = EPA Level 3 Data Review *N = Normal Sample* *TB = Trip Blank* *MS = Matrix Spike*
IV = EPA Level 4 Data Validation *FD = Field Duplicate* *FB = Field Blank* *MSD = Matrix Spike Duplicate*

Sample Cross Reference

Date Collected	Field Sample ID	Lab Sample ID	Sample Type	Prep Method	Analytical Method	Review Level
30-May-2014	SL-651-SA5C-TR-15.0	7483443	N	3546	8081B	III
30-May-2014	SL-651-SA5C-TR-15.0	7483443	N	3546	8082A	III
30-May-2014	SL-651-SA5C-TR-15.0	7483443	N	3546	8270D	III
30-May-2014	SL-651-SA5C-TR-15.0	7483443	N	3546	8270D SIM	III
30-May-2014	SL-651-SA5C-TR-15.0	7483443	N	3550B	8015B	III
30-May-2014	SL-651-SA5C-TR-15.0	7483443	N	3550B	8151A	III
30-May-2014	SL-651-SA5C-TR-15.0	7483443	N	3550C	8015B	III
30-May-2014	SL-651-SA5C-TR-15.0	7483443	N	5035A	8015M	III
30-May-2014	SL-651-SA5C-TR-15.0	7483443	N	8330	8330A	III
30-May-2014	SL-651-SA5C-TR-15.0	7483443	N	METHOD	1613B	III
30-May-2014	SL-651-SA5C-TR-15.0	7483443	N	METHOD	6850	III
30-May-2014	SL-651-SA5C-TR-15.0	7483443	N	METHOD	7471B	III

III = EPA Level 3 Data Review *N = Normal Sample* *TB = Trip Blank* *MS = Matrix Spike*
IV = EPA Level 4 Data Validation *FD = Field Duplicate* *FB = Field Blank* *MSD = Matrix Spike Duplicate*

Attachment 2
Overall Data Qualification Summary

Data Qualifier Summary

Lab Reporting Batch ID: PH209 **Laboratory: LL**

EDD Filename: PH209_v1. **eQAPP Name: CDM_SSFL_140617_Lan**

Method Category: METALS

Method: 6010C **Matrix: SO**

Sample ID: **SL-651-SA5C-TR-0.5** ***Collected:*** **5/30/2014 8:18:00** ***Analysis Type:*** **RES** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
ANTIMONY	4.09	U	0.757	MDL	4.09	PQL	mg/Kg	UJ	Q
BERYLLIUM	0.703	J	0.0685	MDL	1.02	PQL	mg/Kg	J	Z
BORON	1.78	J	0.859	MDL	10.2	PQL	mg/Kg	J	Z
CALCIUM	3530		3.41	MDL	20.4	PQL	mg/Kg	J	E
MAGNESIUM	5070		1.71	MDL	10.2	PQL	mg/Kg	J	E
MOLYBDENUM	0.186	J	0.174	MDL	2.04	PQL	mg/Kg	U	F
POTASSIUM	3920		8.53	MDL	102	PQL	mg/Kg	J	Q
SODIUM	76.3	J	17.1	MDL	102	PQL	mg/Kg	J	Z
TIN	2.73	J	0.225	MDL	10.2	PQL	mg/Kg	U	B
Zirconium	3.73	J	0.859	MDL	5.11	PQL	mg/Kg	U	F
PHOSPHORUS	447		2.95	MDL	10.2	PQL	mg/Kg	J	Q, E

Sample ID: **SL-651-SA5C-TR-10.0** ***Collected:*** **5/30/2014 9:22:00** ***Analysis Type:*** **RES** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
ANTIMONY	4.12	U	0.762	MDL	4.12	PQL	mg/Kg	UJ	Q
BERYLLIUM	0.683	J	0.0690	MDL	1.03	PQL	mg/Kg	J	Z
BORON	2.29	J	0.865	MDL	10.3	PQL	mg/Kg	J	Z
CALCIUM	3240		3.44	MDL	20.6	PQL	mg/Kg	J	E
MAGNESIUM	4150		1.72	MDL	10.3	PQL	mg/Kg	J	E
MOLYBDENUM	0.186	J	0.175	MDL	2.06	PQL	mg/Kg	U	F
PHOSPHORUS	307		2.98	MDL	10.3	PQL	mg/Kg	J	Q, E
POTASSIUM	3110		8.59	MDL	103	PQL	mg/Kg	J	Q
TIN	2.72	J	0.227	MDL	10.3	PQL	mg/Kg	U	B
Zirconium	3.47	J	0.865	MDL	5.15	PQL	mg/Kg	U	F

Sample ID: **SL-651-SA5C-TR-15.0** ***Collected:*** **5/30/2014 11:14:00** ***Analysis Type:*** **RES** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
ANTIMONY	4.07	U	0.752	MDL	4.07	PQL	mg/Kg	UJ	Q
BERYLLIUM	0.651	J	0.0681	MDL	1.02	PQL	mg/Kg	J	Z
BORON	4.80	J	0.854	MDL	10.2	PQL	mg/Kg	J	Z
CALCIUM	4390		3.39	MDL	20.3	PQL	mg/Kg	J	E
MAGNESIUM	4140		1.70	MDL	10.2	PQL	mg/Kg	J	E
MOLYBDENUM	2.03	U	0.173	MDL	2.03	PQL	mg/Kg	U	F

* denotes a non-reportable result

Project Name and Number: 1204-002-001-AL - SSFL Area IV Phase 3

Data Qualifier Summary

Lab Reporting Batch ID: PH209 **Laboratory: LL**

EDD Filename: PH209_v1. **eQAPP Name: CDM_SSFL_140617_Lan**

Method Category: METALS

Method: 6010C **Matrix: SO**

Sample ID: SL-651-SA5C-TR-15.0 **Collected: 5/30/2014 11:14:00** **Analysis Type: RES** **Dilution: 1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
PHOSPHORUS	289		2.94	MDL	10.2	PQL	mg/Kg	J	Q, E
POTASSIUM	2820		8.48	MDL	102	PQL	mg/Kg	J	Q
TIN	2.55	J	0.224	MDL	10.2	PQL	mg/Kg	U	B
Zirconium	3.34	J	0.854	MDL	5.08	PQL	mg/Kg	U	F

Sample ID: SL-651-SA5C-TR-5.0 **Collected: 5/30/2014 8:40:00** **Analysis Type: REA** **Dilution: 1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
CALCIUM	2130		3.47	MDL	20.8	PQL	mg/Kg	J	E

Sample ID: SL-651-SA5C-TR-5.0 **Collected: 5/30/2014 8:40:00** **Analysis Type: RES** **Dilution: 1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
ANTIMONY	4.15	U	0.768	MDL	4.15	PQL	mg/Kg	UJ	Q
ARSENIC	3.17	J	0.726	MDL	4.15	PQL	mg/Kg	J	Z
BERYLLIUM	0.448	J	0.0695	MDL	1.04	PQL	mg/Kg	J	Z
BORON	1.75	J	0.872	MDL	10.4	PQL	mg/Kg	J	Z
MAGNESIUM	3340		1.73	MDL	10.4	PQL	mg/Kg	J	E
MOLYBDENUM	0.308	J	0.176	MDL	2.08	PQL	mg/Kg	UJ	FD, F
PHOSPHORUS	334		3.00	MDL	10.4	PQL	mg/Kg	J	Q, E
POTASSIUM	2840		8.66	MDL	104	PQL	mg/Kg	J	Q
SODIUM	71.3	J	17.3	MDL	104	PQL	mg/Kg	J	Z
TIN	2.63	J	0.228	MDL	10.4	PQL	mg/Kg	U	B
Zirconium	1.94	J	0.872	MDL	5.19	PQL	mg/Kg	U	F

Sample ID: SL-951-SA5C-TR-5.0 **Collected: 5/30/2014 8:45:00** **Analysis Type: REA** **Dilution: 1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
CALCIUM	2320		3.36	MDL	20.1	PQL	mg/Kg	J	E

Sample ID: SL-951-SA5C-TR-5.0 **Collected: 5/30/2014 8:45:00** **Analysis Type: RES** **Dilution: 1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
ANTIMONY	4.02	U	0.744	MDL	4.02	PQL	mg/Kg	UJ	Q
ARSENIC	3.57	J	0.704	MDL	4.02	PQL	mg/Kg	J	Z

* denotes a non-reportable result

Project Name and Number: 1204-002-001-AL - SSFL Area IV Phase 3

Data Qualifier Summary

Lab Reporting Batch ID: PH209 **Laboratory: LL**

EDD Filename: PH209_v1. **eQAPP Name: CDM_SSFL_140617_Lan**

Method Category: METALS

Method: 6010C **Matrix: SO**

Sample ID: **SL-951-SA5C-TR-5.0** *Collected:* **5/30/2014 8:45:00** *Analysis Type:* **RES** *Dilution:* **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
BERYLLIUM	0.559	J	0.0674	MDL	1.01	PQL	mg/Kg	J	Z
BORON	1.62	J	0.845	MDL	10.1	PQL	mg/Kg	J	Z
MAGNESIUM	3660		1.68	MDL	10.1	PQL	mg/Kg	J	E
MOLYBDENUM	2.01	U	0.171	MDL	2.01	PQL	mg/Kg	UJ	FD, F
PHOSPHORUS	318		2.91	MDL	10.1	PQL	mg/Kg	J	Q, E
POTASSIUM	2910		8.39	MDL	101	PQL	mg/Kg	J	Q
SODIUM	71.2	J	16.8	MDL	101	PQL	mg/Kg	J	Z
TIN	2.69	J	0.221	MDL	10.1	PQL	mg/Kg	U	B
Zirconium	2.32	J	0.845	MDL	5.03	PQL	mg/Kg	U	F

Method Category: METALS

Method: 6020A **Matrix: SO**

Sample ID: **SL-651-SA5C-TR-0.5** *Collected:* **5/30/2014 8:18:00** *Analysis Type:* **REA** *Dilution:* **2**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
SELENIUM	0.167	J	0.102	MDL	0.409	PQL	mg/Kg	J	Z

Sample ID: **SL-651-SA5C-TR-10.0** *Collected:* **5/30/2014 9:22:00** *Analysis Type:* **REA** *Dilution:* **2**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
SELENIUM	0.129	J	0.103	MDL	0.412	PQL	mg/Kg	J	Z

Sample ID: **SL-651-SA5C-TR-15.0** *Collected:* **5/30/2014 11:14:00** *Analysis Type:* **REA** *Dilution:* **2**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
SELENIUM	0.122	J	0.102	MDL	0.407	PQL	mg/Kg	J	Z

Sample ID: **SL-651-SA5C-TR-15.0** *Collected:* **5/30/2014 11:14:00** *Analysis Type:* **RES** *Dilution:* **2**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
SILVER	0.0296	J	0.0264	MDL	0.203	PQL	mg/Kg	J	Z

* denotes a non-reportable result

Project Name and Number: 1204-002-001-AL - SSFL Area IV Phase 3

Data Qualifier Summary

Lab Reporting Batch ID: PH209 **Laboratory: LL**

EDD Filename: PH209_v1. **eQAPP Name: CDM_SSFL_140617_Lan**

Method Category: METALS

Method: 6020A **Matrix: SO**

Sample ID: SL-651-SA5C-TR-5.0 *Collected:* 5/30/2014 8:40:00 *Analysis Type:* REA *Dilution:* 2

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
SELENIUM	0.415	U	0.104	MDL	0.415	PQL	mg/Kg	UJ	FD

Sample ID: SL-951-SA5C-TR-5.0 *Collected:* 5/30/2014 8:45:00 *Analysis Type:* REA *Dilution:* 2

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
SELENIUM	0.143	J	0.101	MDL	0.402	PQL	mg/Kg	J	Z, FD

Method Category: METALS

Method: 7199 **Matrix: SO**

Sample ID: SL-651-SA5C-TR-10.0 *Collected:* 5/30/2014 9:22:00 *Analysis Type:* RES *Dilution:* 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
HEXAVALENT CHROMIUM	0.41	J	0.15	MDL	0.43	PQL	mg/Kg	J	Z

Method Category: METALS

Method: 7471B **Matrix: SO**

Sample ID: SL-651-SA5C-TR-10.0 *Collected:* 5/30/2014 9:22:00 *Analysis Type:* RES *Dilution:* 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
MERCURY	0.0124	J	0.0101	MDL	0.0169	PQL	mg/Kg	J	Z

Sample ID: SL-651-SA5C-TR-15.0 *Collected:* 5/30/2014 11:14:00 *Analysis Type:* RES *Dilution:* 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
MERCURY	0.0160	J	0.0103	MDL	0.0171	PQL	mg/Kg	J	Z

Method Category: SVOA

Method: 1613B **Matrix: SO**

Sample ID: SL-651-SA5C-TR-0.5 *Collected:* 5/30/2014 8:18:00 *Analysis Type:* RES *Dilution:* 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
1,2,3,4,6,7,8-HPCDF	1.13	JB	0.0229	MDL	5.17	PQL	ng/Kg	J	Z

* denotes a non-reportable result

Project Name and Number: 1204-002-001-AL - SSFL Area IV Phase 3

Data Qualifier Summary

Lab Reporting Batch ID: PH209 **Laboratory: LL**

EDD Filename: PH209_v1. **eQAPP Name: CDM_SSFL_140617_Lan**

Method Category: SVOA

Method: 1613B **Matrix: SO**

Sample ID: **SL-651-SA5C-TR-0.5** *Collected:* **5/30/2014 8:18:00** *Analysis Type:* **RES** *Dilution:* **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
1,2,3,4,7,8,9-HPCDF	0.0929	JBQ	0.0377	MDL	5.17	PQL	ng/Kg	U	B
1,2,3,4,7,8-HxCDD	0.134	JBQ	0.0429	MDL	5.17	PQL	ng/Kg	U	B
1,2,3,4,7,8-HXCDF	0.141	JBQ	0.0451	MDL	5.17	PQL	ng/Kg	U	B
1,2,3,6,7,8-HXCDD	0.552	JB	0.0447	MDL	5.17	PQL	ng/Kg	J	Z
1,2,3,6,7,8-HXCDF	0.133	JBQ	0.0388	MDL	5.17	PQL	ng/Kg	U	B
1,2,3,7,8,9-HXCDD	0.518	JBQ	0.0409	MDL	5.17	PQL	ng/Kg	J	Z
1,2,3,7,8,9-HXCDF	0.448	JBQ	0.0519	MDL	5.17	PQL	ng/Kg	J	Z
1,2,3,7,8-PECDD	0.170	JBQ	0.0449	MDL	5.17	PQL	ng/Kg	U	B
1,2,3,7,8-PECDF	0.269	JB	0.0254	MDL	5.17	PQL	ng/Kg	U	B
2,3,4,6,7,8-HXCDF	0.148	JB	0.0433	MDL	5.17	PQL	ng/Kg	U	B
2,3,4,7,8-PECDF	0.194	JB	0.0251	MDL	5.17	PQL	ng/Kg	U	B
2,3,7,8-TCDF	0.129	JQ	0.0590	MDL	1.03	PQL	ng/Kg	J	Z
OCDF	2.88	JB	0.0514	MDL	10.3	PQL	ng/Kg	J	Z

Sample ID: **SL-651-SA5C-TR-10.0** *Collected:* **5/30/2014 9:22:00** *Analysis Type:* **RES** *Dilution:* **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
1,2,3,4,6,7,8-HPCDD	1.12	JB	0.0440	MDL	5.07	PQL	ng/Kg	J	Z
1,2,3,4,6,7,8-HPCDF	0.278	JBQ	0.0129	MDL	5.07	PQL	ng/Kg	J	Z
1,2,3,4,7,8,9-HPCDF	0.100	JBQ	0.0226	MDL	5.07	PQL	ng/Kg	U	B
1,2,3,4,7,8-HxCDD	0.0415	JBQ	0.0360	MDL	5.07	PQL	ng/Kg	U	B
1,2,3,4,7,8-HXCDF	0.0822	JBQ	0.0374	MDL	5.07	PQL	ng/Kg	U	B
1,2,3,6,7,8-HXCDD	0.384	JBQ	0.0379	MDL	5.07	PQL	ng/Kg	J	Z
1,2,3,6,7,8-HXCDF	0.114	JBQ	0.0330	MDL	5.07	PQL	ng/Kg	U	B
1,2,3,7,8,9-HXCDD	0.396	JBQ	0.0381	MDL	5.07	PQL	ng/Kg	J	Z
1,2,3,7,8,9-HXCDF	0.330	JBQ	0.0438	MDL	5.07	PQL	ng/Kg	J	Z
1,2,3,7,8-PECDD	0.0599	JBQ	0.0477	MDL	5.07	PQL	ng/Kg	U	B
1,2,3,7,8-PECDF	0.231	JBQ	0.0266	MDL	5.07	PQL	ng/Kg	U	B
2,3,4,6,7,8-HXCDF	0.170	JBQ	0.0344	MDL	5.07	PQL	ng/Kg	U	B
2,3,4,7,8-PECDF	0.166	JBQ	0.0282	MDL	5.07	PQL	ng/Kg	U	B
2,3,7,8-TCDF	0.0779	J	0.0668	MDL	1.01	PQL	ng/Kg	J	Z
OCDF	0.513	JB	0.0482	MDL	10.1	PQL	ng/Kg	U	B

* denotes a non-reportable result

Project Name and Number: 1204-002-001-AL - SSFL Area IV Phase 3

Data Qualifier Summary

Lab Reporting Batch ID: PH209 **Laboratory: LL**

EDD Filename: PH209_v1. **eQAPP Name: CDM_SSFL_140617_Lan**

Method Category: SVOA

Method: 1613B **Matrix: SO**

Sample ID: **SL-651-SA5C-TR-15.0** ***Collected:*** **5/30/2014 11:14:00** ***Analysis Type:*** **RES** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
1,2,3,4,6,7,8-HPCDD	0.808	JB	0.0328	MDL	5.21	PQL	ng/Kg	J	Z
1,2,3,4,6,7,8-HPCDF	0.232	JBQ	0.0100	MDL	5.21	PQL	ng/Kg	U	B
1,2,3,4,7,8,9-HPCDF	0.0608	JB	0.0158	MDL	5.21	PQL	ng/Kg	U	B
1,2,3,4,7,8-HxCDD	0.0325	JBQ	0.0273	MDL	5.21	PQL	ng/Kg	U	B
1,2,3,4,7,8-HXCDF	0.104	JB	0.0264	MDL	5.21	PQL	ng/Kg	U	B
1,2,3,6,7,8-HXCDD	0.0864	JBQ	0.0293	MDL	5.21	PQL	ng/Kg	U	B
1,2,3,6,7,8-HXCDF	0.0819	JB	0.0242	MDL	5.21	PQL	ng/Kg	U	B
1,2,3,7,8,9-HXCDD	0.154	JBQ	0.0262	MDL	5.21	PQL	ng/Kg	U	B
1,2,3,7,8,9-HXCDF	0.168	JBQ	0.0281	MDL	5.21	PQL	ng/Kg	U	B
1,2,3,7,8-PECDD	0.0497	JBQ	0.0358	MDL	5.21	PQL	ng/Kg	U	B
1,2,3,7,8-PECDF	0.118	JBQ	0.0174	MDL	5.21	PQL	ng/Kg	U	B
2,3,4,6,7,8-HXCDF	0.0603	JBQ	0.0242	MDL	5.21	PQL	ng/Kg	U	B
2,3,4,7,8-PECDF	0.0354	JB	0.0175	MDL	5.21	PQL	ng/Kg	U	B
OCDD	9.79	JB	0.0186	MDL	10.4	PQL	ng/Kg	J	Z
OCDF	0.620	JBQ	0.0323	MDL	10.4	PQL	ng/Kg	U	B

Sample ID: **SL-651-SA5C-TR-5.0** ***Collected:*** **5/30/2014 8:40:00** ***Analysis Type:*** **RES** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
1,2,3,4,6,7,8-HPCDD	2.10	JB	0.0291	MDL	5.11	PQL	ng/Kg	J	Z
1,2,3,4,6,7,8-HPCDF	0.321	JB	0.0147	MDL	5.11	PQL	ng/Kg	J	Z
1,2,3,4,7,8,9-HPCDF	0.106	JBQ	0.0227	MDL	5.11	PQL	ng/Kg	U	B
1,2,3,4,7,8-HxCDD	0.0344	JBQ	0.0243	MDL	5.11	PQL	ng/Kg	U	B
1,2,3,4,7,8-HXCDF	0.0936	JB	0.0244	MDL	5.11	PQL	ng/Kg	U	B
1,2,3,6,7,8-HXCDD	0.0769	JBQ	0.0263	MDL	5.11	PQL	ng/Kg	UJ	B, FD
1,2,3,6,7,8-HXCDF	0.0888	JBQ	0.0231	MDL	5.11	PQL	ng/Kg	U	B
1,2,3,7,8,9-HXCDD	0.0679	JBQ	0.0242	MDL	5.11	PQL	ng/Kg	UJ	B, FD
1,2,3,7,8,9-HXCDF	5.11	U	0.0270	MDL	5.11	PQL	ng/Kg	UJ	FD
1,2,3,7,8-PECDD	0.0418	JB	0.0323	MDL	5.11	PQL	ng/Kg	UJ	B, FD
1,2,3,7,8-PECDF	0.147	JB	0.0190	MDL	5.11	PQL	ng/Kg	U	B
2,3,4,6,7,8-HXCDF	0.0792	JB	0.0226	MDL	5.11	PQL	ng/Kg	U	B
2,3,4,7,8-PECDF	0.163	JBQ	0.0193	MDL	5.11	PQL	ng/Kg	UJ	B, FD
2,3,7,8-TCDD	0.0610	JQ	0.0372	MDL	1.02	PQL	ng/Kg	J	Z, FD
OCDF	0.634	JB	0.0345	MDL	10.2	PQL	ng/Kg	U	B

* denotes a non-reportable result

Project Name and Number: 1204-002-001-AL - SSFL Area IV Phase 3

Data Qualifier Summary

Lab Reporting Batch ID: PH209 **Laboratory: LL**

EDD Filename: PH209_v1. **eQAPP Name: CDM_SSFL_140617_Lan**

Method Category: SVOA

Method: 1613B **Matrix: SO**

Sample ID: SL-951-SA5C-TR-5.0 **Collected: 5/30/2014 8:45:00** **Analysis Type: RES** **Dilution: 1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
1,2,3,4,6,7,8-HPCDD	1.55	JB	0.0491	MDL	5.18	PQL	ng/Kg	J	Z
1,2,3,4,6,7,8-HPCDF	0.228	JB	0.0133	MDL	5.18	PQL	ng/Kg	U	B
1,2,3,4,7,8,9-HPCDF	0.116	JBQ	0.0224	MDL	5.18	PQL	ng/Kg	U	B
1,2,3,4,7,8-HxCDD	0.0405	JBQ	0.0320	MDL	5.18	PQL	ng/Kg	U	B
1,2,3,4,7,8-HXCDF	0.100	JB	0.0309	MDL	5.18	PQL	ng/Kg	U	B
1,2,3,6,7,8-HXCDD	0.131	JBQ	0.0329	MDL	5.18	PQL	ng/Kg	UJ	B, FD
1,2,3,6,7,8-HXCDF	0.0960	JBQ	0.0257	MDL	5.18	PQL	ng/Kg	U	B
1,2,3,7,8,9-HXCDD	0.155	JBQ	0.0299	MDL	5.18	PQL	ng/Kg	UJ	B, FD
1,2,3,7,8,9-HXCDF	0.140	JBQ	0.0325	MDL	5.18	PQL	ng/Kg	UJ	B, FD
1,2,3,7,8-PECDD	5.18	U	0.0434	MDL	5.18	PQL	ng/Kg	UJ	FD
1,2,3,7,8-PECDF	0.103	JBQ	0.0197	MDL	5.18	PQL	ng/Kg	U	B
2,3,4,6,7,8-HXCDF	0.0846	JBQ	0.0280	MDL	5.18	PQL	ng/Kg	U	B
2,3,4,7,8-PECDF	0.0634	JBQ	0.0212	MDL	5.18	PQL	ng/Kg	UJ	B, FD
2,3,7,8-TCDD	1.04	U	0.0537	MDL	1.04	PQL	ng/Kg	UJ	FD
OCDF	0.426	JB	0.0557	MDL	10.4	PQL	ng/Kg	U	B

Method Category: SVOA

Method: 8015M **Matrix: SO**

Sample ID: SL-651-SA5C-TR-0.5 **Collected: 5/30/2014 8:18:00** **Analysis Type: REA** **Dilution: 1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
EFH (C8-C11) SG	5.2	U	2.1	MDL	5.2	PQL	mg/Kg	UJ	L

Sample ID: SL-651-SA5C-TR-10.0 **Collected: 5/30/2014 9:22:00** **Analysis Type: REA** **Dilution: 1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
EFH (C21-C30)	3.2	J	2.1	MDL	5.3	PQL	mg/Kg	J	Z

Sample ID: SL-651-SA5C-TR-10.0 **Collected: 5/30/2014 9:22:00** **Analysis Type: REA2** **Dilution: 1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
EFH (C8-C11) SG	5.3	U	2.1	MDL	5.3	PQL	mg/Kg	UJ	L

* denotes a non-reportable result

Project Name and Number: 1204-002-001-AL - SSFL Area IV Phase 3

Data Qualifier Summary

Lab Reporting Batch ID: PH209 **Laboratory: LL**

EDD Filename: PH209_v1. **eQAPP Name: CDM_SSFL_140617_Lan**

Method Category: SVOA

Method: 8015M **Matrix: SO**

Sample ID: SL-651-SA5C-TR-15.0 **Collected: 5/30/2014 11:14:00** **Analysis Type: REA2** **Dilution: 1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
EFH (C8-C11) SG	5.3	U	2.1	MDL	5.3	PQL	mg/Kg	UJ	L

Sample ID: SL-651-SA5C-TR-5.0 **Collected: 5/30/2014 8:40:00** **Analysis Type: REA** **Dilution: 1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
EFH (C21-C30)	4.6	J	2.1	MDL	5.2	PQL	mg/Kg	J	Z, FD
EFH (C30-C40)	8.8	J	4.2	MDL	10	PQL	mg/Kg	J	Z, Q, FD

Sample ID: SL-651-SA5C-TR-5.0 **Collected: 5/30/2014 8:40:00** **Analysis Type: REA2** **Dilution: 1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
EFH (C8-C11) SG	5.2	U	2.1	MDL	5.2	PQL	mg/Kg	UJ	L

Sample ID: SL-951-SA5C-TR-5.0 **Collected: 5/30/2014 8:45:00** **Analysis Type: REA** **Dilution: 1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
EFH (C21-C30)	5.2	U	2.1	MDL	5.2	PQL	mg/Kg	UJ	FD
EFH (C30-C40)	10	U	4.2	MDL	10	PQL	mg/Kg	UJ	FD

Sample ID: SL-951-SA5C-TR-5.0 **Collected: 5/30/2014 8:45:00** **Analysis Type: REA2** **Dilution: 1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
EFH (C8-C11) SG	5.2	U	2.1	MDL	5.2	PQL	mg/Kg	UJ	L

Method Category: SVOA

Method: 8081B **Matrix: SO**

Sample ID: SL-651-SA5C-TR-10.0 **Collected: 5/30/2014 9:22:00** **Analysis Type: RES** **Dilution: 1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
4,4'-DDT	0.57	J	0.37	MDL	1.8	PQL	ug/Kg	J	Z

* denotes a non-reportable result

Project Name and Number: 1204-002-001-AL - SSFL Area IV Phase 3

Data Qualifier Summary

Lab Reporting Batch ID: PH209 **Laboratory: LL**

EDD Filename: PH209_v1. **eQAPP Name: CDM_SSFL_140617_Lan**

Method Category: SVOA

Method: 8151A **Matrix: SO**

Sample ID: **SL-651-SA5C-TR-0.5** *Collected:* **5/30/2014 8:18:00** *Analysis Type:* **RES** *Dilution:* **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
2,4-DB	15	J	6.4	MDL	18	PQL	ug/Kg	J	Z

Sample ID: **SL-651-SA5C-TR-5.0** *Collected:* **5/30/2014 8:40:00** *Analysis Type:* **RES** *Dilution:* **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
DALAPON	94	U	46	MDL	94	PQL	ug/Kg	R	Q

Method Category: SVOA

Method: 8270D **Matrix: SO**

Sample ID: **SL-651-SA5C-TR-0.5** *Collected:* **5/30/2014 8:18:00** *Analysis Type:* **RES-ACID** *Dilution:* **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
4,6-DINITRO-2-METHYLPHENOL	520	U	170	MDL	520	PQL	ug/Kg	UJ	L

Sample ID: **SL-651-SA5C-TR-0.5** *Collected:* **5/30/2014 8:18:00** *Analysis Type:* **RES-BASE/NEUTRAL** *Dilution:* **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
4-NITROANILINE	170	U	70	MDL	170	PQL	ug/Kg	UJ	L
BENZO(A)ANTHRACENE	4	J	3	MDL	18	PQL	ug/Kg	J	Z
BENZO(A)PYRENE	4	J	3	MDL	18	PQL	ug/Kg	J	Z
BENZO(B)FLUORANTHENE	5	J	3	MDL	18	PQL	ug/Kg	J	Z
BENZO(G,H,I)PERYLENE	4	J	3	MDL	18	PQL	ug/Kg	J	Z
CHRYSENE	5	J	3	MDL	18	PQL	ug/Kg	J	Z
FLUORANTHENE	4	J	3	MDL	18	PQL	ug/Kg	J	Z
PYRENE	5	J	3	MDL	18	PQL	ug/Kg	J	Z

Sample ID: **SL-651-SA5C-TR-10.0** *Collected:* **5/30/2014 9:22:00** *Analysis Type:* **RES-ACID** *Dilution:* **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
4,6-DINITRO-2-METHYLPHENOL	530	U	180	MDL	530	PQL	ug/Kg	UJ	L

* denotes a non-reportable result

Project Name and Number: 1204-002-001-AL - SSFL Area IV Phase 3

Data Qualifier Summary

Lab Reporting Batch ID: PH209 **Laboratory: LL**

EDD Filename: PH209_v1. **eQAPP Name: CDM_SSFL_140617_Lan**

Method Category: SVOA

Method: 8270D **Matrix: SO**

Sample ID: **SL-651-SA5C-TR-10.0** ***Collected:*** **5/30/2014 9:22:00** ***Analysis Type:*** **RES-BASE/NEUTRAL** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
4-NITROANILINE	180	U	70	MDL	180	PQL	ug/Kg	UJ	L
BENZO(A)PYRENE	4	J	3	MDL	18	PQL	ug/Kg	J	Z
BENZO(B)FLUORANTHENE	5	J	3	MDL	18	PQL	ug/Kg	J	Z

Sample ID: **SL-651-SA5C-TR-15.0** ***Collected:*** **5/30/2014 11:14:00** ***Analysis Type:*** **RES-ACID** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
4,6-DINITRO-2-METHYLPHENOL	530	U	180	MDL	530	PQL	ug/Kg	UJ	L

Sample ID: **SL-651-SA5C-TR-15.0** ***Collected:*** **5/30/2014 11:14:00** ***Analysis Type:*** **RES-BASE/NEUTRAL** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
4-NITROANILINE	180	U	70	MDL	180	PQL	ug/Kg	UJ	L
BENZO(A)PYRENE	4	J	4	MDL	18	PQL	ug/Kg	J	Z
BENZO(B)FLUORANTHENE	4	J	4	MDL	18	PQL	ug/Kg	J	Z

Sample ID: **SL-651-SA5C-TR-5.0** ***Collected:*** **5/30/2014 8:40:00** ***Analysis Type:*** **RES-ACID** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
2,6-DICHLOROPHENOL	35	U	17	MDL	35	PQL	ug/Kg	R	Q
4,6-DINITRO-2-METHYLPHENOL	520	U	170	MDL	520	PQL	ug/Kg	UJ	L

Sample ID: **SL-651-SA5C-TR-5.0** ***Collected:*** **5/30/2014 8:40:00** ***Analysis Type:*** **RES-BASE/NEUTRAL** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
4-NITROANILINE	170	U	70	MDL	170	PQL	ug/Kg	UJ	L
BENZIDINE	3500	U	730	MDL	3500	PQL	ug/Kg	UJ	Q
BENZO(A)ANTHRACENE	4	J	3	MDL	18	PQL	ug/Kg	J	Z
BENZO(A)PYRENE	4	J	3	MDL	18	PQL	ug/Kg	J	Z
BENZO(B)FLUORANTHENE	5	J	3	MDL	18	PQL	ug/Kg	J	Z
FLUORANTHENE	4	J	3	MDL	18	PQL	ug/Kg	J	Z
PHENANTHRENE	4	J	3	MDL	18	PQL	ug/Kg	J	Z
PYRENE	4	J	3	MDL	18	PQL	ug/Kg	J	Z

* denotes a non-reportable result

Project Name and Number: 1204-002-001-AL - SSFL Area IV Phase 3

Data Qualifier Summary

Lab Reporting Batch ID: PH209 **Laboratory: LL**

EDD Filename: PH209_v1. **eQAPP Name: CDM_SSFL_140617_Lan**

Method Category: SVOA

Method: 8270D **Matrix: SO**

Sample ID: SL-951-SA5C-TR-5.0 *Collected:* 5/30/2014 8:45:00 *Analysis Type:* RES-ACID *Dilution:* 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
4,6-DINITRO-2-METHYLPHENOL	520	U	170	MDL	520	PQL	ug/Kg	UJ	L

Sample ID: SL-951-SA5C-TR-5.0 *Collected:* 5/30/2014 8:45:00 *Analysis Type:* RES-BASE/NEUTRAL *Dilution:* 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
4-NITROANILINE	170	U	70	MDL	170	PQL	ug/Kg	UJ	L
BENZO(A)PYRENE	4	J	3	MDL	18	PQL	ug/Kg	J	Z
BENZO(B)FLUORANTHENE	5	J	3	MDL	18	PQL	ug/Kg	J	Z
CHRYSENE	4	J	3	MDL	18	PQL	ug/Kg	J	Z

Method Category: SVOA

Method: 8270D SIM **Matrix: SO**

Sample ID: SL-651-SA5C-TR-0.5 *Collected:* 5/30/2014 8:18:00 *Analysis Type:* RES-BASE/NEUTRAL *Dilution:* 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
BENZO(E)PYRENE	18	U	3.5	MDL	18	PQL	ug/Kg	UJ	L
NAPHTHALENE	1.2	J	0.70	MDL	1.7	PQL	ug/Kg	J	Z
PHENANTHRENE	1.4	J	0.70	MDL	1.7	PQL	ug/Kg	J	Z

Sample ID: SL-651-SA5C-TR-10.0 *Collected:* 5/30/2014 9:22:00 *Analysis Type:* RES-BASE/NEUTRAL *Dilution:* 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
BENZO(E)PYRENE	18	U	3.5	MDL	18	PQL	ug/Kg	UJ	L

Sample ID: SL-651-SA5C-TR-15.0 *Collected:* 5/30/2014 11:14:00 *Analysis Type:* RES-BASE/NEUTRAL *Dilution:* 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
BENZO(E)PYRENE	18	U	3.5	MDL	18	PQL	ug/Kg	UJ	L

Sample ID: SL-651-SA5C-TR-5.0 *Collected:* 5/30/2014 8:40:00 *Analysis Type:* RES-BASE/NEUTRAL *Dilution:* 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
2-METHYLNAPHTHALENE	0.83	J	0.70	MDL	1.7	PQL	ug/Kg	J	Z
BENZO(E)PYRENE	18	U	3.5	MDL	18	PQL	ug/Kg	UJ	L

* denotes a non-reportable result

Project Name and Number: 1204-002-001-AL - SSFL Area IV Phase 3

Data Qualifier Summary

Lab Reporting Batch ID: PH209 **Laboratory: LL**

EDD Filename: PH209_v1. **eQAPP Name: CDM_SSFL_140617_Lan**

Method Category: SVOA

Method: 8270D SIM **Matrix: SO**

Sample ID: SL-651-SA5C-TR-5.0 *Collected:* 5/30/2014 8:40:00 *Analysis Type:* RES-BASE/NEUTRAL *Dilution:* 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
NAPHTHALENE	1.7	U	0.70	MDL	1.7	PQL	ug/Kg	UJ	FD

Sample ID: SL-951-SA5C-TR-5.0 *Collected:* 5/30/2014 8:45:00 *Analysis Type:* RES-BASE/NEUTRAL *Dilution:* 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
2-METHYLNAPHTHALENE	0.81	J	0.70	MDL	1.7	PQL	ug/Kg	J	Z
BENZO(E)PYRENE	18	U	3.5	MDL	18	PQL	ug/Kg	UJ	L
NAPHTHALENE	0.89	J	0.70	MDL	1.7	PQL	ug/Kg	J	Z, FD

Method Category: SVOA

Method: 8330A **Matrix: SO**

Sample ID: SL-651-SA5C-TR-5.0 *Collected:* 5/30/2014 8:40:00 *Analysis Type:* RES *Dilution:* 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
2,4,6-TRINITROTOLUENE	310	U	100	MDL	310	PQL	ug/Kg	UJ	Q

Method Category: VOA

Method: 8015B **Matrix: SO**

Sample ID: SL-651-SA5C-TR-5.0 *Collected:* 5/30/2014 8:40:00 *Analysis Type:* REA *Dilution:* 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
DIETHYLENE GLYCOL	10	U	5.2	MDL	10	PQL	mg/Kg	UJ	Q
Triethylene glycol	10	U	5.2	MDL	10	PQL	mg/Kg	UJ	Q

* denotes a non-reportable result

Project Name and Number: 1204-002-001-AL - SSFL Area IV Phase 3

Data Qualifier Summary

Lab Reporting Batch ID: PH209 **Laboratory: LL**

EDD Filename: PH209_v1. **eQAPP Name: CDM_SSFL_140617_Lan**

Reason Code Legend

Reason Code	*Description*
B	Method Blank Contamination
E	Laboratory Duplicate Precision
E	Matrix Spike Precision
F	Equipment Blank Contamination
F	Field Blank Contamination
FD	Field Duplicate Precision
L	Laboratory Control Spike Lower Estimation
L	Laboratory Control Spike Upper Estimation
Q	Laboratory Duplicate Precision
Q	Matrix Spike Lower Estimation
Q	Matrix Spike Lower Rejection
Q	Matrix Spike Precision
Q	Matrix Spike Upper Estimation
S	Surrogate/Tracer Recovery Upper Estimation
Z	Reporting Limit Trace Value

* denotes a non-reportable result

Project Name and Number: 1204-002-001-AL - SSFL Area IV Phase 3

Enclosure I

Level III ADR Outliers

(Including Manual Review Outliers)

Quality Control
Outlier Reports

PH209

Method Blank Outlier Report

Lab Reporting Batch ID: PH209 **Laboratory: LL**

EDD Filename: PH209_v1. **eQAPP Name: CDM_SSFL_140617_Lan**

Method: **1613B**
Matrix: **SO**

Method Blank Sample ID	Analysis Date	Analyte	Result	Associated Samples
BLK1600B370050	6/11/2014 12:50:00 AM	1,2,3,4,6,7,8-HPCDD	0.159 ng/Kg	SL-651-SA5C-TR-0.5
		1,2,3,4,6,7,8-HPCDF	0.0496 ng/Kg	SL-651-SA5C-TR-10.0
		1,2,3,4,7,8,9-HPCDF	0.0531 ng/Kg	SL-651-SA5C-TR-15.0
		1,2,3,4,7,8-HxCDD	0.0505 ng/Kg	SL-651-SA5C-TR-5.0
		1,2,3,4,7,8-HXCDF	0.0633 ng/Kg	SL-951-SA5C-TR-5.0
		1,2,3,6,7,8-HXCDD	0.0328 ng/Kg	
		1,2,3,6,7,8-HXCDF	0.0543 ng/Kg	
		1,2,3,7,8,9-HXCDD	0.0326 ng/Kg	
		1,2,3,7,8,9-HXCDF	0.0652 ng/Kg	
		1,2,3,7,8-PECDD	0.0623 ng/Kg	
		1,2,3,7,8-PECDF	0.0587 ng/Kg	
		2,3,4,6,7,8-HXCDF	0.0505 ng/Kg	
		2,3,4,7,8-PECDF	0.0596 ng/Kg	
		OCDD	0.459 ng/Kg	
		OCDF	0.217 ng/Kg	

The following samples and their listed target analytes were qualified due to contamination reported in this blank

Sample ID	Analyte	Reported Result	Modified Final Result
SL-651-SA5C-TR-0.5(RES)	1,2,3,4,7,8,9-HPCDF	0.0929 ng/Kg	0.0929U ng/Kg
SL-651-SA5C-TR-0.5(RES)	1,2,3,4,7,8-HxCDD	0.134 ng/Kg	0.134U ng/Kg
SL-651-SA5C-TR-0.5(RES)	1,2,3,4,7,8-HXCDF	0.141 ng/Kg	0.141U ng/Kg
SL-651-SA5C-TR-0.5(RES)	1,2,3,6,7,8-HXCDF	0.133 ng/Kg	0.133U ng/Kg
SL-651-SA5C-TR-0.5(RES)	1,2,3,7,8-PECDD	0.170 ng/Kg	0.170U ng/Kg
SL-651-SA5C-TR-0.5(RES)	1,2,3,7,8-PECDF	0.269 ng/Kg	0.269U ng/Kg
SL-651-SA5C-TR-0.5(RES)	2,3,4,6,7,8-HXCDF	0.148 ng/Kg	0.148U ng/Kg
SL-651-SA5C-TR-0.5(RES)	2,3,4,7,8-PECDF	0.194 ng/Kg	0.194U ng/Kg
SL-651-SA5C-TR-10.0(RES)	1,2,3,4,7,8,9-HPCDF	0.100 ng/Kg	0.100U ng/Kg
SL-651-SA5C-TR-10.0(RES)	1,2,3,4,7,8-HxCDD	0.0415 ng/Kg	0.0415U ng/Kg
SL-651-SA5C-TR-10.0(RES)	1,2,3,4,7,8-HXCDF	0.0822 ng/Kg	0.0822U ng/Kg
SL-651-SA5C-TR-10.0(RES)	1,2,3,6,7,8-HXCDF	0.114 ng/Kg	0.114U ng/Kg
SL-651-SA5C-TR-10.0(RES)	1,2,3,7,8-PECDD	0.0599 ng/Kg	0.0599U ng/Kg
SL-651-SA5C-TR-10.0(RES)	1,2,3,7,8-PECDF	0.231 ng/Kg	0.231U ng/Kg
SL-651-SA5C-TR-10.0(RES)	2,3,4,6,7,8-HXCDF	0.170 ng/Kg	0.170U ng/Kg
SL-651-SA5C-TR-10.0(RES)	2,3,4,7,8-PECDF	0.166 ng/Kg	0.166U ng/Kg
SL-651-SA5C-TR-10.0(RES)	OCDF	0.513 ng/Kg	0.513U ng/Kg
SL-651-SA5C-TR-15.0(RES)	1,2,3,4,6,7,8-HPCDF	0.232 ng/Kg	0.232U ng/Kg
SL-651-SA5C-TR-15.0(RES)	1,2,3,4,7,8,9-HPCDF	0.0608 ng/Kg	0.0608U ng/Kg
SL-651-SA5C-TR-15.0(RES)	1,2,3,4,7,8-HxCDD	0.0325 ng/Kg	0.0325U ng/Kg
SL-651-SA5C-TR-15.0(RES)	1,2,3,4,7,8-HXCDF	0.104 ng/Kg	0.104U ng/Kg
SL-651-SA5C-TR-15.0(RES)	1,2,3,6,7,8-HXCDD	0.0864 ng/Kg	0.0864U ng/Kg
SL-651-SA5C-TR-15.0(RES)	1,2,3,6,7,8-HXCDF	0.0819 ng/Kg	0.0819U ng/Kg
SL-651-SA5C-TR-15.0(RES)	1,2,3,7,8,9-HXCDD	0.154 ng/Kg	0.154U ng/Kg
SL-651-SA5C-TR-15.0(RES)	1,2,3,7,8,9-HXCDF	0.168 ng/Kg	0.168U ng/Kg
SL-651-SA5C-TR-15.0(RES)	1,2,3,7,8-PECDD	0.0497 ng/Kg	0.0497U ng/Kg
SL-651-SA5C-TR-15.0(RES)	1,2,3,7,8-PECDF	0.118 ng/Kg	0.118U ng/Kg
SL-651-SA5C-TR-15.0(RES)	2,3,4,6,7,8-HXCDF	0.0603 ng/Kg	0.0603U ng/Kg
SL-651-SA5C-TR-15.0(RES)	2,3,4,7,8-PECDF	0.0354 ng/Kg	0.0354U ng/Kg

Project Name and Number: 1204-002-001-AL - SSFL Area IV Phase 3

Method Blank Outlier Report

Lab Reporting Batch ID: PH209 **Laboratory: LL**

EDD Filename: PH209_v1. **eQAPP Name: CDM_SSFL_140617_Lan**

Method: **1613B**
Matrix: **SO**

Method Blank Sample ID	Analysis Date	Analyte	Result	Associated Samples

The following samples and their listed target analytes were qualified due to contamination reported in this blank

Sample ID	Analyte	Reported Result	Modified Final Result
SL-651-SA5C-TR-15.0(RES)	OCDF	0.620 ng/Kg	0.620U ng/Kg
SL-651-SA5C-TR-5.0(RES)	1,2,3,4,7,8,9-HPCDF	0.106 ng/Kg	0.106U ng/Kg
SL-651-SA5C-TR-5.0(RES)	1,2,3,4,7,8-HxCDD	0.0344 ng/Kg	0.0344U ng/Kg
SL-651-SA5C-TR-5.0(RES)	1,2,3,4,7,8-HXCDF	0.0936 ng/Kg	0.0936U ng/Kg
SL-651-SA5C-TR-5.0(RES)	1,2,3,6,7,8-HXCDD	0.0769 ng/Kg	0.0769U ng/Kg
SL-651-SA5C-TR-5.0(RES)	1,2,3,6,7,8-HXCDF	0.0888 ng/Kg	0.0888U ng/Kg
SL-651-SA5C-TR-5.0(RES)	1,2,3,7,8,9-HXCDD	0.0679 ng/Kg	0.0679U ng/Kg
SL-651-SA5C-TR-5.0(RES)	1,2,3,7,8-PECDD	0.0418 ng/Kg	0.0418U ng/Kg
SL-651-SA5C-TR-5.0(RES)	1,2,3,7,8-PECDF	0.147 ng/Kg	0.147U ng/Kg
SL-651-SA5C-TR-5.0(RES)	2,3,4,6,7,8-HXCDF	0.0792 ng/Kg	0.0792U ng/Kg
SL-651-SA5C-TR-5.0(RES)	2,3,4,7,8-PECDF	0.163 ng/Kg	0.163U ng/Kg
SL-651-SA5C-TR-5.0(RES)	OCDF	0.634 ng/Kg	0.634U ng/Kg
SL-951-SA5C-TR-5.0(RES)	1,2,3,4,6,7,8-HPCDF	0.228 ng/Kg	0.228U ng/Kg
SL-951-SA5C-TR-5.0(RES)	1,2,3,4,7,8,9-HPCDF	0.116 ng/Kg	0.116U ng/Kg
SL-951-SA5C-TR-5.0(RES)	1,2,3,4,7,8-HxCDD	0.0405 ng/Kg	0.0405U ng/Kg
SL-951-SA5C-TR-5.0(RES)	1,2,3,4,7,8-HXCDF	0.100 ng/Kg	0.100U ng/Kg
SL-951-SA5C-TR-5.0(RES)	1,2,3,6,7,8-HXCDD	0.131 ng/Kg	0.131U ng/Kg
SL-951-SA5C-TR-5.0(RES)	1,2,3,6,7,8-HXCDF	0.0960 ng/Kg	0.0960U ng/Kg
SL-951-SA5C-TR-5.0(RES)	1,2,3,7,8,9-HXCDD	0.155 ng/Kg	0.155U ng/Kg
SL-951-SA5C-TR-5.0(RES)	1,2,3,7,8,9-HXCDF	0.140 ng/Kg	0.140U ng/Kg
SL-951-SA5C-TR-5.0(RES)	1,2,3,7,8-PECDF	0.103 ng/Kg	0.103U ng/Kg
SL-951-SA5C-TR-5.0(RES)	2,3,4,6,7,8-HXCDF	0.0846 ng/Kg	0.0846U ng/Kg
SL-951-SA5C-TR-5.0(RES)	2,3,4,7,8-PECDF	0.0634 ng/Kg	0.0634U ng/Kg
SL-951-SA5C-TR-5.0(RES)	OCDF	0.426 ng/Kg	0.426U ng/Kg

Method: **6010C**
Matrix: **SO**

Method Blank Sample ID	Analysis Date	Analyte	Result	Associated Samples
P15437AB221115	6/5/2014 11:15:00 AM	CALCIUM	9.64 mg/Kg	SL-651-SA5C-TR-0.5 SL-651-SA5C-TR-10.0 SL-651-SA5C-TR-15.0 SL-651-SA5C-TR-5.0 SL-951-SA5C-TR-5.0
P15437AB222203	6/4/2014 10:03:00 PM	TIN	1.45 mg/Kg	SL-651-SA5C-TR-0.5 SL-651-SA5C-TR-10.0 SL-651-SA5C-TR-15.0 SL-651-SA5C-TR-5.0 SL-951-SA5C-TR-5.0

Method Blank Outlier Report

Lab Reporting Batch ID: PH209 **Laboratory: LL**

EDD Filename: PH209_v1. **eQAPP Name: CDM_SSFL_140617_Lan**

Method: **6010C**
Matrix: **SO**

Method Blank Sample ID	Analysis Date	Analyte	Result	Associated Samples

The following samples and their listed target analytes were qualified due to contamination reported in this blank

Sample ID	Analyte	Reported Result	Modified Final Result
SL-651-SA5C-TR-0.5(RES)	TIN	2.73 mg/Kg	2.73U mg/Kg
SL-651-SA5C-TR-10.0(RES)	TIN	2.72 mg/Kg	2.72U mg/Kg
SL-651-SA5C-TR-15.0(RES)	TIN	2.55 mg/Kg	2.55U mg/Kg
SL-651-SA5C-TR-5.0(RES)	TIN	2.63 mg/Kg	2.63U mg/Kg
SL-951-SA5C-TR-5.0(RES)	TIN	2.69 mg/Kg	2.69U mg/Kg

Equipment Rinsate Blank Outlier Report

Lab Reporting Batch ID: PH209 **Laboratory: LL**

EDD Filename: PrepPH209 **eQAPP Name: CDM_SSFL_140617_Lan**

Method: **6010C**
Matrix: **SO**

Equipment Blank Sample ID	Collected Date	Analyte	Result	Associated Samples
EB1-052914(REA2)	5/29/2014 3:00:00 PM	CALCIUM MAGNESIUM MOLYBDENUM	0.108 mg/L 0.0252 mg/L 0.0054 mg/L	SL-651-SA5C-TR-0.5 SL-651-SA5C-TR-10.0 SL-651-SA5C-TR-15.0 SL-651-SA5C-TR-5.0 SL-951-SA5C-TR-5.0

The following samples and their listed target analytes were qualified due to contamination reported in this blank

Sample ID	Analyte	Reported Result	Modified Final Result
SL-651-SA5C-TR-0.5(RES)	MOLYBDENUM	0.186 mg/Kg	0.186U mg/Kg
SL-651-SA5C-TR-10.0(RES)	MOLYBDENUM	0.186 mg/Kg	0.186U mg/Kg
SL-651-SA5C-TR-15.0(RES)	MOLYBDENUM	2.03 mg/Kg	2.03U mg/Kg
SL-651-SA5C-TR-5.0(RES)	MOLYBDENUM	0.308 mg/Kg	0.308U mg/Kg
SL-951-SA5C-TR-5.0(RES)	MOLYBDENUM	2.01 mg/Kg	2.01U mg/Kg

Surrogate Outlier Report

Lab Reporting Batch ID: PH209 **Laboratory: LL**

EDD Filename: PH209_v1. **eQAPP Name: CDM_SSFL_140617_Lan**

Method: **8270D SIM**
Matrix: **SO**

Sample ID (Analysis Type)	*Surrogate*	*Sample % Recovery*	*% Recovery Limits*	*Affected Compounds*	*Flag*
SL-651-SA5C-TR-5.0	Benzo(a)pyrene-d12	119	61.00-118.00	No Affected Compounds	

Matrix Spike/Matrix Spike Duplicate Outlier Report

Lab Reporting Batch ID: PH209 **Laboratory: LL**

EDD Filename: PH209_v1. **eQAPP Name: CDM_SSFL_140617_Lan**

Method: 8151A
Matrix: SO

QC Sample ID (Associated Samples)	Compound	MS %R	MSD %R	%R Limits	RPD (Limits)	Affected Compounds	Flag
SL-651-SA5C-TR-5.0MSD (SL-651-SA5C-TR-5.0)	DINOSEB	-	-	10.00-52.00	82 (35.00)	DINOSEB	J (all detects)
SL-651-SA5C-TR-5.0MS SL-651-SA5C-TR-5.0MSD (SL-651-SA5C-TR-5.0)	DALAPON	0	-	16.00-98.00	200 (50.00)	DALAPON	J(all detects) R(all non-detects)

Method: 8015M
Matrix: SO

QC Sample ID (Associated Samples)	Compound	MS %R	MSD %R	%R Limits	RPD (Limits)	Affected Compounds	Flag
SL-651-SA5C-TR-5.0MSD (SL-651-SA5C-TR-5.0)	EFH (C30-C40)	-	47	49.00-123.00	-	EFH (C30-C40)	J(all detects) UJ(all non-detects)
SL-651-SA5C-TR-5.0MS SL-651-SA5C-TR-5.0MSD (SL-651-SA5C-TR-5.0)	EFH (C21-C30) SG	155	-	49.00-123.00	59 (20.00)	EFH (C21-C30)	J(all detects)

Method: 8330A
Matrix: SO

QC Sample ID (Associated Samples)	Compound	MS %R	MSD %R	%R Limits	RPD (Limits)	Affected Compounds	Flag
SL-651-SA5C-TR-5.0MS SL-651-SA5C-TR-5.0MSD (SL-651-SA5C-TR-5.0)	HMX PETN	- 195	108 206	72.00-107.00 71.00-133.00	- -	HMX PETN	J(all detects)
SL-651-SA5C-TR-5.0MS (SL-651-SA5C-TR-5.0)	2,4,6-TRINITROTOLUENE	91	-	92.00-114.00	-	2,4,6-TRINITROTOLUENE	J(all detects) UJ(all non-detects)

Method: 8015B
Matrix: SO

QC Sample ID (Associated Samples)	Compound	MS %R	MSD %R	%R Limits	RPD (Limits)	Affected Compounds	Flag
SL-651-SA5C-TR-5.0MSD (SL-651-SA5C-TR-5.0)	Propylene glycol	-	108	63.00-107.00	-	Propylene glycol	J(all detects)
SL-651-SA5C-TR-5.0MS SL-651-SA5C-TR-5.0MSD (SL-651-SA5C-TR-5.0)	DIETHYLENE GLYCOL Triethylene glycol	21 3	25 4	59.00-109.00 66.00-122.00	- 30 (20.00)	DIETHYLENE GLYCOL Triethylene glycol	J(all detects) UJ(all non-detects)

Matrix Spike/Matrix Spike Duplicate Outlier Report

Lab Reporting Batch ID: PH209 **Laboratory: LL**

EDD Filename: PH209_v1. **eQAPP Name: CDM_SSFL_140617_Lan**

Method: 6010C
Matrix: SO

QC Sample ID (Associated Samples)	Compound	MS %R	MSD %R	%R Limits	RPD (Limits)	Affected Compounds	Flag
SL-651-SA5C-TR-5.0MS (TOT) **SL-651-SA5C-TR-5.0MSD (TOT)** (SL-651-SA5C-TR-0.5 SL-651-SA5C-TR-10.0 SL-651-SA5C-TR-15.0 SL-651-SA5C-TR-5.0 SL-951-SA5C-TR-5.0)	ALUMINUM POTASSIUM TITANIUM	618 - 219	1777 145 305	75.00-125.00 75.00-125.00 75.00-125.00	- - -	ALUMINUM POTASSIUM TITANIUM	J(all detects) Al, Ti, No Qual, >4x
SL-651-SA5C-TR-5.0MS (TOT) **SL-651-SA5C-TR-5.0MSD (TOT)** (SL-651-SA5C-TR-0.5 SL-651-SA5C-TR-10.0 SL-651-SA5C-TR-15.0 SL-651-SA5C-TR-5.0 SL-951-SA5C-TR-5.0)	IRON	-955	2923	75.00-125.00	23 (20.00)	IRON	No Qual, >4x
SL-651-SA5C-TR-5.0MS (TOT) **SL-651-SA5C-TR-5.0MSD (TOT)** (SL-651-SA5C-TR-0.5 SL-651-SA5C-TR-10.0 SL-651-SA5C-TR-15.0 SL-651-SA5C-TR-5.0 SL-951-SA5C-TR-5.0)	ANTIMONY CALCIUM MAGNESIUM MANGANESE PHOSPHORUS	71 33 44 64 -	67 209 433 - 166	75.00-125.00 75.00-125.00 75.00-125.00 75.00-125.00 75.00-125.00	- 28 (20.00) 21 (20.00) - 21 (20.00)	ANTIMONY CALCIUM MAGNESIUM MANGANESE PHOSPHORUS	J(all detects) UJ(all non-detects) Ca, Mg, Mn, No Qual %R, >4x

Method: 8270D
Matrix: SO

QC Sample ID (Associated Samples)	Compound	MS %R	MSD %R	%R Limits	RPD (Limits)	Affected Compounds	Flag
SL-651-SA5C-TR-5.0MSD (SL-651-SA5C-TR-5.0)	3,3'-DICHLOROBENZIDINE 4-CHLOROANILINE	- -	- -	10.00-143.00 11.00-114.00	50 (30.00) 43 (30.00)	3,3'-DICHLOROBENZIDINE 4-CHLOROANILINE	J(all detects)
SL-651-SA5C-TR-5.0MS **SL-651-SA5C-TR-5.0MSD** (SL-651-SA5C-TR-5.0)	2,6-DICHLOROPHENOL	0	0	56.00-133.00	-	2,6-DICHLOROPHENOL	J(all detects) R(all non-detects)
SL-651-SA5C-TR-5.0MS **SL-651-SA5C-TR-5.0MSD** (SL-651-SA5C-TR-5.0)	BENZIDINE	15	17	35.00-141.00	-	BENZIDINE	J(all detects) UJ(all non-detects)

Lab Duplicate Outlier Report

Lab Reporting Batch ID: PH209 **Laboratory: LL**

EDD Filename: PH209_v1. **eQAPP Name: CDM_SSFL_140617_Lan**

Method: 6010C
Matrix: SO

QC Sample ID (Associated Sample ID)	*Analyte*	*Sample RPD*	*eQAPP RPD*	*Flag*
SL-651-SA5C-TR-5.0DUP (TOT)	ARSENIC	68	20.00	
(SL-651-SA5C-TR-0.5	MOLYBDENUM	55	20.00	
SL -651-SA5C-TR-10.0	Zirconium	36	20.00	No Qual,
SL -651-SA5C-TR-15.0				OK by Difference
SL -651-SA5C-TR-5.0				
SL -951-SA5C-TR-5.0)				

Method: 6020A
Matrix: SO

QC Sample ID (Associated Sample ID)	*Analyte*	*Sample RPD*	*eQAPP RPD*	*Flag*
SL-651-SA5C-TR-5.0DUP (TOT)	SELENIUM	200	20.00	
(SL-651-SA5C-TR-0.5				
SL -651-SA5C-TR-10.0				No Qual,
SL -651-SA5C-TR-15.0				OK by Difference
SL -651-SA5C-TR-5.0				
SL -951-SA5C-TR-5.0)				

Lab Control Spike/Lab Control Spike Duplicate Outlier Report

Lab Reporting Batch ID: PH209 **Laboratory: LL**

EDD Filename: PH209_v1. **eQAPP Name: CDM_SSFL_140617_Lan**

Method: 8015M
Matrix: SO

QC Sample ID (Associated Samples)	Compound	LCS %R	LCSD %R	%R Limits	RPD (Limits)	Affected Compounds	Flag
P41540AQ322235A (SL-651-SA5C-TR-0.5 SL-651-SA5C-TR-10.0 SL-651-SA5C-TR-15.0 SL-651-SA5C-TR-5.0 SL-951-SA5C-TR-5.0)	EFH (C8-C11) SG	58	-	60.00-115.00	-	EFH (C8-C11)	J (all detects) UJ (all non-detects)

Method: 8330A
Matrix: SO

QC Sample ID (Associated Samples)	Compound	LCS %R	LCSD %R	%R Limits	RPD (Limits)	Affected Compounds	Flag
P41551AQ241516A (SL-651-SA5C-TR-0.5 SL-651-SA5C-TR-10.0 SL-651-SA5C-TR-15.0 SL-651-SA5C-TR-5.0 SL-951-SA5C-TR-5.0)	PETN	158	-	64.00-121.00	-	PETN	J(all detects)

Method: 8270D
Matrix: SO

QC Sample ID (Associated Samples)	Compound	LCS %R	LCSD %R	%R Limits	RPD (Limits)	Affected Compounds	Flag
P4LHLCSQ262015 (SL-651-SA5C-TR-0.5 SL-651-SA5C-TR-10.0 SL-651-SA5C-TR-15.0 SL-651-SA5C-TR-5.0 SL-951-SA5C-TR-5.0)	4,6-DINITRO-2-METHYLPHENOL	64	-	67.00-131.00	-	4,6-DINITRO-2-METHYLPHEN	J(all detects) UJ(all non-detects)
	4-NITROANILINE	56	-	57.00-106.00	-	4-NITROANILINE	

Method: 8270D SIM
Matrix: SO

QC Sample ID (Associated Samples)	Compound	LCS %R	LCSD %R	%R Limits	RPD (Limits)	Affected Compounds	Flag
P4LILCSQ260302 (SL-651-SA5C-TR-0.5 SL-651-SA5C-TR-10.0 SL-651-SA5C-TR-15.0 SL-651-SA5C-TR-5.0 SL-951-SA5C-TR-5.0)	BENZO(E)PYRENE	77	-	81.00-110.00	-	BENZO(E)PYRENE	J(all detects) UJ(all non-detects)

Field Duplicate RPD Report

Lab Reporting Batch ID: PH209 **Laboratory: LL**

EDD Filename: PH209_v1. **eQAPP Name: CDM_SSFL_140617_Lan**

Method: 160.3M
Matrix: SO

Analyte	Concentration (%)		Sample RPD	eQAPP RPD	Flag
	SL-651-SA5C-TR-5.0	SL-951-SA5C-TR-5.0			
MOISTURE	4.6	4.4	4		Not Validated

Method: 1613B
Matrix: SO

Analyte	Concentration (ng/Kg)		Sample RPD	eQAPP RPD	Flag
	SL-651-SA5C-TR-5.0	SL-951-SA5C-TR-5.0			
1,2,3,4,6,7,8-HPCDD	2.10	1.55	30	50.00	
1,2,3,4,6,7,8-HPCDF	0.321	0.228	34	50.00	
1,2,3,4,7,8,9-HPCDF	0.106	0.116	9	50.00	
1,2,3,4,7,8-HxCDD	0.0344	0.0405	16	50.00	
1,2,3,4,7,8-HXCDF	0.0936	0.100	7	50.00	
1,2,3,6,7,8-HXCDF	0.0888	0.0960	8	50.00	No Qualifiers Applied
1,2,3,7,8-PECDF	0.147	0.103	35	50.00	
2,3,4,6,7,8-HXCDF	0.0792	0.0846	7	50.00	
OCDD	13.8	11.1	22	50.00	
OCDF	0.634	0.426	39	50.00	
1,2,3,6,7,8-HXCDD	0.0769	0.131	52	50.00	
1,2,3,7,8,9-HXCDD	0.0679	0.155	78	50.00	
1,2,3,7,8,9-HXCDF	5.11 U	0.140	200	50.00	J(all detects)
1,2,3,7,8-PECDD	0.0418	5.18 U	200	50.00	UJ(all non-detects)
2,3,4,7,8-PECDF	0.163	0.0634	88	50.00	
2,3,7,8-TCDD	0.0610	1.04 U	200	50.00	

Method: 6010C
Matrix: SO

Analyte	Concentration (mg/Kg)		Sample RPD	eQAPP RPD	Flag
	SL-651-SA5C-TR-5.0 (TOT)	SL-951-SA5C-TR-5.0 (TOT)			
ALUMINUM	9500	12300	26	50.00	
ARSENIC	3.17	3.57	12	50.00	
BARIUM	60.7	71.2	16	50.00	
BERYLLIUM	0.448	0.559	22	50.00	
BORON	1.75	1.62	8	50.00	
CALCIUM	2130	2320	9	50.00	
CHROMIUM	9.38	11.8	23	50.00	
COBALT	3.45	4.04	16	50.00	
COPPER	4.42	5.43	21	50.00	
IRON	16200	18400	13	50.00	
LEAD	4.95	5.64	13	50.00	
LITHIUM	22.4	23.5	5	50.00	No Qualifiers Applied
MAGNESIUM	3340	3660	9	50.00	
MANGANESE	248	272	9	50.00	
NICKEL	5.79	7.18	21	50.00	
PHOSPHORUS	334	318	5	50.00	
POTASSIUM	2840	2910	2	50.00	
SODIUM	71.3	71.2	0	50.00	
TIN	2.63	2.69	2	50.00	
TITANIUM	878	943	7	50.00	
VANADIUM	20.9	25.8	21	50.00	
ZINC	56.7	58.5	3	50.00	
Zirconium	1.94	2.32	18	50.00	
MOLYBDENUM	0.308	2.01 U	200	50.00	J(all detects) UJ(all non-detects)

Project Name and Number: 1204-002-001-AL - SSFL Area IV Phase 3

Field Duplicate RPD Report

Lab Reporting Batch ID: PH209 **Laboratory: LL**

EDD Filename: PH209_v1. **eQAPP Name: CDM_SSFL_140617_Lan**

Method: 6020A
Matrix: SO

Analyte	Concentration (mg/Kg)		Sample RPD	eQAPP RPD	Flag
	SL-651-SA5C-TR-5.0 (TOT)	SL-951-SA5C-TR-5.0 (TOT)			
STRONTIUM	9.45	14.7	43	50.00	No Qualifiers Applied
THALLIUM	0.227	0.263	15	50.00	
SELENIUM	0.415 U	0.143	200	50.00	J(all detects) UJ(all non-detects)

Method: 8015M
Matrix: SO

Analyte	Concentration (mg/Kg)		Sample RPD	eQAPP RPD	Flag
	SL-651-SA5C-TR-5.0	SL-951-SA5C-TR-5.0			
EFH (C21-C30)	4.6	5.2 U	200	50.00	J(all detects)
EFH (C30-C40)	8.8	10 U	200	50.00	UJ(all non-detects)

Method: 8270D SIM
Matrix: SO

Analyte	Concentration (ug/Kg)		Sample RPD	eQAPP RPD	Flag
	SL-651-SA5C-TR-5.0	SL-951-SA5C-TR-5.0			
2-METHYLNAPHTHALENE	0.83	0.81	2	50.00	No Qualifiers Applied
NAPHTHALENE	1.7 U	0.89	200	50.00	J(all detects) UJ(all non-detects)

Method: 8270D
Matrix: SO

Analyte	Concentration (ug/Kg)		Sample RPD	eQAPP RPD	Flag
	SL-651-SA5C-TR-5.0	SL-951-SA5C-TR-5.0			
BENZO(A)PYRENE	4	4	0	50.00	No Qualifiers Applied
BENZO(B)FLUORANTHENE	5	5	0	50.00	

Method: 9045M
Matrix: SO

Analyte	Concentration (pH unit)		Sample RPD	eQAPP RPD	Flag
	SL-651-SA5C-TR-5.0	SL-951-SA5C-TR-5.0			
PH	7.85	7.63	3	50.00	Not Validated

Reporting Limit Outliers

Lab Reporting Batch ID: PH209 **Laboratory: LL**

EDD Filename: PH209_v1. **eQAPP Name: CDM_SSFL_140617_Lan**

Method: 1613B

Matrix: SO

SampleID	Analyte	Lab Qual	Result	Reporting Limit	RL Type	Units	Flag
SL-651-SA5C-TR-0.5	1,2,3,4,6,7,8-HPCDF	JB	1.13	5.17	PQL	ng/Kg	
	1,2,3,4,7,8,9-HPCDF	JBQ	0.0929	5.17	PQL	ng/Kg	
	1,2,3,4,7,8-HxCDD	JBQ	0.134	5.17	PQL	ng/Kg	
	1,2,3,4,7,8-HXCDF	JBQ	0.141	5.17	PQL	ng/Kg	
	1,2,3,6,7,8-HXCDD	JB	0.552	5.17	PQL	ng/Kg	
	1,2,3,6,7,8-HXCDF	JBQ	0.133	5.17	PQL	ng/Kg	
	1,2,3,7,8,9-HXCDD	JBQ	0.518	5.17	PQL	ng/Kg	
	1,2,3,7,8,9-HXCDF	JBQ	0.448	5.17	PQL	ng/Kg	J (all detects)
	1,2,3,7,8-PECDD	JBQ	0.170	5.17	PQL	ng/Kg	
	1,2,3,7,8-PECDF	JB	0.269	5.17	PQL	ng/Kg	
	2,3,4,6,7,8-HXCDF	JB	0.148	5.17	PQL	ng/Kg	
	2,3,4,7,8-PECDF	JB	0.194	5.17	PQL	ng/Kg	
	2,3,7,8-TCDF	JQ	0.129	1.03	PQL	ng/Kg	
	OCDF	JB	2.88	10.3	PQL	ng/Kg	
SL-651-SA5C-TR-10.0	1,2,3,4,6,7,8-HPCDD	JB	1.12	5.07	PQL	ng/Kg	
	1,2,3,4,6,7,8-HPCDF	JBQ	0.278	5.07	PQL	ng/Kg	
	1,2,3,4,7,8,9-HPCDF	JBQ	0.100	5.07	PQL	ng/Kg	
	1,2,3,4,7,8-HxCDD	JBQ	0.0415	5.07	PQL	ng/Kg	
	1,2,3,4,7,8-HXCDF	JBQ	0.0822	5.07	PQL	ng/Kg	
	1,2,3,6,7,8-HXCDD	JBQ	0.384	5.07	PQL	ng/Kg	
	1,2,3,6,7,8-HXCDF	JBQ	0.114	5.07	PQL	ng/Kg	
	1,2,3,7,8,9-HXCDD	JBQ	0.396	5.07	PQL	ng/Kg	J (all detects)
	1,2,3,7,8,9-HXCDF	JBQ	0.330	5.07	PQL	ng/Kg	
	1,2,3,7,8-PECDD	JBQ	0.0599	5.07	PQL	ng/Kg	
	1,2,3,7,8-PECDF	JBQ	0.231	5.07	PQL	ng/Kg	
	2,3,4,6,7,8-HXCDF	JBQ	0.170	5.07	PQL	ng/Kg	
	2,3,4,7,8-PECDF	JBQ	0.166	5.07	PQL	ng/Kg	
	2,3,7,8-TCDF	J	0.0779	1.01	PQL	ng/Kg	
	OCDF	JB	0.513	10.1	PQL	ng/Kg	
SL-651-SA5C-TR-15.0	1,2,3,4,6,7,8-HPCDD	JB	0.808	5.21	PQL	ng/Kg	
	1,2,3,4,6,7,8-HPCDF	JBQ	0.232	5.21	PQL	ng/Kg	
	1,2,3,4,7,8,9-HPCDF	JB	0.0608	5.21	PQL	ng/Kg	
	1,2,3,4,7,8-HxCDD	JBQ	0.0325	5.21	PQL	ng/Kg	
	1,2,3,4,7,8-HXCDF	JB	0.104	5.21	PQL	ng/Kg	
	1,2,3,6,7,8-HXCDD	JBQ	0.0864	5.21	PQL	ng/Kg	
	1,2,3,6,7,8-HXCDF	JB	0.0819	5.21	PQL	ng/Kg	
	1,2,3,7,8,9-HXCDD	JBQ	0.154	5.21	PQL	ng/Kg	J (all detects)
	1,2,3,7,8,9-HXCDF	JBQ	0.168	5.21	PQL	ng/Kg	
	1,2,3,7,8-PECDD	JBQ	0.0497	5.21	PQL	ng/Kg	
	1,2,3,7,8-PECDF	JBQ	0.118	5.21	PQL	ng/Kg	
	2,3,4,6,7,8-HXCDF	JBQ	0.0603	5.21	PQL	ng/Kg	
	2,3,4,7,8-PECDF	JB	0.0354	5.21	PQL	ng/Kg	
	OCDD	JB	9.79	10.4	PQL	ng/Kg	
	OCDF	JBQ	0.620	10.4	PQL	ng/Kg	

Reporting Limit Outliers

Lab Reporting Batch ID: PH209 **Laboratory: LL**

EDD Filename: PH209_v1. **eQAPP Name: CDM_SSFL_140617_Lan**

Method: 1613B

Matrix: SO

SampleID	Analyte	Lab Qual	Result	Reporting Limit	RL Type	Units	Flag
SL-651-SA5C-TR-5.0	1,2,3,4,6,7,8-HPCDD	JB	2.10	5.11	PQL	ng/Kg	
	1,2,3,4,6,7,8-HPCDF	JB	0.321	5.11	PQL	ng/Kg	
	1,2,3,4,7,8,9-HPCDF	JBQ	0.106	5.11	PQL	ng/Kg	
	1,2,3,4,7,8-HxCDD	JBQ	0.0344	5.11	PQL	ng/Kg	
	1,2,3,4,7,8-HXCDF	JB	0.0936	5.11	PQL	ng/Kg	
	1,2,3,6,7,8-HXCDD	JBQ	0.0769	5.11	PQL	ng/Kg	
	1,2,3,6,7,8-HXCDF	JBQ	0.0888	5.11	PQL	ng/Kg	
	1,2,3,7,8,9-HXCDD	JBQ	0.0679	5.11	PQL	ng/Kg	J (all detects)
	1,2,3,7,8-PECDD	JB	0.0418	5.11	PQL	ng/Kg	
	1,2,3,7,8-PECDF	JB	0.147	5.11	PQL	ng/Kg	
	2,3,4,6,7,8-HXCDF	JB	0.0792	5.11	PQL	ng/Kg	
	2,3,4,7,8-PECDF	JBQ	0.163	5.11	PQL	ng/Kg	
	2,3,7,8-TCDD	JQ	0.0610	1.02	PQL	ng/Kg	
	OCDF	JB	0.634	10.2	PQL	ng/Kg	
SL-951-SA5C-TR-5.0	1,2,3,4,6,7,8-HPCDD	JB	1.55	5.18	PQL	ng/Kg	
	1,2,3,4,6,7,8-HPCDF	JB	0.228	5.18	PQL	ng/Kg	
	1,2,3,4,7,8,9-HPCDF	JBQ	0.116	5.18	PQL	ng/Kg	
	1,2,3,4,7,8-HxCDD	JBQ	0.0405	5.18	PQL	ng/Kg	
	1,2,3,4,7,8-HXCDF	JB	0.100	5.18	PQL	ng/Kg	
	1,2,3,6,7,8-HXCDD	JBQ	0.131	5.18	PQL	ng/Kg	
	1,2,3,6,7,8-HXCDF	JBQ	0.0960	5.18	PQL	ng/Kg	J (all detects)
	1,2,3,7,8,9-HXCDD	JBQ	0.155	5.18	PQL	ng/Kg	
	1,2,3,7,8,9-HXCDF	JBQ	0.140	5.18	PQL	ng/Kg	
	1,2,3,7,8-PECDF	JBQ	0.103	5.18	PQL	ng/Kg	
	2,3,4,6,7,8-HXCDF	JBQ	0.0846	5.18	PQL	ng/Kg	
	2,3,4,7,8-PECDF	JBQ	0.0634	5.18	PQL	ng/Kg	
	OCDF	JB	0.426	10.4	PQL	ng/Kg	

Method: 6010C

Matrix: SO

SampleID	Analyte	Lab Qual	Result	Reporting Limit	RL Type	Units	Flag
SL-651-SA5C-TR-0.5	BERYLLIUM	J	0.703	1.02	PQL	mg/Kg	
	BORON	J	1.78	10.2	PQL	mg/Kg	
	MOLYBDENUM	J	0.186	2.04	PQL	mg/Kg	
	SODIUM	J	76.3	102	PQL	mg/Kg	J (all detects)
	TIN	J	2.73	10.2	PQL	mg/Kg	
	Zirconium	J	3.73	5.11	PQL	mg/Kg	
SL-651-SA5C-TR-10.0	BERYLLIUM	J	0.683	1.03	PQL	mg/Kg	
	BORON	J	2.29	10.3	PQL	mg/Kg	
	MOLYBDENUM	J	0.186	2.06	PQL	mg/Kg	J (all detects)
	TIN	J	2.72	10.3	PQL	mg/Kg	
	Zirconium	J	3.47	5.15	PQL	mg/Kg	
SL-651-SA5C-TR-15.0	BERYLLIUM	J	0.651	1.02	PQL	mg/Kg	
	BORON	J	4.80	10.2	PQL	mg/Kg	J (all detects)
	TIN	J	2.55	10.2	PQL	mg/Kg	
	Zirconium	J	3.34	5.08	PQL	mg/Kg	

Reporting Limit Outliers

Lab Reporting Batch ID: PH209 **Laboratory: LL**

EDD Filename: PH209_v1. **eQAPP Name: CDM_SSFL_140617_Lan**

Method: 6010C

Matrix: SO

SampleID	Analyte	Lab Qual	Result	Reporting Limit	RL Type	Units	Flag
SL-651-SA5C-TR-5.0	ARSENIC	J	3.17	4.15	PQL	mg/Kg	
	BERYLLIUM	J	0.448	1.04	PQL	mg/Kg	
	BORON	J	1.75	10.4	PQL	mg/Kg	
	MOLYBDENUM	J	0.308	2.08	PQL	mg/Kg	J (all detects)
	SODIUM	J	71.3	104	PQL	mg/Kg	
	TIN	J	2.63	10.4	PQL	mg/Kg	
	Zirconium	J	1.94	5.19	PQL	mg/Kg	
SL-951-SA5C-TR-5.0	ARSENIC	J	3.57	4.02	PQL	mg/Kg	
	BERYLLIUM	J	0.559	1.01	PQL	mg/Kg	
	BORON	J	1.62	10.1	PQL	mg/Kg	J (all detects)
	SODIUM	J	71.2	101	PQL	mg/Kg	
	TIN	J	2.69	10.1	PQL	mg/Kg	
	Zirconium	J	2.32	5.03	PQL	mg/Kg	

Method: 6020A

Matrix: SO

SampleID	Analyte	Lab Qual	Result	Reporting Limit	RL Type	Units	Flag
SL-651-SA5C-TR-0.5	SELENIUM	J	0.167	0.409	PQL	mg/Kg	J (all detects)
SL-651-SA5C-TR-10.0	SELENIUM	J	0.129	0.412	PQL	mg/Kg	J (all detects)
SL-651-SA5C-TR-15.0	SELENIUM	J	0.122	0.407	PQL	mg/Kg	J (all detects)
	SILVER	J	0.0296	0.203	PQL	mg/Kg	
SL-951-SA5C-TR-5.0	SELENIUM	J	0.143	0.402	PQL	mg/Kg	J (all detects)

Method: 7199

Matrix: SO

SampleID	Analyte	Lab Qual	Result	Reporting Limit	RL Type	Units	Flag
SL-651-SA5C-TR-10.0	HEXAVALENT CHROMIUM	J	0.41	0.43	PQL	mg/Kg	J (all detects)

Method: 7471B

Matrix: SO

SampleID	Analyte	Lab Qual	Result	Reporting Limit	RL Type	Units	Flag
SL-651-SA5C-TR-10.0	MERCURY	J	0.0124	0.0169	PQL	mg/Kg	J (all detects)
SL-651-SA5C-TR-15.0	MERCURY	J	0.0160	0.0171	PQL	mg/Kg	J (all detects)

Reporting Limit Outliers

Lab Reporting Batch ID: PH209 **Laboratory: LL**

EDD Filename: PH209_v1. **eQAPP Name: CDM_SSFL_140617_Lan**

Method: 8015M

Matrix: SO

SampleID	Analyte	Lab Qual	Result	Reporting Limit	RL Type	Units	Flag
SL-651-SA5C-TR-10.0	EFH (C21-C30)	J	3.2	5.3	PQL	mg/Kg	J (all detects)
SL-651-SA5C-TR-5.0	EFH (C21-C30)	J	4.6	5.2	PQL	mg/Kg	J (all detects)
	EFH (C30-C40)	J	8.8	10	PQL	mg/Kg	

Method: 8081B

Matrix: SO

SampleID	Analyte	Lab Qual	Result	Reporting Limit	RL Type	Units	Flag
SL-651-SA5C-TR-10.0	4,4'-DDT	J	0.57	1.8	PQL	ug/Kg	J (all detects)

Method: 8151A

Matrix: SO

SampleID	Analyte	Lab Qual	Result	Reporting Limit	RL Type	Units	Flag
SL-651-SA5C-TR-0.5	2,4-DB	J	15	18	PQL	ug/Kg	J (all detects)

Method: 8270D

Matrix: SO

SampleID	Analyte	Lab Qual	Result	Reporting Limit	RL Type	Units	Flag
SL-651-SA5C-TR-0.5	BENZO(A)ANTHRACENE	J	4	18	PQL	ug/Kg	J (all detects)
	BENZO(A)PYRENE	J	4	18	PQL	ug/Kg	
	BENZO(B)FLUORANTHENE	J	5	18	PQL	ug/Kg	
	BENZO(G,H,I)PERYLENE	J	4	18	PQL	ug/Kg	
	CHRYSENE	J	5	18	PQL	ug/Kg	
	FLUORANTHENE	J	4	18	PQL	ug/Kg	
	PYRENE	J	5	18	PQL	ug/Kg	
SL-651-SA5C-TR-10.0	BENZO(A)PYRENE	J	4	18	PQL	ug/Kg	J (all detects)
	BENZO(B)FLUORANTHENE	J	5	18	PQL	ug/Kg	
SL-651-SA5C-TR-15.0	BENZO(A)PYRENE	J	4	18	PQL	ug/Kg	J (all detects)
	BENZO(B)FLUORANTHENE	J	4	18	PQL	ug/Kg	
SL-651-SA5C-TR-5.0	BENZO(A)ANTHRACENE	J	4	18	PQL	ug/Kg	J (all detects)
	BENZO(A)PYRENE	J	4	18	PQL	ug/Kg	
	BENZO(B)FLUORANTHENE	J	5	18	PQL	ug/Kg	
	FLUORANTHENE	J	4	18	PQL	ug/Kg	
	PHENANTHRENE	J	4	18	PQL	ug/Kg	
	PYRENE	J	4	18	PQL	ug/Kg	
SL-951-SA5C-TR-5.0	BENZO(A)PYRENE	J	4	18	PQL	ug/Kg	J (all detects)
	BENZO(B)FLUORANTHENE	J	5	18	PQL	ug/Kg	
	CHRYSENE	J	4	18	PQL	ug/Kg	

Reporting Limit Outliers

Lab Reporting Batch ID: PH209 **Laboratory: LL**

EDD Filename: PH209_v1. **eQAPP Name: CDM_SSFL_140617_Lan**

Method: **8270D SIM**

Matrix: **SO**

SampleID	*Analyte*	*Lab Qual*	*Result*	*Reporting Limit*	*RL Type*	*Units*	*Flag*
SL-651-SA5C-TR-0.5	NAPHTHALENE PHENANTHRENE	J J	1.2 1.4	1.7 1.7	PQL PQL	ug/Kg ug/Kg	J (all detects)
SL-651-SA5C-TR-5.0	2-METHYLNAPHTHALENE	J	0.83	1.7	PQL	ug/Kg	J (all detects)
SL-951-SA5C-TR-5.0	2-METHYLNAPHTHALENE NAPHTHALENE	J J	0.81 0.89	1.7 1.7	PQL PQL	ug/Kg ug/Kg	J (all detects)

LDC #: 32184B4

VALIDATION COMPLETENESS WORKSHEET

Date: 8/1/14

SDG #: PH209

ADR

Page: 1 of 1

Laboratory: Eurofins Lancaster Laboratories

Reviewer: YK

2nd Reviewer: JR

METHOD: Metals (EPA SW 846 Method 6010C/6020A/~~7000~~ 7471 A)

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	—	Sampling dates: 5/30/14
II.	ICP/MS Tune	—	
III.	Calibration	—	
IV.	Blanks	A	CB hits, no quals
V.	ICP Interference Check Sample (ICS) Analysis	—	
VI.	Matrix Spike Analysis	SW N	MS/D
VII.	Duplicate Sample Analysis	SW N	DUP
VIII.	Laboratory Control Samples (LCS)	A N	LCS
IX.	Internal Standard (ICP-MS)	N	
X.	Furnace Atomic Absorption QC	N	
XI.	ICP Serial Dilution	A	
XII.	Sample Result Verification	N	
XIII.	Overall Assessment of Data	N	
XIV.	Field Duplicates	-	(2,3)
XV	Field Blanks	SW	EB = EB1-052914 SDG# PH207 FB= FB-052114 SDG# PH191

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

1	SL-651-SA5C-TR-0.5	11		21		31	
2	SL-651-SA5C-TR-5.0	12		22		32	
3	SL-951-SA5C-TR-5.0	13		23		33	
4	SL-651-SA5C-TR-10.0	14		24		34	
5	SL-651-SA5C-TR-15.0	15		25		35	
6	SL-651-SA5C-TR-5.0MS	16		26		36	
7	SL-651-SA5C-TR-5.0MSD	17		27		37	
8	SL-651-SA5C-TR-5.0DUP	18		28		38	
9		19		29		39	
10		20		30		40	

Notes: _____

LDC #: 32184B4

VALIDATION FINDINGS WORKSHEET
Sample Specific Element Reference

Reviewer: KH
2nd reviewer: CR

All circled elements are applicable to each sample.

Sample ID	Matrix	Target Analyte List (TAL)
1-5	S	Al, Sb, As, Ba, Be, B, Cd, Ca, Cr, Co, Cu, Fe, Pb, Li, Mg, Mo, Mn, Hg, Ni, P, K, Se, Ag, Na, Sr, Tl, Sn, Ti, V, Zn, Zr
	↓	Al, Sb, As, Ba, Be, B, Cd, Ca, Cr, Co, Cu, Fe, Pb, Li, Mg, Mo, Mn, Hg, Ni, P, K, Se, Ag, Na, Sr, Tl, Sn, Ti, V, Zn, Zr
QC 6-8	↓	Al, Sb, As, Ba, Be, B, Cd, Ca, Cr, Co, Cu, Fe, Pb, Li, Mg, Mo, Mn, Hg, Ni, P, K, Se, Ag, Na, Sr, Tl, Sn, Ti, V, Zn, Zr
		Al, Sb, As, Ba, Be, B, Cd, Ca, Cr, Co, Cu, Fe, Pb, Li, Mg, Mo, Mn, Hg, Ni, P, K, Se, Ag, Na, Sr, Tl, Sn, Ti, V, Zn, Zr
		Al, Sb, As, Ba, Be, B, Cd, Ca, Cr, Co, Cu, Fe, Pb, Li, Mg, Mo, Mn, Hg, Ni, P, K, Se, Ag, Na, Sr, Tl, Sn, Ti, V, Zn, Zr
		Al, Sb, As, Ba, Be, B, Cd, Ca, Cr, Co, Cu, Fe, Pb, Li, Mg, Mo, Mn, Hg, Ni, P, K, Se, Ag, Na, Sr, Tl, Sn, Ti, V, Zn, Zr
		Al, Sb, As, Ba, Be, B, Cd, Ca, Cr, Co, Cu, Fe, Pb, Li, Mg, Mo, Mn, Hg, Ni, P, K, Se, Ag, Na, Sr, Tl, Sn, Ti, V, Zn, Zr
		Al, Sb, As, Ba, Be, B, Cd, Ca, Cr, Co, Cu, Fe, Pb, Li, Mg, Mo, Mn, Hg, Ni, P, K, Se, Ag, Na, Sr, Tl, Sn, Ti, V, Zn, Zr
		Al, Sb, As, Ba, Be, B, Cd, Ca, Cr, Co, Cu, Fe, Pb, Li, Mg, Mo, Mn, Hg, Ni, P, K, Se, Ag, Na, Sr, Tl, Sn, Ti, V, Zn, Zr
		Al, Sb, As, Ba, Be, B, Cd, Ca, Cr, Co, Cu, Fe, Pb, Li, Mg, Mo, Mn, Hg, Ni, P, K, Se, Ag, Na, Sr, Tl, Sn, Ti, V, Zn, Zr
		Al, Sb, As, Ba, Be, B, Cd, Ca, Cr, Co, Cu, Fe, Pb, Li, Mg, Mo, Mn, Hg, Ni, P, K, Se, Ag, Na, Sr, Tl, Sn, Ti, V, Zn, Zr
		Al, Sb, As, Ba, Be, B, Cd, Ca, Cr, Co, Cu, Fe, Pb, Li, Mg, Mo, Mn, Hg, Ni, P, K, Se, Ag, Na, Sr, Tl, Sn, Ti, V, Zn, Zr
		Al, Sb, As, Ba, Be, B, Cd, Ca, Cr, Co, Cu, Fe, Pb, Li, Mg, Mo, Mn, Hg, Ni, P, K, Se, Ag, Na, Sr, Tl, Sn, Ti, V, Zn, Zr
		Al, Sb, As, Ba, Be, B, Cd, Ca, Cr, Co, Cu, Fe, Pb, Li, Mg, Mo, Mn, Hg, Ni, P, K, Se, Ag, Na, Sr, Tl, Sn, Ti, V, Zn, Zr
		Al, Sb, As, Ba, Be, B, Cd, Ca, Cr, Co, Cu, Fe, Pb, Li, Mg, Mo, Mn, Hg, Ni, P, K, Se, Ag, Na, Sr, Tl, Sn, Ti, V, Zn, Zr
		Al, Sb, As, Ba, Be, B, Cd, Ca, Cr, Co, Cu, Fe, Pb, Li, Mg, Mo, Mn, Hg, Ni, P, K, Se, Ag, Na, Sr, Tl, Sn, Ti, V, Zn, Zr
		Al, Sb, As, Ba, Be, B, Cd, Ca, Cr, Co, Cu, Fe, Pb, Li, Mg, Mo, Mn, Hg, Ni, P, K, Se, Ag, Na, Sr, Tl, Sn, Ti, V, Zn, Zr
		Al, Sb, As, Ba, Be, B, Cd, Ca, Cr, Co, Cu, Fe, Pb, Li, Mg, Mo, Mn, Hg, Ni, P, K, Se, Ag, Na, Sr, Tl, Sn, Ti, V, Zn, Zr
		Al, Sb, As, Ba, Be, B, Cd, Ca, Cr, Co, Cu, Fe, Pb, Li, Mg, Mo, Mn, Hg, Ni, P, K, Se, Ag, Na, Sr, Tl, Sn, Ti, V, Zn, Zr
		Al, Sb, As, Ba, Be, B, Cd, Ca, Cr, Co, Cu, Fe, Pb, Li, Mg, Mo, Mn, Hg, Ni, P, K, Se, Ag, Na, Sr, Tl, Sn, Ti, V, Zn, Zr
		Al, Sb, As, Ba, Be, B, Cd, Ca, Cr, Co, Cu, Fe, Pb, Li, Mg, Mo, Mn, Hg, Ni, P, K, Se, Ag, Na, Sr, Tl, Sn, Ti, V, Zn, Zr
		Al, Sb, As, Ba, Be, B, Cd, Ca, Cr, Co, Cu, Fe, Pb, Li, Mg, Mo, Mn, Hg, Ni, P, K, Se, Ag, Na, Sr, Tl, Sn, Ti, V, Zn, Zr
		Al, Sb, As, Ba, Be, B, Cd, Ca, Cr, Co, Cu, Fe, Pb, Li, Mg, Mo, Mn, Hg, Ni, P, K, Se, Ag, Na, Sr, Tl, Sn, Ti, V, Zn, Zr
		Al, Sb, As, Ba, Be, B, Cd, Ca, Cr, Co, Cu, Fe, Pb, Li, Mg, Mo, Mn, Hg, Ni, P, K, Se, Ag, Na, Sr, Tl, Sn, Ti, V, Zn, Zr
		Al, Sb, As, Ba, Be, B, Cd, Ca, Cr, Co, Cu, Fe, Pb, Li, Mg, Mo, Mn, Hg, Ni, P, K, Se, Ag, Na, Sr, Tl, Sn, Ti, V, Zn, Zr
Analysis Method		
ICP		Al, Sb, As, Ba, Be, B, Cd, Ca, Cr, Co, Cu, Fe, Pb, Li, Mg, Mo, Mn, Hg, Ni, P, K, Se, Ag, Na, Sr, Tl, Sn, Ti, V, Zn, Zr
ICP-MS		Al, Sb, As, Ba, Be, B, Cd, Ca, Cr, Co, Cu, Fe, Pb, Li, Mg, Mo, Mn, Hg, Ni, P, K, Se, Ag, Na, Sr, Tl, Sn, Ti, V, Zn, Zr

Comments: Mercury by CVAA if performed

LDC #: 32184B4

VALIDATION FINDINGS WORKSHEET
Field Blanks

(F)

Reviewer: KK
2nd Reviewer: 9

METHOD: Trace Metals (EPA SW846 6010B/6020A/7471A)

Blank units: ug/L **Associated sample units:** mg/kg
Sampling date: 5/21/14 and 5/29/14 Soil factor applied 100
Field blank type: (circle one) Field Blank / Rinsate / Other: (EB) Associated Samples: All

Analyte	Blank ID	Blank ID	Sample Identification								
	EB1-052914 SDG#PH207	FB-052114 SDG#PH191	Action Limit	1	2	3	4	5			
Zr		11	5.65	3.73	1.94	2.32	3.47 ~~3.5~~	3.34			
Ca	108		54								
Mg	25.2		12.6								
Mo	5.4		2.7	0.186 ~~0.19~~	0.308 ~~0.31~~	2.01	0.186 ~~0.19~~	2.03			
Sr	0.42		0.21								

CIRCLED RESULTS WERE NOT QUALIFIED. ALL RESULTS NOT CIRCLED WERE QUALIFIED BY THE FOLLOWING STATEMENT:
Samples with analyte concentrations within five times the associated field blank concentration are listed above, these sample results were qualified as not detected, "U".

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>4x (Ca, Fe, Mg RPD out: J/UJ)

QUALITY ASSURANCE SUMMARY
FORM 5A(MS/MSD)
MATRIX SPIKE/MATRIX SPIKE DUPLICATE
SDG No.: PH209
Matrix: SOIL Level (low/med): LOW

Background Lab Sample ID: 7483434BKG Matrix Spike Lab Sample ID: 7483438MS Matrix Spike Duplicate Lab Sample ID: 7483439MSD
Batch Id(s): P15437A, P15438A

		BKG Sample		MS Sample		MSD Sample		MS Spike	MSD Spike		MS		MSD				Control Limit		
Analyte	Mass	Result	C	Result	C	Result	C	Added	Added	Units	%R	Q	%R	Q	RPD	Q	%R	RPD	M
Aluminum		9065.6683		10253.3452		12550.0686		192.3077	196.0784	MG/KG	618		1777		20			20	P
Antimony		0.7327	U	34.2519		32.6196		48.0769	49.0196	MG/KG	71	N	67	N	5		75 - 125	20	P
Arsenic		3.0198	B	17.0077		18.1480		14.4231	14.7059	MG/KG	97		103		6		75 - 125	20	P
Barium		57.9297		245.5721		261.1667		192.3077	196.0784	MG/KG	98		104		6		75 - 125	20	P
Beryllium		0.4277	B	5.2692		5.6147		4.8077	4.9020	MG/KG	101		106		6		75 - 125	20	P
Boron		1.6693	B	183.5183		190.6706		192.3077	196.0784	MG/KG	95		96		4		75 - 125	20	P
Cadmium		0.0752	U	4.7433		4.7863		4.8077	4.9020	MG/KG	99		98		1		75 - 125	20	P
Calcium		2035.2327		2163.9692		2854.6480		384.6154	392.1569	MG/KG	33		209		28	*		20	P
Chromium		8.9475		26.6433		30.2843		19.2308	19.6078	MG/KG	92		109		13		75 - 125	20	P
Cobalt		3.2911		50.0317		50.8931		48.0769	49.0196	MG/KG	97		97		2		75 - 125	20	P
Copper		4.2168		28.1490		32.4873		24.0385	24.5098	MG/KG	100		115		14		75 - 125	20	P
Iron		15454.3941		14536.1721		18320.5382		96.1538	98.0392	MG/KG	-955		2923		23	*		20	P
Lead		4.7238		18.0365		20.3784		14.4231	14.7059	MG/KG	92		106		12		75 - 125	20	P
Lithium		21.3911		120.3000		125.7951		96.1538	98.0392	MG/KG	103		106		4		75 - 125	20	P
Magnesium		3187.4792		3272.0212		4037.2569		192.3077	196.0784	MG/KG	44		433		21	*		20	P
Manganese		236.9327		267.6288		288.7676		48.0769	49.0196	MG/KG	64		106		8			20	P
Mercury		0.0094	U	0.1795		0.1828		0.1635	0.1641	MG/KG	110		111		2		65 - 135	20	CV
Molybdenum		0.2941	B	186.7808		189.7931		192.3077	196.0784	MG/KG	97		97		2		75 - 125	20	P
Nickel		5.5208		52.4163		54.2098		48.0769	49.0196	MG/KG	98		99		3		75 - 125	20	P
Phosphorus		318.2149		390.5760		480.5716		96.1538	98.0392	MG/KG	75		166	N	21	*	75 - 125	20	P
Potassium		2706.2139		3823.3904		4125.1598		961.5385	980.3922	MG/KG	116		145	N	8		75 - 125	20	P
Selenium	78	0.0990	U	2.0423		2.1353		1.9231	1.9608	MG/KG	106		109		4		75 - 125	20	MS
Silver	107	0.0257	U	9.7519		9.9569		9.6154	9.8039	MG/KG	101		102		2		75 - 125	20	MS
Sodium		67.9980	B	1020.6875		1047.9657		961.5385	980.3922	MG/KG	99		100		3		75 - 125	20	P
Strontium	88	9.0178		16.5173		17.3882		7.6923	7.8431	MG/KG	97		107		5		75 - 125	20	MS
Thallium	203	0.2164		0.6137		0.6053		0.3846	0.3922	MG/KG	103		99		1		75 - 125	20	MS
Tin		2.5050	B	357.7250		360.8118		384.6154	392.1569	MG/KG	92		91		1		75 - 125	20	P
Titanium		837.6356		1048.3481		1137.0647		96.1538	98.0392	MG/KG	219		305		8			20	P
Vanadium		19.9327		68.0788		75.2794		48.0769	49.0196	MG/KG	100		113		10		75 - 125	20	P
Zinc		54.1188		100.3692		111.5912		48.0769	49.0196	MG/KG	96		117		11		75 - 125	20	P
Zirconium		1.8535	B	99.6577		101.6451		96.1538	98.0392	MG/KG	102		102		2		75 - 125	20	P

Note: Results shown are reported on an as-received basis.

METHODS:
P = ICP Atomic Emission Spectrometer CV = Cold Vapor
MS = ICP Mass Spectrometry AF = Cold Vapor Atomic Fluorescence

CONCENTRATION QUALIFIERS:
U= Below MDL, B= Below LOQ
FLAGS:
N = Matrix Spike OOS, * = Duplicate OOS

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QUALITY ASSURANCE SUMMARY
FORM 6
DUPLICATES
SDG No.: PH209
Matrix: SOIL Level (low/med): LOW

Background Lab Sample ID: 7483434BKG
Duplicate Lab Sample ID: 7483440DUP
Batch ID(s): P15437A, P15438A
Concentration Units: MG/KG

Analyte	Mass	Control Limit	Samples (S)	C	Duplicate (D)	C	RPD	Q	M
Aluminum			9065.6683		8855.7184		2		P
Antimony			0.7327	U	0.7184	U			P
Arsenic		4.0	3.0198	B	6.1612		68		P
Barium			57.9297		59.0136		2		P
Beryllium			0.4277	B	0.4417	B	3		P
Boron			1.6693	B	1.9680	B	16		P
Cadmium			0.0752	U	0.0738	U			P
Calcium			2035.2327		2047.1194		1		P
Chromium		3.0	8.9475		9.3621		5		P
Cobalt		1.0	3.2911		3.3641		2		P
Copper		2.0	4.2168		4.5777		8		P
Iron			15454.3941		16332.8709		6		P
Lead		3.0	4.7238		5.0136		6		P
Lithium			21.3911		22.6893		6		P
Magnesium			3187.4792		3353.7689		5		P
Manganese			236.9327		240.7631		2		P
Mercury			0.0094	U	0.0098	U			CV
Molybdenum			0.2941	B	0.1680	B	55		P
Nickel		2.0	5.5208		5.4204		2		P
Phosphorus			318.2149		337.9029		6		P
Potassium			2706.2139		2724.2388		1		P
Selenium	78		0.0990	U	0.1335	B	200		MS
Silver	107		0.0257	U	0.0252	U			MS
Sodium			67.9980	B	68.2447	B	0		P
Strontium	88		9.0178		9.9223		10		MS
Thallium	203	0.2	0.2164		0.2336		8		MS
Tin			2.5050	B	2.5524	B	2		P
Titanium			837.6356		884.2660		5		P
Vanadium			19.9327		21.1447		6		P
Zinc			54.1188		56.5757		4		P
Zirconium			1.8535	B	2.6709	B	36		P

NOTE: An asterisk (*) in column "Q" indicates poor duplicate precision (RPD > 20% OR |(S) - (D)| > LOQ for values < 5x LOQ).
The data are considered to be valid because the laboratory control sample is within the control limits. See the Laboratory Control Sample.

OK by diff

Note: Results shown are reported on an as-received basis.

METHODS:
P = ICP Atomic Emission Spectrometer
MS = ICP Mass Spectrometry
CV = Cold Vapor
AF = Cold Vapor Atomic Fluorescence

CONCENTRATION QUALIFIERS:
U= Below MDL
B= Below LOQ
FLAGS:
* = Duplicate Out of Spec

Data Validation Report
Santa Susana Field Laboratory

Go Backs, Subgroup Trench

SDG: PH212

Prepared for

CDM Smith
555 17th Street, Suite 1100
Denver, CO 80202

Prepared by

Laboratory Data Consultants, Inc.
2701 Loker Ave West, Suite 220
Carlsbad, California 92010

August 12, 2014

INTRODUCTION

This Data Validation Report (DVR) presents Level IV data validation results for samples collected on June 2, 2014. Data validation was performed in accordance with the Quality Assurance Project Plan (QAPP) for Santa Susana Field Laboratory (SSFL), RCRA Facility Investigation, Surficial Media Operable Unit (March 2009, Revision 4) and a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines (CLPNFGs) for Superfund Organic Methods Data Review (June 2008), Polychlorinated Dioxins/Dibenzofurans Data Review (September 2005) and for Inorganic Data Review (January 2010). Where specific guidance is not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following methods:

Semivolatiles (SVOCs) by Environmental Protection Agency (EPA) SW 846 Method 8270D
SVOCs by EPA SW 846 Method 8270D utilizing Selective Ion Monitoring (SIM)
Pesticides by EPA SW 846 Method 8081B
Polychlorinated Biphenyls (PCBs) by EPA SW 846 Method 8082A
Metals by EPA SW 846 Method 6010C, 6020A, and 7471B
Herbicides by EPA SW 846 Method 8151A
Perchlorate by EPA SW 846 Method 6850
Total Petroleum Hydrocarbons (TPH) as Gasoline by EPA SW 846 Method 8015M
TPH as Extractables with and without Silica Gel Clean Up by EPA SW 846 Method 8015M
Glycols by EPA SW 846 Method 8015B
Terphenyls by EPA SW 846 Method 8015B
Explosives by EPA SW 846 Method 8330A
Dioxins and Dibenzofurans by EPA Method 1613B
Hexavalent Chromium by EPA method 7199

The sample identification and methods of analyses performed on each sample is presented in Attachment 1. Overall data qualification summary is presented in Attachment II. Level III Automated Data Review outliers are presented in Enclosure I. Level IV DVRs are presented in Enclosure II.

All sample results were subjected to Level IV data validation, which comprises an evaluation of quality control (QC) summary results for sample holding times, initial and continuing calibrations, initial and continuing calibration blanks (ICB/CCBs), surrogates, internal standards, interference check (ICSA and ICSAB) samples, matrix spike/matrix spike duplicates (MS/MSD), laboratory duplicates (DUP), laboratory control sample/laboratory control sample duplicates (LCS/LCSD), method blanks, trip blanks, equipment blanks, field blanks, and the raw data to confirm sample quantitation and identification.

Automated data review was performed on all QC summary results using the Automated Data Review (ADR) software program (LDC, 2013) with exception of the initial and continuing calibrations, ICB/CCBs, interference check samples, and internal standards (except dioxins), which were validated manually. Quality assurance (QA)/QC criteria specified in the QAPP and CLPNFGs were incorporated with the program's reference library to assess compliance with project requirements.

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.

NJ Presumptive evidence of presence of the compound at an estimated quantity.

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

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 QC criteria.

II. Initial Calibration

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

III. Continuing Calibration

All criteria for the initial calibration verifications and continuing calibration of each method were met with the exception of several SVOCs, pesticides, and herbicides. The associated sample results were qualified as detected estimated (J) or non-detected estimated (UJ) as applicable. The details regarding the qualification of data are provided in Enclosure II.

IV. Blanks

Method blanks were performed at the required frequencies. No contaminant concentrations were detected in the method or preparation blanks with the exception of two blanks for metals, and dioxins and dibenzofurans. The associated sample results were qualified as non-detected (U) due to method blank contamination as applicable. The sample results that were not detected or were significantly greater than the concentrations found in the associated blanks were not qualified. The details regarding the qualification of data are provided in Enclosures I and II.

No contaminant concentrations were detected in the initial or continuing calibration blanks with the exception of several metals. The associated sample results were qualified as non-detected (U) due to calibration blank contamination as applicable. The sample results that were not detected or were significantly greater than the concentrations found in the associated blanks were not qualified. The details regarding the qualification of data are provided in Enclosure II.

V. Surrogate Spikes

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

VI. ICP Interference Check Sample (ICS) Analysis

The frequency of analysis was met.

The criteria for analysis were met.

VII. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) samples were performed at the required frequency. Percent recoveries (%R) and relative percent differences (RPD) were within QC limits.

VIII. Laboratory Duplicates Sample

Laboratory duplicates (DUP) sample analyses were reviewed for each matrix as applicable. Results were within QC limits.

IX. Laboratory Control Samples (LCS)

Laboratory control samples were reviewed for each matrix as applicable. Percent recoveries (%R) and relative percent differences (RPD) were within QC limits with the exception of several LCS/LCSD pairs for SVOCs, TPH as extractables with silica gel clean up, explosives, and herbicides. The dinoseb result in samples SL-653-SA5C-TR-0.5, SL-653-SA5C-TR-10.0, SL-653-SA5C-TR-15.0, and SL-653-SA5C-TR-5.0 were qualified as rejected (R) due to LCS/LCSD %Rs grossly outside QC limits (i.e., ≤ 10%). The remainder of the associated sample results were qualified as detected estimated (J) or non-detected estimated (UJ) as applicable. The details regarding the qualification of data are provided in Enclosures I and II.

X. Internal Standards

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

XI. ICP Serial Dilution

ICP serial dilution was not performed for this SDG.

XII. Compound Quantitation

The laboratory reporting limits were evaluated. All laboratory reporting limits met the specified requirements.

All compounds reported below the RL as detected were qualified as follows:

Sample	Finding	Flag
All samples in SDG PH212	All compounds reported as detected below the RL.	J (all detects)

XIII. Field Duplicate Samples

No field duplicates were identified in this SDG.

XIV. Field Blank Samples

One trip blank was collected and analyzed for TPH as gasoline. No contaminant concentrations were found in the trip blank.

One equipment blank (from SDG PH217) was collected and analyzed for SVOCs, pesticides, PCBs, metals, herbicides, perchlorate, TPH as gasoline, TPH as extractables with and without silica gel clean up, glycols, explosives, terphenyls, hexavalent chromium, and dioxins and dibenzofurans. The equipment blank had detections for SVOCs, metals and dioxins and dibenzofurans. The associated sample results were qualified as non-detected (U) due to equipment blank contamination as applicable. The sample results that were not detected or

were significantly greater than the concentrations found in the equipment blanks were not qualified. The equipment blank outlier reports are presented in Enclosures I and II.

One field blank (from SDG PH191) was collected and analyzed for SVOCs, pesticides, PCBs, metals, herbicides, perchlorate, TPH as gasoline, TPH as extractables with and without silica gel clean up, glycols, explosives, terphenyls, hexavalent chromium, and dioxins and dibenzofurans. The field blank had detections for SVOCs, metals and dioxins and dibenzofurans. The associated sample results were qualified as non-detected (U) due to field blank contamination as applicable. The sample results that were not detected or were significantly greater than the concentrations found in the field blanks were not qualified. The field blank outlier reports are presented in Enclosures I and II.

XV. Overall Assessment of Data

Four herbicide results were rejected due to LCS/LCSD %Rs grossly outside of QC limits. These results are not useable for all purposes.

The overall assessment of QA/QC data review by automated and manual validation of this sampling event met project requirements and analytical completeness levels with the exceptions noted in the above sections. The remainder of the data are deemed useable for the intended use.

Data flags are summarized and are presented as Attachment 2.

Attachment 1

Sample Cross Reference

Sample Cross Reference

Date Collected	Field Sample ID	Lab Sample ID	Sample Type	Prep Method	Analytical Method	Review Level
02-Jun-2014	TB4-060214	7485082	TB	5030B	8015M	IV
02-Jun-2014	SL-653-SA5C-TR-15.0	7485081	N	3050B	6010C	IV
02-Jun-2014	SL-653-SA5C-TR-15.0	7485081	N	3050B	6020A	IV
02-Jun-2014	SL-653-SA5C-TR-15.0	7485081	N	3060A	7199	IV
02-Jun-2014	SL-653-SA5C-TR-15.0	7485081	N	3546	8015M	IV
02-Jun-2014	SL-653-SA5C-TR-15.0	7485081	N	3546	8081B	IV
02-Jun-2014	SL-653-SA5C-TR-15.0	7485081	N	3546	8082A	IV
02-Jun-2014	SL-653-SA5C-TR-15.0	7485081	N	3546	8270D	IV
02-Jun-2014	SL-653-SA5C-TR-15.0	7485081	N	3546	8270D SIM	IV
02-Jun-2014	SL-653-SA5C-TR-15.0	7485081	N	3550B	8015B	IV
02-Jun-2014	SL-653-SA5C-TR-15.0	7485081	N	3550B	8151A	IV
02-Jun-2014	SL-653-SA5C-TR-15.0	7485081	N	3550C	8015C	IV
02-Jun-2014	SL-653-SA5C-TR-15.0	7485081	N	5035A	8015M	IV
02-Jun-2014	SL-653-SA5C-TR-15.0	7485081	N	METHOD	1613B	IV
02-Jun-2014	SL-653-SA5C-TR-15.0	7485081	N	METHOD	6850	IV
02-Jun-2014	SL-653-SA5C-TR-15.0	7485081	N	METHOD	7471B	IV
02-Jun-2014	SL-653-SA5C-TR-15.0	7485081	N	METHOD	8330A	IV
02-Jun-2014	SL-653-SA5C-TR-0.5	7485078	N	3050B	6010C	IV
02-Jun-2014	SL-653-SA5C-TR-0.5	7485078	N	3050B	6020A	IV
02-Jun-2014	SL-653-SA5C-TR-0.5	7485078	N	3060A	7199	IV
02-Jun-2014	SL-653-SA5C-TR-0.5	7485078	N	3546	8015M	IV
02-Jun-2014	SL-653-SA5C-TR-0.5	7485078	N	3546	8081B	IV
02-Jun-2014	SL-653-SA5C-TR-0.5	7485078	N	3546	8082A	IV
02-Jun-2014	SL-653-SA5C-TR-0.5	7485078	N	3546	8270D	IV
02-Jun-2014	SL-653-SA5C-TR-0.5	7485078	N	3546	8270D SIM	IV
02-Jun-2014	SL-653-SA5C-TR-0.5	7485078	N	3550B	8015B	IV

III = EPA Level 3 Data Review *N = Normal Sample* *TB = Trip Blank* *MS = Matrix Spike*
IV = EPA Level 4 Data Validation *FD = Field Duplicate* *FB = Field Blank* *MSD = Matrix Spike Duplicate*

Sample Cross Reference

Date Collected	Field Sample ID	Lab Sample ID	Sample Type	Prep Method	Analytical Method	Review Level
02-Jun-2014	SL-653-SA5C-TR-0.5	7485078	N	3550B	8151A	IV
02-Jun-2014	SL-653-SA5C-TR-0.5	7485078	N	3550C	8015C	IV
02-Jun-2014	SL-653-SA5C-TR-0.5	7485078	N	METHOD	1613B	IV
02-Jun-2014	SL-653-SA5C-TR-0.5	7485078	N	METHOD	6850	IV
02-Jun-2014	SL-653-SA5C-TR-0.5	7485078	N	METHOD	7471B	IV
02-Jun-2014	SL-653-SA5C-TR-0.5	7485078	N	METHOD	8330A	IV
02-Jun-2014	SL-653-SA5C-TR-0.5MSD	P485078M240211A	MSD	3550B	8151A	IV
02-Jun-2014	SL-653-SA5C-TR-0.5MSD	P485078M241810A	MSD	3546	8081B	IV
02-Jun-2014	SL-653-SA5C-TR-0.5MS	P485078R240144A	MS	3550B	8151A	IV
02-Jun-2014	SL-653-SA5C-TR-0.5MS	P485078R241757A	MS	3546	8081B	IV
02-Jun-2014	SL-653-SA5C-TR-5.0	7485079	N	3050B	6010C	IV
02-Jun-2014	SL-653-SA5C-TR-5.0	7485079	N	3050B	6020A	IV
02-Jun-2014	SL-653-SA5C-TR-5.0	7485079	N	3060A	7199	IV
02-Jun-2014	SL-653-SA5C-TR-5.0	7485079	N	3546	8015M	IV
02-Jun-2014	SL-653-SA5C-TR-5.0	7485079	N	3546	8081B	IV
02-Jun-2014	SL-653-SA5C-TR-5.0	7485079	N	3546	8082A	IV
02-Jun-2014	SL-653-SA5C-TR-5.0	7485079	N	3546	8270D	IV
02-Jun-2014	SL-653-SA5C-TR-5.0	7485079	N	3546	8270D SIM	IV
02-Jun-2014	SL-653-SA5C-TR-5.0	7485079	N	3550B	8015B	IV
02-Jun-2014	SL-653-SA5C-TR-5.0	7485079	N	3550B	8151A	IV
02-Jun-2014	SL-653-SA5C-TR-5.0	7485079	N	3550C	8015C	IV
02-Jun-2014	SL-653-SA5C-TR-5.0	7485079	N	5035A	8015M	IV
02-Jun-2014	SL-653-SA5C-TR-5.0	7485079	N	METHOD	1613B	IV
02-Jun-2014	SL-653-SA5C-TR-5.0	7485079	N	METHOD	6850	IV
02-Jun-2014	SL-653-SA5C-TR-5.0	7485079	N	METHOD	7471B	IV
02-Jun-2014	SL-653-SA5C-TR-5.0	7485079	N	METHOD	8330A	IV

III = EPA Level 3 Data Review *N = Normal Sample* *TB = Trip Blank* *MS = Matrix Spike*
IV = EPA Level 4 Data Validation *FD = Field Duplicate* *FB = Field Blank* *MSD = Matrix Spike Duplicate*

Sample Cross Reference

Date Collected	Field Sample ID	Lab Sample ID	Sample Type	Prep Method	Analytical Method	Review Level
02-Jun-2014	SL-653-SA5C-TR-10.0	7485080	N	3050B	6010C	IV
02-Jun-2014	SL-653-SA5C-TR-10.0	7485080	N	3050B	6020A	IV
02-Jun-2014	SL-653-SA5C-TR-10.0	7485080	N	3060A	7199	IV
02-Jun-2014	SL-653-SA5C-TR-10.0	7485080	N	3546	8015M	IV
02-Jun-2014	SL-653-SA5C-TR-10.0	7485080	N	3546	8081B	IV
02-Jun-2014	SL-653-SA5C-TR-10.0	7485080	N	3546	8082A	IV
02-Jun-2014	SL-653-SA5C-TR-10.0	7485080	N	3546	8270D	IV
02-Jun-2014	SL-653-SA5C-TR-10.0	7485080	N	3546	8270D SIM	IV
02-Jun-2014	SL-653-SA5C-TR-10.0	7485080	N	3550B	8015B	IV
02-Jun-2014	SL-653-SA5C-TR-10.0	7485080	N	3550B	8151A	IV
02-Jun-2014	SL-653-SA5C-TR-10.0	7485080	N	3550C	8015C	IV
02-Jun-2014	SL-653-SA5C-TR-10.0	7485080	N	5035A	8015M	IV
02-Jun-2014	SL-653-SA5C-TR-10.0	7485080	N	METHOD	1613B	IV
02-Jun-2014	SL-653-SA5C-TR-10.0	7485080	N	METHOD	6850	IV
02-Jun-2014	SL-653-SA5C-TR-10.0	7485080	N	METHOD	7471B	IV
02-Jun-2014	SL-653-SA5C-TR-10.0	7485080	N	METHOD	8330A	IV

III = EPA Level 3 Data Review *N = Normal Sample* *TB = Trip Blank* *MS = Matrix Spike*
IV = EPA Level 4 Data Validation *FD = Field Duplicate* *FB = Field Blank* *MSD = Matrix Spike Duplicate*

Attachment 2
Overall Data Qualification Summary

Data Qualifier Summary

Lab Reporting Batch ID: PH212 **Laboratory: LL**

EDD Filename: PrepPH212 **eQAPP Name: CDM_SSFL_140617_Lan**

Method Category: METALS

Method: 6010C **Matrix: SO**

Sample ID: **SL-653-SA5C-TR-0.5** ***Collected:*** **6/2/2014 10:20:00** ***Analysis Type:*** **RES** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
ARSENIC	3.24	J	0.707	MDL	4.04	PQL	mg/Kg	J	Z
BERYLLIUM	0.568	J	0.0677	MDL	1.01	PQL	mg/Kg	J	Z
BORON	6.14	J	0.849	MDL	10.1	PQL	mg/Kg	J	Z
CADMIUM	0.191	J	0.0768	MDL	1.01	PQL	mg/Kg	U	B
SODIUM	67.8	J	16.9	MDL	101	PQL	mg/Kg	J	Z
TIN	2.67	J	0.222	MDL	10.1	PQL	mg/Kg	U	B
Zirconium	2.61	J	0.849	MDL	5.05	PQL	mg/Kg	U	F, F
MOLYBDENUM	0.223	J	0.172	MDL	2.02	PQL	mg/Kg	J	Z

Sample ID: **SL-653-SA5C-TR-10.0** ***Collected:*** **6/2/2014 10:55:00** ***Analysis Type:*** **RES** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
ARSENIC	3.14	J	0.711	MDL	4.06	PQL	mg/Kg	J	Z
BERYLLIUM	0.684	J	0.0680	MDL	1.02	PQL	mg/Kg	J	Z
BORON	7.17	J	0.853	MDL	10.2	PQL	mg/Kg	J	Z
CADMIUM	0.183	J	0.0772	MDL	1.02	PQL	mg/Kg	U	B
MOLYBDENUM	0.186	J	0.173	MDL	2.03	PQL	mg/Kg	J	Z
TIN	2.77	J	0.223	MDL	10.2	PQL	mg/Kg	U	B
Zirconium	3.28	J	0.853	MDL	5.08	PQL	mg/Kg	U	F, F

Sample ID: **SL-653-SA5C-TR-15.0** ***Collected:*** **6/2/2014 9:20:00 AM** ***Analysis Type:*** **RES** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
BERYLLIUM	0.696	J	0.0685	MDL	1.02	PQL	mg/Kg	J	Z
BORON	8.69	J	0.858	MDL	10.2	PQL	mg/Kg	J	Z
CADMIUM	0.302	J	0.0777	MDL	1.02	PQL	mg/Kg	J	Z
MOLYBDENUM	0.262	J	0.174	MDL	2.04	PQL	mg/Kg	J	Z
TIN	2.90	J	0.225	MDL	10.2	PQL	mg/Kg	U	B
Zirconium	3.91	J	0.858	MDL	5.11	PQL	mg/Kg	U	F, F

Sample ID: **SL-653-SA5C-TR-5.0** ***Collected:*** **6/2/2014 10:45:00** ***Analysis Type:*** **RES** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
ARSENIC	3.11	J	0.719	MDL	4.11	PQL	mg/Kg	J	Z
BERYLLIUM	0.529	J	0.0689	MDL	1.03	PQL	mg/Kg	J	Z

* denotes a non-reportable result

Project Name and Number: 1204-002-001-AL - SSFL Area IV Phase 3

Data Qualifier Summary

Lab Reporting Batch ID: PH212 **Laboratory: LL**

EDD Filename: PrepPH212 **eQAPP Name: CDM_SSFL_140617_Lan**

Method Category: METALS

Method: 6010C **Matrix: SO**

Sample ID: SL-653-SA5C-TR-5.0 **Collected: 6/2/2014 10:45:00** **Analysis Type: RES** **Dilution: 1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
BORON	7.53	J	0.863	MDL	10.3	PQL	mg/Kg	J	Z
CADMIUM	0.170	J	0.0781	MDL	1.03	PQL	mg/Kg	U	B
MOLYBDENUM	0.192	J	0.175	MDL	2.06	PQL	mg/Kg	J	Z
SODIUM	68.6	J	17.2	MDL	103	PQL	mg/Kg	J	Z
TIN	2.78	J	0.226	MDL	10.3	PQL	mg/Kg	U	B
Zirconium	2.41	J	0.863	MDL	5.14	PQL	mg/Kg	U	F, F

Method Category: METALS

Method: 6020A **Matrix: SO**

Sample ID: SL-653-SA5C-TR-0.5 **Collected: 6/2/2014 10:20:00** **Analysis Type: REA** **Dilution: 2**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
SELENIUM	0.305	J	0.101	MDL	0.404	PQL	mg/Kg	J	Z

Sample ID: SL-653-SA5C-TR-10.0 **Collected: 6/2/2014 10:55:00** **Analysis Type: REA** **Dilution: 2**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
SELENIUM	0.229	J	0.102	MDL	0.406	PQL	mg/Kg	J	Z

Sample ID: SL-653-SA5C-TR-10.0 **Collected: 6/2/2014 10:55:00** **Analysis Type: RES** **Dilution: 2**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
SILVER	0.0305	J	0.0264	MDL	0.203	PQL	mg/Kg	J	Z

Sample ID: SL-653-SA5C-TR-15.0 **Collected: 6/2/2014 9:20:00 AM** **Analysis Type: REA** **Dilution: 2**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
SELENIUM	0.351	J	0.102	MDL	0.409	PQL	mg/Kg	J	Z

Sample ID: SL-653-SA5C-TR-15.0 **Collected: 6/2/2014 9:20:00 AM** **Analysis Type: RES** **Dilution: 2**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
SILVER	0.0415	J	0.0266	MDL	0.204	PQL	mg/Kg	J	Z

* denotes a non-reportable result

Project Name and Number: 1204-002-001-AL - SSFL Area IV Phase 3

Data Qualifier Summary

Lab Reporting Batch ID: PH212 **Laboratory: LL**

EDD Filename: PrepPH212 **eQAPP Name: CDM_SSFL_140617_Lan**

Method Category: METALS

Method: 6020A **Matrix: SO**

Sample ID: **SL-653-SA5C-TR-5.0** *Collected:* **6/2/2014 10:45:00** *Analysis Type:* **REA** *Dilution:* **2**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
SELENIUM	0.262	J	0.103	MDL	0.411	PQL	mg/Kg	J	Z

Method Category: METALS

Method: 7199 **Matrix: SO**

Sample ID: **SL-653-SA5C-TR-0.5** *Collected:* **6/2/2014 10:20:00** *Analysis Type:* **RES** *Dilution:* **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
HEXAVALENT CHROMIUM	0.38	J	0.15	MDL	0.42	PQL	mg/Kg	J	Z

Sample ID: **SL-653-SA5C-TR-15.0** *Collected:* **6/2/2014 9:20:00 AM** *Analysis Type:* **RES** *Dilution:* **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
HEXAVALENT CHROMIUM	0.35	J	0.14	MDL	0.41	PQL	mg/Kg	J	Z

Method Category: SVOA

Method: 1613B **Matrix: SO**

Sample ID: **SL-653-SA5C-TR-0.5** *Collected:* **6/2/2014 10:20:00** *Analysis Type:* **RES** *Dilution:* **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
1,2,3,4,6,7,8-HPCDD	1.12	JB	0.0527	MDL	4.87	PQL	ng/Kg	J	Z
1,2,3,4,6,7,8-HPCDF	0.260	JB	0.0173	MDL	4.87	PQL	ng/Kg	U	B
1,2,3,4,7,8,9-HPCDF	0.0620	JBQ	0.0273	MDL	4.87	PQL	ng/Kg	U	B
1,2,3,4,7,8-HxCDD	0.0493	JBQ	0.0443	MDL	4.87	PQL	ng/Kg	U	B
1,2,3,4,7,8-HXCDF	0.0803	JBQ	0.0406	MDL	4.87	PQL	ng/Kg	U	B
1,2,3,6,7,8-HXCDD	0.0720	JBQ	0.0453	MDL	4.87	PQL	ng/Kg	U	B
1,2,3,6,7,8-HXCDF	0.0430	JQ	0.0360	MDL	4.87	PQL	ng/Kg	J	Z
1,2,3,7,8,9-HXCDD	0.0806	JQ	0.0467	MDL	4.87	PQL	ng/Kg	J	Z
1,2,3,7,8-PECDF	0.0676	JBQ	0.0318	MDL	4.87	PQL	ng/Kg	U	B
2,3,4,6,7,8-HXCDF	0.0708	JQ	0.0356	MDL	4.87	PQL	ng/Kg	J	Z
2,3,7,8-TCDF	0.0958	JQ	0.0919	MDL	0.974	PQL	ng/Kg	J	Z
OCDF	0.399	JBQ	0.0616	MDL	9.74	PQL	ng/Kg	U	B

* denotes a non-reportable result

Project Name and Number: 1204-002-001-AL - SSFL Area IV Phase 3

Data Qualifier Summary

Lab Reporting Batch ID: PH212 **Laboratory: LL**

EDD Filename: PrepPH212 **eQAPP Name: CDM_SSFL_140617_Lan**

Method Category: SVOA

Method: 1613B **Matrix:** SO

Sample ID: SL-653-SA5C-TR-10.0 **Collected:** 6/2/2014 10:55:00 **Analysis Type:** RES **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
1,2,3,4,6,7,8-HPCDD	0.0801	JBQ	0.0447	MDL	5.07	PQL	ng/Kg	U	B
1,2,3,4,6,7,8-HPCDF	0.0339	JBQ	0.0114	MDL	5.07	PQL	ng/Kg	U	B
1,2,3,4,7,8,9-HPCDF	0.0442	JBQ	0.0208	MDL	5.07	PQL	ng/Kg	U	B
1,2,3,4,7,8-HXCDF	0.0475	JBQ	0.0412	MDL	5.07	PQL	ng/Kg	U	B
1,2,3,6,7,8-HXCDD	0.0825	JBQ	0.0481	MDL	5.07	PQL	ng/Kg	U	B
1,2,3,7,8,9-HXCDD	0.0529	JQ	0.0468	MDL	5.07	PQL	ng/Kg	J	Z
1,2,3,7,8,9-HXCDF	0.0745	JBQ	0.0390	MDL	5.07	PQL	ng/Kg	U	B
1,2,3,7,8-PECDF	0.0525	JBQ	0.0452	MDL	5.07	PQL	ng/Kg	U	B
OCDD	0.877	JB	0.0308	MDL	10.1	PQL	ng/Kg	U	B
OCDF	0.133	JBQ	0.0761	MDL	10.1	PQL	ng/Kg	U	B

Sample ID: SL-653-SA5C-TR-15.0 **Collected:** 6/2/2014 9:20:00 AM **Analysis Type:** RES **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
1,2,3,4,6,7,8-HPCDD	0.482	JBQ	0.0538	MDL	4.92	PQL	ng/Kg	U	B
1,2,3,4,6,7,8-HPCDF	0.177	JBQ	0.0160	MDL	4.92	PQL	ng/Kg	U	B
1,2,3,4,7,8-HXCDF	0.0929	JB	0.0532	MDL	4.92	PQL	ng/Kg	U	B
1,2,3,6,7,8-HXCDD	0.236	JBQ	0.0531	MDL	4.92	PQL	ng/Kg	U	B
1,2,3,6,7,8-HXCDF	0.0882	JQ	0.0460	MDL	4.92	PQL	ng/Kg	J	Z
1,2,3,7,8,9-HXCDD	0.289	JQ	0.0508	MDL	4.92	PQL	ng/Kg	J	Z
1,2,3,7,8,9-HXCDF	0.681	JBQ	0.0485	MDL	4.92	PQL	ng/Kg	J	Z
1,2,3,7,8-PECDF	0.265	JBQ	0.0494	MDL	4.92	PQL	ng/Kg	U	B
2,3,4,6,7,8-HXCDF	0.107	JQ	0.0477	MDL	4.92	PQL	ng/Kg	J	Z
2,3,4,7,8-PECDF	0.0879	JB	0.0499	MDL	4.92	PQL	ng/Kg	U	B
OCDD	2.51	JB	0.0258	MDL	9.84	PQL	ng/Kg	J	Z
OCDF	0.512	JB	0.0652	MDL	9.84	PQL	ng/Kg	U	B

Sample ID: SL-653-SA5C-TR-5.0 **Collected:** 6/2/2014 10:45:00 **Analysis Type:** RES **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
1,2,3,4,6,7,8-HPCDD	0.201	JB	0.0510	MDL	5.01	PQL	ng/Kg	U	B
1,2,3,4,6,7,8-HPCDF	0.0653	JB	0.0147	MDL	5.01	PQL	ng/Kg	U	B
1,2,3,4,7,8,9-HPCDF	0.0609	JBQ	0.0282	MDL	5.01	PQL	ng/Kg	U	B
1,2,3,4,7,8-HXCDF	0.124	JBQ	0.0439	MDL	5.01	PQL	ng/Kg	U	B
1,2,3,7,8,9-HXCDD	0.104	JQ	0.0414	MDL	5.01	PQL	ng/Kg	J	Z

* denotes a non-reportable result

Project Name and Number: 1204-002-001-AL - SSFL Area IV Phase 3

Data Qualifier Summary

Lab Reporting Batch ID: PH212 **Laboratory: LL**

EDD Filename: PrepPH212 **eQAPP Name: CDM_SSFL_140617_Lan**

Method Category: SVOA

Method: 1613B **Matrix: SO**

Sample ID: SL-653-SA5C-TR-5.0 **Collected: 6/2/2014 10:45:00** **Analysis Type: RES** **Dilution: 1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
1,2,3,7,8,9-HXCDF	0.0844	JBQ	0.0386	MDL	5.01	PQL	ng/Kg	U	B
1,2,3,7,8-PECDD	0.112	JQ	0.0970	MDL	5.01	PQL	ng/Kg	J	Z
1,2,3,7,8-PECDF	0.0554	JBQ	0.0425	MDL	5.01	PQL	ng/Kg	U	B
2,3,4,7,8-PECDF	0.0578	JBQ	0.0426	MDL	5.01	PQL	ng/Kg	U	B
2,3,7,8-TCDD	0.260	JQ	0.146	MDL	1.00	PQL	ng/Kg	J	Z
OCDD	3.06	JB	0.0406	MDL	10.0	PQL	ng/Kg	J	Z
OCDF	0.355	JBQ	0.0761	MDL	10.0	PQL	ng/Kg	U	B

Method Category: SVOA

Method: 8015M **Matrix: SO**

Sample ID: SL-653-SA5C-TR-0.5 **Collected: 6/2/2014 10:20:00** **Analysis Type: REA** **Dilution: 1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
EFH (C8-C11) SG	5.1	U	2.0	MDL	5.1	PQL	mg/Kg	UJ	L

Sample ID: SL-653-SA5C-TR-10.0 **Collected: 6/2/2014 10:55:00** **Analysis Type: REA2** **Dilution: 1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
EFH (C8-C11) SG	5.2	U	2.1	MDL	5.2	PQL	mg/Kg	UJ	L

Sample ID: SL-653-SA5C-TR-15.0 **Collected: 6/2/2014 9:20:00 AM** **Analysis Type: REA** **Dilution: 1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
EFH (C30-C40)	9.1	J	4.1	MDL	10	PQL	mg/Kg	J	Z

Sample ID: SL-653-SA5C-TR-15.0 **Collected: 6/2/2014 9:20:00 AM** **Analysis Type: REA2** **Dilution: 1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
EFH (C8-C11) SG	5.2	U	2.1	MDL	5.2	PQL	mg/Kg	UJ	L

Sample ID: SL-653-SA5C-TR-5.0 **Collected: 6/2/2014 10:45:00** **Analysis Type: REA2** **Dilution: 1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
EFH (C8-C11) SG	5.1	U	2.1	MDL	5.1	PQL	mg/Kg	UJ	L

* denotes a non-reportable result

Project Name and Number: 1204-002-001-AL - SSFL Area IV Phase 3

Data Qualifier Summary

Lab Reporting Batch ID: PH212 **Laboratory: LL**

EDD Filename: PrepPH212 **eQAPP Name: CDM_SSFL_140617_Lan**

Method Category: SVOA

Method: 8015M **Matrix: SO**

Method Category: SVOA

Method: 8081B **Matrix: SO**

Sample ID: **SL-653-SA5C-TR-0.5** ***Collected:*** **6/2/2014 10:20:00** ***Analysis Type:*** **RES** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
4,4'-DDD	1.7	U	0.34	MDL	1.7	PQL	ug/Kg	UJ	C
4,4'-DDE	1.7	U	0.34	MDL	1.7	PQL	ug/Kg	UJ	C
4,4'-DDT	1.7	U	0.36	MDL	1.7	PQL	ug/Kg	UJ	C
METHOXYCHLOR	6.8	U	1.7	MDL	6.8	PQL	ug/Kg	UJ	C

Sample ID: **SL-653-SA5C-TR-10.0** ***Collected:*** **6/2/2014 10:55:00** ***Analysis Type:*** **RES** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
4,4'-DDD	1.8	U	0.35	MDL	1.8	PQL	ug/Kg	UJ	C
4,4'-DDE	1.8	U	0.35	MDL	1.8	PQL	ug/Kg	UJ	C
4,4'-DDT	1.8	U	0.37	MDL	1.8	PQL	ug/Kg	UJ	C
METHOXYCHLOR	7.0	U	1.8	MDL	7.0	PQL	ug/Kg	UJ	C

Sample ID: **SL-653-SA5C-TR-15.0** ***Collected:*** **6/2/2014 9:20:00 AM** ***Analysis Type:*** **RES** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
4,4'-DDD	1.7	U	0.34	MDL	1.7	PQL	ug/Kg	UJ	C
4,4'-DDE	1.1	J	0.34	MDL	1.7	PQL	ug/Kg	J	Z, C
4,4'-DDT	1.2	J	0.36	MDL	1.7	PQL	ug/Kg	J	Z, C
METHOXYCHLOR	6.8	U	1.7	MDL	6.8	PQL	ug/Kg	UJ	C

Sample ID: **SL-653-SA5C-TR-5.0** ***Collected:*** **6/2/2014 10:45:00** ***Analysis Type:*** **RES** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
4,4'-DDD	1.7	U	0.34	MDL	1.7	PQL	ug/Kg	UJ	C
4,4'-DDE	1.7	U	0.34	MDL	1.7	PQL	ug/Kg	UJ	C
4,4'-DDT	1.7	U	0.36	MDL	1.7	PQL	ug/Kg	UJ	C
METHOXYCHLOR	6.8	U	1.7	MDL	6.8	PQL	ug/Kg	UJ	C

* denotes a non-reportable result

Project Name and Number: 1204-002-001-AL - SSFL Area IV Phase 3

Data Qualifier Summary

Lab Reporting Batch ID: PH212 **Laboratory: LL**

EDD Filename: PrepPH212 **eQAPP Name: CDM_SSFL_140617_Lan**

Method Category: SVOA

Method: 8151A **Matrix: SO**

Sample ID: **SL-653-SA5C-TR-0.5** *Collected:* **6/2/2014 10:20:00** *Analysis Type:* **RES** *Dilution:* **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
DINOSEB	24	U	9.2	MDL	24	PQL	ug/Kg	R	L

Sample ID: **SL-653-SA5C-TR-10.0** *Collected:* **6/2/2014 10:55:00** *Analysis Type:* **RES** *Dilution:* **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
DINOSEB	25	U	9.4	MDL	25	PQL	ug/Kg	R	L

Sample ID: **SL-653-SA5C-TR-15.0** *Collected:* **6/2/2014 9:20:00 AM** *Analysis Type:* **RES** *Dilution:* **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
DINOSEB	25	U	9.3	MDL	25	PQL	ug/Kg	R	L

Sample ID: **SL-653-SA5C-TR-5.0** *Collected:* **6/2/2014 10:45:00** *Analysis Type:* **RES** *Dilution:* **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
DINOSEB	25	U	9.2	MDL	25	PQL	ug/Kg	R	L

Method Category: SVOA

Method: 8270D **Matrix: SO**

Sample ID: **SL-653-SA5C-TR-0.5** *Collected:* **6/2/2014 10:20:00** *Analysis Type:* **RES-ACID** *Dilution:* **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
4,6-DINITRO-2-METHYLPHENOL	510	U	170	MDL	510	PQL	ug/Kg	UJ	L

Sample ID: **SL-653-SA5C-TR-0.5** *Collected:* **6/2/2014 10:20:00** *Analysis Type:* **RES-BASE/NEUTRAL** *Dilution:* **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
4-NITROANILINE	170	U	68	MDL	170	PQL	ug/Kg	UJ	L
BENZO(A)PYRENE	4	J	3	MDL	17	PQL	ug/Kg	J	Z
BENZO(B)FLUORANTHENE	5	J	3	MDL	17	PQL	ug/Kg	J	Z

* denotes a non-reportable result

Project Name and Number: 1204-002-001-AL - SSFL Area IV Phase 3

Data Qualifier Summary

Lab Reporting Batch ID: PH212 **Laboratory: LL**

EDD Filename: PrepPH212 **eQAPP Name: CDM_SSFL_140617_Lan**

Method Category: SVOA

Method: 8270D **Matrix: SO**

Sample ID: **SL-653-SA5C-TR-10.0** *Collected:* **6/2/2014 10:55:00** *Analysis Type:* **RES-ACID** *Dilution:* **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
4,6-DINITRO-2-METHYLPHENOL	520	U	170	MDL	520	PQL	ug/Kg	UJ	L

Sample ID: **SL-653-SA5C-TR-10.0** *Collected:* **6/2/2014 10:55:00** *Analysis Type:* **RES-BASE/NEUTRAL** *Dilution:* **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
4-NITROANILINE	170	U	70	MDL	170	PQL	ug/Kg	UJ	L

Sample ID: **SL-653-SA5C-TR-15.0** *Collected:* **6/2/2014 9:20:00 AM** *Analysis Type:* **RES-ACID** *Dilution:* **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
4,6-DINITRO-2-METHYLPHENOL	520	U	170	MDL	520	PQL	ug/Kg	UJ	L

Sample ID: **SL-653-SA5C-TR-15.0** *Collected:* **6/2/2014 9:20:00 AM** *Analysis Type:* **RES-BASE/NEUTRAL** *Dilution:* **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
4-NITROANILINE	170	U	69	MDL	170	PQL	ug/Kg	UJ	L

Sample ID: **SL-653-SA5C-TR-5.0** *Collected:* **6/2/2014 10:45:00** *Analysis Type:* **RES-ACID** *Dilution:* **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
4,6-DINITRO-2-METHYLPHENOL	510	U	170	MDL	510	PQL	ug/Kg	UJ	L

Sample ID: **SL-653-SA5C-TR-5.0** *Collected:* **6/2/2014 10:45:00** *Analysis Type:* **RES-BASE/NEUTRAL** *Dilution:* **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
4-NITROANILINE	170	U	69	MDL	170	PQL	ug/Kg	UJ	L

Method Category: SVOA

Method: 8270D SIM **Matrix: SO**

Sample ID: **SL-653-SA5C-TR-0.5** *Collected:* **6/2/2014 10:20:00** *Analysis Type:* **RES-BASE/NEUTRAL** *Dilution:* **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
ANTHRACENE	0.71	J	0.34	MDL	1.7	PQL	ug/Kg	J	Z
BENZO(A)ANTHRACENE	1.5	J	0.68	MDL	1.7	PQL	ug/Kg	J	Z

* denotes a non-reportable result

Project Name and Number: 1204-002-001-AL - SSFL Area IV Phase 3

Data Qualifier Summary

Lab Reporting Batch ID: PH212 **Laboratory: LL**

EDD Filename: PrepPH212 **eQAPP Name: CDM_SSFL_140617_Lan**

Method Category: **SVOA**

Method: **8270D SIM** ***Matrix:*** **SO**

Sample ID: **SL-653-SA5C-TR-0.5** ***Collected:*** **6/2/2014 10:20:00** ***Analysis Type:*** **RES-BASE/NEUTRAL** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
BENZO(E)PYRENE	17	U	3.4	MDL	17	PQL	ug/Kg	UJ	L
CHRYSENE	1.3	J	0.34	MDL	1.7	PQL	ug/Kg	J	Z
INDENO(1,2,3-CD)PYRENE	0.74	J	0.68	MDL	1.7	PQL	ug/Kg	J	Z

Sample ID: **SL-653-SA5C-TR-10.0** ***Collected:*** **6/2/2014 10:55:00** ***Analysis Type:*** **RES-BASE/NEUTRAL** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
BENZO(B)FLUORANTHENE	1.7	U	0.70	MDL	1.7	PQL	ug/Kg	UJ	C
BENZO(E)PYRENE	18	U	3.5	MDL	18	PQL	ug/Kg	UJ	L

Sample ID: **SL-653-SA5C-TR-15.0** ***Collected:*** **6/2/2014 9:20:00 AM** ***Analysis Type:*** **RES-BASE/NEUTRAL** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
BENZO(B)FLUORANTHENE	1.7	U	0.69	MDL	1.7	PQL	ug/Kg	UJ	C
BENZO(E)PYRENE	18	U	3.4	MDL	18	PQL	ug/Kg	UJ	L
CHRYSENE	0.62	J	0.34	MDL	1.7	PQL	ug/Kg	J	Z

Sample ID: **SL-653-SA5C-TR-5.0** ***Collected:*** **6/2/2014 10:45:00** ***Analysis Type:*** **RES-BASE/NEUTRAL** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
BENZO(B)FLUORANTHENE	1.7	U	0.69	MDL	1.7	PQL	ug/Kg	UJ	C
BENZO(E)PYRENE	17	U	3.4	MDL	17	PQL	ug/Kg	UJ	L

* denotes a non-reportable result

Project Name and Number: 1204-002-001-AL - SSFL Area IV Phase 3

Data Qualifier Summary

Lab Reporting Batch ID: PH212 **Laboratory: LL**

EDD Filename: PrepPH212 **eQAPP Name: CDM_SSFL_140617_Lan**

Reason Code Legend

Reason Code	*Description*
B	Calibration Blank Contamination
B	Method Blank Contamination
C	Continuing Calibration Verification Percent Difference Lower Estimation
C	Initial Calibration Verification Percent Difference Lower Estimation
F	Equipment Blank Contamination
F	Field Blank Contamination
L	Laboratory Control Spike Lower Estimation
L	Laboratory Control Spike Lower Rejection
L	Laboratory Control Spike Upper Estimation
S	Surrogate/Tracer Recovery Upper Estimation
Z	Reporting Limit Trace Value

* denotes a non-reportable result

Project Name and Number: 1204-002-001-AL - SSFL Area IV Phase 3

Enclosure I

Level III ADR Outliers

Quality Control
Outlier Reports

PH212

Method Blank Outlier Report

Lab Reporting Batch ID: PH212 **Laboratory: LL**

EDD Filename: PH212_v1. **eQAPP Name: CDM_SSFL_140617_Lan**

Method: **1613B**
Matrix: **SO**

Method Blank Sample ID	Analysis Date	Analyte	Result	Associated Samples
BLK1610B372001	6/11/2014 8:01:00 PM	1,2,3,4,6,7,8-HPCDD	0.103 ng/Kg	SL-653-SA5C-TR-0.5
		1,2,3,4,6,7,8-HPCDF	0.0595 ng/Kg	SL-653-SA5C-TR-10.0
		1,2,3,4,7,8,9-HPCDF	0.0431 ng/Kg	SL-653-SA5C-TR-15.0
		1,2,3,4,7,8-HxCDD	0.0558 ng/Kg	SL-653-SA5C-TR-5.0
		1,2,3,4,7,8-HXCDF	0.0578 ng/Kg	
		1,2,3,6,7,8-HXCDD	0.0628 ng/Kg	
		1,2,3,7,8,9-HXCDF	0.0787 ng/Kg	
		1,2,3,7,8-PECDF	0.143 ng/Kg	
		2,3,4,7,8-PECDF	0.0760 ng/Kg	
		OCDD	0.217 ng/Kg	
		OCDF	0.216 ng/Kg	

The following samples and their listed target analytes were qualified due to contamination reported in this blank

Sample ID	Analyte	Reported Result	Modified Final Result
SL-653-SA5C-TR-0.5(RES)	1,2,3,4,6,7,8-HPCDF	0.260 ng/Kg	0.260U ng/Kg
SL-653-SA5C-TR-0.5(RES)	1,2,3,4,7,8,9-HPCDF	0.0620 ng/Kg	0.0620U ng/Kg
SL-653-SA5C-TR-0.5(RES)	1,2,3,4,7,8-HxCDD	0.0493 ng/Kg	0.0493U ng/Kg
SL-653-SA5C-TR-0.5(RES)	1,2,3,4,7,8-HXCDF	0.0803 ng/Kg	0.0803U ng/Kg
SL-653-SA5C-TR-0.5(RES)	1,2,3,6,7,8-HXCDD	0.0720 ng/Kg	0.0720U ng/Kg
SL-653-SA5C-TR-0.5(RES)	1,2,3,7,8-PECDF	0.0676 ng/Kg	0.0676U ng/Kg
SL-653-SA5C-TR-0.5(RES)	OCDF	0.399 ng/Kg	0.399U ng/Kg
SL-653-SA5C-TR-10.0(RES)	1,2,3,4,6,7,8-HPCDD	0.0801 ng/Kg	0.0801U ng/Kg
SL-653-SA5C-TR-10.0(RES)	1,2,3,4,6,7,8-HPCDF	0.0339 ng/Kg	0.0339U ng/Kg
SL-653-SA5C-TR-10.0(RES)	1,2,3,4,7,8,9-HPCDF	0.0442 ng/Kg	0.0442U ng/Kg
SL-653-SA5C-TR-10.0(RES)	1,2,3,4,7,8-HXCDF	0.0475 ng/Kg	0.0475U ng/Kg
SL-653-SA5C-TR-10.0(RES)	1,2,3,6,7,8-HXCDD	0.0825 ng/Kg	0.0825U ng/Kg
SL-653-SA5C-TR-10.0(RES)	1,2,3,7,8,9-HXCDF	0.0745 ng/Kg	0.0745U ng/Kg
SL-653-SA5C-TR-10.0(RES)	1,2,3,7,8-PECDF	0.0525 ng/Kg	0.0525U ng/Kg
SL-653-SA5C-TR-10.0(RES)	OCDD	0.877 ng/Kg	0.877U ng/Kg
SL-653-SA5C-TR-10.0(RES)	OCDF	0.133 ng/Kg	0.133U ng/Kg
SL-653-SA5C-TR-15.0(RES)	1,2,3,4,6,7,8-HPCDD	0.482 ng/Kg	0.482U ng/Kg
SL-653-SA5C-TR-15.0(RES)	1,2,3,4,6,7,8-HPCDF	0.177 ng/Kg	0.177U ng/Kg
SL-653-SA5C-TR-15.0(RES)	1,2,3,4,7,8-HXCDF	0.0929 ng/Kg	0.0929U ng/Kg
SL-653-SA5C-TR-15.0(RES)	1,2,3,6,7,8-HXCDD	0.236 ng/Kg	0.236U ng/Kg
SL-653-SA5C-TR-15.0(RES)	1,2,3,7,8-PECDF	0.265 ng/Kg	0.265U ng/Kg
SL-653-SA5C-TR-15.0(RES)	2,3,4,7,8-PECDF	0.0879 ng/Kg	0.0879U ng/Kg
SL-653-SA5C-TR-15.0(RES)	OCDF	0.512 ng/Kg	0.512U ng/Kg
SL-653-SA5C-TR-5.0(RES)	1,2,3,4,6,7,8-HPCDD	0.201 ng/Kg	0.201U ng/Kg
SL-653-SA5C-TR-5.0(RES)	1,2,3,4,6,7,8-HPCDF	0.0653 ng/Kg	0.0653U ng/Kg
SL-653-SA5C-TR-5.0(RES)	1,2,3,4,7,8,9-HPCDF	0.0609 ng/Kg	0.0609U ng/Kg
SL-653-SA5C-TR-5.0(RES)	1,2,3,4,7,8-HXCDF	0.124 ng/Kg	0.124U ng/Kg
SL-653-SA5C-TR-5.0(RES)	1,2,3,7,8,9-HXCDF	0.0844 ng/Kg	0.0844U ng/Kg
SL-653-SA5C-TR-5.0(RES)	1,2,3,7,8-PECDF	0.0554 ng/Kg	0.0554U ng/Kg
SL-653-SA5C-TR-5.0(RES)	2,3,4,7,8-PECDF	0.0578 ng/Kg	0.0578U ng/Kg
SL-653-SA5C-TR-5.0(RES)	OCDF	0.355 ng/Kg	0.355U ng/Kg

Project Name and Number: 1204-002-001-AL - SSFL Area IV Phase 3

Method Blank Outlier Report

Lab Reporting Batch ID: PH212 **Laboratory: LL**

EDD Filename: PH212_v1. **eQAPP Name: CDM_SSFL_140617_Lan**

Method: **6010C**
Matrix: **SO**

Method Blank Sample ID	Analysis Date	Analyte	Result	Associated Samples
P16137AB220432	6/12/2014 4:32:00 AM	TIN ZINC	1.54 mg/Kg 0.790 mg/Kg	SL-653-SA5C-TR-0.5 SL-653-SA5C-TR-10.0 SL-653-SA5C-TR-15.0 SL-653-SA5C-TR-5.0

The following samples and their listed target analytes were qualified due to contamination reported in this blank

Sample ID	Analyte	Reported Result	Modified Final Result
SL-653-SA5C-TR-0.5(RES)	TIN	2.67 mg/Kg	2.67U mg/Kg
SL-653-SA5C-TR-10.0(RES)	TIN	2.77 mg/Kg	2.77U mg/Kg
SL-653-SA5C-TR-15.0(RES)	TIN	2.90 mg/Kg	2.90U mg/Kg
SL-653-SA5C-TR-5.0(RES)	TIN	2.78 mg/Kg	2.78U mg/Kg

Equipment Rinsate Blank Outlier Report

Lab Reporting Batch ID: PH212 **Laboratory: LL**

EDD Filename: PH212_v1. **eQAPP Name: CDM_SSFL_140617_Lan**

Method: **6010C**
Matrix: **SO**

Equipment Blank Sample ID	Collected Date	Analyte	Result	Associated Samples
EB3-060414(REA2)	6/4/2014 10:30:00 AM	BARIUM	0.0007 mg/L	SL-653-SA5C-TR-0.5
		CALCIUM	0.151 mg/L	SL-653-SA5C-TR-10.0
		MANGANESE	0.0016 mg/L	SL-653-SA5C-TR-15.0
		Zirconium	0.0113 mg/L	SL-653-SA5C-TR-5.0

The following samples and their listed target analytes were qualified due to contamination reported in this blank

Sample ID	Analyte	Reported Result	Modified Final Result
SL-653-SA5C-TR-0.5(RES)	Zirconium	2.61 mg/Kg	2.61U mg/Kg
SL-653-SA5C-TR-10.0(RES)	Zirconium	3.28 mg/Kg	3.28U mg/Kg
SL-653-SA5C-TR-15.0(RES)	Zirconium	3.91 mg/Kg	3.91U mg/Kg
SL-653-SA5C-TR-5.0(RES)	Zirconium	2.41 mg/Kg	2.41U mg/Kg

Lab Control Spike/Lab Control Spike Duplicate Outlier Report

Lab Reporting Batch ID: PH212 **Laboratory: LL**

EDD Filename: PH212_v1. **eQAPP Name: CDM_SSFL_140617_Lan**

Method: 8015M
Matrix: SO

QC Sample ID (Associated Samples)	Compound	LCS %R	LCSD %R	%R Limits	RPD (Limits)	Affected Compounds	Flag
P41540AQ322235A (SL-653-SA5C-TR-0.5 SL-653-SA5C-TR-10.0 SL-653-SA5C-TR-15.0 SL-653-SA5C-TR-5.0)	EFH (C8-C11) SG	58	-	60.00-115.00	-	EFH (C8-C11) SG	J (all detects) UJ (all non-detects)

Method: 8330A
Matrix: SO

QC Sample ID (Associated Samples)	Compound	LCS %R	LCSD %R	%R Limits	RPD (Limits)	Affected Compounds	Flag
P41551AQ241516A (SL-653-SA5C-TR-0.5 SL-653-SA5C-TR-10.0 SL-653-SA5C-TR-15.0 SL-653-SA5C-TR-5.0)	PETN	158	-	64.00-121.00	-	PETN	J(all detects)

Method: 8151A
Matrix: SO

QC Sample ID (Associated Samples)	Compound	LCS %R	LCSD %R	%R Limits	RPD (Limits)	Affected Compounds	Flag
P41564AQ240051A (SL-653-SA5C-TR-0.5 SL-653-SA5C-TR-10.0 SL-653-SA5C-TR-15.0 SL-653-SA5C-TR-5.0)	DINOSEB	9	-	10.00-56.00	-	DINOSEB	J(all detects) R(all non-detects)

Method: 8270D
Matrix: SO

QC Sample ID (Associated Samples)	Compound	LCS %R	LCSD %R	%R Limits	RPD (Limits)	Affected Compounds	Flag
P4LHLCSQ262015 (SL-653-SA5C-TR-0.5 SL-653-SA5C-TR-10.0 SL-653-SA5C-TR-15.0 SL-653-SA5C-TR-5.0)	4,6-DINITRO-2-METHYLPHENOL	64	-	67.00-131.00	-	4,6-DINITRO-2-METHYLPHEN	J(all detects) UJ(all non-detects)
	4-NITROANILINE	56	-	57.00-106.00	-	4-NITROANILINE	

Lab Control Spike/Lab Control Spike Duplicate Outlier Report

Lab Reporting Batch ID: PH212 **Laboratory: LL**

EDD Filename: PH212_v1. **eQAPP Name: CDM_SSFL_140617_Lan**

Method: **8270D SIM**
Matrix: **SO**

QC Sample ID (Associated Samples)	*Compound*	*LCS %R*	*LCSD %R*	*%R Limits*	*RPD (Limits)*	*Affected Compounds*	*Flag*
P4LILCSQ260302 (SL-653-SA5C-TR-0.5 SL-653-SA5C-TR-10.0 SL-653-SA5C-TR-15.0 SL-653-SA5C-TR-5.0)	BENZO(E)PYRENE	77	-	81.00-110.00	-	BENZO(E)PYRENE	J(all detects) UJ(all non-detects)

Reporting Limit Outliers

Lab Reporting Batch ID: PH212 **Laboratory: LL**

EDD Filename: PH212_v1. **eQAPP Name: CDM_SSFL_140617_Lan**

Method: 1613B

Matrix: SO

SampleID	Analyte	Lab Qual	Result	Reporting Limit	RL Type	Units	Flag
SL-653-SA5C-TR-0.5	1,2,3,4,6,7,8-HPCDD	JB	1.12	4.87	PQL	ng/Kg	
	1,2,3,4,6,7,8-HPCDF	JB	0.260	4.87	PQL	ng/Kg	
	1,2,3,4,7,8,9-HPCDF	JBQ	0.0620	4.87	PQL	ng/Kg	
	1,2,3,4,7,8-HxCDD	JBQ	0.0493	4.87	PQL	ng/Kg	
	1,2,3,4,7,8-HXCDF	JBQ	0.0803	4.87	PQL	ng/Kg	
	1,2,3,6,7,8-HXCDD	JBQ	0.0720	4.87	PQL	ng/Kg	J (all detects)
	1,2,3,6,7,8-HXCDF	JQ	0.0430	4.87	PQL	ng/Kg	
	1,2,3,7,8,9-HXCDD	JQ	0.0806	4.87	PQL	ng/Kg	
	1,2,3,7,8-PECDF	JBQ	0.0676	4.87	PQL	ng/Kg	
	2,3,4,6,7,8-HXCDF	JQ	0.0708	4.87	PQL	ng/Kg	
	2,3,7,8-TCDF	JQ	0.0958	0.974	PQL	ng/Kg	
	OCDF	JBQ	0.399	9.74	PQL	ng/Kg	
SL-653-SA5C-TR-10.0	1,2,3,4,6,7,8-HPCDD	JBQ	0.0801	5.07	PQL	ng/Kg	
	1,2,3,4,6,7,8-HPCDF	JBQ	0.0339	5.07	PQL	ng/Kg	
	1,2,3,4,7,8,9-HPCDF	JBQ	0.0442	5.07	PQL	ng/Kg	
	1,2,3,4,7,8-HXCDF	JBQ	0.0475	5.07	PQL	ng/Kg	
	1,2,3,6,7,8-HXCDD	JBQ	0.0825	5.07	PQL	ng/Kg	
	1,2,3,7,8,9-HXCDD	JQ	0.0529	5.07	PQL	ng/Kg	J (all detects)
	1,2,3,7,8,9-HXCDF	JBQ	0.0745	5.07	PQL	ng/Kg	
	1,2,3,7,8-PECDF	JBQ	0.0525	5.07	PQL	ng/Kg	
	OCDD	JB	0.877	10.1	PQL	ng/Kg	
	OCDF	JBQ	0.133	10.1	PQL	ng/Kg	
SL-653-SA5C-TR-15.0	1,2,3,4,6,7,8-HPCDD	JBQ	0.482	4.92	PQL	ng/Kg	
	1,2,3,4,6,7,8-HPCDF	JBQ	0.177	4.92	PQL	ng/Kg	
	1,2,3,4,7,8-HXCDF	JB	0.0929	4.92	PQL	ng/Kg	
	1,2,3,6,7,8-HXCDD	JBQ	0.236	4.92	PQL	ng/Kg	
	1,2,3,6,7,8-HXCDF	JQ	0.0882	4.92	PQL	ng/Kg	
	1,2,3,7,8,9-HXCDD	JQ	0.289	4.92	PQL	ng/Kg	
	1,2,3,7,8,9-HXCDF	JBQ	0.681	4.92	PQL	ng/Kg	J (all detects)
	1,2,3,7,8-PECDF	JBQ	0.265	4.92	PQL	ng/Kg	
	2,3,4,6,7,8-HXCDF	JQ	0.107	4.92	PQL	ng/Kg	
	2,3,4,7,8-PECDF	JB	0.0879	4.92	PQL	ng/Kg	
	OCDD	JB	2.51	9.84	PQL	ng/Kg	
	OCDF	JB	0.512	9.84	PQL	ng/Kg	
SL-653-SA5C-TR-5.0	1,2,3,4,6,7,8-HPCDD	JB	0.201	5.01	PQL	ng/Kg	
	1,2,3,4,6,7,8-HPCDF	JB	0.0653	5.01	PQL	ng/Kg	
	1,2,3,4,7,8,9-HPCDF	JBQ	0.0609	5.01	PQL	ng/Kg	
	1,2,3,4,7,8-HXCDF	JBQ	0.124	5.01	PQL	ng/Kg	
	1,2,3,7,8,9-HXCDD	JQ	0.104	5.01	PQL	ng/Kg	
	1,2,3,7,8,9-HXCDF	JBQ	0.0844	5.01	PQL	ng/Kg	J (all detects)
	1,2,3,7,8-PECDD	JQ	0.112	5.01	PQL	ng/Kg	
	1,2,3,7,8-PECDF	JBQ	0.0554	5.01	PQL	ng/Kg	
	2,3,4,7,8-PECDF	JBQ	0.0578	5.01	PQL	ng/Kg	
	2,3,7,8-TCDD	JQ	0.260	1.00	PQL	ng/Kg	
	OCDD	JB	3.06	10.0	PQL	ng/Kg	
	OCDF	JBQ	0.355	10.0	PQL	ng/Kg	

Reporting Limit Outliers

Lab Reporting Batch ID: PH212 **Laboratory: LL**

EDD Filename: PH212_v1. **eQAPP Name: CDM_SSFL_140617_Lan**

Method: 6010C

Matrix: SO

SampleID	Analyte	Lab Qual	Result	Reporting Limit	RL Type	Units	Flag
SL-653-SA5C-TR-0.5	ARSENIC	J	3.24	4.04	PQL	mg/Kg	J (all detects)
	BERYLLIUM	J	0.568	1.01	PQL	mg/Kg	
	BORON	J	6.14	10.1	PQL	mg/Kg	
	CADMIUM	J	0.191	1.01	PQL	mg/Kg	
	MOLYBDENUM	J	0.223	2.02	PQL	mg/Kg	
	SODIUM	J	67.8	101	PQL	mg/Kg	
	TIN	J	2.67	10.1	PQL	mg/Kg	
	Zirconium	J	2.61	5.05	PQL	mg/Kg	
SL-653-SA5C-TR-10.0	ARSENIC	J	3.14	4.06	PQL	mg/Kg	J (all detects)
	BERYLLIUM	J	0.684	1.02	PQL	mg/Kg	
	BORON	J	7.17	10.2	PQL	mg/Kg	
	CADMIUM	J	0.183	1.02	PQL	mg/Kg	
	MOLYBDENUM	J	0.186	2.03	PQL	mg/Kg	
	TIN	J	2.77	10.2	PQL	mg/Kg	
	Zirconium	J	3.28	5.08	PQL	mg/Kg	
SL-653-SA5C-TR-15.0	BERYLLIUM	J	0.696	1.02	PQL	mg/Kg	J (all detects)
	BORON	J	8.69	10.2	PQL	mg/Kg	
	CADMIUM	J	0.302	1.02	PQL	mg/Kg	
	MOLYBDENUM	J	0.262	2.04	PQL	mg/Kg	
	TIN	J	2.90	10.2	PQL	mg/Kg	
	Zirconium	J	3.91	5.11	PQL	mg/Kg	
SL-653-SA5C-TR-5.0	ARSENIC	J	3.11	4.11	PQL	mg/Kg	J (all detects)
	BERYLLIUM	J	0.529	1.03	PQL	mg/Kg	
	BORON	J	7.53	10.3	PQL	mg/Kg	
	CADMIUM	J	0.170	1.03	PQL	mg/Kg	
	MOLYBDENUM	J	0.192	2.06	PQL	mg/Kg	
	SODIUM	J	68.6	103	PQL	mg/Kg	
	TIN	J	2.78	10.3	PQL	mg/Kg	
	Zirconium	J	2.41	5.14	PQL	mg/Kg	

Method: 6020A

Matrix: SO

SampleID	Analyte	Lab Qual	Result	Reporting Limit	RL Type	Units	Flag
SL-653-SA5C-TR-0.5	SELENIUM	J	0.305	0.404	PQL	mg/Kg	J (all detects)
SL-653-SA5C-TR-10.0	SELENIUM	J	0.229	0.406	PQL	mg/Kg	J (all detects)
	SILVER	J	0.0305	0.203	PQL	mg/Kg	
SL-653-SA5C-TR-15.0	SELENIUM	J	0.351	0.409	PQL	mg/Kg	J (all detects)
	SILVER	J	0.0415	0.204	PQL	mg/Kg	
SL-653-SA5C-TR-5.0	SELENIUM	J	0.262	0.411	PQL	mg/Kg	J (all detects)

Method: 7199

Matrix: SO

SampleID	Analyte	Lab Qual	Result	Reporting Limit	RL Type	Units	Flag
SL-653-SA5C-TR-0.5	HEXAVALENT CHROMIUM	J	0.38	0.42	PQL	mg/Kg	J (all detects)

Project Name and Number: 1204-002-001-AL - SSFL Area IV Phase 3

Reporting Limit Outliers

Lab Reporting Batch ID: PH212 **Laboratory: LL**

EDD Filename: PH212_v1. **eQAPP Name: CDM_SSFL_140617_Lan**

Method: 7199
Matrix: SO

SampleID	Analyte	Lab Qual	Result	Reporting Limit	RL Type	Units	Flag
SL-653-SA5C-TR-15.0	HEXAVALENT CHROMIUM	J	0.35	0.41	PQL	mg/Kg	J (all detects)

Method: 8015M
Matrix: SO

SampleID	Analyte	Lab Qual	Result	Reporting Limit	RL Type	Units	Flag
SL-653-SA5C-TR-15.0	EFH (C30-C40)	J	9.1	10	PQL	mg/Kg	J (all detects)

Method: 8081B
Matrix: SO

SampleID	Analyte	Lab Qual	Result	Reporting Limit	RL Type	Units	Flag
SL-653-SA5C-TR-15.0	4,4'-DDE	J	1.1	1.7	PQL	ug/Kg	J (all detects)
	4,4'-DDT	J	1.2	1.7	PQL	ug/Kg	

Method: 8270D
Matrix: SO

SampleID	Analyte	Lab Qual	Result	Reporting Limit	RL Type	Units	Flag
SL-653-SA5C-TR-0.5	BENZO(A)PYRENE	J	4	17	PQL	ug/Kg	J (all detects)
	BENZO(B)FLUORANTHENE	J	5	17	PQL	ug/Kg	

Method: 8270D SIM
Matrix: SO

SampleID	Analyte	Lab Qual	Result	Reporting Limit	RL Type	Units	Flag
SL-653-SA5C-TR-0.5	ANTHRACENE	J	0.71	1.7	PQL	ug/Kg	J (all detects)
	BENZO(A)ANTHRACENE	J	1.5	1.7	PQL	ug/Kg	
	CHRYSENE	J	1.3	1.7	PQL	ug/Kg	
	INDENO(1,2,3-CD)PYRENE	J	0.74	1.7	PQL	ug/Kg	
SL-653-SA5C-TR-15.0	CHRYSENE	J	0.62	1.7	PQL	ug/Kg	J (all detects)

Enclosure II

Level IV Data Validation Reports

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: Santa Susana Field Laboratory

Collection Date: June 2, 2014

LDC Report Date: August 1, 2014

Matrix: Soil

Parameters: Semivolatiles

Validation Level: Level IV

Laboratory: Eurofins

Sample Delivery Group (SDG): PH212

Sample Identification

SL-653-SA5C-TR-0.5
SL-653-SA5C-TR-5.0
SL-653-SA5C-TR-10.0
SL-653-SA5C-TR-15.0

Introduction

This data review covers 4 soil samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA SW 846 Method 8270D for Semivolatiles.

This review follows the Quality Assurance Project Plan for Santa Susana Field Laboratory (SSFL), RCRA Facility Investigation, Surficial Media Operable Unit (March 2009, Revision 4) and a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Superfund Organic Methods Data Review (June 2008).

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.

The following are definitions of the data qualifiers:

U Indicates the compound or analyte was analyzed for but not detected.

J Indicates an estimated value.

R Quality control indicates the data is not usable.

NJ Presumptive evidence of presence of the compound at an estimated quantity.

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. GC/MS Instrument Performance Check

Instrument performance was checked at 12 hour intervals. All ion abundance requirements were met.

III. Initial Calibration

Initial calibration was performed using required standard concentrations.

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

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

IV. Continuing Calibration

Continuing calibration was performed at the required frequencies.

Percent differences (%D) between the initial calibration RRF and the continuing calibration RRF were within the method criteria of less than or equal to 20.0% for calibration check compounds (CCCs) and 25.0% for all other compounds.

The percent differences (%D) of the second source calibration standard were less than or equal to 25.0% for all compounds.

All of the continuing calibration relative response factors (RRF) were within method and validation criteria.

V. Blanks

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

Sample EB3-060414 (from SDG PH217) was identified as an equipment blank. No semivolatile contaminants were found.

Sample FB-052114 (from SDG PH191) was identified as a field blank. No semivolatile contaminants were found.

VI. Surrogate Spikes

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

VII. Matrix Spike/Matrix Spike Duplicates

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.

VIII. Laboratory Control Samples (LCS)

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

LCS ID (Associated Samples)	Compound	LCS %R (Limits)	LCSD %R (Limits)	RPD (Limits)	Flag	A or P
154LHLCS (All samples in SDG PH212)	4-Nitroaniline	56 (57-106)	-	-	J (all detects) UJ (all non-detects)	P
	4,6-Dinitro-2-methylphenol	64 (67-131)	-	-	J (all detects) UJ (all non-detects)	

IX. Regional Quality Assurance and Quality Control

Not applicable.

X. Internal Standards

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

XI. Target Compound Identifications

All target compound identifications were within validation criteria.

XII. Compound Quantitation

All compound quantitation were within validation criteria.

All compounds reported below the RL were qualified as follows:

Sample	Finding	Flag	A or P
All samples in SDG PH212	All compounds reported below the RL.	J (all detects)	A

XIII. Tentatively Identified Compounds (TICs)

Tentatively identified compounds were not reported by the laboratory.

XIV. System Performance

The system performance was acceptable.

XV. Overall Assessment

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

XVI. Field Duplicates

No field duplicates were identified in this SDG.

Santa Susana Field Laboratory
Semivolatiles - Data Qualification Summary - SDG PH212

SDG	Sample	Compound	Flag	A or P	Reason (Code)
PH212	SL-653-SA5C-TR-0.5 SL-653-SA5C-TR-5.0 SL-653-SA5C-TR-10.0 SL-653-SA5C-TR-15.0	4-Nitroaniline 4,6-Dinitro-2-methylphenol	J (all detects) UJ (all non-detects) J (all detects) UJ (all non-detects)	P	Laboratory control samples (%R) (L)
PH212	SL-653-SA5C-TR-0.5 SL-653-SA5C-TR-5.0 SL-653-SA5C-TR-10.0 SL-653-SA5C-TR-15.0	All compounds reported below the RL.	J (all detects)	A	Compound quantitation (Z)

Santa Susana Field Laboratory
Semivolatiles - Laboratory Blank Data Qualification Summary - SDG PH212

No Sample Data Qualified in this SDG

Santa Susana Field Laboratory
Semivolatiles - Field Blank Data Qualification Summary - SDG PH212

No Sample Data Qualified in this SDG

LDC #: 32184C2a **VALIDATION COMPLETENESS WORKSHEET** Date: 7/29/14
SDG #: PH212 Level IV Page: 1 of 1
Laboratory: Eurofins Reviewer: BR
2nd Reviewer: SM

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

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

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 6/2/14
II.	GC/MS Instrument performance check	A	
III.	Initial calibration	A	RSD ≤30%
IV.	Continuing calibration/ICV	A	ICV/CCV ≤25%
V.	Blanks	A	
VI.	Surrogate spikes	A	
VII.	Matrix spike/Matrix spike duplicates	N	Client spec.
VIII.	Laboratory control samples	SW	LCS/D
IX.	Regional Quality Assurance and Quality Control	N	
X.	Internal standards	A	
XI.	Target compound identification	A	
XII.	Compound quantitation/RL/LOQ/LODs	A	
XIII.	Tentatively identified compounds (TICs)	N	
XIV.	System performance	A	
XV.	Overall assessment of data	A	
XVI.	Field duplicates	N	
XVII.	Field blanks	ND SW	*EB = EB-060414 (PH217) PB = PB-052114 (PH191)

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

1	SL-653-SA5C-TR-0.5	11		21		31	SBLKLH154
2	SL-653-SA5C-TR-5.0	12		22		32	
3	SL-653-SA5C-TR-10.0	13		23		33	
4	SL-653-SA5C-TR-15.0	14		24		34	
5		15		25		35	
6		16		26		36	
7		17		27		37	
8		18		28		38	
9		19		29		39	
10		20		30		40	

LDC #: 32184C2a

VALIDATION FINDINGS CHECKLIST

Reviewer: BA
2nd Reviewer: SM

Method: Semivolatiles (EPA SW 846 Method 8270D)

Validation Area	Yes	No	NA	Findings/Comments
I. Technical holding times				
All technical holding times were met.	✓			
Cooler temperature criteria was met.	✓			
II. GC/MS Instrument performance check				
Were the DFTPP performance results reviewed and found to be within the specified criteria?	✓			
Were all samples analyzed within the 12 hour clock criteria?	✓			
III. Initial calibration				
Did the laboratory perform a 5 point calibration prior to sample analysis?	✓			
Were all percent relative standard deviations (%RSD) ≤ 30% and relative response factors (RRF) within the method criteria?	✓			
Was a curve fit used for evaluation?		✓		
Did the initial calibration meet the curve fit acceptance criteria of ≥ 0.990?			✓	
IV. Continuing calibration				
Was a continuing calibration standard analyzed at least once every 12 hours for each instrument?	✓			
Were all percent differences (%D) ≤ 25% and relative response factors (RRF) ≥ 0.05?	✓			
V. Blanks				
Was a method blank associated with every sample in this SDG?	✓			
Was a method blank analyzed for each matrix and concentration?	✓			
Was there contamination in the method blanks? If yes, please see the Blanks validation completeness worksheet.		✓		
VI. Surrogate spikes				
Were all surrogate %R within QC limits?	✓			
If 2 or more base neutral or acid surrogates were outside QC limits, was a reanalysis performed to confirm %R?			✓	
If any %R was less than 10 percent, was a reanalysis performed to confirm %R?			✓	
VII. Matrix spike/Matrix spike duplicates				
Were a matrix spike (MS) and matrix spike duplicate (MSD) analyzed for each matrix in this SDG? If no, indicate which matrix does not have an associated MS/MSD. Soil / Water.		✓		
Was a MS/MSD analyzed every 20 samples of each matrix?			✓	
Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?			✓	
VIII. Laboratory control samples				
Was an LCS analyzed for this SDG?	✓			
Was an LCS analyzed per extraction batch?	✓			
Were the LCS percent recoveries (%R) and relative percent difference (RPD) within the QC limits?	✓			

LDC #: 32184C2a

VALIDATION FINDINGS CHECKLIST

Reviewer: SR
2nd Reviewer: SM

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

VALIDATION FINDINGS WORKSHEET

METHOD: GC/MS SVOA

A. Phenol	T. 4-Chloroaniline	MM. 4-Chlorophenyl-phenyl ether	FFF. Di-n-octylphthalate	YYY. 2,3,5-Trimethylnaphthalene
B. Bis (2-chloroethyl) ether	U. Hexachlorobutadiene	NN. Fluorene	GGG. Benzo(b)fluoranthene	ZZZ. Perylene
C. 2-Chlorophenol	V. 4-Chloro-3-methylphenol	OO. 4-Nitroaniline	HHH. Benzo(k)fluoranthene	AAAA. Dibenzothiophene
D. 1,3-Dichlorobenzene	W. 2-Methylnaphthalene	PP. 4,6-Dinitro-2-methylphenol	III. Benzo(a)pyrene	BBBB. Benzo(a)fluoranthene
E. 1,4-Dichlorobenzene	X. Hexachlorocyclopentadiene	QQ. N-Nitrosodiphenylamine	JJJ. Indeno(1,2,3-cd)pyrene	CCCC. Benzo(b)fluorene
F. 1,2-Dichlorobenzene	Y. 2,4,6-Trichlorophenol	RR. 4-Bromophenyl-phenylether	KKK. Dibenz(a,h)anthracene	DDDD. cis/trans-Decalin
G. 2-Methylphenol	Z. 2,4,5-Trichlorophenol	SS. Hexachlorobenzene	LLL. Benzo(g,h,i)perylene	EEEE. Biphenyl
H. 2,2'-Oxybis(1-chloropropane)	AA. 2-Chloronaphthalene	TT. Pentachlorophenol	MMM. Bis(2-Chloroisopropyl)ether	FFFF. Retene
I. 4-Methylphenol	BB. 2-Nitroaniline	UU. Phenanthrene	NNN. Aniline	GGGG. C30-Hopane
J. N-Nitroso-di-n-propylamine	CC. Dimethylphthalate	VV. Anthracene	OOO. N-Nitrosodimethylamine	HHHH. 1-Methylphenanthrene
K. Hexachloroethane	DD. Acenaphthylene	WW. Carbazole	PPP. Benzoic Acid	IIII. 1,4-Dioxane
L. Nitrobenzene	EE. 2,6-Dinitrotoluene	XX. Di-n-butylphthalate	QQQ. Benzyl alcohol	JJJJ. Acetophenone
M. Isophorone	FF. 3-Nitroaniline	YY. Fluoranthene	RRR. Pyridine	KKKK. Atrazine
N. 2-Nitrophenol	GG. Acenaphthene	ZZ. Pyrene	SSS. Benzidine	LLLL. Benzaldehyde
O. 2,4-Dimethylphenol	HH. 2,4-Dinitrophenol	AAA. Butylbenzylphthalate	TTT. 1-Methylnaphthalene	MMMM. Caprolactam
P. Bis(2-chloroethoxy)methane	II. 4-Nitrophenol	BBB. 3,3'-Dichlorobenzidine	UUU.Benzo(b)thiophene	NNNN.
Q. 2,4-Dichlorophenol	JJ. Dibenzofuran	CCC. Benzo(a)anthracene	VVV.Benzonaphthothiophene	OOOO.
R. 1,2,4-Trichlorobenzene	KK. 2,4-Dinitrotoluene	DDD. Chrysene	WWW.Benzo(e)pyrene	PPPP.
S. Naphthalene	LL. Diethylphthalate	EEE. Bis(2-ethylhexyl)phthalate	XXX. 2,6-Dimethylnaphthalene	QQQQ.

LDC #: 32184C2a

VALIDATION FINDINGS WORKSHEET
Laboratory Control Samples (LCS)

Reviewer: BR
2nd Reviewer: SM

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

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".
(Y) N N/A Was a LCS required?
Y (N) N/A Were the LCS/LCSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?

#	Date	LCS/LCSD ID	Compound	LCS %R (Limits)	LCSD %R (Limits)	RPD (Limits)	Associated Samples	Qual: L Qualifications
		LCS 82	90	56 (57-106	( )	( )	All	J (UJ/P
		154LHLCS	PP	64 (67-131	( )	( )		J
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
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				( )	( )	( )		
				( )	( )	( )		

LDC #: 32184C2a

VALIDATION FINDINGS WORKSHEET
Initial Calibration Calculation Verification

Reviewer BR
2nd Reviewer SM

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

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

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

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

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

#	Standard ID	Calibration Date	Compound (IS)	Reported RRF (1 std)	Recalculated RRF (1 std)	Reported Average RRF (Initial)	Recalculated Average RRF (Initial)	Reported %RSD	Recalculated %RSD
1	HP11165	6/11/2014	Phenol (IS1)	2.477	2.477	2.49743	2.497	6	6
			4-Chloroaniline (IS2)	0.501	0.501	0.492	0.492	8	8
			Fluorene (IS3)	1.459	1.459	1.472	1.472	4	4
			Pentachlorophenol (IS4)	0.131	0.131	0.134	0.134	10	10.6
			bis(2-ethylhexyl)phthalate (IS5)	0.735	0.736	0.737	0.737	10	10
			Benzo(a)pyrene (IS6)	1.227	1.227	1.154	1.154	15	15

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

LDC #: 32184C2a

VALIDATION FINDINGS WORKSHEET
Initial Calibration Calculation Verification

Reviewer BR
2nd Reviewer SM

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

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

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

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

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

#	Standard ID	Calibration Date	Compound (IS)	Reported RRF (1 std)	Recalculated RRF (1 std)	Reported Average RRF (Initial)	Recalculated Average RRF (Initial)	Reported %RSD	Recalculated %RSD
1	HP11165	6/12/2014	3,5-Dimethylphenol (IS2)	0.332	0.332	0.322	0.322	6	6

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

LDC# 32184C2a

VALIDATION FINDINGS WORSHEET
Continuing Calibration Results Verification

Reviewer: BR
2nd Reviewer: SM

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

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

% Difference = 100 * (ave. RRF - RRF)/ave. RRF
RRF = (Ax)(Cis)/(Ais)(Cx)

Where:
ave. RRF = initial calibration average RRF
RRF = continuing calibration RRF
Ax = Area of compound
Cx = Concentration of compound
Ais = Area of associated internal standard
Cis = Concentration of internal standard

#	Standard ID	Calibration Date	Compound (IS)	Average RRF (Initial RRF)	Reported (CC RRF)	Recalculated (CC RRF)	Reported %D	Recalculated %D
1	gf301	06/12/14	Phenol (IS1)	2.497	2.471	2.471	1	1
			4-Chloroaniline (IS2)	0.492	0.478	0.478	3	3
			Fluorene (IS3)	1.472	1.400	1.400	5	5
			Pentachlorophenol (IS4	0.134	0.132	0.132	1	1
			bis(2-ethylhexyl)phthalate (IS5	0.737	0.669	0.669	9	9
			Benzo(a)pyrene (IS6	1.154	1.209	1.209	5	5

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

LDC# 32184C2a

VALIDATION FINDINGS WORSHEET
Continuing Calibration Results Verification

Reviewer: BR
2nd Reviewer: SM

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

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

% Difference = 100 * (ave. RRF - RRF)/ave. RRF
RRF = (Ax)(Cis)/(Ais)(Cx)

Where:
ave. RRF = initial calibration average RRF
RRF = continuing calibration RRF
Ax = Area of compound
Cx = Concentration of compound
Ais = Area of associated internal standard
Cis = Concentration of internal standard

#	Standard ID	Calibration Date	Compound (IS)	Average RRF (Initial RRF)	Reported (CC RRF)	Recalculated (CC RRF)	Reported %D	Recalculated %D
1	gf302	06/12/14	3,5-Dimethylphenol (IS2	0.322	0.325	0.325	1	1

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

LDC# 32184C2a

VALIDATION FINDINGS WORSHEET
Continuing Calibration Results Verification

Reviewer: BR
2nd Reviewer: SM

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

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

% Difference = 100 * (ave. RRF - RRF)/ave. RRF
RRF = (Ax)(Cis)/(Ais)(Cx)

Where:
ave. RRF = initial calibration average RRF
RRF = continuing calibration RRF
Ax = Area of compound
Cx = Concentration of compound
Ais = Area of associated internal standard
Cis = Concentration of internal standard

#	Standard ID	Calibration Date	Compound (IS)	Average RRF (Initial RRF)	Reported (CC RRF)	Recalculated (CC RRF)	Reported %D	Recalculated %D
1	gf0331	06/13/14	Phenol (IS1)	2.497	2.457	2.457	2	2
			4-Chloroaniline (IS2)	0.492	0.486	0.486	1	1
			Fluorene (IS3)	1.472	1.407	1.407	4	4
			Pentachlorophenol (IS4	0.134	0.141	0.141	6	6
			bis(2-ethylhexyl)phthalate (IS5	0.737	0.756	0.756	3	3
			Benzo(a)pyrene (IS6	1.154	1.224	1.224	6	6

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

LDC# 32184C2a

VALIDATION FINDINGS WORSHEET
Continuing Calibration Results Verification

Reviewer: BR
2nd Reviewer: SM

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

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

% Difference = 100 * (ave. RRF - RRF)/ave. RRF
RRF = (Ax)(Cis)/(Ais)(Cx)

Where:
ave. RRF = initial calibration average RRF
RRF = continuing calibration RRF
Ax = Area of compound
Cx = Concentration of compound
Ais = Area of associated internal standard
Cis = Concentration of internal standard

#	Standard ID	Calibration Date	Compound (IS)	Average RRF (Initial RRF)	Reported (CC RRF)	Recalculated (CC RRF)	Reported %D	Recalculated %D
1	gf332	06/13/14	3,5-Dimethylphenol (IS2	0.322	0.339	0.339	5	5

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

LDC #: 32184C2a

VALIDATION FINDINGS WORKSHEET
Surrogate Results Verification

Reviewer: BR
2nd reviewer: SM

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

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

% Recovery: SF/SS * 100

Where: SF = Surrogate Found
SS = Surrogate Spiked

Sample ID: 1

	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
Nitrobenzene-d5	150	71.953	72	72	0
2-Fluorobiphenyl	↓	77.921	78	78	0
Terphenyl-d14	↓	84.959	85	85	0
Phenol-d6	200	142.361	71	71	0
2-Fluorophenol	↓	155.020	78	78	0
2,4,6-Tribromophenol	↓	160.515	80	80	0
2-Chlorophenol-d4					
1,2-Dichlorobenzene-d4					

Sample ID:

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

Sample ID:

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

LDC #: 32184C2a

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

Reviewer: BR
2nd Reviewer: SM

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

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

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

RPD = | LCSC - LCSDC | * 2/(LCSC + LCSDC) LCSC = Laboratory control sample concentration LCSDC = Laboratory control sample duplicate concentration

LCS/LCSD samples: 154L172CS

Compound	Spike Added (ug/kg)		Spike Concentration (ug/kg)		LCS Percent Recovery		LCSD Percent Recovery		LCS/LCSD RPD	
	LCS	LCSD	LCS	LCSD	Reported	Recalc	Reported	Recalc	Reported	Recalculated
Phenol	1666.67	-	1596.48	-	96	96				
N-Nitroso-di-n-propylamine			1459.4		88	88				
4-Chloro-3-methylphenol			1586.63		95	95				
Acenaphthene			-		-	-				
Pentachlorophenol			1428.12		86	86				
Pyrene			-		-	-				

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

LDC #: 32184C2a

VALIDATION FINDINGS WORKSHEET
Sample Calculation Verification

Page: 1 of 1
Reviewer: BR
2nd reviewer: SM

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

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

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

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

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

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

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

V_i = Volume of extract injected in microliters (ul)

V_t = Volume of the concentrated extract in microliters (ul)

Df = Dilution Factor.

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

2.0 = Factor of 2 to account for GPC cleanup

Example:

Sample I.D. 1 , III :

4

Conc. = $\frac{(3088)(20)(1000)(\quad)(\quad)}{(468372)(1.154)(30)(0.98)(\quad)}$

= 3.886540733 ug/kg

#	Sample ID	Compound	Reported Concentration ( )	Calculated Concentration ( )	Qualification
1	S4HLCS7	A = 1596.48			
		= (478688)(20)(1000)			
		(80038)(2.497)(30)			
		= 1596.785246 ug/kg			

RECALC.2SD

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: Santa Susana Field Laboratory

Collection Date: June 2, 2014

LDC Report Date: August 6, 2014

Matrix: Soil

Parameters: Semivolatiles

Validation Level: Level IV

Laboratory: Eurofins

Sample Delivery Group (SDG): PH212

Sample Identification

SL-653-SA5C-TR-0.5
SL-653-SA5C-TR-5.0
SL-653-SA5C-TR-10.0
SL-653-SA5C-TR-15.0

Introduction

This data review covers 4 soil samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA SW 846 Method 8270D using Selected Ion Monitoring (SIM) for Semivolatiles.

This review follows the Quality Assurance Project Plan for Santa Susana Field Laboratory (SSFL), RCRA Facility Investigation, Surficial Media Operable Unit (March 2009, Revision 4) and a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Superfund Organic Methods Data Review (June 2008).

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.

The following are definitions of the data qualifiers:

U Indicates the compound or analyte was analyzed for but not detected.

J Indicates an estimated value.

R Quality control indicates the data is not usable.

NJ Presumptive evidence of presence of the compound at an estimated quantity.

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. GC/MS Instrument Performance Check

Instrument performance was checked at 12 hour intervals. All ion abundance requirements were met.

III. Initial Calibration

Initial calibration was performed using required standard.

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

In the case where the laboratory used a calibration curve to evaluate the compounds, all coefficients of determination (r^2) were greater than or equal to 0.990.

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

IV. Continuing Calibration

Continuing calibration was performed at the required frequencies.

Percent differences (%D) between the initial calibration RRF and the continuing calibration RRF were within the method criteria of less than or equal to 20.0% for calibration check compounds (CCCs) and 25.0% for all other compounds.

The percent differences (%D) of the second source calibration standard were less than or equal to 25.0% for all compounds with the following exceptions:

Date	Compound	%D	Associated Samples	Flag	A or P
5/2/14	Benzo(b)fluoranthene	26	SL-653-SA5C-TR-5.0 SL-653-SA5C-TR-10.0 SL-653-SA5C-TR-15.0 SBLK1154	J (all detects) UJ (all non-detects)	A

All of the continuing calibration relative response factors (RRF) were within method and validation criteria.

V. Blanks

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

Sample EB3-060414 (from SDG PH217) was identified as an equipment blank. No semivolatile contaminants were found with the following exceptions:

Blank ID	Sampling Date	Compound	Concentration	Associated Samples
EB3-060414	6/4/14	Di-n-butylphthalate Diethylphthalate Bis(2-ethylhexyl)phthalate 1-Methylnaphthalene 2-Methylnaphthalene Naphthalene	0.14 ug/L 0.078 ug/L 0.13 ug/L 0.020 ug/L 0.028 ug/L 0.073 ug/L	All samples in SDG PH212

Sample FB-052114 (from SDG PH191) was identified as a field blank. No semivolatile contaminants were found with the following exceptions:

Blank ID	Sampling Date	Compound	Concentration	Associated Samples
FB-052114	5/21/14	Di-n-butylphthalate Bis(2-ethylhexyl)phthalate 1-Methylnaphthalene 2-Methylnaphthalene Naphthalene	0.089 ug/L 0.058 ug/L 0.022 ug/L 0.032 ug/L 0.11 ug/L	All samples in SDG PH212

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

VI. Surrogate Spikes

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

VII. Matrix Spike/Matrix Spike Duplicates

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.

VIII. Laboratory Control Samples (LCS)

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

LCS ID	Compound	%R (Limits)	Associated Samples	Flag	A or P
154LILCS	Benzo(e)pyrene	77 (81-110)	All samples in SDG PH212	J (all detects) UJ (all non-detects)	P

IX. Regional Quality Assurance and Quality Control

Not applicable.

X. Internal Standards

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

XI. Target Compound Identifications

All target compound identifications were within validation criteria.

XII. Compound Quantitation

All compound quantitation were within validation criteria.

All compounds reported below the RL were qualified as follows:

Sample	Finding	Flag	A or P
All samples in SDG PH212	All compounds reported below the RL.	J (all detects)	A

XIII. Tentatively Identified Compounds (TICs)

Tentatively identified compounds were not reported by the laboratory.

XIV. System Performance

The system performance was acceptable.

XV. Overall Assessment of Data

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

XVI. Field Duplicates

No field duplicates were identified in this SDG.

Santa Susana Field Laboratory
Semivolatiles - Data Qualification Summary - SDG PH212

SDG	Sample	Compound	Flag	A or P	Reason (Code)
PH212	SL-653-SA5C-TR-5.0 SL-653-SA5C-TR-10.0 SL-653-SA5C-TR-15.0	Benzo(b)fluoranthene	J (all detects) UJ (all non-detects)	A	Continuing calibration (ICV %D) (C)
PH212	SL-653-SA5C-TR-0.5 SL-653-SA5C-TR-5.0 SL-653-SA5C-TR-10.0 SL-653-SA5C-TR-15.0	Benzo(e)pyrene	J (all detects) UJ (all non-detects)	P	Laboratory control samples (%R) (L)
PH212	SL-653-SA5C-TR-0.5 SL-653-SA5C-TR-5.0 SL-653-SA5C-TR-10.0 SL-653-SA5C-TR-15.0	All compounds reported below the RL.	J (all detects)	A	Compound quantitation (Z)

Santa Susana Field Laboratory
Semivolatiles - Laboratory Blank Data Qualification Summary - SDG PH212

No Sample Data Qualified in this SDG

Santa Susana Field Laboratory
Semivolatiles - Field Blank Data Qualification Summary - SDG PH212

No Sample Data Qualified in this SDG

LDC #: 32184C2b **VALIDATION COMPLETENESS WORKSHEET** Date: 7/29/14
SDG #: PH212 Level IV Page: 1 of 1
Laboratory: Eurofins Reviewer: BR
2nd Reviewer: SM

METHOD: GC/MS ~~Polynuclear Aromatic Hydrocarbons~~ SVOCs (EPA SW 846 Method 8270D-SIM)

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

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 6/2/14
II.	GC/MS Instrument performance check	A	
III.	Initial calibration	A	RSD≤30%, r²
IV.	Continuing calibration/ICV	SW	ICV/CCV≤25%
V.	Blanks	A	
VI.	Surrogate spikes	SW	
VII.	Matrix spike/Matrix spike duplicates	N	Client spec.
VIII.	Laboratory control samples	SW	LCS
IX.	Regional Quality Assurance and Quality Control	N	
X.	Internal standards	A	
XI.	Target compound identification	A	
XII.	Compound quantitation/RL/LOQ/LODs	A	
XIII.	Tentatively identified compounds (TICs)	N	
XIV.	System performance	A	
XV.	Overall assessment of data	A	
XVI.	Field duplicates	N	
XVII.	Field blanks	SW	EB = EB3-060414 (~~PH217~~ ~~PH2178~~) FB = FB-052114 (PH1191)

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

1	SL-653-SA5C-TR-0.5	11		21		31	SBLK1154
2	SL-653-SA5C-TR-5.0	12		22		32	
3	SL-653-SA5C-TR-10.0	13		23		33	
4	SL-653-SA5C-TR-15.0	14		24		34	
5		15		25		35	
6		16		26		36	
7		17		27		37	
8		18		28		38	
9		19		29		39	
10		20		30		40	

LDC #: 32184C26

VALIDATION FINDINGS CHECKLIST

Reviewer: KM
2nd Reviewer: SM

Method: Semivolatiles (EPA SW 846 Method 8270D)

Validation Area	Yes	No	NA	Findings/Comments
I. Technical holding times				
All technical holding times were met.	✓			
Cooler temperature criteria was met.	✓			
II. GC/MS Instrument performance check				
Were the DFTPP performance results reviewed and found to be within the specified criteria?	✓			
Were all samples analyzed within the 12 hour clock criteria?	✓			
III. Initial calibration				
Did the laboratory perform a 5 point calibration prior to sample analysis?	✓			
Were all percent relative standard deviations (%RSD) ≤ 30% and relative response factors (RRF) within the method criteria?	✓			
Was a curve fit used for evaluation?	✓			
Did the initial calibration meet the curve fit acceptance criteria of ≥ 0.990?	✓			
IV. Continuing calibration				
Was a continuing calibration standard analyzed at least once every 12 hours for each instrument?	✓			
Were all percent differences (%D) ≤ 25% and relative response factors (RRF) ≥ 0.05?		✓		
V. Blanks				
Was a method blank associated with every sample in this SDG?	✓			
Was a method blank analyzed for each matrix and concentration?	✓			
Was there contamination in the method blanks? If yes, please see the Blanks validation completeness worksheet.		✓		
VI. Surrogate spikes				
Were all surrogate %R within QC limits?		✓		
If 2 or more base neutral or acid surrogates were outside QC limits, was a reanalysis performed to confirm %R?			✓	
If any %R was less than 10 percent, was a reanalysis performed to confirm %R?			✓	
VII. Matrix spike/Matrix spike duplicates				
Were a matrix spike (MS) and matrix spike duplicate (MSD) analyzed for each matrix in this SDG? If no, indicate which matrix does not have an associated MS/MSD. Soil / Water.		✓		
Was a MS/MSD analyzed every 20 samples of each matrix?			✓	
Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?			✓	
VIII. Laboratory control samples				
Was an LCS analyzed for this SDG?	✓			
Was an LCS analyzed per extraction batch?	✓			
Were the LCS percent recoveries (%R) and relative percent difference (RPD) within the QC limits?	✓	✓		

VALIDATION FINDINGS CHECKLIST

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

VALIDATION FINDINGS WORKSHEET

METHOD: GC/MS SVOA

A. Phenol	T. 4-Chloroaniline	MM. 4-Chlorophenyl-phenyl ether	FFF. Di-n-octylphthalate	YYY. 2,3,5-Trimethylnaphthalene
B. Bis (2-chloroethyl) ether	U. Hexachlorobutadiene	NN. Fluorene	GGG. Benzo(b)fluoranthene	ZZZ. Perylene
C. 2-Chlorophenol	V. 4-Chloro-3-methylphenol	OO. 4-Nitroaniline	HHH. Benzo(k)fluoranthene	AAAA. Dibenzothiophene
D. 1,3-Dichlorobenzene	W. 2-Methylnaphthalene	PP. 4,6-Dinitro-2-methylphenol	III. Benzo(a)pyrene	BBBB. Benzo(a)fluoranthene
E. 1,4-Dichlorobenzene	X. Hexachlorocyclopentadiene	QQ. N-Nitrosodiphenylamine	JJJ. Indeno(1,2,3-cd)pyrene	CCCC. Benzo(b)fluorene
F. 1,2-Dichlorobenzene	Y. 2,4,6-Trichlorophenol	RR. 4-Bromophenyl-phenylether	KKK. Dibenz(a,h)anthracene	DDDD. cis/trans-Decalin
G. 2-Methylphenol	Z. 2,4,5-Trichlorophenol	SS. Hexachlorobenzene	LLL. Benzo(g,h,i)perylene	EEEE. Biphenyl
H. 2,2'-Oxybis(1-chloropropane)	AA. 2-Chloronaphthalene	TT. Pentachlorophenol	MMM. Bis(2-Chloroisopropyl)ether	FFFF. Retene
I. 4-Methylphenol	BB. 2-Nitroaniline	UU. Phenanthrene	NNN. Aniline	GGGG. C30-Hopane
J. N-Nitroso-di-n-propylamine	CC. Dimethylphthalate	VV. Anthracene	OOO. N-Nitrosodimethylamine	HHHH. 1-Methylphenanthrene
K. Hexachloroethane	DD. Acenaphthylene	WW. Carbazole	PPP. Benzoic Acid	IIII. 1,4-Dioxane
L. Nitrobenzene	EE. 2,6-Dinitrotoluene	XX. Di-n-butylphthalate	QQQ. Benzyl alcohol	JJJJ. Acetophenone
M. Isophorone	FF. 3-Nitroaniline	YY. Fluoranthene	RRR. Pyridine	KKKK. Atrazine
N. 2-Nitrophenol	GG. Acenaphthene	ZZ. Pyrene	SSS. Benzidine	LLLL. Benzaldehyde
O. 2,4-Dimethylphenol	HH. 2,4-Dinitrophenol	AAA. Butylbenzylphthalate	TTT. 1-Methylnaphthalene	MMMM. Caprolactam
P. Bis(2-chloroethoxy)methane	II. 4-Nitrophenol	BBB. 3,3'-Dichlorobenzidine	UUU.Benzo(b)thiophene	NNNN.
Q. 2,4-Dichlorophenol	JJ. Dibenzofuran	CCC. Benzo(a)anthracene	VVV.Benzonaphthothiophene	OOOO.
R. 1,2,4-Trichlorobenzene	KK. 2,4-Dinitrotoluene	DDD. Chrysene	WWW.Benzo(e)pyrene	PPPP.
S. Naphthalene	LL. Diethylphthalate	EEE. Bis(2-ethylhexyl)phthalate	XXX. 2,6-Dimethylnaphthalene	QQQQ.

LDC #: 32184C21

VALIDATION FINDINGS WORKSHEET
Continuing Calibration

Reviewer: BR
2nd Reviewer: SM

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

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

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

#	Date	Standard ID	Compound	Finding %D (Limit: ≤25.0%)	Finding RRF (Limit: ≥0.05)	Associated Samples	Code: C Qualifications
	5/2/14	ICV-fe0020	GGG	26		2-4 + SBLK 1154	J/UJ/A

LDC #: 32184C26

VALIDATION FINDINGS WORKSHEET
Field Blanks

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

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

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

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

FB = FB-052114 (SDG # PH191)

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

Sampling date: 5/21/14

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

Compound	Blank ID	Sample Identification								
	FB									
XX	0.089									
EEE	0.058									
TTT	~~0.020~~	0.022								
W	0.032									
S	0.11									

EB = EB3-060414 (PH PH217)

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

Sampling date: 6/4/14

Field blank type: (circle one) Field Blank / Rinsate / (Other:) EB Associated Samples: All (ND)

Compound	Blank ID	Sample Identification								
	EB									
XX	0.14									
LL	0.078									
EEE	0.13									
TTT	0.020									
W	0.028									
S	0.073									

CIRCLED RESULTS WERE NOT QUALIFIED. ALL RESULTS NOT CIRCLED WERE QUALIFIED BY THE FOLLOWING STATEMENT:
Common contaminants such as the phthalates and TICs noted above that were detected in samples within ten times the associated field blank concentration were qualified as not detected, "U". Other contaminants within five times the field blank concentration were also qualified as not detected, "U".

LDC #: 32184C2L

VALIDATION FINDINGS WORKSHEET
Surrogate Recovery

Reviewer: BR
2nd Reviewer: SM

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

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

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

#	Date	Sample ID	Surrogate	%R (Limits)	Qualifications
		1	Benzo(a)pyrene-d12	119 (61-118)	No qual
				( )	
				( )	
				( )	
				( )	
				( )	
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(NBZ) = Nitrobenzene-d5
(FBP) = 2-Fluorobiphenyl
(TPH) = Terphenyl-d14
(PHL) = Phenol-d5
(2FP)= 2-Fluorophenol
(TBP) = 2,4,6-Tribromophenol
(2CP) = 2-Chlorophenol-d4
(DCB) = 1,2-Dichlorobenzene-d4

LDC #: 32184C2L

VALIDATION FINDINGS WORKSHEET
Laboratory Control Samples (LCS)

Reviewer: BR
2nd Reviewer: SM

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

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

Y (N) N/A Was a LCS required?

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

#	Date	LCS/LCSD ID	Compound	LCS %R (Limits)	LCSD %R (Limits)	RPD (Limits)	Associated Samples	Code: L Qualifications
		184LILCS	~~WWW~~ M	77 (81-119)	( )	( )	All	J (UO) P
			WWW ~~Not for~~	( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
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				( )	( )	( )		
				( )	( )	( )		

LDC #: 32184C2b

VALIDATION FINDINGS WORKSHEET
Initial Calibration Calculation Verification

Reviewer BR
2nd Reviewer SM

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

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

$RRF = (A_x)(C_{is})/(A_{is})(C_x)$

average RRF = sum of the RRFs/number of standards

%RSD = 100 * (S/X)

A_x = Area of Compound

C_x = Concentration of compound,

S= Standard deviation of the RRFs,

A_{is} = Area of associated internal standard

C_{is} = Concentration of internal standard

X = Mean of the RRFs

#	Standard ID	Calibration Date	Compound (IS)	Reported RRF (1 std)	Recalculated RRF (1 std)	Reported Average RRF (Initial)	Recalculated Average RRF (Initial)	Reported %RSD	Recalculated %RSD
1	HP07166	5/2/2014	N-Nitrosodimethylamine (IS1)	0.848	0.848	0.850	0.850	4	4
			Naphthalene (IS2)	1.206	1.206	1.222	1.222	3	3
			Fluorene (IS3)	1.465	1.465	1.460	1.461	3	3
			Anthracene (IS4)	1.222	1.222	1.187	1.187	6	6
			Chrysene (IS5)	1.555	1.555	1.553	1.553	2	2
			Benzo(a)pyrene (IS6)	1.737	1.737	1.619	1.619	15	15

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

LDC# 32184C2b

VALIDATION FINDINGS WORSHEET
Continuing Calibration Results Verification

Reviewer: BR
2nd Reviewer: SM

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

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

% Difference = 100 * (ave. RRF - RRF)/ave. RRF
RRF = (Ax)(Cis)/(Ais)(Cx)

Where:
ave. RRF = initial calibration average RRF
RRF = continuing calibration RRF
Ax = Area of compound
Cx = Concentration of compound
Ais = Area of associated internal standard
Cis = Concentration of internal standard

#	Standard ID	Calibration Date	Compound (IS)	Average RRF (Initial RRF)	Reported (CC RRF)	Recalculated (CC RRF)	Reported %D	Recalculated %D
1	ff0201	06/10/14	N-Nitrosodimethylamine (IS1)	0.850	0.845	0.845	1	0.6
			Naphthalene (IS2)	1.222	1.224	1.224	0	0
			Fluorene (IS3)	1.460	1.438	1.438	2	2
			Anthracene (IS4)	1.187	1.297	1.297	9	9
			Chrysene (IS5)	1.553	1.390	1.390	11	11
			Benzo(a)pyrene (IS6)	1.619	1.479	1.479	9	9

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

LDC #: 32184C2b

VALIDATION FINDINGS WORKSHEET
Surrogate Results Verification

Page: 1 of 1
Reviewer: BR
2nd Reviewer: SM

METHOD: GC/MS Semivolatiles (EPA Method 8270D)

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

%Recovery: SF/SS * 100

Where: SF = Surrogate Found
SS = Surrogate Spiked

Sample ID: 1

	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
Fluoranthene-d10	1.00	1.061	106	106	0
Benzo(a)pyrene-d12	↓	1.190	119	119	0
1-Methylnaphthalene-d10	↓	0.967	97	97	0

Sample ID:

	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
Fluoranthene-d10					
Benzo(a)pyrene-d12					
1-Methylnaphthalene-d10					

Sample ID:

	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
Fluoranthene-d10					
Benzo(a)pyrene-d12					
1-Methylnaphthalene-d10					

LDC #: 32184C26

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

Reviewer: BR
2nd Reviewer: SM

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

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

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

RPD = I LCSC - LCSDC I * 2/(LCSC + LCSDC) LCSC = Laboratory control sample concentration LCSDC = Laboratory control sample duplicate concentration

LCS/LCSD samples: 154LILCS

Compound	Spike Added (ug/kg)		Spike Concentration (ug/kg)		LCS Percent Recovery		LCSD Percent Recovery		LCS/LCSD RPD	
	LCS	LCSD	LCS	LCSD	Reported	Recalc	Reported	Recalc	Reported	Recalculated
Phenol										
N-Nitroso-di-n-propylamine										
4-Chloro-3-methylphenol										
Acenaphthene	33.33	-	34.41	-	103	103	-	-	-	-
Pentachlorophenol										
Pyrene	33.33	-	30.74	-	92	92	-	-	-	-

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

LDC #: 32184 C26

VALIDATION FINDINGS WORKSHEET
Sample Calculation Verification

Page: 1 of 1
Reviewer: BR
2nd reviewer: SM

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

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

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

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

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

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

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

V_i = Volume of extract injected in microliters (ul)

V_t = Volume of the concentrated extract in microliters (ul)

Df = Dilution Factor.

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

2.0 = Factor of 2 to account for GPC cleanup

Example:

Sample I.D. 1, DDD:

DDD = 1.3 ug/L

Conc. = $\frac{(7728)(1.000)(1000)(\quad)(\quad)}{(12641)(1.553)(80)(\quad)(\quad)}$

= 1.312272093

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

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: Santa Susana Field Laboratory

Collection Date: June 2, 2014

LDC Report Date: August 12, 2014

Matrix: Soil

Parameters: Chlorinated Pesticides

Validation Level: Level IV

Laboratory: Eurofins

Sample Delivery Group (SDG): PH212

Sample Identification

SL-653-SA5C-TR-0.5
SL-653-SA5C-TR-5.0
SL-653-SA5C-TR-10.0
SL-653-SA5C-TR-15.0
SL-653-SA5C-TR-0.5MS
SL-653-SA5C-TR-0.5MSD

Introduction

This data review covers 6 soil samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA SW 846 Method 8081B for Chlorinated Pesticides.

This review follows the Quality Assurance Project Plan for Santa Susana Field Laboratory (SSFL), RCRA Facility Investigation, Surficial Media Operable Unit (March 2009, Revision 4) and a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Superfund Organic Methods Data Review (June 2008).

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.

The following are definitions of the data qualifiers:

U Indicates the compound or analyte was analyzed for but not detected.

J Indicates an estimated value.

R Quality control indicates the data is not usable.

NJ Presumptive evidence of presence of the compound at an estimated quantity.

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. GC Instrument Performance Check

Instrument performance was checked at 12 hour intervals.

The individual 4,4'-DDT and Endrin breakdowns (%BD) were less than or equal to 15.0%.

III. Initial Calibration

Initial calibration was performed as required by the method.

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

Retention time windows were established as required by the method.

IV. Continuing Calibration

Continuing calibration was performed at required frequencies.

The percent differences (%D) were less than or equal to 20.0% for all compounds with the following exceptions:

Date	Standard	Column	Compound	%D	Associated Samples	Flag	A or P
6/10/14	CCV-M1XA3ZW	RTX-CIP	4,4'-DDE 4,4'-DDD 4,4'-DDT Methoxychlor	26 30 21 21	All samples in SDG PH212	J (all detects) UJ (all non-detects)	A

The percent differences (%D) of the second source calibration standard were less than or equal to 20.0% for all compounds.

Retention times of all compounds in the calibration standards were within the established retention time windows.

V. Blanks

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

Sample EB3-060414 (from SDG PH217) was identified as an equipment blank. No chlorinated pesticide contaminants were found.

Sample FB-052114 (from SDG PH191) was identified as a field blank. No chlorinated pesticide contaminants were found.

VI. Surrogate Spikes

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

VII. Matrix Spike/Matrix Spike Duplicates

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

VIII. Laboratory Control Samples (LCS)

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

IX. Regional Quality Assurance and Quality Control

Not applicable.

X. Florisil Cartridge Check

Florisil cleanup was not reviewed in this SDG.

XI. GPC Calibration

GPC cleanup was not reviewed in this SDG.

XII. Target Compound Identification

All target compound identifications were within validation criteria.

XIII. Compound Quantitation

All compound quantitations were within validation criteria.

All compounds reported below the RL were qualified as follows:

Sample	Finding	Flag	A or P
All samples in SDG PH212	All compounds reported below the RL.	J (all detects)	A

XIV. Overall Assessment of Data

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

XV. Field Duplicates

No field duplicates were identified in this SDG.

Santa Susana Field Laboratory
Chlorinated Pesticides - Data Qualification Summary - SDG PH212

SDG	Sample	Compound	Flag	A or P	Reason (Codes)
PH212	SL-653-SA5C-TR-0.5 SL-653-SA5C-TR-5.0 SL-653-SA5C-TR-10.0 SL-653-SA5C-TR-15.0	4,4'-DDE 4,4'-DDD 4,4'-DDT Methoxychlor	J (all detects) UJ (all non-detects)	A	Continuing calibration (%D) (C)
PH212	SL-653-SA5C-TR-0.5 SL-653-SA5C-TR-5.0 SL-653-SA5C-TR-10.0 SL-653-SA5C-TR-15.0	All compounds reported below the RL.	J (all detects)	A	Compound quantitation (Z)

Santa Susana Field Laboratory
Chlorinated Pesticides - Laboratory Blank Data Qualification Summary - SDG PH212

No Sample Data Qualified in this SDG

Santa Susana Field Laboratory
Chlorinated Pesticides - Field Blank Data Qualification Summary - SDG PH212

No Sample Data Qualified in this SDG

LDC #: 32184C3a **VALIDATION COMPLETENESS WORKSHEET** Date: 7/30/14
SDG #: PH212 Level IV Page: 1 of 1
Laboratory: Eurofins Reviewer: BR
2nd Reviewer: SM

METHOD: GC Chlorinated Pesticides (EPA SW846 Method 8081B)

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

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 6/2/14
II.	GC Instrument Performance Check	A	
III.	Initial calibration	A	RSD ≤ 20%
IV.	Continuing calibration/ICV	SW	ICV/CCV ≤ 20%
V.	Blanks	A	
VI.	Surrogate spikes	A	
VII.	Matrix spike/Matrix spike duplicates	A ~~N~~	~~Client specific~~
VIII.	Laboratory control samples	A	LCS/D BR
IX.	Regional quality assurance and quality control	N	
X.	Florisil cartridge check	N	
XI.	GPC Calibration	N	
XII.	Target compound identification	A	
XIII.	Compound quantitation/RL/LOQ/LODs	A	
XIV.	Overall assessment of data	A	
XV.	Field duplicates	N	
XVI.	Field blanks	ND	EB = ~~EB3~~-060414 (PH4217) FB = FB-052114 (PH1917)

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

1	SL-653-SA5C-TR-0.5	11		21		31	PBLK 64158
2	SL-653-SA5C-TR-5.0	12		22		32	
3	SL-653-SA5C-TR-10.0	13		23		33	
4	SL-653-SA5C-TR-15.0	14		24		34	
5	#1 MS	15		25		35	
6	#1 MSD	16		26		36	
7		17		27		37	
8		18		28		38	
9		19		29		39	
10		20		30		40	

Notes:

LDC #: 32184C3a

VALIDATION FINDINGS CHECKLIST

Reviewer: KR
2nd Reviewer: SM

Method: Pesticides/PCBs (EPA SW 846 Method 8081/8082)

Validation Area	Yes	No	NA	Findings/Comments
I. Technical holding times				
All technical holding times were met.	✓			
Cooler temperature criteria was met.	✓			
II. GC/ECD Instrument performance check				
Was the instrument performance found to be acceptable?	✓			
III. Initial calibration				
Did the laboratory perform a 5 point calibration prior to sample analysis?	✓			
Was a linear fit used for evaluation? If yes, were all percent relative standard deviations (%RSD) ≤ 20%?	✓			
Was a curve fit used for evaluation? If Yes, what was the acceptance criteria used?		✓		
Did the initial calibration meet the curve fit acceptance criteria?			✓	
Were the RT windows properly established?	✓			
Were the required standard concentrations analyzed in the initial calibration?	✓			
IV. Continuing calibration				
What type of continuing calibration calculation was performed? ✓ %D or ___%R	✓			
Were Evaluation mix standards analyzed prior to the initial calibration and sample analysis?	✓			
Were endrin and 4,4'-DDT breakdowns ≤ 15%.0 for individual breakdown in the Evaluation mix standards?	✓			
Was a continuing calibration analyzed daily?	✓			
Were all percent differences (%D) ≤ 20%.0 or percent recovieries 80-120%?		✓		
Were all the retention times within the acceptance windows?	✓			
V. Blanks				
Was a method blank associated with every sample in this SDG?	✓			
Was a method blank analyzed for each matrix and concentration?	✓			
Were extract cleanup blanks analyzed with every batch requiring clean-up?			✓	
Was there contamination in the method blanks or clean-up blanks? If yes, please see the Blanks validation completeness worksheet.		✓		
VI. Surrogate spikes				
Were all surrogate %R within the QC limits?	✓			
If the percent recovery (%R) of one or more surrogates was outside QC limits, was a reanalysis performed to confirm %R?			✓	

Validation Area	Yes	No	NA	Findings/Comments
If any %R was less than 10 percent, was a reanalysis performed to confirm %R?			✓	
VII. Matrix spike/Matrix spike duplicates				
Were a matrix spike (MS) and matrix spike duplicate (MSD) analyzed for each matrix in this SDG? If no, indicate which matrix does not have an associated MS/MSD. Soil / Water.	✓			
Was a MS/MSD analyzed every 20 samples of each matrix?	✓			
Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?	✓			
VIII. Laboratory control samples				
Was an LCS analyzed for this SDG?	✓			
Was an LCS analyzed per extraction batch?	✓			
Were the LCS percent recoveries (%R) and relative percent difference (RPD) within the QC limits?	✓			
IX. Regional Quality Assurance and Quality Control				
Were performance evaluation (PE) samples performed?		✓		
Were the performance evaluation (PE) samples within the acceptance limits?			✓	
X. Target compound identification				
Were the retention times of reported detects within the RT windows?	✓			
XI. Compound quantitation/CRQLs				
Were compound quantitation and CRQLs adjusted to reflect all sample dilutions, dry weight factors, and clean-up activities applicable to level IV validation?	✓			
XII. System performance				
System performance was found to be acceptable.	✓			
XIII. Overall assessment of data				
Overall assessment of data was found to be acceptable.	✓			
XIV. Field duplicates				
Field duplicate pairs were identified in this SDG.		✓		
Target compounds were detected in the field duplicates.			✓	
XV. Field blanks				
Field blanks were identified in this SDG.	✓			
Target compounds were detected in the field blanks.		✓		

VALIDATION FINDINGS WORKSHEET

METHOD: Pesticide/PCBs (EPASW 846 Method 8081/8082)

A. alpha-BHC	I. Dieldrin	Q. Endrin ketone	Y. Aroclor-1242	GG. Chlordane
B. beta-BHC	J. 4,4'-DDE	R. Endrin aldehyde	Z. Aroclor-1248	HH. Chlordane (Technical)
C. delta-BHC	K. Endrin	S. alpha-Chlordane	AA. Aroclor-1254	II. Aroclor 1262
D. gamma-BHC	L. Endosulfan II	T. gamma-Chlordane	BB. Aroclor-1260	JJ. Aroclor 1268
E. Heptachlor	M. 4,4'-DDD	U. Toxaphene	CC. 2,4'-DDD	KK. Oxychlordane
F. Aldrin	N. Endosulfan sulfate	V. Aroclor-1016	DD. 2,4'-DDE	LL. trans-Nonachlor
G. Heptachlor epoxide	O. 4,4'-DDT	W. Aroclor-1221	EE. 2,4'-DDT	MM. cis-Nonachlor
H. Endosulfan I	P. Methoxychlor	X. Aroclor-1232	FF. Hexachlorobenzene	NN.

Notes:_____

LDC #: 32184C3a

VALIDATION FINDINGS WORKSHEET
Continuing Calibration

Page: 1 of 1
Reviewer: KR
2nd Reviewer: SM

METHOD: GC Pesticides/PCBs (EPA SW 846 Method 8081/8082)

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

Y N N/A Were Evaluation mix standards run before initial calibration and before samples?
Y N N/A Were Endrin & 4,4'-DDT breakdowns acceptable in the Evaluation Mix standard (≤15.0% for individual breakdowns)?
Y N N/A Was at least one standard run daily to verify the working curve?
Y N N/A Did the continuing calibration standards meet the percent difference (%D) / relative percent difference (RPD) criteria of ≤20.0%?

Level IV/D Only

Y N N/A Were the retention times for all calibrated compounds within their respective acceptance windows?

#	Date	Standard ID	Column	Compound	%D (Limit ≤ 20.0)	RT (Limits)	Associated Samples	Qualifications
	6/10/14	CCV-MIXA3ZW	RTX-CLP	J	25	( )	All	J/UJ/A
				M	30	( )		
				O	21	( )		
				P	21	( )		
						( )		
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A. alpha-BHC
B. beta-BHC
C. delta-BHC
D. gamma-BHC
E. Heptachlor
F. Aldrin
G. Heptachlor epoxide
H. Endosulfan I
I. Dieldrin
J. 4,4'-DDE
K. Endrin
L. Endosulfan II
M. 4,4'-DDD
N. Endosulfan sulfate
O. 4,4'-DDT
P. Methoxychlor
Q. Endrin ketone
R. Endrin aldehyde
S. alpha-Chlordane
T. gamma-Chlordane
U. Toxaphene
V. Aroclor-1016
W. Aroclor-1221
X. Aroclor-1232
Y. Aroclor-1242
Z. Aroclor-1248
AA. Aroclor-1254
BB. Aroclor-1260
CC. DB 608
DD. DB 1701
EE. Hexachlobenzene
FF.
GG.
HH.
II.
JJ.

LDC#: 32184C3a

VALIDATION FINDINGS WORKSHEET
Initial Calibration Calculation Verification

Page: 1 of 1
Reviewer: BR
2nd Reviewer: SM

METHOD: GC Pesticides (EPA SW 846 Method 8081B)

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

$RRF = (A_x)(C_{is})/(A_{is})(C_x)$

average RRF = sum of the RRFs/number of standards

%RSD = 100 * (S/X)

Where

A_x = Area of Compound

C_x = Concentration of compound,

S= Standard deviation of the RRFs,

A_{is} = Area of associated internal standard

C_{is} = Concentration of internal standard

X = Mean of the RRFs

#	Standard ID	Calibration Date	Compound	Reported RRF (10 std)	Recalculated RRF (10 std)	Reported Average RRF (Initial)	Recalculated Average RRF (Initial)	Reported %RSD	Recalculated %RSD
1	ICAL	6/8/2014	4,4-DDT (RTX-CLP)	387000	386821	411000	410755	7	7
	H9191A and B		Methoxychlor (RTX-CLP)	202000	201533	188000	188072	4	4
			4,4-DDT (RTX-CLPII)	80800	80848	85400	85360	4	4
			Methoxychlor (RTX-CLPII)	45200	45205	43600	43576	3%	3%

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

LDC#: 32184C3a

VALIDATION FINDINGS WORKSHEET
Continuing Calibration Calculation Verification

Reviewer: BR
2nd Reviewer: SM

METHOD: GC Pesticides (EPA SW 846 Method 8081B)

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

% Difference = 100 * (ave. RRF - RRF)/ave. RRF
RRF = (Ax)(Cis)/(Ais)(Cx)

Where:
ave. RRF = initial calibration average RRF
RRF = continuing calibration RRF
Ax = Area of compound,
Cx = Concentration of compound,
Ais = Area of associated internal standard
Cis = Concentration of internal standard

#	Standard ID	Calibration Date	Compound	Average CF/ Conc	Reported Conc/CF (CC)	Recalculated Conc/CF (CC)	Reported % D	Recalculated %D
1	MIXA3ZW	6/10/2014	4,4-DDT (RTX-CLP)	20.00	24.22	24.22	21	21
			Methoxychlor (RTX-CLP)	100.0	121.32	121.32	21	21
			4,4-DDT (RTX-CLPII)	20.00	20.32	20.32	2	2
			Methoxychlor (RTX-CLPII)	100.0	97.59	103.44	3	3
2								

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

LDC #: 32184C3a

VALIDATION FINDINGS WORKSHEET
Surrogate Results Verification

Reviewer: BR
2nd reviewer: SM

METHOD: GC Pesticides/PCBs (EPA SW 846 Method 8081/8082)

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

% Recovery: SF/SS * 100

Where: SF = Surrogate Found
SS = Surrogate Spiked

Sample ID: 1

Surrogate	Column	Surrogate Spiked	Surrogate Found	Percent Recovery	Percent Recovery	Percent Difference
				Reported	Recalculated	
Tetrachloro-m-xylene						
Tetrachloro-m-xylene	RTX-CLP	10.1	9.387416	93	93	0
Decachlorobiphenyl	↓	10.2	10.5658	104	104	0
Decachlorobiphenyl						

Sample ID:

Surrogate	Column	Surrogate Spiked	Surrogate Found	Percent Recovery	Percent Recovery	Percent Difference
				Reported	Recalculated	
Tetrachloro-m-xylene						
Tetrachloro-m-xylene						
Decachlorobiphenyl						
Decachlorobiphenyl						

Sample ID:

Surrogate	Column	Surrogate Spiked	Surrogate Found	Percent Recovery	Percent Recovery	Percent Difference
				Reported	Recalculated	
Tetrachloro-m-xylene						
Tetrachloro-m-xylene						
Decachlorobiphenyl						
Decachlorobiphenyl						

Sample ID:

Surrogate	Column	Surrogate Spiked	Surrogate Found	Percent Recovery	Percent Recovery	Percent Difference
				Reported	Recalculated	
Tetrachloro-m-xylene						
Tetrachloro-m-xylene						
Decachlorobiphenyl						
Decachlorobiphenyl						

Notes:

LDC #: 32184C3a

VALIDATION FINDINGS WORKSHEET
Matrix Spike/Matrix Spike Duplicates Results Verification

Reviewer: BR
2nd Reviewer: SM

METHOD: GC Pesticides/PCBs (EPA SW 846 Method 8081/8082)

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

% Recovery = 100* (SSC-SC)/SA

Where: SSC = Spiked sample concentration; SA = Spike added; SC = Concentration

RPD = I MS - MSD I * 2/(MS + MSD)

MS = Matrix spike percent recovery; MSD = Matrix spike duplicate percent recovery

MS/MSD samples: 5/6

Compound	Spike Added (ug/kg)		Sample Concentration (ug/kg)	Spiked Sample Concentration (ug/kg)		Matrix Spike Percent Recovery		Matrix Spike Duplicate Percent Recovery		MS/MSD RPD	
	MS	MSD	-	MS	MSD	Reported	Recalc.	Reported	Recalc.	Reported	Recalculated
gamma-BHC	3.39	~~3.50~~ 3.38	0	3.38	3.23	100	100	95	95.6	5	4.5
4,4'-DDT	7.08	7.08	0	6.91	6.54	98	98	92	92	6	6
Aroclor 1260											

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

LDC #: 32184C3a

VALIDATION FINDINGS WORKSHEET

Laboratory Control Sample/Laboratory Control Sample Duplicate Results Verification

Reviewer: BR
2nd Reviewer: SM

METHOD: GC Pesticides/PCBs (EPA SW 846 Method 8081/8082)

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

% Recovery = 100* (SSC-SC)/SA

Where: SSC = Spiked sample concentration
SA = Spike added
SC = Concentration

RPD = I LCS - LCSD I * 2/(LCS + LCSD)

LCS = Laboratory control sample percent recovery

LCSD = Laboratory control sample duplicate percent recovery

LCS/LCSD samples: LCS 04158

Compound	Spike Added (ug/kg)		Spiked Sample Concentration (ug/kg)		LCS Percent Recovery		LCSD Percent Recovery		LCS/LCSD RPD	
	LCS	LCSD	LCS	LCSD	Reported	Recalc.	Reported	Recalc.	Reported	Recalc.
gamma-BHC	3.42	—	3.15	—	92	92	—	—	—	—
4,4'-DDT	7.15	—	6.09	—	85	85	—	—	—	—
Aroclor 1260										

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

LDC #: 32184C3a

VALIDATION FINDINGS WORKSHEET
Sample Calculation Verification

Page: 1 of 1
Reviewer: BR
2nd reviewer: SM

METHOD: GC Pesticides/PCBs (EPA SW 846 Method 8081/8082)

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

Example: Column: RTX - CLP II
D = 1.2 ug/L

Sample I.D. 4 D:

Conc. = $\frac{(298064)(10)}{(85360.08)(30.4)(0.969)}$

= 1.185379334

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

Note:

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name:	Santa Susana Field Laboratory
Collection Date:	June 2, 2014
LDC Report Date:	August 5, 2014
Matrix:	Soil
Parameters:	Polychlorinated Biphenyls
Validation Level:	Level IV
Laboratory:	Eurofins
Sample Delivery Group (SDG):	PH212

Sample Identification

SL-653-SA5C-TR-0.5
SL-653-SA5C-TR-5.0
SL-653-SA5C-TR-10.0
SL-653-SA5C-TR-15.0

Introduction

This data review covers 4 soil samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA SW 846 Method 8082A for Polychlorinated Biphenyls.

This review follows the Quality Assurance Project Plan for Santa Susana Field Laboratory (SSFL), RCRA Facility Investigation, Surficial Media Operable Unit (March 2009, Revision 4) and a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Superfund Organic Methods Data Review (June 2008).

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.

The following are definitions of the data qualifiers:

U Indicates the compound or analyte was analyzed for but not detected.

J Indicates an estimated value.

R Quality control indicates the data is not usable.

NJ Presumptive evidence of presence of the compound at an estimated quantity.

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. GC/ECD Instrument Performance Check

Instrument performance was not required by the method.

III. Initial Calibration

Initial calibration was performed as required by the method.

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

Retention time windows were evaluated and considered technically acceptable.

IV. Continuing Calibration

Continuing calibration was performed at required frequencies.

The percent differences (%D) were less than or equal to 20.0% for all compounds.

The percent difference (%D) of the second source calibration standard were less than or equal to 20.0% for all compounds.

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

V. Blanks

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

Sample EB3-060414 (from SDG PH217) was identified as an equipment blank. No polychlorinated biphenyl contaminants were found.

Sample FB-052114 (from SDG PH191) was identified as a field blank. No polychlorinated biphenyl contaminants were found.

VI. Surrogate Spikes

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

VII. Matrix Spike/Matrix Spike Duplicates

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.

VIII. Laboratory Control Samples (LCS)

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

IX. Regional Quality Assurance and Quality Control

Not applicable.

X. Florisil Cartridge Check

Florisil cleanup was not required and therefore not performed in this SDG.

XI. GPC Calibration

GPC cleanup was not required and therefore not performed in this SDG.

XII. Target Compound Identification

All target compound identifications were within validation criteria.

XIII. Compound Quantitation

All compound quantitations were within validation criteria.

All compounds reported below the RL were qualified as follows:

Sample	Finding	Flag	A or P
All samples in SDG PH212	All compounds reported below the RL.	J (all detects)	A

XIV. Overall Assessment of Data

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

XV. Field Duplicates

No field duplicates were identified in this SDG.

Santa Susana Field Laboratory
Polychlorinated Biphenyls - Data Qualification Summary - SDG PH212

SDG	Sample	Compound	Flag	A or P	Reason (Code)
PH212	SL-653-SA5C-TR-0.5 SL-653-SA5C-TR-5.0 SL-653-SA5C-TR-10.0 SL-653-SA5C-TR-15.0	All compounds reported below the RL.	J (all detects)	A	Compound quantitation (Z)

Santa Susana Field Laboratory
Polychlorinated Biphenyls - Laboratory Blank Data Qualification Summary - SDG PH212

No Sample Data Qualified in this SDG

Santa Susana Field Laboratory
Polychlorinated Biphenyls - Field Blank Data Qualification Summary - SDG PH212

No Sample Data Qualified in this SDG

LDC #: 32184C3b

SDG #: PH212

Laboratory: Eurofins

VALIDATION COMPLETENESS WORKSHEET

Level IV

Date: 7/30/14

Page: 1 of 1

Reviewer: BA

2nd Reviewer: SM

METHOD: GC Polychlorinated Biphenyls (EPA SW 846 Method 8082A)

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

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 6/4 thr 2/14
II.	GC Instrument Performance Check	N	
III.	Initial calibration	D	RSD ≤20%
IV.	Continuing calibration/ICV	D	1 cal ccv ≤20%
V.	Blanks	A	
VI.	Surrogate spikes	A	
VII.	Matrix spike/Matrix spike duplicates	N	Client spec.
VIII.	Laboratory control samples	A	LCSD
IX.	Regional quality assurance and quality control	N	
X.	Florisil cartridge check	N	
XI.	GPC Calibration	N	
XII.	Target compound identification	A	
XIII.	Compound quantitation/RL/LOQ/LODs	A	
XIV.	Overall assessment of data	A	
XV.	Field duplicates	N	
XVI.	Field blanks	ND	EB = EB3-060414 (SDG # PH217) PB = FB-052114 (SDG # PH191)

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

1	SL-653-SA5C-TR-0.5	11		21		31	PBLK27154
2	SL-653-SA5C-TR-5.0	12		22		32	
3	SL-653-SA5C-TR-10.0	13		23		33	
4	SL-653-SA5C-TR-15.0	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 #: 32184C36

VALIDATION FINDINGS CHECKLIST

Reviewer: KR
2nd Reviewer: SM

Method: Pesticides/PCBs (EPA SW 846 Method 8081/8082)

Validation Area	Yes	No	NA	Findings/Comments
I. Technical holding times				
All technical holding times were met.	✓			
Cooler temperature criteria was met.	✓			
II. GC/ECD Instrument performance check				
Was the instrument performance found to be acceptable?			✓	
III. Initial calibration				
Did the laboratory perform a 5 point calibration prior to sample analysis?	✓			
Was a linear fit used for evaluation? If yes, were all percent relative standard deviations (%RSD) ≤ 20%?	✓			
Was a curve fit used for evaluation? If Yes, what was the acceptance criteria used?		✓		
Did the initial calibration meet the curve fit acceptance criteria?			✓	
Were the RT windows properly established?	✓			
Were the required standard concentrations analyzed in the initial calibration?	✓			
IV. Continuing calibration				
What type of continuing calibration calculation was performed? X %D or ___%R	✓			
Were Evaluation mix standards analyzed prior to the initial calibration and sample analysis?	✓		✓	
Were endrin and 4,4'-DDT breakdowns ≤ 15%.0 for individual breakdown in the Evaluation mix standards?			✓	
Was a continuing calibration analyzed daily?	✓			
Were all percent differences (%D) ≤ 20%.0 or percent recovieries 80-120%?	✓			
Were all the retention times within the acceptance windows?	✓			
V. Blanks				
Was a method blank associated with every sample in this SDG?	✓			
Was a method blank analyzed for each matrix and concentration?				
Were extract cleanup blanks analyzed with every batch requiring clean-up?			✓	
Was there contamination in the method blanks or clean-up blanks? If yes, please see the Blanks validation completeness worksheet.		✓		
VI. Surrogate spikes				
Were all surrogate %R within the QC limits?	✓			
If the percent recovery (%R) of one or more surrogates was outside QC limits, was a reanalysis performed to confirm %R?			✓	

Validation Area	Yes	No	NA	Findings/Comments
If any %R was less than 10 percent, was a reanalysis performed to confirm %R?			✓	
VII. Matrix spike/Matrix spike duplicates				
Were a matrix spike (MS) and matrix spike duplicate (MSD) analyzed for each matrix in this SDG? If no, indicate which matrix does not have an associated MS/MSD. Soil / Water.		✓		
Was a MS/MSD analyzed every 20 samples of each matrix?			✓	
Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?			✓	
VIII. Laboratory control samples				
Was an LCS analyzed for this SDG?	✓			
Was an LCS analyzed per extraction batch?	✓			
Were the LCS percent recoveries (%R) and relative percent difference (RPD) within the QC limits?	✓			
IX. Regional Quality Assurance and Quality Control				
Were performance evaluation (PE) samples performed?		✓		
Were the performance evaluation (PE) samples within the acceptance limits?			✓	
X. Target compound identification				
Were the retention times of reported detects within the RT windows?	✓			
XI. Compound quantitation/CRQLs				
Were compound quantitation and CRQLs adjusted to reflect all sample dilutions, dry weight factors, and clean-up activities applicable to level IV validation?	✓			
XII. System performance				
System performance was found to be acceptable.	✓			
XIII. Overall assessment of data				
Overall assessment of data was found to be acceptable.	✓			
XIV. Field duplicates				
Field duplicate pairs were identified in this SDG.		✓		
Target compounds were detected in the field duplicates.			✓	
XV. Field blanks				
Field blanks were identified in this SDG.	✓			
Target compounds were detected in the field blanks.		✓		

VALIDATION FINDINGS WORKSHEET

METHOD: Pesticide/PCBs (EPASW 846 Method 8081/8082)

A. alpha-BHC	I. Dieldrin	Q. Endrin ketone	Y. Aroclor-1242	GG. Chlordane
B. beta-BHC	J. 4,4'-DDE	R. Endrin aldehyde	Z. Aroclor-1248	HH. Chlordane (Technical)
C. delta-BHC	K. Endrin	S. alpha-Chlordane	AA. Aroclor-1254	II. Aroclor 1262
D. gamma-BHC	L. Endosulfan II	T. gamma-Chlordane	BB. Aroclor-1260	JJ. Aroclor 1268
E. Heptachlor	M. 4,4'-DDD	U. Toxaphene	CC. 2,4'-DDD	KK. Oxychlordane
F. Aldrin	N. Endosulfan sulfate	V. Aroclor-1016	DD. 2,4'-DDE	LL. trans-Nonachlor
G. Heptachlor epoxide	O. 4,4'-DDT	W. Aroclor-1221	EE. 2,4'-DDT	MM. cis-Nonachlor
H. Endosulfan I	P. Methoxychlor	X. Aroclor-1232	FF. Hexachlorobenzene	NN.

Notes:_____

LDC#: 32184C3b

VALIDATION FINDINGS WORKSHEET
Initial Calibration Calculation Verification

Reviewer: BR
2nd Reviewer: SM

METHOD: GC PCBs (EPA SW 846 Method 8082A)

The calibration factors (CF), average CF, and relative standard deviation (%RSD) were recalculated for compounds identified below using the following calculations:

CF = A/C
average CF = sum of the CF/number of standards
%RSD = 100 * (S/X)

Where:
A = Area of compound
C = Concentration of compound
S = Standard deviation of calibration factors
X = Mean of calibration factors

#	Standard ID	Calibration Date	Compound	Reported CF (500 std)	Recalculated CF (500 std)	Reported Average CF (Initial)	Recalculated Average CF (Initial)	Reported %RSD	Recalculated %RSD
1	ICAL 19843A	6/8/2014	PCB1260-1 (ZB-MultiR1)	1903	1903	2001	2001	10	10
			PCB1260-1 (ZB-MultiR2I)	2225	2225	2349	2349	11	11

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

LDC#: 32184C3b

VALIDATION FINDINGS WORKSHEET
Continuing Calibration Calculation Verification

Reviewer: BR
2nd Reviewer: SM

METHOD: GC PCBs (EPA SW 846 Method 8082)

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

Percent difference (%D) = 100 * (N - C)/N

Where: N = Initial Calibration Factor or Nominal Amount
C = Calibration Factor from Continuing Calibration Standard or Calculated Amount

#	Standard ID	Calibration Date	Compound	Conc	Reported Conc (CCV)	Recalculated Conc (CCV)	Reported % D	Recalculated %D
1	AR163AN	6/9/2014 16:17	PCB1260 (ZB-MultiR1)	200	191.73	191.71	4	4
			PCB1260 (ZB-MultiR2)	200	194.83	194.84	3	3

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

LDC#: 32184C3b

VALIDATION FINDINGS WORKSHEET
Continuing Calibration Calculation Verification

Reviewer: BR
2nd Reviewer: SM

METHOD: GC PCBs (EPA SW 846 Method 8082)

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

Percent difference (%D) = 100 * (N - C)/N

Where: N = Initial Calibration Factor or Nominal Amount
C = Calibration Factor from Continuing Calibration Standard or Calculated Amount

#	Standard ID	Calibration Date	Compound	Conc	Reported Conc (CCV)	Recalculated Conc (CCV)	Reported % D	Recalculated %D
2	AR163AO	6/9/2014 23:39	PCB1260 (ZB-MultiR1)	200	215.81	215.79	8	8
			PCB1260 (ZB-MultiR2)	200	229.17	229.18	15	15

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

LDC #: 32184C3b

VALIDATION FINDINGS WORKSHEET
Surrogate Results Verification

Reviewer: BR
2nd reviewer: [illegible]

METHOD: GC Pesticides/PCBs (EPA SW 846 Method 8081/8082)

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

% Recovery: SF/SS * 100

Where: SF = Surrogate Found
SS = Surrogate Spiked

Sample ID: 1

Surrogate	Column	Surrogate Spiked	Surrogate Found	Percent Recovery	Percent Recovery	Percent Difference
				Reported	Recalculated	
Tetrachloro-m-xylene						
Tetrachloro-m-xylene	ZB multiR2	9.934	10.70785	108	108	J
Decachlorobiphenyl	↓	↓	10.23985	103	103	J
Decachlorobiphenyl						

Sample ID: _____

Surrogate	Column	Surrogate Spiked	Surrogate Found	Percent Recovery	Percent Recovery	Percent Difference
				Reported	Recalculated	
Tetrachloro-m-xylene						
Tetrachloro-m-xylene						
Decachlorobiphenyl						
Decachlorobiphenyl						

Sample ID: _____

Surrogate	Column	Surrogate Spiked	Surrogate Found	Percent Recovery	Percent Recovery	Percent Difference
				Reported	Recalculated	
Tetrachloro-m-xylene						
Tetrachloro-m-xylene						
Decachlorobiphenyl						
Decachlorobiphenyl						

Sample ID: _____

Surrogate	Column	Surrogate Spiked	Surrogate Found	Percent Recovery	Percent Recovery	Percent Difference
				Reported	Recalculated	
Tetrachloro-m-xylene						
Tetrachloro-m-xylene						
Decachlorobiphenyl						
Decachlorobiphenyl						

Notes: _____

LDC #: 32184C36

VALIDATION FINDINGS WORKSHEET

Laboratory Control Sample/Laboratory Control Sample Duplicate Results Verification

Reviewer: BR
2nd Reviewer: SM

METHOD: GC Pesticides/PCBs (EPA SW 846 Method 8081/8082)

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

% Recovery = 100* (SSC-SC)/SA

Where: SSC = Spiked sample concentration
SA = Spike added
SC = Concentration

RPD = I LCS - LCSD I * 2/(LCS + LCSD)

LCS = Laboratory control sample percent recovery

LCSD = Laboratory control sample duplicate percent recovery

LCS/LCSD samples: LCS27154

Compound	Spike Added (ug/kg)		Spiked Sample Concentration (ug/kg)		LCS Percent Recovery		LCSD Percent Recovery		LCS/LCSD RPD	
	LCS	LCSD	LCS	LCSD	Reported	Recalc.	Reported	Recalc.	Reported	Recalc.
gamma-BHC										
4,4'-DDT										
Aroclor 1260	167	-	208.24	-	125	125	-	-	-	-

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

LDC #: 32184C3L

VALIDATION FINDINGS WORKSHEET
Sample Calculation Verification

Reviewer: BR
2nd reviewer: SM

METHOD: GC Pesticides/PCBs (EPA SW 846 Method 8081/8082)

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

LCS 27154

PCB 1260-1 : $\frac{(1450545)(10)}{(2349)(30)}$

= 205.819818

1260-2 = 212.972868

1260-3 = 206.822022

1260-4 = 213.480602

1260-5 = 211.842188

1260-6 = 198.448885

208.2425606 ug/kg

Example: ZB-Multi R2 PCB-1260 = 208.24 ug/kg

Sample I.D. All ND:

Conc. = _____

= _____

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

Note: _____

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: Santa Susana Field Laboratory

Collection Date: June 2, 2014

LDC Report Date: August 3, 2014

Matrix: Soil

Parameters: Metals

Validation Level: Level IV

Laboratory: Eurofins

Sample Delivery Group (SDG): PH212

Sample Identification

SL-653-SA5C-TR-0.5
SL-653-SA5C-TR-5.0
SL-653-SA5C-TR-10.0
SL-653-SA5C-TR-15.0

Introduction

This data review covers 4 soil samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA SW 846 Methods 6010C, 6020A, and 7471A for Metals. The metals analyzed were Aluminum, Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Calcium, Chromium, Cobalt, Copper, Iron, Lead, Lithium, Magnesium, Manganese, Mercury, Molybdenum, Nickel, Phosphorus, Potassium, Selenium, Silver, Sodium, Strontium, Thallium, Tin, Titanium, Vanadium, Zinc, and Zirconium.

This review follows the Quality Assurance Project Plan for Santa Susana Field Laboratory (SSFL), RCRA Facility Investigation, Surficial Media Operable Unit (March 2009, Revision 4) and a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Superfund Data Review (January 2010).

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.

The following are definitions of the data qualifiers:

U Indicates the compound or analyte was analyzed for but not detected.

J Indicates an estimated value.

R Quality control indicates the data is not usable.

NJ Presumptive evidence of presence of the compound at an estimated quantity.

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. ICPMS Tune

The mass calibration was within 0.1 AMU and the percent relative standard deviation (%RSD) was less than or equal to 5%.

III. Calibration

The initial and continuing calibrations were performed at the required frequency.

The calibration standards criteria were met.

IV. Blanks

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

Method Blank ID	Analyte	Maximum Concentration	Associated Samples
PB (prep blank)	Tin Zinc	1.54 mg/Kg 0.790 mg/Kg	All samples in SDG PH212
ICB/CCB	Cadmium Zirconium	0.40 ug/L 2.5 ug/L	All samples in SDG PH212
ICB/CCB	Arsenic	4.9 ug/L	SL-653-SA5C-TR-10.0 SL-653-SA5C-TR-15.0

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

Sample	Analyte	Reported Concentration	Modified Final Concentration
SL-653-SA5C-TR-0.5	Cadmium Tin	0.191 mg/Kg 2.67 mg/Kg	0.191U mg/Kg 2.67U mg/Kg

Sample	Analyte	Reported Concentration	Modified Final Concentration
SL-653-SA5C-TR-5.0	Cadmium Tin	0.170 mg/Kg 2.78 mg/Kg	0.170U mg/Kg 2.78U mg/Kg
SL-653-SA5C-TR-10.0	Cadmium Tin	0.183 mg/Kg 2.77 mg/Kg	0.183U mg/Kg 2.77U mg/Kg
SL-653-SA5C-TR-15.0	Tin	2.90 mg/Kg	2.90U mg/Kg

Sample EB3-060414 (from SDG PH217) was identified as an equipment blank. No metal contaminants were found with the following exceptions:

Blank ID	Sampling Date	Analyte	Concentration	Associated Samples
EB3-060414	6/4/14	Zirconium Barium Calcium Manganese Strontium	11.3 ug/L 0.70 ug/L 151 ug/L 1.6 ug/L 0.69 ug/L	All samples in SDG PH212

Sample FB-052114 (from SDG PH191) was identified as an equipment blank. No metal contaminants were found with the following exceptions:

Blank ID	Sampling Date	Analyte	Concentration	Associated Samples
FB-052114	5/2/14	Zirconium	11.0 ug/L	All samples in SDG PH212

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

Sample	Analyte	Reported Concentration	Modified Final Concentration
SL-653-SA5C-TR-0.5	Zirconium	2.61 mg/Kg	2.61U mg/Kg
SL-653-SA5C-TR-5.0	Zirconium	2.41 mg/Kg	2.41U mg/Kg
SL-653-SA5C-TR-10.0	Zirconium	3.28 mg/Kg	3.28U mg/Kg
SL-653-SA5C-TR-15.0	Zirconium	3.91 mg/Kg	3.91U mg/Kg

V. ICP Interference Check Sample (ICS) Analysis

The frequency of analysis was met.

The criteria for analysis were met.

VI. Matrix Spike Analysis

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. Duplicate Sample Analysis

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

VIII. Laboratory Control Samples (LCS)

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

IX. Internal Standards

All internal standard percent recoveries (%R) were within QC limits.

X. ICP Serial Dilution

ICP serial dilution was not performed for this SDG.

XI. Sample Result Verification

All sample result verifications were acceptable.

All metals reported below the RL and above the MDL were qualified as follows:

Sample	Analyte	Flag	A or P
All samples in SDG PH212	All analytes reported below the RL and above the MDL.	J (all detects)	A

XII. Overall Assessment of Data

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

XIII. Field Duplicates

No field duplicates were identified in this SDG.

Santa Susana Field Laboratory
Metals - Data Qualification Summary - SDG PH212

SDG	Sample	Analyte	Flag	A or P	Reason (Code)
PH212	SL-653-SA5C-TR-0.5 SL-653-SA5C-TR-5.0 SL-653-SA5C-TR-10.0 SL-653-SA5C-TR-15.0	All analytes reported below the RL and above the MDL.	J (all detects)	A	Sample result verification (Z)

Santa Susana Field Laboratory
Metals - Laboratory Blank Data Qualification Summary - SDG PH212

SDG	Sample	Analyte	Modified Final Concentration	A or P	Code
PH212	SL-653-SA5C-TR-0.5	Cadmium Tin	0.191U mg/Kg 2.67U mg/Kg	A	B
PH212	SL-653-SA5C-TR-5.0	Cadmium Tin	0.170U mg/Kg 2.78U mg/Kg	A	B
PH212	SL-653-SA5C-TR-10.0	Cadmium Tin	0.183U mg/Kg 2.77U mg/Kg	A	B
PH212	SL-653-SA5C-TR-15.0	Tin	2.90U mg/Kg	A	B

Santa Susana Field Laboratory
Metals - Field Blank Data Qualification Summary - SDG PH212

SDG	Sample	Analyte	Modified Final Concentration	A or P	Code
PH212	SL-653-SA5C-TR-0.5	Zirconium	2.61U mg/Kg	A	F
PH212	SL-653-SA5C-TR-5.0	Zirconium	2.41U mg/Kg	A	F
PH212	SL-653-SA5C-TR-10.0	Zirconium	3.28U mg/Kg	A	F
PH212	SL-653-SA5C-TR-15.0	Zirconium	3.91U mg/Kg	A	F

LDC #: 32184C4 **VALIDATION COMPLETENESS WORKSHEET** Date: 8/1/14

SDG #: PH212 Level IV Page: 1 of 1

Laboratory: Eurofins Lancaster Laboratories Reviewer: KK

2nd Reviewer: CL

METHOD: Metals (EPA SW 846 Method 6010C/6020A/~~7000~~ 7471A)

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

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 6/2/14
II.	ICP/MS Tune	A	
III.	Calibration	A	
IV.	Blanks	SW	
V.	ICP Interference Check Sample (ICS) Analysis	A	
VI.	Matrix Spike Analysis	N	
VII.	Duplicate Sample Analysis	N	
VIII.	Laboratory Control Samples (LCS)	A	LCS
IX.	Furnace Atomic Absorption QC	N	
X.	ICP Serial Dilution	N	
XI.	Sample Result Verification	A	
XII.	Overall Assessment of Data	A	
XIII.	Field Duplicates	N	
XIV.	Field Blanks	SW	EB3-060414 SDG#PH217 FB-052114 SDG#PH191

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

1	SL-653-SA5C-TR-0.5	11		21		31	
2	SL-653-SA5C-TR-5.0	12		22		32	
3	SL-653-SA5C-TR-10.0	13		23		33	
4	SL-653-SA5C-TR-15.0	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: _____

Method: Metals (EPA SW 846 Method 6010/~~7000~~/6020, C 7471A A)

Validation Area	Yes	No	NA	Findings/Comments
I. Technical holding times				
All technical holding times were met.	✓			
Cooler temperature criteria was met.	✓			
II. ICP/MS Tune				
Were all isotopes in the tuning solution mass resolution within 0.1 amu?	✓			
Were %RSD of isotopes in the tuning solution ≤5%?	✓			
III. Calibration				
Were all instruments calibrated daily, each set-up time?	✓			
Were the proper number of standards used?	✓			
Were all initial and continuing calibration verification %Rs within the 90-110% (80-120% for mercury) QC limits?	✓			
Were all initial calibration correlation coefficients ≥ 0.995?	✓			
IV. Blanks				
Was a method blank associated with every sample in this SDG?	✓			
Was there contamination in the method blanks? If yes, please see the Blanks validation completeness worksheet.		✓		
V. ICP Interference Check Sample				
Were ICP interference check samples performed daily?	✓			
Were the AB solution percent recoveries (%R) with the 80-120% QC limits?	✓			
VI. Matrix spike/Matrix spike duplicates				
Were a matrix spike (MS) and duplicate (DUP) analyzed for each matrix in this SDG? If no, indicate which matrix does not have an associated MS/MSD or MS/DUP. Soil / Water.		✓		
Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the 75-125 QC limits? If the sample concentration exceeded the spike concentration by a factor of 4 or more, no action was taken.			✓	
Were the MS/MSD or duplicate relative percent differences (RPD) ≤ 20% for waters and ≤ 35% for soil samples? A control limit of +/- RL(+/-2X RL for soil) was used for samples that were ≤ 5X the RL, including when only one of the duplicate sample values were ≤ 5X the RL.			✓	
VII. Laboratory control samples				
Was an LCS anaylzed for this SDG?	✓			
Was an LCS analyzed per extraction batch?	✓			
Were the LCS percent recoveries (%R) and relative percent difference (RPD) within the 80-120% QC limits for water samples and laboratory established QC limits for soils?	✓			

Validation Area	Yes	No	NA	Findings/Comments
VIII. Internal Standards (EPA SW 846 Method 6020/EPA 200.8)				
Were all the percent recoveries (%R) within the 30-120% (6020)/60-125% (200.8) of the intensity of the internal standard in the associated initial calibration?	✓			
If the %Rs were outside the criteria, was a reanalysis performed?	✓			
IX. ICP Serial Dilution				
Was an ICP serial dilution analyzed if analyte concentrations were > 50X the MDL (ICP)/>100X the MDL(ICP/MS)?		✓		
Were all percent differences (%Ds) < 10%?			✓	
Was there evidence of negative interference? If yes, professional judgement will be used to qualify the data.			✓	
X. Sample Result Verification				
Were RLs adjusted to reflect all sample dilutions and dry weight factors applicable to level IV validation?	✓			
XI. Overall assessment of data				
Overall assessment of data was found to be acceptable.	✓			
XII. Field duplicates				
Field duplicate pairs were identified in this SDG.		✓		
Target analytes were detected in the field duplicates.			✓	
XIII. Field blanks				
Field blanks were identified in this SDG.	✓			
Target analytes were detected in the field blanks.	✓			

LDC #: 32184C4

VALIDATION FINDINGS WORKSHEET
Sample Specific Element Reference

Reviewer: WL
2nd reviewer: [illegible]

All circled elements are applicable to each sample.

Sample ID	Matrix	Target Analyte List (TAL)
1-54	S	Al, Sb, As, Ba, Be, B, Cd, Ca, Cr, Co, Cu, Fe, Pb, Li, Mg, Mo, Mn, Hg, Ni, P, K, Se, Ag, Na, Sr, Tl, Sn, Ti, V, Zn, Zr
		Al, Sb, As, Ba, Be, B, Cd, Ca, Cr, Co, Cu, Fe, Pb, Li, Mg, Mo, Mn, Hg, Ni, P, K, Se, Ag, Na, Sr, Tl, Sn, Ti, V, Zn, Zr
		Al, Sb, As, Ba, Be, B, Cd, Ca, Cr, Co, Cu, Fe, Pb, Li, Mg, Mo, Mn, Hg, Ni, P, K, Se, Ag, Na, Sr, Tl, Sn, Ti, V, Zn, Zr
		Al, Sb, As, Ba, Be, B, Cd, Ca, Cr, Co, Cu, Fe, Pb, Li, Mg, Mo, Mn, Hg, Ni, P, K, Se, Ag, Na, Sr, Tl, Sn, Ti, V, Zn, Zr
		Al, Sb, As, Ba, Be, B, Cd, Ca, Cr, Co, Cu, Fe, Pb, Li, Mg, Mo, Mn, Hg, Ni, P, K, Se, Ag, Na, Sr, Tl, Sn, Ti, V, Zn, Zr
		Al, Sb, As, Ba, Be, B, Cd, Ca, Cr, Co, Cu, Fe, Pb, Li, Mg, Mo, Mn, Hg, Ni, P, K, Se, Ag, Na, Sr, Tl, Sn, Ti, V, Zn, Zr
		Al, Sb, As, Ba, Be, B, Cd, Ca, Cr, Co, Cu, Fe, Pb, Li, Mg, Mo, Mn, Hg, Ni, P, K, Se, Ag, Na, Sr, Tl, Sn, Ti, V, Zn, Zr
		Al, Sb, As, Ba, Be, B, Cd, Ca, Cr, Co, Cu, Fe, Pb, Li, Mg, Mo, Mn, Hg, Ni, P, K, Se, Ag, Na, Sr, Tl, Sn, Ti, V, Zn, Zr
		Al, Sb, As, Ba, Be, B, Cd, Ca, Cr, Co, Cu, Fe, Pb, Li, Mg, Mo, Mn, Hg, Ni, P, K, Se, Ag, Na, Sr, Tl, Sn, Ti, V, Zn, Zr
		Al, Sb, As, Ba, Be, B, Cd, Ca, Cr, Co, Cu, Fe, Pb, Li, Mg, Mo, Mn, Hg, Ni, P, K, Se, Ag, Na, Sr, Tl, Sn, Ti, V, Zn, Zr
		Al, Sb, As, Ba, Be, B, Cd, Ca, Cr, Co, Cu, Fe, Pb, Li, Mg, Mo, Mn, Hg, Ni, P, K, Se, Ag, Na, Sr, Tl, Sn, Ti, V, Zn, Zr
		Al, Sb, As, Ba, Be, B, Cd, Ca, Cr, Co, Cu, Fe, Pb, Li, Mg, Mo, Mn, Hg, Ni, P, K, Se, Ag, Na, Sr, Tl, Sn, Ti, V, Zn, Zr
		Al, Sb, As, Ba, Be, B, Cd, Ca, Cr, Co, Cu, Fe, Pb, Li, Mg, Mo, Mn, Hg, Ni, P, K, Se, Ag, Na, Sr, Tl, Sn, Ti, V, Zn, Zr
		Al, Sb, As, Ba, Be, B, Cd, Ca, Cr, Co, Cu, Fe, Pb, Li, Mg, Mo, Mn, Hg, Ni, P, K, Se, Ag, Na, Sr, Tl, Sn, Ti, V, Zn, Zr
		Al, Sb, As, Ba, Be, B, Cd, Ca, Cr, Co, Cu, Fe, Pb, Li, Mg, Mo, Mn, Hg, Ni, P, K, Se, Ag, Na, Sr, Tl, Sn, Ti, V, Zn, Zr
		Al, Sb, As, Ba, Be, B, Cd, Ca, Cr, Co, Cu, Fe, Pb, Li, Mg, Mo, Mn, Hg, Ni, P, K, Se, Ag, Na, Sr, Tl, Sn, Ti, V, Zn, Zr
		Al, Sb, As, Ba, Be, B, Cd, Ca, Cr, Co, Cu, Fe, Pb, Li, Mg, Mo, Mn, Hg, Ni, P, K, Se, Ag, Na, Sr, Tl, Sn, Ti, V, Zn, Zr
		Al, Sb, As, Ba, Be, B, Cd, Ca, Cr, Co, Cu, Fe, Pb, Li, Mg, Mo, Mn, Hg, Ni, P, K, Se, Ag, Na, Sr, Tl, Sn, Ti, V, Zn, Zr
		Al, Sb, As, Ba, Be, B, Cd, Ca, Cr, Co, Cu, Fe, Pb, Li, Mg, Mo, Mn, Hg, Ni, P, K, Se, Ag, Na, Sr, Tl, Sn, Ti, V, Zn, Zr
		Al, Sb, As, Ba, Be, B, Cd, Ca, Cr, Co, Cu, Fe, Pb, Li, Mg, Mo, Mn, Hg, Ni, P, K, Se, Ag, Na, Sr, Tl, Sn, Ti, V, Zn, Zr
		Al, Sb, As, Ba, Be, B, Cd, Ca, Cr, Co, Cu, Fe, Pb, Li, Mg, Mo, Mn, Hg, Ni, P, K, Se, Ag, Na, Sr, Tl, Sn, Ti, V, Zn, Zr
Analysis Method		
ICP		Al, Sb, As, Ba, Be, B, Cd, Ca, Cr, Co, Cu, Fe, Pb, Li, Mg, Mo, Mn, Hg, Ni, P, K, Se, Ag, Na, Sr, Tl, Sn, Ti, V, Zn, Zr
ICP-MS		Al, Sb, As, Ba, Be, B, Cd, Ca, Cr, Co, Cu, Fe, Pb, Li, Mg, Mo, Mn, Hg, Ni, P, K, Se, Ag, Na, Sr, Tl, Sn, Ti, V, Zn, Zr

Comments: ~~Mercury by CVAA if performed~~

LDC #: 32184C4

(B)

VALIDATION FINDINGS WORKSHEET
PB/ICB/CCB QUALIFIED SAMPLES

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

METHOD: Trace metals (EPA SW 864 Method 6010C/6020A/7471A) Soil preparation factor applied: 100
Sample Concentration units, unless otherwise noted: mg/kg Associated Samples: All

					Sample Identification										
Analyte	Maximum PB[a] (mg/Kg)	Maximum PB[a] (mg/L)	Maximum ICB/CCB[a] (ug/L)	Action Level	1	2	3	4							
Cd			0.40	0.20	0.191	0.170	0.183								
Zr			2.5	1.25											
Sn	1.537			7.685	2.67	2.78	2.77	2.90							
Zn	0.790			3.95											

METHOD: Trace metals (EPA SW 864 Method 6010C/6020A/7471A) Soil preparation factor applied: 100
Sample Concentration units, unless otherwise noted: mg/kg Associated Samples: 3-4

					Sample Identification										
Analyte	Maximum PB[a] (mg/Kg)	Maximum PB[a] (mg/L)	Maximum ICB/CCB[a] (ug/L)	Action Level	no quals										
As			4.9	2.45											

Samples with analyte concentrations within five times the associated ICB, CCB or PB concentration are listed above with the identifications from the Validation Completeness Worksheet. These sample results were qualified as not detected, "U".
Note : a - The listed analyte concentration is the highest ICB, CCB, or PB detected in the analysis of each element.

LDC #: 32184C4

VALIDATION FINDINGS WORKSHEET
Field Blanks

(F)

Reviewer: KK
2nd Reviewer: ar

METHOD: Trace Metals (EPA SW846 6010C/6020A/7471A)

Blank units: ug/L **Associated sample units:** mg/kg
Sampling date: 6/4/14 and 5/21/14 Soil factor applied 100
Field blank type: (circle one) Field Blank / Rinsate / Other: EB Associated Samples: All

Analyte	Blank ID	Blank ID	Sample Identification								
	EB3-060414 SDG#PH217	FB-052114 SDG# PH191	Action Limit (mg/kg)	1	2	3	4				
Zr	11.3	11.0	5.65	2.61	2.41	3.28	3.91				
Ba	0.70		0.35								
Ca	151		75.5								
Mn	1.6		0.8								
Sr	0.69		0.345								

CIRCLED RESULTS WERE NOT QUALIFIED. ALL RESULTS NOT CIRCLED WERE QUALIFIED BY THE FOLLOWING STATEMENT:
Samples with analyte concentrations within five times the associated field blank concentration are listed above, these sample results were qualified as not detected, "U".

LDC #: 32184C4

VALIDATION FINDINGS WORKSHEET
Initial and Continuing Calibration Calculation Verification

Reviewer: KK
2nd Reviewer: AL

METHOD: Trace Metals (EPA SW 846 Method 6010/6020/~~7000~~ C A 7471A)

An initial and continuing calibration verification percent recovery (%R) was recalculated for each type of analysis using the following formula:

%R = Found x 100 / True

Where, Found = concentration (in ug/L) of each analyte measured in the analysis of the ICV or CCV solution
True = concentration (in ug/L) of each analyte in the ICV or CCV source

Standard ID	Type of Analysis	Element	Found (ug/L)	True (ug/L)	Recalculated %R	Reported %R	Acceptable (Y/N)
ICV (4:01)	ICP (Initial calibration)	Al	29,854.98	30,000	99.5	99.5	Y
ICV (7:10)	ICP/MS (Initial calibration)	Se	52.579	50.0	105.2	105.2	
ICV (8:28)	CVAA (Initial calibration)	Hg	2.6445	2.5	105.8	105.6	
CCV (5:12)	ICP (Continuing calibration)	Sb	515.94	~~500.0~~ 500.0	103.2	103.1	
CCV (7:26)	ICP/MS (Continuing calibration)	Ag	25.353	25.0	101.4	101.4	
CCV (8:35)	CVAA (Continuing calibration)	Hg	1.0345	1.0	103.5	103.0	
	GFAA (Initial calibration)						
	GFAA (Continuing calibation)						

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

LDC #: 32184C4

VALIDATION FINDINGS WORKSHEET
Level IV Recalculation Worksheet

Reviewer: KK
2nd Reviewer: CR

METHOD: Trace Metals (EPA SW 846 Method 6010/6020/7000)

Percent recoveries (%R) for an ICP interference check sample, a laboratory control sample and a matrix spike sample were recalculated using the following formula:

$\%R = \frac{Found}{True} \times 100$ Where, Found = Concentration of each analyte measured in the analysis of the sample. For the matrix spike calculation, Found = SSR (spiked sample result) - SR (sample result).
True = Concentration of each analyte in the source.

A sample and duplicate relative percent difference (RPD) was recalculated using the following formula:

$RPD = \frac{|S-D|}{(S+D)/2} \times 100$ Where, S = Original sample concentration
D = Duplicate sample concentration

An ICP serial dilution percent difference (%D) was recalculated using the following formula:

$\%D = \frac{|I-SDR|}{I} \times 100$ Where, I = Initial Sample Result (mg/L)
SDR = Serial Dilution Result (mg/L) (Instrument Reading x 5)

Sample ID	Type of Analysis	Element	ug/L Found / S / I (units)	ug/L True / D / SDR (units)	Recalculated %R / RPD / %D	Reported %R / RPD / %D	Acceptable (Y/N)
ICSAB (4:20)	ICP interference check	Al	48521836	500,000	97.0	97.0	Y
LCS (8:41)	Laboratory control sample	Hg	0.1 mg/kg	0.1 mg/kg	100	100	↓
—	Matrix spike		(SSR-SR)				
—	Duplicate						
—	ICP serial dilution						

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

LDC #: 32184C4

VALIDATION FINDINGS WORKSHEET
Sample Calculation Verification

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

METHOD: Trace Metals (EPA SW 846 Method 6010/6020/~~7000~~ 7471A)

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

Y N N/A Have results been reported and calculated correctly?
Y N N/A Are results within the calibrated range of the instruments and within the linear range of the ICP?
Y N N/A Are all detection limits below the CRDL?

Detected analyte results for Strontium were recalculated and verified using the following equation:

Concentration = $\frac{(RD)(FV)(Dil)}{(In.\ Vol.)}$

RD = Raw data concentration
FV = Final volume (ml)
In. Vol. = Initial volume (ml) or weight (G)
Dil = Dilution factor

Recalculation:

2: $\frac{(80.804\ ppb)(100mL)(2)}{(1.00g)(1000)} = 16.1608\ mg/kg$

#	Sample ID	Analyte	Reported Concentration (mg/kg)	Calculated Concentration (mg/kg)	Acceptable (Y/N)
	1	Tl	0.277	0.277	Y
	2	Sr	16.6	16.6	↓
	3	Zr	3.28	3.28	↓
	4	Sn	2.90	2.90	↓

Note: Hg all ND

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: Santa Susana Field Laboratory

Collection Date: June 2, 2014

LDC Report Date: August 4, 2014

Matrix: Soil

Parameters: Herbicides

Validation Level: Level IV

Laboratory: Eurofins

Sample Delivery Group (SDG): PH212

Sample Identification

SL-653-SA5C-TR-0.5
SL-653-SA5C-TR-5.0
SL-653-SA5C-TR-10.0
SL-653-SA5C-TR-15.0
SL-653-SA5C-TR-0.5MS
SL-653-SA5C-TR-0.5MSD

Introduction

This data review covers 6 soil samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA SW 846 Method 8151A for Herbicides.

This review follows the Quality Assurance Project Plan for Santa Susana Field Laboratory (SSFL), RCRA Facility Investigation, Surficial Media Operable Unit (March 2009, Revision 4) and a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Superfund Organic Methods Data Review (June 2008).

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.

The following are definitions of the data qualifiers:

U Indicates the compound or analyte was analyzed for but not detected.

J Indicates an estimated value.

R Quality control indicates the data is not usable.

NJ Presumptive evidence of presence of the compound at an estimated quantity.

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. Initial Calibration

Initial calibration was performed as required by the method.

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

In the case where the laboratory used a calibration curve to evaluate the compounds, all coefficients of determination (r^2) were greater than or equal to 0.990.

Retention time windows were evaluated and considered technically acceptable.

III. Continuing Calibration

Continuing calibration was performed at the required frequencies.

The percent differences (%D) were less than or equal to 20.0% for all compounds with the following exceptions:

Date	Standard	Column	Compound	%D	Associated Samples	Flag	A or P
6/6/14	CCV-HERB3NN	ZB35	Dinoseb	32	All samples in SDG PH212	J (all detects) UJ (all non-detects)	A

The percent differences (%D) of the second source calibration standard were less than or equal to 20.0% for all compounds.

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

IV. Blanks

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

Sample EB3-060414 (from SDG PH217) was identified as an equipment blank. No herbicide contaminants were found.

Sample FB-0512114 (from SDG PH191) was identified as a field blank. No herbicide contaminants were found.

V. Surrogate Recovery

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

VI. Matrix Spike/Matrix Spike Duplicate

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.

VII. Laboratory Control Samples (LCS)

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

LCS ID	Compound	%R (Limits)	Associated Samples	Flag	A or P
LCS 24156	Dinoseb	9 (10-56)	All samples in SDG PH212	J (all detects) R (all non-detects)	P

VIII. Target Compound Identification

All target compound identifications were within validation criteria.

IX. Compound Quantitation

All compound quantitations were within validation criteria.

All compounds reported below the RL were qualified as follows:

Sample	Finding	Flag	A or P
All samples in SDG PH212	All compounds reported below the RL.	J (all detects)	A

X. System Performance

The system performance was acceptable.

XI. Overall Assessment of Data

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

XII. Field Duplicates

No field duplicates were identified in this SDG.

Santa Susana Field Laboratory
Herbicides - Data Qualification Summary - SDG PH212

SDG	Sample	Compound	Flag	A or P	Reason (Code)
PH212	SL-653-SA5C-TR-0.5 SL-653-SA5C-TR-5.0 SL-653-SA5C-TR-10.0 SL-653-SA5C-TR-15.0	Dinoseb	J (all detects) UJ (all non-detects)	A	Continuing calibration (%D) (C)
PH212	SL-653-SA5C-TR-0.5 SL-653-SA5C-TR-5.0 SL-653-SA5C-TR-10.0 SL-653-SA5C-TR-15.0	Dinoseb	J (all detects) R (all non-detects)	P	Laboratory control samples (%R) (L)
PH212	SL-653-SA5C-TR-0.5 SL-653-SA5C-TR-5.0 SL-653-SA5C-TR-10.0 SL-653-SA5C-TR-15.0	All compounds reported below the RL.	J (all detects)	A	Compound quantitation (Z)

Santa Susana Field Laboratory
Herbicides - Laboratory Blank Data Qualification Summary - SDG PH212

No Sample Data Qualified in this SDG

Santa Susana Field Laboratory
Herbicides - Field Blank Data Qualification Summary - SDG PH212

No Sample Data Qualified in this SDG

LDC #: 32184C5
SDG #: PH212
Laboratory: Eurofins

VALIDATION COMPLETENESS WORKSHEET
Level IV

Date: 7/30/14
Page: 1 of 1
Reviewer: BR
2nd Reviewer: SW

METHOD: GC Herbicides (EPA SW 846 Method 8151A)

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

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 6/2/14
II	Initial calibration	A	RSD ≤20? r^2
III.	Calibration verification/ICV	SW	ICV/CCV ≤20?
IV.	Blanks	A	
V	Surrogate recovery	A	
VI.	Matrix spike/Matrix spike duplicates	A	
VII.	Laboratory control samples	SW	LCS
VIII.	Target compound identification	A	
IX.	Compound quantitation/RL/LOQ/LODs	A	
X.	System Performance	A	
XI.	Overall assessment of data	A	
XII.	Field duplicates	N	
XIII.	Field blanks	ND	ER = EB3-060414 (PH217) FB = FB-052114 (PH211)

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

1	SL-653-SA5C-TR-0.5	11		21		31	PBLK24156
2	SL-653-SA5C-TR-5.0	12		22		32	
3	SL-653-SA5C-TR-10.0	13		23		33	
4	SL-653-SA5C-TR-15.0	14		24		34	
5	#1 MS	15		25		35	
6	#1 MSD	16		26		36	
7		17		27		37	
8		18		28		38	
9		19		29		39	
10		20		30		40	

Notes:

LDC #: 321405

VALIDATION FINDINGS CHECKLIST

Reviewer: BR
2nd Reviewer: SM

Method: ✓ GC _____ HPLC

Validation Area	Yes	No	NA	Findings/Comments
I. Technical holding times				
All technical holding times were met.	✓			
Cooler temperature criteria was met.	✓			
II. Initial calibration				
Did the laboratory perform a 5 point calibration prior to sample analysis?	✓			
Was a linear fit used for evaluation? If yes, were all percent relative standard deviations (%RSD) ≤ 20%?	✓			
Was a curve fit used for evaluation? If Yes, what was the acceptance criteria used?	✓			
Did the initial calibration meet the curve fit acceptance criteria?	✓			
Were the RT windows properly established?	✓			
IV. Continuing calibration				
What type of continuing calibration calculation was performed? ✓ %D or __ %R	✓			
Was a continuing calibration analyzed daily?	✓			
Were all percent differences (%D) ≤ 20%.0 or percent recoveries 80-120%?		✓		
Were all the retention times within the acceptance windows?	✓			
V. Blanks				
Was a method blank associated with every sample in this SDG?	✓			
Was a method blank analyzed for each matrix and concentration?	✓			
Was there contamination in the method blanks? If yes, please see the Blanks validation completeness worksheet.		✓		
VI. Surrogate spikes				
Were all surrogate %R within the QC limits?	✓			
If the percent recovery (%R) of one or more surrogates was outside QC limits, was a reanalysis performed to confirm %R?			✓	
If any %R was less than 10 percent, was a reanalysis performed to confirm %R?			✓	
VII. Matrix spike/Matrix spike duplicates				
Were a matrix spike (MS) and matrix spike duplicate (MSD) analyzed for each matrix in this SDG? If no, indicate which matrix does not have an associated MS/MSD. Soil / Water.	✓			
Was a MS/MSD analyzed every 20 samples of each matrix?	✓			
Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?	✓			
VIII. Laboratory control samples				
Was an LCS analyzed for this SDG?	✓			
Was an LCS analyzed per extraction batch?	✓			
Were the LCS percent recoveries (%R) and relative percent difference (RPD) within the QC limits?		✓		

Validation Area	Yes	No	NA	Findings/Comments
IX. Regional Quality Assurance and Quality Control				
Were performance evaluation (PE) samples performed?		✓		
Were the performance evaluation (PE) samples within the acceptance limits?			✓	
X. Target compound identification				
Were the retention times of reported detects within the RT windows?	✓			
XI. Compound quantitation/CRQLs				
Were compound quantitation and CRQLs adjusted to reflect all sample dilutions and dry weight factors applicable to level IV validation?	✓			
XII. System performance				
System performance was found to be acceptable.	✓			
XIII. Overall assessment of data				
Overall assessment of data was found to be acceptable.	✓			
XIV. Field duplicates				
Field duplicate pairs were identified in this SDG.		✓		
Target compounds were detected in the field duplicates.			✓	
XV. Field blanks				
Field blanks were identified in this SDG.	✓			
Target compounds were detected in the field blanks.		✓		

VALIDATION FINDINGS WORKSHEET

METHOD: X **GC** ___ **HPLC**

8310	8330	8151	8141	8141 (Con't)	8021B
A. Acenaphthene	A. HMX	A. 2,4-D	A. Dichlorvos	V. Fensulfothion	V. Benzene
B. Acenaphthylene	B. RDX	B. 2,4-DB	B. Mevinphos	W. Bolstar	CC. Toluene
C. Anthracene	C. 1,3,5-Trinitrobenzene	C. 2,4,5-T	C. Demeton-O	X. EPN	EE. Ethylbenzene
D. Benzo(a)anthracene	D. 1,3-Dinitrobenzene	D. 2,4,5-TP	D. Demeton-S	Y. Azinphos-methyl	SSS. o-Xylene
E. Benzo(a)pyrene	E. Tetryl	E. Dinoseb	E. Ethoprop	Z. Coumaphos	RRR. m,p-Xylenes
F. Benzo(b)fluoranthene	F. Nitrobenzene	F. Dichlorprop	F. Naled	AA. Parathion	GG. Total xylenes
G. Benzo(g,h,i)perylene	G. 2.4.6-Trinitrotoluene	G. Dicamba	G. Sulfotepp	BB. Famphur	
H. Benzo(k)fluoranthene	H. 4-Amino-2,6-dinitrotoluene	H. Dalapon	H. Phorate	CC. Phosmet	
I. Chrysene	I. 2-Amino-4,6-dinitrotoluene	I. MCPP	I. Dimethoate	DD. Trifluralin	
J. Dibenz(a,h)anthracene	J. 2,4-Dinitrotolune	J. MCPA	J. Diazinon	EE. Def	
K. Fluoranthene	K. 2,6-Dinitrotoluene	K. Pentachlorophenol	K. Disulfoton	FF. Prowl	Krone
L. Fluorene	L. 2-Nitrotoluene	L.. 2,4,5-TP (silvex)	L. Parathion-methyl	GG. Ethion	A. Tetra-n-butyltin
M. Indeno(1,2,3-cd)pyrene	M. 3-Nitrotoluene	M. Silvex	M. Ronnel	HH. Tetrachlorvinphos	B. Tri-n-butyltin Cation
N. Naphthalene	N. 4-Nitrotoluene		N. Malathion	II. Sulprofos	C. Di-n-butyltin Cation
O. Phenanthrene	O.		O. Chlorpyrifos		D. N-Butyltin Cation
P. Pyrene	P.		P. Fenthion		
Q.	Q		Q. Parathion-ethyl		
R.			R. Trichloronate		
S.			S. Merphos		
			T. Stirophos		
			U. Tokuthion		

Notes: _____

LDC #: 32184C5

VALIDATION FINDINGS WORKSHEET
Continuing Calibration

Reviewer: BR

METHOD: X GC ___ HPLC

2nd Reviewer: SM

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

Y (N) N/A Were continuing calibration standards analyzed at the required frequencies?

Y (N) N/A Did the continuing calibration standards meet the %D validation criteria of ≤20.0%?

Level IV Only

(Y) N N/A Were the retention times for all calibrated compounds within their respective acceptance windows?

#	Date	Standard ID	Detector/ Column	Compound	%D (Limit)	RT (limit)	Associated Samples	Qualifications (Lab: C)
	6/6/14	CCV-HERB3	NN 2B35	E	32	( )	All	J/UJ/A
						( )		
						( )		
						( )		
						( )		
						( )		
						( )		
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LDC #: 32184C5

VALIDATION FINDINGS WORKSHEET
Laboratory Control Samples (LCS)

Page: 1 of 1
Reviewer: BR
2nd Reviewer: SM

METHOD: X **GC** __ **HPLC**

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

Y N N/A Were a laboratory control samples (LCS) and laboratory control sample duplicate (LCSD) analyzed for each matrix in this SDG?

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

Level IV/D Only

Y N N/A Was an LCS analyzed every 20 samples for each matrix or whenever a sample extraction was performed?

#	LCS/LCSD ID	Compound	LCS %R (Limits)	LCSD %R (Limits)	RPD (Limits)	Associated Samples	Code: L Qualifications
	LCS24456	E	9 (10-56)	( )	( )	All	J+
			( )	( )	( )		J/R/P
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
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			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		

LDC#: 32184C5

VALIDATION FINDINGS WORKSHEET
Initial Calibration Calculation Verification

Page: 1 of 1
Reviewer: BR
2nd Reviewer: SM

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

$RRF = (A_x)(C_{is})/(A_{is})(C_x)$ A_x = Area of Compound A_{is} = Area of associated internal standard

average RRF = sum of the RRFs/number of standards C_x = Concentration of compound, C_{is} = Concentration of internal standard

%RSD = 100 * (S/X) S= Standard deviation of the RRF X = Mean of the RRFs

#	Standard ID	Calibration Date	Compound	Reported RRF (RRF 176 std)	Recalculated RRF (RRF 176 std)	Reported Average RRF (Initial)	Recalculated Average RRF (Initial)	Reported %RSD	Recalculated %RSD
1	ICAL	5/29/2014	2,4-D (ZB XLB)	9.97E-04	9.97E-04	1.05E-03	1.05E-03	10	10
	19850A		Dinoseb (ZB XLB)	2.50E-03	2.50E-03	2.51E-03	2.51E-03	3	3
			2,4-D (ZB 35)	1.11E-03	1.11E-03	1.13E-03	1.13E-03	12	12
			Dinoseb (ZB 35)	1.72E-03	1.72E-03	1.74E-03	1.74E-03	3	3

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

LDC#: 32184C5

VALIDATION FINDINGS WORKSHEET
Continuing Calibration Calculation Verification

Page: 1 of 1
Reviewer: BR
2nd Reviewer: SM

METHOD: GC Pesticides (EPA SW 846 Method 8081)

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

% Difference = 100 * (ave. RRF - RRF)/ave. RRF
RRF = (Ax)(Cis)/(Ais)(Cx)

Where: ave. RRF = initial calibration average RRF
RRF = continuing calibration RRF
Ax = Area of compound,
Cx = Concentration of compound,
Ais = Area of associated internal standard
Cis = Concentration of internal standard

#	Standard ID	Calibration Date	Compound	Average RRF (Initial)	Reported RRF (CC)	Recalculated RRF (CC)	Reported % D	Recalculated %D
1	HERB3NN	6/6/2014	2,4-D (ZB XLB)	176.00	172.71	172.71	2	2
			Dinoseb (ZB XLB)	100.10	99.47	99.47	1	1
			2,4-D (ZB 35)	176.00	171.66	171.66	2	2
			Dinoseb (ZB 35)	100.10	67.94	67.94	32	32
2								

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

LDC #: 32184C5

VALIDATION FINDINGS WORKSHEET
Surrogate Results Verification

Reviewer: BR
2nd reviewer: SM

METHOD: X GC __ HPLC

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

% Recovery: SF/SS * 100

Where: SF = Surrogate Found
SS = Surrogate Spiked

Sample ID: 1

Surrogate	Column/Detector	Surrogate Spiked	Surrogate Found	Percent Recovery	Percent Recovery	Percent Difference
				Reported	Recalculated	
2,4-Dichlorophenylacetic acid	DB-XLB	66.7	62.84627	94	94	0

Sample ID:

Surrogate	Column/Detector	Surrogate Spiked	Surrogate Found	Percent Recovery	Percent Recovery	Percent Difference
				Reported	Recalculated	

Sample ID:

Surrogate	Column/Detector	Surrogate Spiked	Surrogate Found	Percent Recovery	Percent Recovery	Percent Difference
				Reported	Recalculated	

LDC #: 32184C5

VALIDATION FINDINGS WORKSHEET
Matrix Spike/Matrix Spike Duplicates Results Verification

Reviewer: BR
2nd Reviewer: SM

METHOD: X GC ___ HPLC

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

%Recovery = 100 * (SSC - SC)/SA

Where SSC = Spiked sample concentration; SC = Sample concentration; SA = Spike added; MS = Matrix spike; MSD = Matrix spike duplicate

RPD =(({SSCMS - SSCMSD} * 2) / (SSCMS + SSCMSD))*100

MS/MSD samples: 516

Compound	Spike Added (ug/kg)		Sample Conc. (ug/kg)	Spike Sample Concentration (ug/kg)		Matrix spike Percent Recovery		Matrix Spike Duplicate Percent Recovery		MS/MSD RPD	
	MS	MSD	---	MS	MSD	Reported	Recalc.	Reported	Recalc.	Reported	Recalc.
Gasoline (8015)											
Diesel (8015)											
Benzene (8021B)											
Methane (RSK-175)											
2,4-D (8151)	82.9		0	114.23	110.53	138	138	133	133	3	3
Dinoseb (8151)	141		0	28.39	31.35	~~31.35~~ 20 *	20	22	22	10	10
Naphthalene (8310)											
Anthracene (8310)											
HMX (8330)											
2,4,6-Trinitrotoluene (8330)											

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

LDC #: 32184C5

VALIDATION FINDINGS WORKSHEET

Laboratory Control Sample/Laboratory Control Sample Duplicates Results Verification

Reviewer: BR

2nd Reviewer: SM

METHOD: X GC __HPLC

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

%Recovery = 100 * (SSC - SC)/SA

Where SSC = Spiked sample concentration; SA = Spike added; SC = Sample concentration

RPD =(({SSCLCS - SSCLCSD} * 2) / (SSCLCS + SSCLCSD))*100

LCS = Laboratory Control Sample; LCSD = Laboratory Control Sample duplicate

LCS/LCSD samples: LCS 24156

Compound	Spike Added (ug/kg)		Spike Sample Concentration (ug/kg)		LCS Percent Recovery		LCSD Percent Recovery		LCS/LCSD RPD	
	LCS	LCSD	LCS	LCSD	Reported	Recalc.	Reported	Recalc.	Reported	Recalc.
Gasoline (8015)										
Diesel (8015)										
Benzene (8021B)										
Methane (RSK-175)										
2,4-D (8151)	83.5	-	107.55	-	129	129	-	-	-	-
Dinoseb (8151)	142	-	12.2	-	9	8.6	-	-	-	-
Naphthalene (8310)										
Anthracene (8310)										
HMX (8330)										
2,4,6-Trinitrotoluene (8330)										

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

LDC #: 32184C5

VALIDATION FINDINGS WORKSHEET
Sample Calculation Verification

Reviewer: BR
2nd Reviewer: SM

METHOD: X GC __ HPLC

Y N N/A Were all reported results recalculated and verified for all level IV samples?
Y N N/A Were all recalculated results for detected target compounds within 10% of the reported results?

Concentration= $\frac{(A)(Fv)(Df)}{(RF)(Vs \text{ or } Ws)(\%S/100)}$

A= Area or height of the compound to be measured
Fv= Final Volume of extract
Df= Dilution Factor
RF= Average response factor of the compound In the initial calibration
Vs= Initial volume of the sample
Ws= Initial weight of the sample
%S= Percent Solid

Example:

Sample ID. A6 Compound Name ND
LCS 24156 ; 2,4D = 107.55 Column: B (2835)

Concentration = $\frac{(4278055)(1)(10)}{(11726470)(0.00113073)(30)}$

= 107.54705527 ug/kg

#	Sample ID	Compound	Reported Concentrations ( )	Recalculated Results Concentrations ( )	Qualifications

Comments: _____

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: Santa Susana Field Laboratory

Collection Date: June 2, 2014

LDC Report Date: August 3, 2014

Matrix: Soil

Parameters: Hexavalent Chromium

Validation Level: Level IV

Laboratory: Eurofins

Sample Delivery Group (SDG): PH212

Sample Identification

SL-653-SA5C-TR-0.5
SL-653-SA5C-TR-5.0
SL-653-SA5C-TR-10.0
SL-653-SA5C-TR-15.0

Introduction

This data review covers 4 soil samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA SW 846 Method 7199 for Hexavalent Chromium.

This review follows the Quality Assurance Project Plan for Santa Susana Field Laboratory (SSFL), RCRA Facility Investigation, Surficial Media Operable Unit (March 2009, Revision 4) and a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Superfund Data Review (January 2010).

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 deviation from a specified protocol or is of technical advisory nature.

The following are definitions of the data qualifiers:

U Indicates the compound or analyte was analyzed for but not detected.

J Indicates an estimated value.

R Quality control indicates the data is not usable.

NJ Presumptive evidence of presence of the compound at an estimated quantity.

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. Initial Calibration

All criteria for the initial calibration were met.

III. Continuing Calibration

Continuing calibration frequency and analysis criteria were met.

IV. Blanks

Method blanks were reviewed for each matrix as applicable. No hexavalent chromium was found in the initial, continuing and preparation blanks.

Sample EB3-060414 (from SDG PH217) was identified as an equipment blank. No hexavalent chromium was found.

Sample FB-052114 (from SDG PH191) was identified as a field blank. No hexavalent chromium was found.

V. 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.

VI. Duplicates

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

VII. Laboratory Control Samples

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

VIII. Sample Result Verification

All sample result verifications were acceptable.

All analytes reported below the RL and above the MDL were qualified as follows:

Sample	Analyte	Flag	A or P
All samples in SDG PH212	All analytes reported below the RL and above the MDL.	J (all detects)	A

IX. Overall Assessment of Data

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

X. Field Duplicates

No field duplicates were identified in this SDG.

Santa Susana Field Laboratory
Hexavalent Chromium - Data Qualification Summary - SDG PH212

SDG	Sample	Analyte	Flag	A or P	Reason (Code)
PH212	SL-653-SA5C-TR-0.5 SL-653-SA5C-TR-5.0 SL-653-SA5C-TR-10.0 SL-653-SA5C-TR-15.0	All analytes reported below the RL and above the MDL.	J (all detects)	A	Sample result verification (Z)

Santa Susana Field Laboratory
Hexavalent Chromium – Laboratory Blank Data Qualification Summary - SDG PH212

No Sample Data Qualified in this SDG

Santa Susana Field Laboratory
Hexavalent Chromium - Field Blank Data Qualification Summary - SDG PH212

No Sample Data Qualified in this SDG

LDC #: 32184C6
SDG #: PH212
Laboratory: Eurofins

VALIDATION COMPLETENESS WORKSHEET
Level IV

Date: 8/1/14
Page: 1 of 1
Reviewer: KR
2nd Reviewer: CL

METHOD: (Analyte) Hexavalent Chromium (EPA SW846 Method 7199).

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

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 6/2/14
II	Initial calibration	A	
III.	Calibration verification	A	
IV	Blanks	A	
V	Matrix Spike/Matrix Spike Duplicates	N	
VI.	Duplicates	A	DUP from SDG#PH209
VII.	Laboratory control samples	A	LCS
VIII.	Sample result verification	A	
IX.	Overall assessment of data	A	
X.	Field duplicates	N	
XI	Field blanks	ND	EB3-060414 SDG#PH217 ~~FB-052114~~ FB-052114 SDG# PH191

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

1	SL-653-SA5C-TR-0.5	11		21		31	
2	SL-653-SA5C-TR-5.0	12		22		32	
3	SL-653-SA5C-TR-10.0	13		23		33	
4	SL-653-SA5C-TR-15.0	14		24		34	
5	~~SL-651~~	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 #: 32184C6

VALIDATION FINDINGS CHECKLIST

Reviewer: KK
2nd Reviewer: CR

Method: Inorganics (EPA Method 7199)

Validation Area	Yes	No	NA	Findings/Comments
I. Technical holding times				
All technical holding times were met.	✓			
Cooler temperature criteria was met.	✓			
II. Calibration				
Were all instruments calibrated daily, each set-up time?	✓			
Were the proper number of standards used?	✓			
Were all initial calibration correlation coefficients ≥ 0.995?	✓			
Were all initial and continuing calibration verification %Rs within the 90-110% QC limits?	✓			
Were titrant checks performed as required? (Level IV only)			✓	
Were balance checks performed as required? (Level IV only)			✓	
III. Blanks				
Was a method blank associated with every sample in this SDG?	✓			
Was there contamination in the method blanks? If yes, please see the Blanks validation completeness worksheet.		✓		
IV. Matrix spike/Matrix spike duplicates and Duplicates				
Were a matrix spike (MS) and duplicate (DUP) analyzed for each matrix in this SDG? If no, indicate which matrix does not have an associated MS/MSD or MS/DUP. Soil / Water.		✓		Soil DUP only
Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the 75-125 QC limits? If the sample concentration exceeded the spike concentration by a factor of 4 or more, no action was taken.	~~✓~~		✓	
Were the ~~MS/MSD~~ or duplicate relative percent differences (RPD) ≤ 20% for waters and ≤ 35% for soil samples? A control limit of ≤ CRDL(≤ 2X CRDL for soil) was used for samples that were ≤ 5X the CRDL, including when only one of the duplicate sample values were ≤ 5X the CRDL.	✓			
V. Laboratory control samples				
Was an LCS anaylzed for this SDG?	✓			
Was an LCS analyzed per extraction batch?	✓			
Were the LCS percent recoveries (%R) and relative percent difference (RPD) within the 80-120% (85-115% for Method 300.0) QC limits?	✓			
VI. Regional Quality Assurance and Quality Control				
Were performance evaluation (PE) samples performed?			✓	
Were the performance evaluation (PE) samples within the acceptance limits?			✓	

LDC #: 32184 CAD

VALIDATION FINDINGS CHECKLIST

Reviewer: VA
2nd Reviewer: CA

Validation Area	Yes	No	NA	Findings/Comments
VII. Sample Result Verification				
Were RLs adjusted to reflect all sample dilutions and dry weight factors applicable to level IV validation?	✓			
Were detection limits < RL?	✓			
VIII. Overall assessment of data				
Overall assessment of data was found to be acceptable.	✓			
IX. Field duplicates				
Field duplicate pairs were identified in this SDG.		✓		
Target analytes were detected in the field duplicates.			✓	
X. Field blanks				
Field blanks were identified in this SDG.	✓			
Target analytes were detected in the field blanks.		✓		

LDC #: 32184C60

Validation Findings Worksheet
Initial and Continuing Calibration Calculation Verification

Reviewer: KK
2nd Reviewer: CC

Method: Inorganics, Method See Cover

The correlation coefficient (r) for the calibration of $Cr6^+$ was recalculated.Calibration date: 6/5/14

An initial or continuing calibration verification percent recovery (%R) was recalculated for each type of analysis using the following formula:

$$\%R = \frac{\text{Found} \times 100}{\text{True}}$$

Where, Found = concentration of each analyte measured in the analysis of the ICV or CCV solution
True = concentration of each analyte in the ICV or CCV source

Type of analysis	Analyte	~~(ug/L)~~ Standard	Conc. (ug/L)	(Mg/L) Abs	Recalculated r or r^2	Reported r or r^2	Acceptable (Y/N)
Initial calibration	Hexavalent Chromium	s1	10	0.096962	*0.9997*	0.9997	Y
		s2	50	0.447351			
		s3	100	0.912875			
		s4	200	1.821575			
		s5	300	2.82212			
Calibration verification		IVC(15:28)	50	52.71	105	105	
Calibration verification		CCV(18:36)	200	201.5	101	101	
Calibration verification	-	-	-	-	-	-	-

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

LDC #: 32184C6

VALIDATION FINDINGS WORKSHEET
Level IV Recalculation Worksheet

Reviewer: KK
2nd Reviewer: CR

METHOD: Inorganics, Method See Cover

Percent recoveries (%R) for a laboratory control sample and a matrix spike sample were recalculated using the following formula:

%R = Found x 100 / True Where, Found = concentration of each analyte measured in the analysis of the sample. For the matrix spike calculation, Found = SSR (spiked sample result) - SR (sample result).
True = concentration of each analyte in the source.

A sample and duplicate relative percent difference (RPD) was recalculated using the following formula:

RPD = |S-D| x 100 / (S+D)/2 Where, S = Original sample concentration
D = Duplicate sample concentration

Sample ID	Type of Analysis	Element	Found / S (mg/kg) (units)	True / S (mg/kg) (units)	Recalculated %R / RPD	Reported %R / RPD	Acceptable (Y/N)
LCS (15:59)	Laboratory control sample	Hexavalent Chromium	4.4368063	5.00	89	89	Y
-	Matrix spike sample -	-	(SSR-SR) -	-	-	-	-
SL-651-SA5C-TR-5.0DUP SDG # PH209	Duplicate sample	Hexavalent Chromium	~~0.42~~ ND	ND	0	0	Y

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

LDC #: 32184C6

VALIDATION FINDINGS WORKSHEET
Sample Calculation Verification

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

METHOD: Inorganics, Method See Cover

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

Y N N/A Have results been reported and calculated correctly?
Y N N/A Are results within the calibrated range of the instruments?
Y N N/A Are all detection limits below the CRQL?

Compound (analyte) results for Hexavalent Chromium reported with a positive detect were recalculated and verified using the following equation:

Concentration = Recalculation:

$[(area)(X\ Coeff)] + Constant = \mu g/L$ 4: $[(0.0634)(\frac{106.584}{1.948571})] + 1.948571 = \frac{8.706\ \mu g/L\ (100\ ml)(1)}{(1000)(2.52)(0.969)}$

$\frac{(\mu g/L)(V_F)(DF)}{(1000)(V_i)(\%\ Solid)} = mg/kg$

#	Sample ID	Analyte	Reported Concentration (mg/kg)	Calculated Concentration (mg/kg)	Acceptable (Y/N)
	1	Hexavalent Chromium	0.38	0.37	Y
	4	↓	0.35	0.36	↓

Note:

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name:	Santa Susana Field Laboratory
Collection Date:	June 2, 2014
LDC Report Date:	August 5, 2014
Matrix:	Soil/Water
Parameters:	Total Petroleum Hydrocarbons as Gasoline
Validation Level:	Level IV
Laboratory:	Eurofins
Sample Delivery Group (SDG):	PH212

Sample Identification

SL-653-SA5C-TR-5.0
SL-653-SA5C-TR-10.0
SL-653-SA5C-TR-15.0
TB4-060214

Introduction

This data review covers 3 soil samples and one water sample listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA SW 846 Method 8015B for Total Petroleum Hydrocarbons (TPH) as Gasoline.

This review follows the Quality Assurance Project Plan for Santa Susana Field Laboratory (SSFL), RCRA Facility Investigation, Surficial Media Operable Unit (March 2009, Revision 4) and a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Superfund Organic Methods Data Review (June 2008).

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.

The following are definitions of the data qualifiers:

U Indicates the compound or analyte was analyzed for but not detected.

J Indicates an estimated value.

R Quality control indicates the data is not usable.

NJ Presumptive evidence of presence of the compound at an estimated quantity.

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. Initial Calibration

Initial calibration of compounds was performed as required by the method.

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

III. Continuing Calibration

Continuing calibration was performed at required frequencies. The percent differences (%D) of amounts in continuing standard mixtures were within the 20.0% QC limits.

The percent differences (%D) of the second source calibration standard were less than or equal to 20.0% for all compounds.

IV. Blanks

Method blanks were reviewed for each matrix as applicable. No total petroleum hydrocarbons as gasoline contaminants were found in the method blanks.

Sample TB4-060214 was identified as a trip blank. No total petroleum hydrocarbons as gasoline contaminants were found.

Sample EB3-060414 (from SDG PH217) was identified as an equipment blank. No total petroleum hydrocarbons as gasoline contaminants were found.

Sample FB-052114 (from SDG PH191) was identified as a field blank. No total petroleum hydrocarbons as gasoline contaminants were found.

V. Surrogate Recovery

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

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. Laboratory Control Samples

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

VIII. Target Compound Identification

All target compound identifications were within validation criteria.

IX. Compound Quantitation

All compound quantitations were within validation criteria.

All compounds reported below the RL were qualified as follows:

Sample	Finding	Flag	A or P
All samples in SDG PH212	All compounds reported below the RL.	J (all detects)	A

X. System Performance

The system performance was acceptable.

XI. Overall Assessment of Data

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

XII. Field Duplicates

No field duplicates were identified in this SDG.

Santa Susana Field Laboratory
Total Petroleum Hydrocarbons as Gasoline - Data Qualification Summary - SDG PH212

SDG	Sample	Compound	Flag	A or P	Reason (Code)
PH212	SL-653-SA5C-TR-5.0 SL-653-SA5C-TR-10.0 SL-653-SA5C-TR-15.0 TB4-060214	All compounds reported below the RL.	J (all detects)	A	Compound quantitation (Z)

Santa Susana Field Laboratory
Total Petroleum Hydrocarbons as Gasoline - Laboratory Blank Data Qualification Summary - SDG PH212

No Sample Data Qualified in this SDG

Santa Susana Field Laboratory
Total Petroleum Hydrocarbons as Gasoline - Field Blank Data Qualification Summary - SDG PH212

No Sample Data Qualified in this SDG

LDC #: 32184C7 **VALIDATION COMPLETENESS WORKSHEET** Date: 7/30/14
SDG #: PH212 Level IV Page: 1 of 1
Laboratory: Eurofins Reviewer: BR
2nd Reviewer: SM

METHOD: GC TPH as ~~Purgeables~~ Gasoline (EPA SW 846 Method 8015B)

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

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 6/2/14
II	Initial calibration	A	RSD≤20%
III.	Calibration verification/ICV	A	ICV/CCV≤20%
IV.	Blanks	A	
V	Surrogate recovery	A	
VI.	Matrix spike/Matrix spike duplicates	N	Client spec.
VII.	Laboratory control samples	A	LCS/D
VIII.	Target compound identification	A	
IX.	Compound quantitation/RL/LOQ/LODs	A	
X.	System Performance	A	
XI.	Overall assessment of data	A	
XII.	Field duplicates	N	
XIII.	Field blanks	ND	TB = 4 EB = EB3-060414 (SDG # PH2217) FB = FB-052114 (SDG # PH1917)

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

Validated Samples: Water + Soil

1	SL-653-SA5C-TR-5.0	11		21		31	BLKXH
2	SL-653-SA5C-TR-10.0	12		22		32	BLKXU
3	SL-653-SA5C-TR-15.0	13		23		33	
4	TB4-060214 W	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 #: 32184C7

VALIDATION FINDINGS CHECKLIST

Reviewer: BR
2nd Reviewer: SM

Method: X GC _____ HPLC

Validation Area	Yes	No	NA	Findings/Comments
I. Technical holding times				
All technical holding times were met.	✓			
Cooler temperature criteria was met.	✓			
II. Initial calibration				
Did the laboratory perform a 5 point calibration prior to sample analysis?	✓			
Was a linear fit used for evaluation? If yes, were all percent relative standard deviations (%RSD) ≤ 20%?	✓			
Was a curve fit used for evaluation? If Yes, what was the acceptance criteria used?		✓		
Did the initial calibration meet the curve fit acceptance criteria?			✓	
Were the RT windows properly established?	✓			
IV. Continuing calibration				
What type of continuing calibration calculation was performed? ✓ %D or __ %R	✓			
Was a continuing calibration analyzed daily?	✓			
Were all percent differences (%D) ≤ 20%.0 or percent recoveries 80-120%?	✓			
Were all the retention times within the acceptance windows?	✓			
V. Blanks				
Was a method blank associated with every sample in this SDG?	✓			
Was a method blank analyzed for each matrix and concentration?	✓			
Was there contamination in the method blanks? If yes, please see the Blanks validation completeness worksheet.		✓		
VI. Surrogate spikes				
Were all surrogate %R within the QC limits?	✓			
If the percent recovery (%R) of one or more surrogates was outside QC limits, was a reanalysis performed to confirm %R?			✓	
If any %R was less than 10 percent, was a reanalysis performed to confirm %R?			✓	
VII. Matrix spike/Matrix spike duplicates				
Were a matrix spike (MS) and matrix spike duplicate (MSD) analyzed for each matrix in this SDG? If no, indicate which matrix does not have an associated MS/MSD. Soil / Water.		✓		
Was a MS/MSD analyzed every 20 samples of each matrix?			✓	
Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?			✓	
VIII. Laboratory control samples				
Was an LCS analyzed for this SDG?	✓			
Was an LCS analyzed per extraction batch?	✓			
Were the LCS percent recoveries (%R) and relative percent difference (RPD) within the QC limits?	✓			

LDC #: 321847

VALIDATION FINDINGS CHECKLIST

Reviewer: BR
2nd Reviewer: SM

Validation Area	Yes	No	NA	Findings/Comments
IX. Regional Quality Assurance and Quality Control				
Were performance evaluation (PE) samples performed?		✓		
Were the performance evaluation (PE) samples within the acceptance limits?			✓	
X. Target compound identification				
Were the retention times of reported detects within the RT windows?	✓			
XI. Compound quantitation/CRQLs				
Were compound quantitation and CRQLs adjusted to reflect all sample dilutions and dry weight factors applicable to level IV validation?	✓			
XII. System performance				
System performance was found to be acceptable.	✓			
XIII. Overall assessment of data				
Overall assessment of data was found to be acceptable.	✓			
XIV. Field duplicates				
Field duplicate pairs were identified in this SDG.		✓		
Target compounds were detected in the field duplicates.			✓	
XV. Field blanks				
Field blanks were identified in this SDG.	✓			
Target compounds were detected in the field blanks.		✓		

LDC #: 32184C7

VALIDATION FINDINGS WORKSHEET
Initial Calibration Calculation Verification

Reviewer: BR
2nd Reviewer: SM

METHOD: GC X HPLC _____

The calibration factors (CF), average CF, and relative standard deviation (%RSD) were recalculated for compounds identified below using the following calculations:

CF = A/C
average CF = sum of the CF/number of standards
%RSD = 100 * (S/X)

Where:
A = Area of compound
C = Concentration of compound
S = Standard deviation of calibration factors
X = Mean of calibration factors

#	Standard ID	Calibration Date	Compound	Reported CF (550 std)	Recalculated CF (550 std)	Reported Average CF (Initial)	Recalculated Average CF (Initial)	Reported %RSD	Recalculated %RSD
1	ICAL 11379F J&W DB-MTB	9/27/2013	GRO	53902	53902	55635	55635	4	4

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

LDC #: 32184C7

VALIDATION FINDINGS WORKSHEET
Initial Calibration Calculation Verification

Reviewer: BR
2nd Reviewer: SM

METHOD: GC X HPLC _____

The calibration factors (CF), average CF, and relative standard deviation (%RSD) were recalculated for compounds identified below using the following calculations:

CF = A/C
average CF = sum of the CF/number of standards
%RSD = 100 * (S/X)

Where:
A = Area of compound
C = Concentration of compound
S = Standard deviation of calibration factors
X = Mean of calibration factors

#	Standard ID	Calibration Date	Compound	Reported CF (550 std)	Recalculated CF (550 std)	Reported Average CF (Initial)	Recalculated Average CF (Initial)	Reported %RSD	Recalculated %RSD
1	ICAL 16394F Restek VRX	10/8/2013	GRO	28604	28604	28046	28046	6	6

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

LDC #: 32184C7

VALIDATION FINDINGS WORKSHEET
Continuing Calibration Calculation Verification

Reviewer: BR
2nd Reviewer: SM

METHOD: GC__X__HPLC_____

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

Percent difference (%D) = 100 * (N - C)/N

Where: N = Initial Calibration Factor or Nominal Amount
C = Calibration Factor from Continuing Calibration Standard or Calculated Amount

#	Standard ID	Calibration Date	Compound	CCV Conc/CF	Reported Conc/CF	Recalculated Conc/CF	Reported % D	Recalculated %D
1	SGCKXAB	6/3/2014	GRO	220.04	221.45	221.45	1	1
	J&W DB-MTB	17:20						
2	SGCKXAD	6/4/2014	GRO	220.04	211.28	211.28	4	4
	J&W DB-MTB	8:53						
3								

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

LDC #: 32184C7

VALIDATION FINDINGS WORKSHEET
Continuing Calibration Calculation Verification

Reviewer: BR
2nd Reviewer: SM

METHOD: GC_____HPLC_____

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

Percent difference (%D) = 100 * (N - C)/N

Where: N = Initial Calibration Factor or Nominal Amount
C = Calibration Factor from Continuing Calibration Standard or Calculated Amount

#	Standard ID	Calibration Date	Compound	CCV Conc/CF	Reported Conc/CF	Recalculated Conc/CF	Reported % D	Recalculated %D
1	WGCCXAO	6/9/2014	GRO	550.10	511.54	511.54	7	7
	Restek VRX							
2								
3								

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

LDC #: 321847

VALIDATION FINDINGS WORKSHEET
Surrogate Results Verification

Reviewer: BR
2nd reviewer: SM

METHOD: X GC __ HPLC

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

% Recovery: SF/SS * 100

Where: SF = Surrogate Found
SS = Surrogate Spiked

Sample ID: 1

Surrogate	Column/Detector	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
Trifluorotoluene	J&W DB-MTBE	0.750	0.6974748	~~91~~ 92	92	D

Sample ID: 4

Surrogate	Column/Detector	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
Trifluorotoluene	VRX	80	25.645032	85	85	D

Sample ID:

Surrogate	Column/Detector	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference

LDC #: 32184C7

VALIDATION FINDINGS WORKSHEET

Laboratory Control Sample/Laboratory Control Sample Duplicates Results Verification

Reviewer: BR

2nd Reviewer: SM

METHOD: X GC __HPLC

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

%Recovery = 100 * (SSC - SC)/SA

Where SSC = Spiked sample concentration; SA = Spike added; SC = Sample concentration

RPD =(({SSCLCS - SSCLCSD} * 2) / (SSCLCS + SSCLCSD))*100

LCS = Laboratory Control Sample; LCSD = Laboratory Control Sample duplicate

LCS/LCSD samples: LCSC7

Compound	Spike Added (mg/kg)		Spike Sample Concentration (mg/kg)		LCS Percent Recovery		LCSD Percent Recovery		LCS/LCSD RPD	
	LCS	LCSD	LCS	LCSD	Reported	Recalc.	Reported	Recalc.	Reported	Recalc.
Gasoline (8015)	11	-	8.49	-	77		-	-	-	-
Diesel (8015)										
Benzene (8021B)										
Methane (RSK-175)										
2,4-D (8151)										
Dinoseb (8151)										
Naphthalene (8310)										
Anthracene (8310)										
HMX (8330)										
2,4,6-Trinitrotoluene (8330)										

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

LDC #: 321847

VALIDATION FINDINGS WORKSHEET
Sample Calculation Verification

Reviewer: BR
2nd Reviewer: SM

METHOD: X GC ___ HPLC

Y N N/A Were all reported results recalculated and verified for all level IV samples?
Y N N/A Were all recalculated results for detected target compounds within 10% of the reported results?

Concentration= $\frac{(A)(Fv)(Df)}{(RF)(Vs \text{ or } Ws)(\%S/100)}$

A= Area or height of the compound to be measured
Fv= Final Volume of extract
Df= Dilution Factor
RF= Average response factor of the compound In the initial calibration
Vs= Initial volume of the sample
Ws= Initial weight of the sample
%S= Percent Solid

Example:

Sample ID. All Compound Name ND

LCSY : TPH GRO = 8.49 mg/kg

Concentration = $\frac{(2154950 - 2657809)(25)(5)}{(55635)(5)(100)}$

$= 8.488874 36 mg/kg$

#	Sample ID	Compound	Reported Concentrations ( )	Recalculated Results Concentrations ( )	Qualifications

Comments: _____

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name:	Santa Susana Field Laboratory
Collection Date:	June 2, 2014
LDC Report Date:	August 4, 2014
Matrix:	Soil
Parameters:	Total Petroleum Hydrocarbons as Extractables
Validation Level:	Level IV
Laboratory:	Eurofins
Sample Delivery Group (SDG):	PH212

Sample Identification

SL-653-SA5C-TR-0.5
SL-653-SA5C-TR-5.0
SL-653-SA5C-TR-10.0
SL-653-SA5C-TR-15.0
SL-653-SA5C-TR-0.5(SGCU)
SL-653-SA5C-TR-5.0(SGCU)
SL-653-SA5C-TR-10.0(SGCU)
SL-653-SA5C-TR-15.0(SGCU)

Samples appended with SGCU underwent Silica Gel cleanup

Introduction

This data review covers 8 soil samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA SW 846 Method 8015B for Total Petroleum Hydrocarbons (TPH) as Extractables.

This review follows the Quality Assurance Project Plan for Santa Susana Field Laboratory (SSFL), RCRA Facility Investigation, Surficial Media Operable Unit (March 2009, Revision 4) and a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Superfund Organic Methods Data Review (June 2008).

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.

The following are definitions of the data qualifiers:

U Indicates the compound or analyte was analyzed for but not detected.

J Indicates an estimated value.

R Quality control indicates the data is not usable.

NJ Presumptive evidence of presence of the compound at an estimated quantity.

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. Initial Calibration

Initial calibration was performed as required by the method.

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

III. Continuing Calibration

Continuing calibration was performed at required frequencies.

The percent differences (%D) were less than or equal to 20.0% for all compounds.

The percent differences (%D) of the second source calibration standard were less than or equal to 20.0% for all compounds.

IV. Blanks

Method blanks were reviewed for each matrix as applicable. No total petroleum hydrocarbons as extractable contaminants were found in the method blanks.

Sample EB3-060414 (from SDG PH217) was identified as an equipment blank. No total petroleum hydrocarbons as extractable contaminants were found.

Sample FB-052114 (from SDG PH191) was identified as a field blank. No total petroleum hydrocarbons as extractable contaminants were found.

V. Surrogate Recovery

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

VI. Matrix Spike/Matrix Spike Duplicates/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. Laboratory Control Samples (LCS)

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

LCS ID	Compound	%R (Limits)	Associated Samples	Flag	A or P
LCS 30154	Extractable fuel hydrocarbons (C8-C11) SGCU	58 (60-115)	SL-653-SA5C-TR-0.5(SGCU) SL-653-SA5C-TR-5.0(SGCU) SL-653-SA5C-TR-10.0(SGCU) SL-653-SA5C-TR-15.0(SGCU)	J (all detects) UJ (all non-detects)	P

VIII. Target Compound Identification

All target compound identifications were within validation criteria.

IX. Compound Quantitation

All compound quantitations were within validation criteria.

All compounds reported below the RL were qualified as follows:

Sample	Finding	Flag	A or P
All samples in SDG PH212	All compounds reported below the RL.	J (all detects)	A

X. System Performance

The system performance was acceptable.

XI. Overall Assessment of Data

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

XII. Field Duplicates

No field duplicates were identified in this SDG.

Santa Susana Field Laboratory
Total Petroleum Hydrocarbons as Extractables - Data Qualification Summary - SDG PH212

SDG	Sample	Compound	Flag	A or P	Reason (Code)
PH212	SL-653-SA5C-TR-0.5(SGCU) SL-653-SA5C-TR-5.0(SGCU) SL-653-SA5C-TR-10.0(SGCU) SL-653-SA5C-TR-15.0(SGCU)	Extractable fuel hydrocarbons (C8-C11) SGCU	J (all detects) UJ (all non-detects)	P	Laboratory control samples (%R) (L)
PH212	SL-653-SA5C-TR-0.5 SL-653-SA5C-TR-5.0 SL-653-SA5C-TR-10.0 SL-653-SA5C-TR-15.0 SL-653-SA5C-TR-0.5(SGCU) SL-653-SA5C-TR-5.0(SGCU) SL-653-SA5C-TR-10.0(SGCU) SL-653-SA5C-TR-15.0(SGCU)	All compounds reported below the RL.	J (all detects)	A	Compound quantitation (Z)

Santa Susana Field Laboratory
Total Petroleum Hydrocarbons as Extractables - Laboratory Blank Data Qualification Summary - SDG PH212

No Sample Data Qualified in this SDG

Santa Susana Field Laboratory
Total Petroleum Hydrocarbons as Extractables - Field Blank Data Qualification Summary - SDG PH212

No Sample Data Qualified in this SDG

LDC #: 32184C8
SDG #: PH212
Laboratory: Eurofins

VALIDATION COMPLETENESS WORKSHEET
Level IV

Date: 7/30/14
Page: 1 of 1
Reviewer: KR
2nd Reviewer: YM

METHOD: GC TPH as Extractables (EPA SW 846 Method 8015B)

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

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 6/2/14
II	Initial calibration	A	RSD ≤ 20%
III.	Calibration verification/ICV	A	ICV/CCV ≤ 20%
IV.	Blanks	A	
V	Surrogate recovery	A	
VI.	Matrix spike/Matrix spike duplicates	N	Client spec.
VII.	Laboratory control samples	SW	LCS KR
VIII.	Target compound identification	A	
IX.	Compound quantitation/RL/LOQ/LODs	A	
X.	System Performance	A	
XI.	Overall assessment of data	A	
XII.	Field duplicates	N	
XIII.	Field blanks	ND	EB = EB3-060414 (SDG # PH217) FB = FB-052114 (SDG # PH191)

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

1	SL-653-SA5C-TR-0.5	11		21		31	PBLK29154
2	SL-653-SA5C-TR-5.0	12		22		32	PBLK30154(SGCU)
3	SL-653-SA5C-TR-10.0	13		23		33	
4	SL-653-SA5C-TR-15.0	14		24		34	
5	SL-653-SA5C-TR-0.5(SGCU)	15		25		35	
6	SL-653-SA5C-TR-5.0(SGCU)	16		26		36	
7	SL-653-SA5C-TR-10.0(SGCU)	17		27		37	
8	SL-653-SA5C-TR-15.0(SGCU)	18		28		38	
9		19		29		39	
10		20		30		40	

Notes: SGCU - Silica Gel cleanup

LDC #: 32184C8

VALIDATION FINDINGS CHECKLIST

Page: 1 of 2
Reviewer: BR
2nd Reviewer: SM

Method: ✓ GC _____ HPLC

Validation Area	Yes	No	NA	Findings/Comments
I. Technical holding times				
All technical holding times were met.	✓			
Cooler temperature criteria was met.	✓			
II. Initial calibration				
Did the laboratory perform a 5 point calibration prior to sample analysis?	✓			
Was a linear fit used for evaluation? If yes, were all percent relative standard deviations (%RSD) ≤ 20%?	✓			
Was a curve fit used for evaluation? If Yes, what was the acceptance criteria used?		✓		
Did the initial calibration meet the curve fit acceptance criteria?			✓	
Were the RT windows properly established?	✓			
IV. Continuing calibration				
What type of continuing calibration calculation was performed? ✓ %D or __ %R	✓			
Was a continuing calibration analyzed daily?	✓			
Were all percent differences (%D) ≤ 20%.0 or percent recoveries 80-120%?	✓			
Were all the retention times within the acceptance windows?	✓			
V. Blanks				
Was a method blank associated with every sample in this SDG?	✓			
Was a method blank analyzed for each matrix and concentration?	✓			
Was there contamination in the method blanks? If yes, please see the Blanks validation completeness worksheet.		✓		
VI. Surrogate spikes				
Were all surrogate %R within the QC limits?	✓			
If the percent recovery (%R) of one or more surrogates was outside QC limits, was a reanalysis performed to confirm %R?			✓	
If any %R was less than 10 percent, was a reanalysis performed to confirm %R?			✓	
VII. Matrix spike/Matrix spike duplicates				
Were a matrix spike (MS) and matrix spike duplicate (MSD) analyzed for each matrix in this SDG? If no, indicate which matrix does not have an associated MS/MSD. Soil / Water.		✓		
Was a MS/MSD analyzed every 20 samples of each matrix?			✓	
Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?			✓	
VIII. Laboratory control samples				
Was an LCS analyzed for this SDG?	✓			
Was an LCS analyzed per extraction batch?	✓			
Were the LCS percent recoveries (%R) and relative percent difference (RPD) within the QC limits?		✓		

Validation Area	Yes	No	NA	Findings/Comments
IX. Regional Quality Assurance and Quality Control				
Were performance evaluation (PE) samples performed?		✓	✓	
Were the performance evaluation (PE) samples within the acceptance limits?				
X. Target compound identification				
Were the retention times of reported detects within the RT windows?	✓			
XI. Compound quantitation/CRQLs				
Were compound quantitation and CRQLs adjusted to reflect all sample dilutions and dry weight factors applicable to level IV validation?	✓			
XII. System performance				
System performance was found to be acceptable.	✓			
XIII. Overall assessment of data				
Overall assessment of data was found to be acceptable.	✓			
XIV. Field duplicates				
Field duplicate pairs were identified in this SDG.		✓		
Target compounds were detected in the field duplicates.			✓	
XV. Field blanks				
Field blanks were identified in this SDG.	✓			
Target compounds were detected in the field blanks.		✓		

LDC #: 32184C8

VALIDATION FINDINGS WORKSHEET
Laboratory Control Samples (LCS)

Page: 1 of 1
Reviewer: RK
2nd Reviewer: SM

METHOD: X GC ___ HPLC

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

Y (N) N/A — Were a laboratory control samples (LCS) and laboratory control sample duplicate (LCSD) analyzed for each matrix in this SDG?

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

Level IV/D Only

Y (N) N/A — Was an LCS analyzed every 20 samples for each matrix or whenever a sample extraction was performed?

#	LCS/LCSD ID	Compound	LCS %R (Limits)	LCSD %R (Limits)	RPD (Limits)	Associated Samples	Code: Qualifications
	LCS30154	EFH	58 (60-115)	( )	( )	All samples w/ SGCu	J/UJ/P
		C8-C11	( )	( )	( )		
		w/ SiGel	( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
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			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		

LDC #: 32184C8

VALIDATION FINDINGS WORKSHEET
Initial Calibration Calculation Verification

Reviewer: BR
2nd Reviewer: Sm

METHOD: GC X HPLC _____

The calibration factors (CF), average CF, and relative standard deviation (%RSD) were recalculated for compounds identified below using the following calculations:

CF = A/C
average CF = sum of the CF/number of standards
%RSD = 100 * (S/X)

Where:
A = Area of compound
C = Concentration of compound
S = Standard deviation of calibration factors
X = Mean of calibration factors

#	Standard ID	Calibration Date	Compound	Reported CF (144 std)	Recalculated CF (144 std)	Reported Average CF (Initial)	Recalculated Average CF (Initial)	Reported %RSD	Recalculated %RSD
1	ICAL CP23-19879A ZB-5	5/5/2014	C8-C40	22555	22555	23612	23612	7%	7%

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

LDC #: 32184C8

VALIDATION FINDINGS WORKSHEET
Initial Calibration Calculation Verification

Reviewer: BR
2nd Reviewer: SA

METHOD: GC X HPLC _____

The calibration factors (CF), average CF, and relative standard deviation (%RSD) were recalculated for compounds identified below using the following calculations:

CF = A/C
average CF = sum of the CF/number of standards
%RSD = 100 * (S/X)

Where:
A = Area of compound
C = Concentration of compound
S = Standard deviation of calibration factors
X = Mean of calibration factors

#	Standard ID	Calibration Date	Compound	Reported CF (144 std)	Recalculated CF (144 std)	Reported Average CF (Initial)	Recalculated Average CF (Initial)	Reported %RSD	Recalculated %RSD
1	ICAL CP23-19879B	5/5/2014	C8-C40	24233	24233	24315	24315	11%	11%

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

LDC #: 32184C8

VALIDATION FINDINGS WORKSHEET
Continuing Calibration Calculation Verification

Reviewer: BR
2nd Reviewer: SM

METHOD: GC_____HPLC_____

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

Percent difference (%D) = 100 * (N - C)/N

Where: N = Initial Calibration Factor or Nominal Amount
C = Calibration Factor from Continuing Calibration Standard or Calculated Amount

#	Standard ID	Calibration Date	Compound	CCV Conc/CF	Reported Conc/CF	Recalculated Conc/CF	Reported % D	Recalculated %D
1	TPH_3VG	6/4/2014	C8-C40	288.01	282.41	282.41	2	2
	B	18:32						
2	TPH_3VP	6/5/2014	C8-C40	288.01	316.86	316.86	10	10
	A	21:52						
3								

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

LDC #: 32184C8

VALIDATION FINDINGS WORKSHEET
Surrogate Results Verification

Reviewer: BR
2nd reviewer: SM

METHOD: X GC __ HPLC

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

% Recovery: SF/SS * 100

Where: SF = Surrogate Found
SS = Surrogate Spiked

Sample ID: 1

Surrogate	Column/Detector	Surrogate Spiked	Surrogate Found	Percent Recovery	Percent Recovery	Percent Difference
				Reported	Recalculated	
Chlorobenzene	FID/B	2.00	1.824365	91	91	0
Orthoterphenyl	L	2.00	~~1.886891~~ 1.886891	94	94	0

Sample ID: _____

Surrogate	Column/Detector	Surrogate Spiked	Surrogate Found	Percent Recovery	Percent Recovery	Percent Difference
				Reported	Recalculated	

Sample ID: _____

Surrogate	Column/Detector	Surrogate Spiked	Surrogate Found	Percent Recovery	Percent Recovery	Percent Difference
				Reported	Recalculated	

LDC #: 32184C8

VALIDATION FINDINGS WORKSHEET

Laboratory Control Sample/Laboratory Control Sample Duplicates Results Verification

Reviewer: BR

2nd Reviewer: SM

METHOD: X GC __HPLC

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

%Recovery = 100 * (SSC - SC)/SA

Where SSC = Spiked sample concentration; SA = Spike added; SC = Sample concentration

RPD =({SSCLCS - SSCLCSD} * 2) / (SSCLCS + SSCLCSD))*100

LCS = Laboratory Control Sample; LCSD = Laboratory Control Sample duplicate

LCS/LCSD samples: LCS 2914

Compound	Spike Added (mg/kg)		Spike Sample Concentration (mg/kg)		LCS Percent Recovery		LCSD Percent Recovery		LCS/LCSD RPD	
	LCS	LCSD	LCS	LCSD	Reported	Recalc.	Reported	Recalc.	Reported	Recalc.
Gasoline (8015)										
Diesel (8015)										
Benzene (8021B)										
Methane (RSK-175)										
2,4-D (8151)										
Dinoseb (8151)										
Naphthalene (8310)										
Anthracene (8310)										
HMX (8330)										
2,4,6-Trinitrotoluene (8330)										
EPH (C8-C11)	5.02	-	4.61	-	92	92	-	-	-	-

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

LDC #: 32184C8

VALIDATION FINDINGS WORKSHEET
Sample Calculation Verification

Reviewer: BR
2nd Reviewer: SM

METHOD: X GC __ HPLC

Y N N/A Were all reported results recalculated and verified for all level IV samples?
Y N N/A Were all recalculated results for detected target compounds within 10% of the reported results?

C21 - C30 = 6.5

Concentration= (A)(Fv)(Df) / (RF)(Vs or Ws)(%S/100)

A= Area or height of the compound to be measured
Fv= Final Volume of extract
Df= Dilution Factor
RF= Average response factor of the compound In the initial calibration
Vs= Initial volume of the sample
Ws= Initial weight of the sample
%S= Percent Solid

Example:

Sample ID. 4 Compound Name EFH C21 - C30

Concentration = (4423285)(1) / (2415)(30)(0.969)
= 6.257856744 mg/kg

#	Sample ID	Compound	Reported Concentrations ( )	Recalculated Results Concentrations ( )	Qualifications

Comments: _____

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name:	Santa Susana Field Laboratory
Collection Date:	June 2, 2014
LDC Report Date:	August 5, 2014
Matrix:	Soil
Parameters:	Dioxins/Dibenzofurans
Validation Level:	Level IV
Laboratory:	Eurofins
Sample Delivery Group (SDG):	PH212

Sample Identification

SL-653-SA5C-TR-0.5
SL-653-SA5C-TR-5.0
SL-653-SA5C-TR-10.0
SL-653-SA5C-TR-15.0

Introduction

This data review covers 4 soil 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 the Quality Assurance Project Plan for Santa Susana Field Laboratory (SSFL), RCRA Facility Investigation, Surficial Media Operable Unit (March 2009, Revision 4) and a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Superfund Organic Methods Data Review (June 2008).

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.

The following are definitions of the data qualifiers:

U Indicates the compound or analyte was analyzed for but not detected.

J Indicates an estimated value.

R Quality control indicates the data is not usable.

NJ Presumptive evidence of presence of the compound at an estimated quantity.

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. HRGC/HRMS Instrument Performance Check

Instrument performance was checked at the required daily frequency.

The chromatographic resolution between 2,3,7,8-TCDD and the peaks representing any other unlabeled TCDD isomers was resolved with a valley of less than or equal to 25%.

The static resolving power was at least 10,000 (10% valley definition).

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.

The minimum S/N ratio was greater than or equal to 2.5 for target compounds and 10 for recovery and internal standard compounds.

IV. Continuing Calibration

Continuing calibration was performed at the required frequencies.

All of the continuing calibration results were within the QC limits for unlabeled compounds and labeled compounds.

The second source calibration standard results were within the QC limits for unlabeled compounds and labeled compounds.

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
BLK149004	6/10/14	1,2,3,4,7,8-HxCDD 1,2,3,6,7,8-HxCDD 1,2,3,4,6,7,8-HpCDD OCDD 1,2,3,7,8-PeCDF 2,3,4,7,8-PeCDF 1,2,3,4,7,8-HxCDF 1,2,3,7,8,9-HxCDF 1,2,3,4,6,7,8-HpCDF 1,2,3,4,7,8,9-HpCDF OCDF	0.0558 ng/Kg 0.0628 ng/Kg 0.103 ng/Kg 0.217 ng/Kg 0.143 ng/Kg 0.0760 ng/Kg 0.0578 ng/Kg 0.0787 ng/Kg 0.0595 ng/Kg 0.0431 ng/Kg 0.216 ng/Kg	All samples in SDG PH212

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

Sample	Compound	Reported Concentration	Modified Final Concentration
SL-653-SA5C-TR-0.5	1,2,3,4,7,8-HxCDD 1,2,3,6,7,8-HxCDD 1,2,3,7,8-PeCDF 1,2,3,4,7,8-HxCDF 1,2,3,4,6,7,8-HpCDF 1,2,3,4,7,8,9-HpCDF OCDF	0.0493 ng/Kg 0.0720 ng/Kg 0.0676 ng/Kg 0.0803 ng/Kg 0.260 ng/Kg 0.0620 ng/Kg 0.399 ng/Kg	0.0493U ng/Kg 0.0720U ng/Kg 0.0676U ng/Kg 0.0803U ng/Kg 0.260U ng/Kg 0.0620U ng/Kg 0.399U ng/Kg
SL-653-SA5C-TR-5.0	1,2,3,4,6,7,8-HpCDD 1,2,3,7,8-PeCDF 2,3,4,7,8-PeCDF 1,2,3,4,7,8-HxCDF 1,2,3,7,8,9-HxCDF 1,2,3,4,6,7,8-HpCDF 1,2,3,4,7,8,9-HpCDF OCDF	0.201 ng/Kg 0.0554 ng/Kg 0.0578 ng/Kg 0.124 ng/Kg 0.0844 ng/Kg 0.0653 ng/Kg 0.0609 ng/Kg 0.355 ng/Kg	0.201U ng/Kg 0.0554U ng/Kg 0.0578U ng/Kg 0.124U ng/Kg 0.0844U ng/Kg 0.0653U ng/Kg 0.0609U ng/Kg 0.355U ng/Kg
SL-653-SA5C-TR-10.0	1,2,3,6,7,8-HxCDD 1,2,3,4,6,7,8-HpCDD OCDD 1,2,3,7,8-PeCDF 1,2,3,4,7,8-HxCDF 1,2,3,7,8,9-HxCDF 1,2,3,4,6,7,8-HpCDF 1,2,3,4,7,8,9-HpCDF OCDF	0.0825 ng/Kg 0.0801 ng/Kg 0.877 ng/Kg 0.0525 ng/Kg 0.0475 ng/Kg 0.0745 ng/Kg 0.0339 ng/Kg 0.0442 ng/Kg 0.133 ng/Kg	0.0825U ng/Kg 0.0801U ng/Kg 0.877U ng/Kg 0.0525U ng/Kg 0.0475U ng/Kg 0.0745U ng/Kg 0.0339U ng/Kg 0.0442U ng/Kg 0.133U ng/Kg
SL-653-SA5C-TR-15.0	1,2,3,6,7,8-HxCDD 1,2,3,4,6,7,8-HpCDD 1,2,3,7,8-PeCDF 2,3,4,7,8-PeCDF 1,2,3,4,7,8-HxCDF 1,2,3,4,6,7,8-HpCDF OCDF	0.236 ng/Kg 0.482 ng/Kg 0.265 ng/Kg 0.0879 ng/Kg 0.0929 ng/Kg 0.177 ng/Kg 0.512 ng/Kg	0.236U ng/Kg 0.482U ng/Kg 0.265U ng/Kg 0.0879U ng/Kg 0.0929U ng/Kg 0.177U ng/Kg 0.512U ng/Kg

Sample EB3-060414 (from SDG PH217) was identified as an equipment blank. No polychlorinated dioxin/dibenzofuran contaminants were found with the following exceptions:

Blank ID	Sampling Date	Compound	Concentration	Associated Samples
EB3-060414	6/4/14	2,3,7,8-TCDD 1,2,3,7,8-PeCDD 1,2,3,4,7,8-HxCDD 1,2,3,6,7,8-HxCDD 1,2,3,4,6,7,8-HpCDD OCDD 1,2,3,7,8-PeCDF 2,3,4,7,8-PeCDF 1,2,3,4,7,8-HxCDF 1,2,3,6,7,8-HxCDF 2,3,4,6,7,8-HxCDF 1,2,3,7,8,9-HxCDF 1,2,3,4,6,7,8-HpCDF 1,2,3,4,7,8,9-HpCDF OCDF	0.262 pg/L 0.331 pg/L 0.209 pg/L 0.313 pg/L 0.541 pg/L 2.25 pg/L 0.647 pg/L 0.375 pg/L 0.549 pg/L 0.379 pg/L 0.388 pg/L 0.423 pg/L 0.539 pg/L 0.408 pg/L 1.21 pg/L	All samples in SDG PH212

Sample FB-052114 (FROM SDG PH191) was identified as a field blank. No polychlorinated dioxin/dibenzofuran contaminants were found with the following exceptions:

Blank ID	Sampling Date	Compound	Concentration	Associated Samples
FB-052114	5/21/14	1,2,3,4,6,7,8-HpCDD OCDD 1,2,3,7,8-PeCDF 1,2,3,4,7,8-HxCDF 2,3,4,6,7,8-HxCDF 1,2,3,7,8,9-HxCDF 1,2,3,4,6,7,8-HpCDF 1,2,3,4,7,8,9-HpCDF OCDF	1.23 pg/L 6.37 pg/L 0.333 pg/L 0.108 pg/L 0.188 pg/L 0.182 pg/L 0.176 pg/L 0.328 pg/L 0.531 pg/L	All samples in SDG PH212

Sample concentrations were compared to concentrations detected in the field blanks. The sample concentrations were either not detected or were significantly greater (>5X for other contaminants) than the concentrations found in the associated field 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 (%R) were within QC limits.

X. Target Compound Identifications

All target compound identifications were within validation criteria.

XI. Compound Quantitation

All compound quantitations were within validation criteria.

All compounds reported below the RL were qualified as follows:

Sample	Finding	Flag	A or P
All samples in SDG PH212	All compounds reported below the RL.	J (all detects)	A

XII. System Performance

The system performance was acceptable.

XIII. Overall Assessment of Data

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

XIV. Field Duplicates

No field duplicates were identified in this SDG.

Santa Susana Field Laboratory
Dioxins/Dibenzofurans - Data Qualification Summary - SDG PH212

SDG	Sample	Analyte	Flag	A or P	Reason (Code)
PH212	SL-653-SA5C-TR-0.5 SL-653-SA5C-TR-5.0 SL-653-SA5C-TR-10.0 SL-653-SA5C-TR-15.0	All compounds reported below the RL.	J (all detects)	A	Compound quantitation (Z)

Santa Susana Field Laboratory
Dioxins/Dibenzofurans - Laboratory Blank Data Qualification Summary - SDG PH212

SDG	Sample	Analyte	Modified Final Concentration	A or P	Code
PH212	SL-653-SA5C-TR-0.5	1,2,3,4,7,8-HxCDD 1,2,3,6,7,8-HxCDD 1,2,3,7,8-PeCDF 1,2,3,4,7,8-HxCDF 1,2,3,4,6,7,8-HpCDF 1,2,3,4,7,8,9-HpCDF OCDF	0.0493U ng/Kg 0.0720U ng/Kg 0.0676U ng/Kg 0.0803U ng/Kg 0.260U ng/Kg 0.0620U ng/Kg 0.399U ng/Kg	A	B
PH212	SL-653-SA5C-TR-5.0	1,2,3,4,6,7,8-HpCDD 1,2,3,7,8-PeCDF 2,3,4,7,8-PeCDF 1,2,3,4,7,8-HxCDF 1,2,3,7,8,9-HxCDF 1,2,3,4,6,7,8-HpCDF 1,2,3,4,7,8,9-HpCDF OCDF	0.201U ng/Kg 0.0554U ng/Kg 0.0578U ng/Kg 0.124U ng/Kg 0.0844U ng/Kg 0.0653U ng/Kg 0.0609U ng/Kg 0.355U ng/Kg	A	B
PH212	SL-653-SA5C-TR-10.0	1,2,3,6,7,8-HxCDD 1,2,3,4,6,7,8-HpCDD OCDD 1,2,3,7,8-PeCDF 1,2,3,4,7,8-HxCDF 1,2,3,7,8,9-HxCDF 1,2,3,4,6,7,8-HpCDF 1,2,3,4,7,8,9-HpCDF OCDF	0.0825U ng/Kg 0.0801U ng/Kg 0.877U ng/Kg 0.0525U ng/Kg 0.0475U ng/Kg 0.0745U ng/Kg 0.0339U ng/Kg 0.0442U ng/Kg 0.133U ng/Kg	A	B
PH212	SL-653-SA5C-TR-15.0	1,2,3,6,7,8-HxCDD 1,2,3,4,6,7,8-HpCDD 1,2,3,7,8-PeCDF 2,3,4,7,8-PeCDF 1,2,3,4,7,8-HxCDF 1,2,3,4,6,7,8-HpCDF OCDF	0.236U ng/Kg 0.482U ng/Kg 0.265U ng/Kg 0.0879U ng/Kg 0.0929U ng/Kg 0.177U ng/Kg 0.512U ng/Kg	A	B

Santa Susana Field Laboratory
Dioxins/Dibenzofurans - Field Blank Data Qualification Summary - SDG PH212

No Sample Data Qualified in this SDG

LDC #: 32184C21 **VALIDATION COMPLETENESS WORKSHEET** Date: 7-31-14
SDG #: PH212 Level IV Page: 1 of 1
Laboratory: Eurofins Lancaster Laboratories Reviewer: SW
2nd Reviewer: SW

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: 4/2/14
II.	HRGC/HRMS Instrument performance check	A	
III.	Initial calibration	A	≤20/35
IV.	Continuing Calibration	A	QC limits
V.	Blanks	SW	
VI.	Matrix spike/Matrix spike duplicates	N	C.S.
VII.	Laboratory control samples	A	DPR
VIII.	Regional quality assurance and quality control	N	
IX.	Internal standards	A	
X.	Target compound identifications	A	
XI.	Compound quantitation/RL/~~LOQ/LODs~~	A	
XII.	System performance	A	
XIII.	Overall assessment of data	A	
XIV.	Field duplicates	N	
XV.	Field blanks	SW	EB=EB3-060414 (PH217); FB=FB-052114 (PH191)

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

1	SL-653-SA5C-TR-0.5	11		21		31	
2	SL-653-SA5C-TR-5.0	12		22		32	
3	SL-653-SA5C-TR-10.0	13		23		33	
4	SL-653-SA5C-TR-15.0	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	BLK161001	30		40	

Notes:

LDC #: 32184C21

VALIDATION FINDINGS CHECKLIST

Reviewer: SM
2nd Reviewer: SM

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

Validation Area	Yes	No	NA	Findings/Comments
I. Technical holding times				
All technical holding times were met.	✓			
Cooler temperature criteria was met.	✓			
II. GC/MS Instrument performance check				
Was PFK exact mass 380.9760 verified?	✓			
Were the retention time windows established for all homologues?	✓			
Was the chromatographic resolution between 2,3,7,8-TCDD and peaks representing any other unlabeled TCDD isomers ≤ 25% ?	✓			
Is the static resolving power at least 10,000 (10% valley definition)?	✓			
Was the mass resolution adequately check with PFK?	✓			
Was the presence of 1,2,8,9-TCDD and 1,3,4,6,8-PeCDF verified?	✓			
III. Initial calibration				
Was the initial calibration performed at 5 concentration levels?	✓			
Were all percent relative standard deviations (%RSD) ≤ 20% for unlabeled compounds and ≤ 35% for labeled compounds ?	✓			
Did all calibration standards meet the Ion Abundance Ratio criteria?	✓			
Was the signal to noise ratio for each target compound ≥ 2.5 and for each recovery and internal standard ≥ 10?	✓			
IV. Continuing calibration				
Was a routine calibration performed at the beginning and end of each 12 hour period?	✓			
Were all the concentrations for the unlabeled compounds and labeled compounds within the QC limits (Method 1613B, Table 6)?	✓			
Did all routine calibration standards meet the Ion Abundance Ratio criteria?	✓			
V. Blanks				
Was a method blank associated with every sample in this SDG?	✓			
Was a method blank performed for each matrix and concentration?			✓	
Was there contamination in the method blanks? If yes, please see the Blanks validation completeness worksheet?	✓			
VI. Matrix spike/Matrix spike duplicates				
Were a matrix spike (MS) and matrix spike duplicate (MSD) analyzed for each matrix in this SDG? If no, indicate which matrix does not have an associated MS/MSD. Soil / Water.		✓		
Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?			✓	
VII. Laboratory control samples				
Was an LCS analyzed for this SDG?	✓		✓	
Was an LCS analyzed per extraction batch?				
Were the LCS percent recoveries (%R) and relative percent difference (RPD) within the QC limits?	✓			

LDC #: 32184C21

VALIDATION FINDINGS CHECKLIST

Reviewer: 9h
2nd Reviewer: M

Validation Area	Yes	No	NA	Findings/Comments
VIII. Regional Quality Assurance and Quality Control				
Were performance evaluation (PE) samples performed?		✓		
Were the performance evaluation (PE) samples within the acceptance limits?			✓	
IX. Internal standards				
Were internal standard recoveries within the 25-150% criteria?	✓			
Was the minimum S/N ratio of all internal standard peaks ≥ 10?	✓			
X. Target compound identification				
For 2,3,7,8 substituted congeners with associated labeled standards, were the retention times of the two quantitation peaks within -1 to 3 sec. of the RT of the labeled standard?	✓			
For 2,3,7,8 substituted congeners without associated labeled standards, were the relative retention times of the two quantitation peaks within 0.005 time units of the RRT measured in the routine calibration?	✓			
For non-2,3,7,8 substituted congeners, were the retention times of the two quantitation peaks within RT established in the performance check solution?			✓	
Did compound spectra contain all characteristic ions listed in the table attached?	✓			
Was the Ion Abundance Ratio for the two quantitation ions within criteria?		✓		
Was the signal to noise ratio for each target compound and labeled standard ≥ 2.5?	✓			
Does the maximum intensity of each specified characteristic ion coincide within ± 2 seconds (includes labeled standards)?	✓			
For PCDF identification, was any signal (S/N ≥ 2.5, at ± seconds RT) detected in the corresponding PCDPE channel?		✓		
Was an acceptable lock mass recorded and monitored?	✓			
XI. Compound quantitation/CRQLs				
Were the correct internal standard (IS), quantitation ion and relative response factor (RRF) used to quantitate the compound?	✓			
Were compound quantitation and CRQLs adjusted to reflect all sample dilutions and dry weight factors applicable to level IV validation?	✓			
XII. System performance				
System performance was found to be acceptable.	✓			
XIII. Overall assessment of data				
Overall assessment of data was found to be acceptable.	✓			
XIV. Field duplicates				
Field duplicate pairs were identified in this SDG.		✓		
Target compounds were detected in the field duplicates.			✓	
XV. Field blanks				
Field blanks were identified in this SDG.	✓			
Target compounds were detected in the field blanks.	✓			

VALIDATION FINDINGS WORKSHEET

METHOD: HRGC/HRMS Dioxins/Dibenzofurans (EPA 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 #: 32184C21

VALIDATION FINDINGS WORKSHEET
Blanks

Reviewer: 9h
2nd Reviewer: Sm

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

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: 06/10/14 **Blank analysis date:** 06/11/14 **Associated samples:** All Qual U (B)
Conc. units: ng/kg

Compound	Blank ID	Sample Identification								
	BLK149004	5x	1	2	3	4				
C	0.0558*	0.279	0.0493*							
D	0.0628*	0.314	0.0720*		0.0825*	0.236*				
F	0.103*	0.515		0.201	0.0801*	0.482*				
G	0.217*	1.09			0.877					
I	0.143*	0.715	0.0676*	0.0554*	0.0525*	0.265*				
J	0.0760*	0.380		0.0578*		0.0879				
K	0.0578*	0.289	0.0803*	0.124*	0.0475*	0.0929				
N	0.0787	0.394		0.0844*	0.0745*					
O	0.0595*	0.298	0.260	0.0653	0.0339*	0.177*				
P	0.0431*	0.216	0.0620*	0.0609*	0.0442*					
Q	0.216*	1.08	0.399*	0.355*	0.133*	0.512				

*EMPC

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 #: 32184C21

VALIDATION FINDINGS WORKSHEET
Field Blanks

Reviewer: 9n
2nd Reviewer: Sm

METHOD: HRGC/HRMS Dioxins/Furans (EPA Method 1613B)

Blank units: pg/L **Associated sample units:** ng/kg
Sampling date: 06/04/14
Field blank type: (circle one) Field Blank / Rinsate / Other: EB Associated Samples: all >5x

Compound	Blank ID	Sample Identification								
	EB3-060414	5X								
A	0.262*	0.00131								
B	0.331	0.00166								
C	0.209*	0.00105								
D	0.313*	0.00157								
F	0.541*	0.00271								
G	2.25	0.01125								
I	0.647*	0.00324								
J	0.375	0.00188								
K	0.549*	0.00275								
L	0.379*	0.00190								
M	0.388	0.00194								
N	0.423	0.00212								
O	0.539*	0.00270								
P	0.408*	0.00204								
Q	1.21*	0.00605								

*EMPC

EB3-060414 (PH217)

CIRCLED RESULTS WERE NOT QUALIFIED. ALL RESULTS NOT CIRCLED WERE QUALIFIED BY THE FOLLOWING STATEMENT:
All contaminants within five times the blank concentration were qualified as not detected, "U".

LDC #: 32184C21

VALIDATION FINDINGS WORKSHEET
Field Blanks

Reviewer: AH
2nd Reviewer: SM

METHOD: HRGC/HRMS Dioxins/Furans (EPA Method 1613B)

Blank units: pg/L **Associated sample units:** ng/kg
Sampling date: 05/21/14
Field blank type: (circle one) Field Blank / Rinsate / Other: FB Associated Samples: all >5X

Compound	Blank ID	Sample Identification								
	FB-052114	5X								
F	1.23*	0.00615								
G	6.37*	0.03185								
I	0.333*	0.00167								
K	0.108*	0.00054								
M	0.188*	0.00094								
N	0.182*	0.00091								
O	0.176*	0.00088								
P	0.328*	0.00164								
Q	0.531*	0.00266								

*EMPC

FB-052114 (PH191)

CIRCLED RESULTS WERE NOT QUALIFIED. ALL RESULTS NOT CIRCLED WERE QUALIFIED BY THE FOLLOWING STATEMENT:
All contaminants within five times the blank concentration were qualified as not detected, "U".

V:\Field Blanks\32030A21_FB3-052114.wpd

LDC #: 32184C21

VALIDATION FINDINGS WORKSHEET
Initial Calibration Calculation Verification

Reviewer: 9m
2nd Reviewer: Sm

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

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

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

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

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

#	Standard ID	Calibration Date	Compound (Reference Internal Standard)	Reported Average RRF (initial)	Recalculated Average RRF (initial)	Reported RRF (CS3 std)	Recalculated RRF (CS3 std)	Reported %RSD	Recalculated %RSD
1	DF18471	06/05/14	2,3,7,8-TCDF (^{13}C-2,3,7,8-TCDF)	1.110	1.1095	1.087	1.087	6.14	6.13
			2,3,7,8-TCDD (^{13}C-2,3,7,8-TCDD)	1.305	1.3045	1.188	1.188	15.84	15.85
			1,2,3,6,7,8-HxCDD (^{13}C-1,2,3,6,7,8-HxCDD)	1.046	1.0455	0.987	0.987	9.36	9.34
			1,2,3,4,6,7,8-HpCDD (^{13}C-1,2,4,6,7,8,-HpCDD)	1.118	1.118	1.056	1.056	10.54	10.53
			OCDF (^{13}C-OCDF)	1.006	1.006	0.977	0.977	7.73	7.74
2			2,3,7,8-TCDF (^{13}C-2,3,7,8-TCDF)						
			2,3,7,8-TCDD (^{13}C-2,3,7,8-TCDD)						
			1,2,3,6,7,8-HxCDD (^{13}C-1,2,3,6,7,8-HxCDD)						
			1,2,3,4,6,7,8-HpCDD (^{13}C-1,2,4,6,7,8,-HpCDD)						
			OCDF (^{13}C-OCDF)						
3			2,3,7,8-TCDF (^{13}C-2,3,7,8-TCDF)						
			2,3,7,8-TCDD (^{13}C-2,3,7,8-TCDD)						
			1,2,3,6,7,8-HxCDD (^{13}C-1,2,3,6,7,8-HxCDD)						
			1,2,3,4,6,7,8-HpCDD (^{13}C-1,2,4,6,7,8,-HpCDD)						
			OCDF (^{13}C-OCDF)						

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

LDC #: 32184C21

VALIDATION FINDINGS WORKSHEET
Routine Calibration Results Verification

Reviewer: 9m
2nd Reviewer: Sm

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

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

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

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

#	Standard ID	Calibration Date	Compound (Reference Internal Standard)	Spiked Conc (ng/mL)	Reported Conc (ng/mL)	Recalculated Conc (ng/mL)	Reported %R	Recalculated %R
1	14JUN11-03	6-11-14	2,3,7,8-TCDF (^{13}C-2,3,7,8-TCDF)	10	9.868	9.864	99	99
			2,3,7,8-TCDD (^{13}C-2,3,7,8-TCDD)	10	9.271	9.267	93	93
			1,2,3,6,7,8-HxCDD (^{13}C-1,2,3,6,7,8-HxCDD)	50	48.095	48.076	96	96
			1,2,3,4,6,7,8-HpCDD (^{13}C-1,2,4,6,7,8,-HpCDD)	50	47.711	47.713	95	95
			OCDF (^{13}C-OCDF)	100	90.507	90.518	91	91
2	14JUN11-17	6-12-14	2,3,7,8-TCDF (^{13}C-2,3,7,8-TCDF)	10	9.716	9.712	97	97
			2,3,7,8-TCDD (^{13}C-2,3,7,8-TCDD)	10	9.735	9.731	97	97
			1,2,3,6,7,8-HxCDD (^{13}C-1,2,3,6,7,8-HxCDD)	50	47.747	47.729	95	95
			1,2,3,4,6,7,8-HpCDD (^{13}C-1,2,4,6,7,8,-HpCDD)	50	48.259	48.261	97	97
			OCDF (^{13}C-OCDF)	100	91.466	91.477	91	91
3			2,3,7,8-TCDF (^{13}C-2,3,7,8-TCDF)	10				
			2,3,7,8-TCDD (^{13}C-2,3,7,8-TCDD)	10				
			1,2,3,6,7,8-HxCDD (^{13}C-1,2,3,6,7,8-HxCDD)	50				
			1,2,3,4,6,7,8-HpCDD (^{13}C-1,2,4,6,7,8,-HpCDD)	50				
			OCDF (^{13}C-OCDF)	100				

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

LDC #: 32184C21

VALIDATION FINDINGS WORKSHEET
Laboratory Control Sample Results Verification

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

METHOD: GC/MS Dioxins/Dibenzofurans (EPA Method 1613B)

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

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

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

LCS ID: OPR161001

Compound	Spike Added (ng/kg)		Spiked Sample Concentration (ng/kg)		LCS Percent Recovery		LCSD Percent Recovery		LCS/LCSD RPD	
	LCS	LCSD	LCS	LCSD	Reported	Recalc	Reported	Recalc	Reported	Recalculated
2,3,7,8-TCDD	20.0	NA	19.8	NA	99	99				
1,2,3,7,8-PeCDD	100		104		104	104				
1,2,3,4,7,8-HxCDD	100		96.2		96	96				
1,2,3,4,7,8,9-HpCDF	100		99.8		100	100				
OCDF	200		191		95	95				

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

LDC #: 32184C21

VALIDATION FINDINGS WORKSHEET
Sample Calculation Verification

Reviewer: QL
2nd reviewer: SM

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

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

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

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

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

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

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

RRF = Relative Response Factor (average) from the initial calibration

Df = Dilution Factor.

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

Example:

Sample I.D. 1 , Q :

Conc. = $\frac{(438+548)(4000)(1)}{(505897+450001)(1.006)(10.48)(0.98)}$

= 0.399 ng/kg

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

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: Santa Susana Field Laboratory

Collection Date: June 2, 2014

LDC Report Date: August 4, 2014

Matrix: Soil

Parameters: Explosives

Validation Level: Level IV

Laboratory: Eurofins

Sample Delivery Group (SDG): PH212

Sample Identification

SL-653-SA5C-TR-0.5
SL-653-SA5C-TR-5.0
SL-653-SA5C-TR-10.0
SL-653-SA5C-TR-15.0

Introduction

This data review covers 4 soil samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA SW 846 Method 8330A for Explosives.

This review follows the Quality Assurance Project Plan for Santa Susana Field Laboratory (SSFL), RCRA Facility Investigation, Surficial Media Operable Unit (March 2009, Revision 4) and a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Superfund Organic Methods Data Review (June 2008).

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.

The following are definitions of the data qualifiers:

U Indicates the compound or analyte was analyzed for but not detected.

J Indicates an estimated value.

R Quality control indicates the data is not usable.

NJ Presumptive evidence of presence of the compound at an estimated quantity.

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. Initial Calibration

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

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

In the case where the laboratory used a calibration curve to evaluate the compounds, all coefficients of determination (r^2) were greater than or equal to 0.990.

Retention time windows were evaluated and considered technically acceptable.

III. Continuing Calibration

Continuing calibration was performed at required frequencies.

The percent differences (%D) were less than or equal to 20.0% for all compounds.

The percent differences (%D) of the second source calibration standard were less than or equal to 20.0% for all compounds.

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

IV. Blanks

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

Sample EB3-060414 (from SDG PH217) was identified as an equipment blank. No explosive contaminants were found.

Sample FB-052114 (from SDG PH191) was identified as an equipment blank. No explosive contaminants were found.

V. Surrogate Recovery

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

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. Laboratory Control Samples (LCS)

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

LCS ID (Associated Samples)	Compound	LCS %R (Limits)	LCSD %R (Limits)	RPD (Limits)	Flag	A or P
LCS 01155 (All samples in SDG PH212)	PETN	158 (64-121)	-	-	J (all detects)	P

VIII. Target Compound Identification

All target compound identifications were within validation criteria.

IX. Compound Quantitation

All compound quantitations were within validation criteria.

All compounds reported below the RL were qualified as follows:

Sample	Finding	Flag	A or P
All samples in SDG PH212	All compounds reported below the RL.	J (all detects)	A

X. System Performance

The system performance was acceptable.

XI. Overall Assessment of Data

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

XII. Field Duplicates

No field duplicates were identified in this SDG.

Santa Susana Field Laboratory, Trench
Explosives - Data Qualification Summary - SDG PH212

SDG	Sample	Compound	Flag	A or P	Reason (Codes)
PH212	SL-653-SA5C-TR-0.5 SL-653-SA5C-TR-5.0 SL-653-SA5C-TR-10.0 SL-653-SA5C-TR-15.0	PETN	J (all detects)	P	Laboratory control samples (%R) (L)
PH212	SL-653-SA5C-TR-0.5 SL-653-SA5C-TR-5.0 SL-653-SA5C-TR-10.0 SL-653-SA5C-TR-15.0	All compounds reported below the RL.	J (all detects)	A	Compound quantitation (Z)

Santa Susana Field Laboratory, Trench
Explosives - Laboratory Blank Data Qualification Summary - SDG PH212

No Sample Data Qualified in this SDG

Santa Susana Field Laboratory, Trench
Explosives - Field Blank Data Qualification Summary - SDG PH212

No Sample Data Qualified in this SDG

LDC #: 32184C40 **VALIDATION COMPLETENESS WORKSHEET** Date: 7/30/14
SDG #: PH212 Level IV Page: 1 of 1
Laboratory: Eurofins Reviewer: KR
2nd Reviewer: SM

METHOD: HPLC Explosives (EPA SW 846 Method 8330A)

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

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 6/2/14
II	Initial calibration	A	RSD ≤ 20%, r²
III.	Calibration verification/ICV	A	ICV/CCV ≤ 20%
IV.	Blanks	A	
V	Surrogate recovery	A	
VI.	Matrix spike/Matrix spike duplicates	N	Client spec.
VII.	Laboratory control samples	SW	LCS/D
VIII.	Target compound identification	A	
IX.	Compound quantitation/RL/LOQ/LODs	A	
X.	System Performance	A	
XI.	Overall assessment of data	A	
XII.	Field duplicates	N	
XIII.	Field blanks	ND	EB = EB3-060414 (SDG # PH217) FB = FB-052114 (SDG # PH191)

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

1	SL-653-SA5C-TR-0.5	11		21		31	PBLK 011155
2	SL-653-SA5C-TR-5.0	12		22		32	
3	SL-653-SA5C-TR-10.0	13		23		33	
4	SL-653-SA5C-TR-15.0	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 #: 32184C40

VALIDATION FINDINGS CHECKLIST

Reviewer: BR
2nd Reviewer: SM

Method: ____ GC X HPLC

Validation Area	Yes	No	NA	Findings/Comments
I. Technical holding times				
All technical holding times were met.	✓			
Cooler temperature criteria was met.	✓			
II. Initial calibration				
Did the laboratory perform a 5 point calibration prior to sample analysis?	✓			
Was a linear fit used for evaluation? If yes, were all percent relative standard deviations (%RSD) ≤ 20%?	✓			
Was a curve fit used for evaluation? If Yes, what was the acceptance criteria used?	✓			
Did the initial calibration meet the curve fit acceptance criteria?	✓			
Were the RT windows properly established?	✓			
IV. Continuing calibration				
What type of continuing calibration calculation was performed? ~~%~~D or X %R	✓			
Was a continuing calibration analyzed daily?	✓			
Were all percent differences (%D) ≤ 20%.0 or percent recoveries 80-120%?	✓			
Were all the retention times within the acceptance windows?	✓			
V. Blanks				
Was a method blank associated with every sample in this SDG?	✓			
Was a method blank analyzed for each matrix and concentration?	✓			
Was there contamination in the method blanks? If yes, please see the Blanks validation completeness worksheet.		✓		
VI. Surrogate spikes				
Were all surrogate %R within the QC limits?	✓			
If the percent recovery (%R) of one or more surrogates was outside QC limits, was a reanalysis performed to confirm %R?			✓	
If any %R was less than 10 percent, was a reanalysis performed to confirm %R?			✓	
VII. Matrix spike/Matrix spike duplicates				
Were a matrix spike (MS) and matrix spike duplicate (MSD) analyzed for each matrix in this SDG? If no, indicate which matrix does not have an associated MS/MSD. Soil / Water.	✓	✓		
Was a MS/MSD analyzed every 20 samples of each matrix?			✓	
Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?			✓	
VIII. Laboratory control samples				
Was an LCS analyzed for this SDG?	✓			
Was an LCS analyzed per extraction batch?	✓			
Were the LCS percent recoveries (%R) and relative percent difference (RPD) within the QC limits?		✓		

Validation Area	Yes	No	NA	Findings/Comments
IX. Regional Quality Assurance and Quality Control				
Were performance evaluation (PE) samples performed?		✓		
Were the performance evaluation (PE) samples within the acceptance limits?			✓	
X. Target compound identification				
Were the retention times of reported detects within the RT windows?	✓			
XI. Compound quantitation/CRQLs				
Were compound quantitation and CRQLs adjusted to reflect all sample dilutions and dry weight factors applicable to level IV validation?	✓			
XII. System performance				
System performance was found to be acceptable.	✓			
XIII. Overall assessment of data				
Overall assessment of data was found to be acceptable.	✓			
XIV. Field duplicates				
Field duplicate pairs were identified in this SDG.		✓		
Target compounds were detected in the field duplicates.			✓	
XV. Field blanks				
Field blanks were identified in this SDG.	✓			
Target compounds were detected in the field blanks.		✓		

VALIDATION FINDINGS WORKSHEET

METHOD: ____GC __X__HPLC

8310	8330	8151	8141	8141 (Con't)	8021B
A. Acenaphthene	A. HMX	A. 2,4-D	A. Dichlorvos	V. Fensulfothion	V. Benzene
B. Acenaphthylene	B. RDX	B. 2,4-DB	B. Mevinphos	W. Bolstar	CC. Toluene
C. Anthracene	C. 1,3,5-Trinitrobenzene	C. 2,4,5-T	C. Demeton-O	X. EPN	EE. Ethylbenzene
D. Benzo(a)anthracene	D. 1,3-Dinitrobenzene	D. 2,4,5-TP	D. Demeton-S	Y. Azinphos-methyl	SSS. o-Xylene
E. Benzo(a)pyrene	E. Tetryl	E. Dinoseb	E. Ethoprop	Z. Coumaphos	RRR. m,p-Xylenes
F. Benzo(b)fluoranthene	F. Nitrobenzene	F. Dichlorprop	F. Naled	AA. Parathion	GG. Total xylenes
G. Benzo(g,h,i)perylene	G. 2.4.6-Trinitrotoluene	G. Dicamba	G. Sulfotepp	BB. Famphur	
H. Benzo(k)fluoranthene	H. 4-Amino-2,6-dinitrotoluene	H. Dalapon	H. Phorate	CC. Phosmet	
I. Chrysene	I. 2-Amino-4,6-dinitrotoluene	I. MCPP	I. Dimethoate	DD. Trifluralin	
J. Dibenz(a,h)anthracene	J. 2,4-Dinitrotolune	J. MCPA	J. Diazinon	EE. Def	
K. Fluoranthene	K. 2,6-Dinitrotoluene	K. Pentachlorophenol	K. Disulfoton	FF. Prowl	Krone
L. Fluorene	L. 2-Nitrotoluene	L.. 2,4,5-TP (silvex)	L. Parathion-methyl	GG. Ethion	A. Tetra-n-butyltin
M. Indeno(1,2,3-cd)pyrene	M. 3-Nitrotoluene	M. Silvex	M. Ronnel	HH. Tetrachlorvinphos	B. Tri-n-butyltin Cation
N. Naphthalene	N. 4-Nitrotoluene		N. Malathion	II. Sulprofos	C. Di-n-butyltin Cation
O. Phenanthrene	O. PETN		O. Chlorpyrifos		D. N-Butyltin Cation
P. Pyrene	P.		P. Fenthion		
Q.	Q		Q. Parathion-ethyl		
R.			R. Trichloronate		
S.			S. Merphos		
			T. Stirophos		
			U. Tokuthion		

Notes:_____

LDC #: 32184C40

VALIDATION FINDINGS WORKSHEET
Laboratory Control Samples (LCS)

Page: 1 of 1
Reviewer: BK
2nd Reviewer: SM

METHOD: __ GC X HPLC

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

Y N N/A Were a laboratory control samples (LCS) and laboratory control sample duplicate (LCSD) analyzed for each matrix in this SDG?

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

Level IV/D Only

Y N N/A Was an LCS analyzed every 20 samples for each matrix or whenever a sample extraction was performed?

#	LCS/LCSD ID	Compound	LCS %R (Limits)	LCSD %R (Limits)	RPD (Limits)	Associated Samples	Qualifications (Code: C)
	LCS 01155	O	158 (64-121)	( )	( )	All	J det/P
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
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			( )	( )	( )		
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			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		

LDC #: 32184C40

VALIDATION FINDINGS WORKSHEET
Initial Calibration Calculation Verification

Page: 1 of 1
Reviewer: BR
2nd Reviewer: [signature]

METHOD: GC _____ HPLC ___X____

The calibration factors (CF), average CF, and relative standard deviation (%RSD) were recalculated for compounds identified below using the following calculations:

CF = A/C
average CF = sum of the CF/number of standards
%RSD = 100 * (S/X)

Where:
A = Area of compound
C = Concentration of compound
S = Standard deviation of calibration factors
X = Mean of calibration factors

#	Standard ID	Calibration Date	Compound	Reported (CF 100.1 std)	Recalculated (CF 100.1 std)	Reported Average RRF (Initial)	Recalculated Average RRF (Initial)	Reported %RSD	Recalculated %RSD
1	ICAL	6/6/2014	2,6-Dinitrotoluene	150	150	149	149	8	8
	X6329A CHROMAPAC K		1,3,5-Trinitrobenze	212	212	222	222	7	7

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

LDC #: 32184C40

VALIDATION FINDINGS WORKSHEET
Initial Calibration Calculation Verification

Reviewer: BR
2nd Reviewer:

METHOD: GC _____ HPLC ___X____

The calibration factors (CF), average CF, and relative standard deviation (%RSD) were recalculated for compounds identified below using the following calculations:

CF = A/C
average CF = sum of the CF/number of standards
%RSD = 100 * (S/X)

Where:
A = Area of compound
C = Concentration of compound
S = Standard deviation of calibration factors
X = Mean of calibration factors

#	Standard ID	Calibration Date	Compound	Reported (CF 100.1 std)	Recalculated (CF 100.1 std)	Reported Average RRF (Initial)	Recalculated Average RRF (Initial)	Reported %RSD	Recalculated %RSD
1	ICAL	6/6/2014	HMX	92	92	98.3	98.3	9	9
	Y6329A		1,3-Dinitrobenzene	339	340	371	371	10	10
	CAPCELL								

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

LDC #: 32184C40

VALIDATION FINDINGS WORKSHEET
Continuing Calibration Calculation Verification

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

METHOD: GC____HPLC_X____

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

Percent difference (%D) = 100 * (N - C)/N

Where:
N = Initial Calibration Factor or Nominal Amount
C = Calibration Factor from Continuing Calibration Standard or Calculated Amount

#	Standard ID	Calibration Date	Compound	CCV Conc/CF	Reported Conc/CF	Recalculated Conc/CF	Reported % D	Recalculated %D
1	NITR3AK	6/6/2014	2,6-Dinitrotoluene	500.50	468.80	468.81	6	6
	CHROMAPAK	8:54	1,3,5-Trinitrobenzen	500.50	478.92	478.92	4	4
2	NITR3AR	6/6/2014	2,6-Dinitrotoluene	500.50	469.78	469.78	6	6
	CHROMAPAK	17:24	1,3,5-Trinitrobenzen	500.50	487.85	487.85	3	3

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

LDC #: 32184C40

VALIDATION FINDINGS WORKSHEET
Continuing Calibration Calculation Verification

Page: 2 of 4 ~~1 of 1~~
Reviewer: BR
2nd Reviewer: SM

METHOD: GC_____HPLC_X____

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

Percent difference (%D) = 100 * (N - C)/N

Where:
N = Initial Calibration Factor or Nominal Amount
C = Calibration Factor from Continuing Calibration Standard or Calculated Amount

#	Standard ID	Calibration Date	Compound	CCV Conc/CF	Reported Conc/CF	Recalculated Conc/CF	Reported % D	Recalculated %D
1	NITR3AT	6/7/2014	2,6-Dinitrotoluene	500.50	473.68	473.67	5	5
	CHROMAPACK	1:55	1,3,5-Trinitrobenzen	500.50	496.52	496.52	1	1
2								

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

LDC #: 32184C40

VALIDATION FINDINGS WORKSHEET
Continuing Calibration Calculation Verification

Reviewer: BR
2nd Reviewer:

METHOD: GC_____HPLC_X____

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

Percent difference (%D) = 100 * (N - C)/N

Where:
N = Initial Calibration Factor or Nominal Amount
C = Calibration Factor from Continuing Calibration Standard or Calculated Amount

#	Standard ID	Calibration Date	Compound	CCV Conc/CF	Reported Conc/CF	Recalculated Conc/CF	Reported % D	Recalculated %D
1	NITR3AK	6/6/2014	HMX	498.50	450.27	450.26	10	10
	CAPCELL CN	8:54	1,3-Dinitrobenzene	498.50	454.51	454.51	9	9
2	NITR3AR	6/6/2014	HMX	498.50	452.09	452.09	9	9
	CAPCELL CN	17:24	1,3-Dinitrobenzene	498.50	460.97	460.97	8	8

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

LDC #: 32184C40

VALIDATION FINDINGS WORKSHEET
Continuing Calibration Calculation Verification

Reviewer: BR
2nd Reviewer:

METHOD: GC____HPLC_X____

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

Percent difference (%D) = 100 * (N - C)/N

Where:
N = Initial Calibration Factor or Nominal Amount
C = Calibration Factor from Continuing Calibration Standard or Calculated Amount

#	Standard ID	Calibration Date	Compound	CCV Conc/CF	Reported Conc/CF	Recalculated Conc/CF	Reported % D	Recalculated %D
1	NITR3AT	6/7/2014	HMX	498.50	451	451	10	10
	CAPCELL	1:55	1,3-Dinitrobenzene	500.50	434	434	13	13
2								

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

LDC #: 32184C4o

VALIDATION FINDINGS WORKSHEET
Surrogate Results Verification

Reviewer: BR
2nd reviewer: SM

METHOD: ___ GC X HPLC

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

% Recovery: SF/SS * 100

Where: SF = Surrogate Found
SS = Surrogate Spiked

Sample ID: 1

Surrogate	Column/Detector	Surrogate Spiked	Surrogate Found	Percent Recovery	Percent Recovery	Percent Difference
				Reported	Recalculated	
2-Nitro-m-xylene	B	~~609~~ 5000	6097.00293	122	122	0

Sample ID: _____

Surrogate	Column/Detector	Surrogate Spiked	Surrogate Found	Percent Recovery	Percent Recovery	Percent Difference
				Reported	Recalculated	

Sample ID: _____

Surrogate	Column/Detector	Surrogate Spiked	Surrogate Found	Percent Recovery	Percent Recovery	Percent Difference
				Reported	Recalculated	

LDC #: 32184C40

VALIDATION FINDINGS WORKSHEET

Laboratory Control Sample/Laboratory Control Sample Duplicates Results Verification

Reviewer: BR

2nd Reviewer: SM

METHOD: ___ GC X HPLC

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

%Recovery = 100 * (SSC - SC)/SA

Where SSC = Spiked sample concentration; SA = Spike added; SC = Sample concentration

RPD =(({SSCLCS - SSCLCSD} * 2) / (SSCLCS + SSCLCSD))*100

LCS = Laboratory Control Sample; LCSD = Laboratory Control Sample duplicate

LCS/LCSD samples: LCS 0155

Compound	Spike Added (ug/kg)		Spike Sample Concentration (ug/kg)		LCS Percent Recovery		LCSD Percent Recovery		LCS/LCSD RPD	
	LCS	LCSD	LCS	LCSD	Reported	Recalc.	Reported	Recalc.	Reported	Recalc.
Gasoline (8015)										
Diesel (8015)										
Benzene (8021B)										
Methane (RSK-175)										
2,4-D (8151)										
Dinoseb (8151)										
Naphthalene (8310)										
Anthracene (8310)										
HMX (8330)	5000	-	5607.61	-	112	112	-	-	-	-
2,4,6-Trinitrotoluene (8330)	L		5098.8	-	102	102	-	-	-	-

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

LDC #: 32184C4J

VALIDATION FINDINGS WORKSHEET
Sample Calculation Verification

Reviewer: BR
2nd Reviewer: SM

METHOD: ___ GC X HPLC

Y N N/A Were all reported results recalculated and verified for all level IV samples?
Y N N/A Were all recalculated results for detected target compounds within 10% of the reported results?

Concentration= $\frac{(A)(Fv)(Df)}{(RF)(Vs \text{ or } Ws)(\%S/100)}$

A= Area or height of the compound to be measured
Fv= Final Volume of extract
Df= Dilution Factor
RF= Average response factor of the compound In the initial calibration
Vs= Initial volume of the sample
Ws= Initial weight of the sample
%S= Percent Solid

Example:

Sample ID. All Compound Name ND

LCS01155 : 1,3,5-TNB = 5578.38

Concentration = $\frac{(12\ 3838)(20000)}{(221.9962)(2)(100)}$

= 5,578.383774 ug/kg

#	Sample ID	Compound	Reported Concentrations ( )	Recalculated Results Concentrations ( )	Qualifications

Comments: _____

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: Santa Susana Field Laboratory

Collection Date: June 2, 2014

LDC Report Date: August 1, 2014

Matrix: Soil

Parameters: Terphenyls

Validation Level: Level IV

Laboratory: Eurofins

Sample Delivery Group (SDG): PH212

Sample Identification

SL-653-SA5C-TR-0.5
SL-653-SA5C-TR-5.0
SL-653-SA5C-TR-10.0
SL-653-SA5C-TR-15.0

Introduction

This data review covers 4 soil samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA SW 846 Method 8015B for Terphenyls.

This review follows the Quality Assurance Project Plan for Santa Susana Field Laboratory (SSFL), RCRA Facility Investigation, Surficial Media Operable Unit (March 2009, Revision 4) and a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Superfund Organic Methods Data Review (June 2008).

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.

The following are definitions of the data qualifiers:

U Indicates the compound or analyte was analyzed for but not detected.

J Indicates an estimated value.

R Quality control indicates the data is not usable.

NJ Presumptive evidence of presence of the compound at an estimated quantity.

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. Initial Calibration

Initial calibration was performed as required by the method.

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

III. Continuing Calibration

Continuing calibration was performed at required frequencies.

The percent differences (%D) were less than or equal to 20.0% for all compounds.

The percent differences (%D) of the second source calibration standard were less than or equal to 20.0% for all compounds.

IV. Blanks

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

Sample EB3-060414 (from SDG PH217) was identified as an equipment blank. No terphenyl contaminants were found.

Sample FB-052114 (from SDG PH191) was identified as a field blank. No terphenyl contaminants were found.

V. Surrogate Recovery

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

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. Laboratory Control Samples (LCS)

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

VIII. Target Compound Identification

All target compound identifications were within validation criteria.

IX. Compound Quantitation

All compound quantitations were within validation criteria.

All compounds reported below the RL were qualified as follows:

Sample	Finding	Flag	A or P
All samples in SDG PH212	All compounds reported below the RL.	J (all detects)	A

X. System Performance

The system performance was acceptable.

XI. Overall Assessment of Data

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

XII. Field Duplicates

No field duplicates were identified in this SDG.

Santa Susana Field Laboratory
Terphenyls - Data Qualification Summary - SDG PH212

SDG	Sample	Compound	Flag	A or P	Reason
PH212	SL-653-SA5C-TR-0.5 SL-653-SA5C-TR-5.0 SL-653-SA5C-TR-10.0 SL-653-SA5C-TR-15.0	All compounds reported below the RL.	J (all detects)	A	Compound quantitation (Z)

Santa Susana Field Laboratory
Terphenyls - Laboratory Blank Data Qualification Summary - SDG PH212

No Sample Data Qualified in this SDG

Santa Susana Field Laboratory
Terphenyls - Field Blank Data Qualification Summary - SDG PH212

No Sample Data Qualified in this SDG

LDC #: 32184C41 **VALIDATION COMPLETENESS WORKSHEET** Date: 7/29/14
SDG #: PH212 Level IV Page: 1 of 1
Laboratory: Eurofins Reviewer: BM
2nd Reviewer: SM

METHOD: GC Terphenyls (EPA SW 846 Method 8015B)

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

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 6/2/14
II	Initial calibration	A	RSD≤20?
III.	Calibration verification/ICV	A	|CV| CCV≤20)
IV.	Blanks	A	
V	Surrogate recovery	A	
VI.	Matrix spike/Matrix spike duplicates	N	Client spec.
VII.	Laboratory control samples	A	LCS
VIII.	Target compound identification	A	
IX.	Compound quantitation/RL/LOQ/LODs	A	
X.	System Performance	A	
XI.	Overall assessment of data	A	
XII.	Field duplicates	N	
XIII.	Field blanks	ND	EB = EB3-060414 (SDG # ~~PH217~~ PH219) FB = FB-052114 (SDG # PH 191)

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

1	SL-653-SA5C-TR-0.5	11		21		31	PBLK17156
2	SL-653-SA5C-TR-5.0	12		22		32	
3	SL-653-SA5C-TR-10.0	13		23		33	
4	SL-653-SA5C-TR-15.0	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 #: 32184C41

VALIDATION FINDINGS CHECKLIST

Reviewer: BR
2nd Reviewer: SM

Method: X GC _____ HPLC

Validation Area	Yes	No	NA	Findings/Comments
I. Technical holding times				
All technical holding times were met.	✓			
Cooler temperature criteria was met.	✓			
II. Initial calibration				
Did the laboratory perform a 5 point calibration prior to sample analysis?	✓			
Was a linear fit used for evaluation? If yes, were all percent relative standard deviations (%RSD) ≤ 20%?	✓			
Was a curve fit used for evaluation? If Yes, what was the acceptance criteria used?		✓		
Did the initial calibration meet the curve fit acceptance criteria?			✓	
Were the RT windows properly established?	✓			
IV. Continuing calibration.				
What type of continuing calibration calculation was performed? ✓ %D or __ %R	✓			
Was a continuing calibration analyzed daily?	✓			
Were all percent differences (%D) ≤ 20%.0 or percent recoveries 80-120%?	✓			
Were all the retention times within the acceptance windows?	✓			
V. Blanks				
Was a method blank associated with every sample in this SDG?	✓			
Was a method blank analyzed for each matrix and concentration?	✓			
Was there contamination in the method blanks? If yes, please see the Blanks validation completeness worksheet.		✓		
VI. Surrogate spikes				
Were all surrogate %R within the QC limits?	✓			
If the percent recovery (%R) of one or more surrogates was outside QC limits, was a reanalysis performed to confirm %R?			✓	
If any %R was less than 10 percent, was a reanalysis performed to confirm %R?			✓	
VII. Matrix spike/Matrix spike duplicates				
Were a matrix spike (MS) and matrix spike duplicate (MSD) analyzed for each matrix in this SDG? If no, indicate which matrix does not have an associated MS/MSD. Soil / Water.		✓		
Was a MS/MSD analyzed every 20 samples of each matrix?			✓	
Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?			✓	
VIII. Laboratory control samples				
Was an LCS analyzed for this SDG?	✓			
Was an LCS analyzed per extraction batch?	✓			
Were the LCS percent recoveries (%R) and relative percent difference (RPD) within the QC limits?	✓			

Validation Area	Yes	No	NA	Findings/Comments
IX. Regional Quality Assurance and Quality Control				
Were performance evaluation (PE) samples performed?		✓		
Were the performance evaluation (PE) samples within the acceptance limits?			✓	
X. Target compound identification				
Were the retention times of reported detects within the RT windows?	✓			
XI. Compound quantitation/CRQLs				
Were compound quantitation and CRQLs adjusted to reflect all sample dilutions and dry weight factors applicable to level IV validation?	✓			
XII. System performance				
System performance was found to be acceptable.	✓			
XIII. Overall assessment of data				
Overall assessment of data was found to be acceptable.	✓			
XIV. Field duplicates				
Field duplicate pairs were identified in this SDG.		✓		
Target compounds were detected in the field duplicates.			✓	
XV. Field blanks				
Field blanks were identified in this SDG.	✓			
Target compounds were detected in the field blanks.		✓		

LDC #: 32184C41

VALIDATION FINDINGS WORKSHEET
Initial Calibration Calculation Verification

Reviewer: BR
2nd Reviewer: [signature]

METHOD: GC X HPLC _____

The calibration factors (CF), average CF, and relative standard deviation (%RSD) were recalculated for compounds identified below using the following calculations:

CF = A/C
average CF = sum of the CF/number of standards
%RSD = 100 * (S/X)

Where:
A = Area of compound
C = Concentration of compound
S = Standard deviation of calibration factors
X = Mean of calibration factors

#	Standard ID	Calibration Date	Compound	Reported CF (77600 std)	Recalculated CF (77600 std)	Reported Average CF (Initial)	Recalculated Average CF (Initial)	Reported %RSD	Recalculated %RSD
1	ICAL U8642A	6/2/2014	m-Tephenyl	26.4	26.4	27.6	27.1	3	3

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

LDC #: 32184C41

VALIDATION FINDINGS WORKSHEET
Continuing Calibration Calculation Verification

Reviewer: BR
2nd Reviewer: SM

METHOD: GC_____HPLC_____

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

Percent difference (%D) = 100 * (N - C)/N

Where: N = Initial Calibration Factor or Nominal Amount
C = Calibration Factor from Continuing Calibration Standard or Calculated Amount

#	Standard ID	Calibration Date	Compound	CCV Conc/CF	Reported Conc/CF	Recalculated Conc/CF	Reported % D	Recalculated %D
1	U157.0003	6/6/2014 12:41	m-Terphenyl	38800.00	40104.34	40104.34	3	3
2								
3								

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

LDC #: 32184C41

VALIDATION FINDINGS WORKSHEET
Surrogate Results Verification

Reviewer: BR
2nd reviewer: SM

METHOD: X GC __ HPLC

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

% Recovery: SF/SS * 100

Where: SF = Surrogate Found
SS = Surrogate Spiked

Sample ID: 1

Surrogate	Column/Detector	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
n-Triacontane-d62	A	1330	1401.21	105	105	0

Sample ID:

Surrogate	Column/Detector	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference

Sample ID:

Surrogate	Column/Detector	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference

LDC #: 32184C41

VALIDATION FINDINGS WORKSHEET

Laboratory Control Sample/Laboratory Control Sample Duplicates Results Verification

Reviewer: BR

2nd Reviewer: [signature]

METHOD: X GC __HPLC

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

%Recovery = 100 * (SSC - SC)/SA

Where SSC = Spiked sample concentration; SA = Spike added; SC = Sample concentration

RPD =(({SSCLCS - SSCLCSD} * 2) / (SSCLCS + SSCLCSD))*100

LCS = Laboratory Control Sample; LCSD = Laboratory Control Sample duplicate

LCS/LCSD samples: LCS17156

Compound	Spike Added (ug/kg)		Spike Sample Concentration (ug/kg)		LCS Percent Recovery		LCSD Percent Recovery		LCS/LCSD RPD	
	LCS	LCSD	LCS	LCSD	Reported	Recalc.	Reported	Recalc.	Reported	Recalc.
Gasoline (8015)										
Diesel (8015)										
Benzene (8021B)										
Methane (RSK-175)										
2,4-D (8151)										
Dinoseb (8151)										
Naphthalene (8310)										
Anthracene (8310)										
HMX (8330)										
2,4,6-Trinitrotoluene (8330)										
m-Terphenyl	2620	—	258298	—	99	99	—	—	—	—

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

LDC #: 32184C41

VALIDATION FINDINGS WORKSHEET
Sample Calculation Verification

Reviewer: BR
2nd Reviewer: SM

METHOD: X **GC** __ **HPLC**

Y N N/A Were all reported results recalculated and verified for all level IV samples?
Y N N/A Were all recalculated results for detected target compounds within 10% of the reported results?

Concentration= (A)(Fv)(Df) / (RF)(Vs or Ws)(%S/100)

A= Area or height of the compound to be measured
Fv= Final Volume of extract
Df= Dilution Factor
RF= Average response factor of the compound In the initial calibration
Vs= Initial volume of the sample
Ws= Initial weight of the sample
%S= Percent Solid

Example:

Sample ID. A4 Compound Name ND

LCS 17156 : m-Terphenyl = 2582.98 ug/kg

Concentration = (2091287)(1) / (27.09123)(30)

= ~~25~~ 2582.984727 ug/kg

#	Sample ID	Compound	Reported Concentrations ( )	Recalculated Results Concentrations ( )	Qualifications

Comments: _____

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: Santa Susana Field Laboratory

Collection Date: June 2, 2014

LDC Report Date: August 1, 2014

Matrix: Soil

Parameters: Glycols

Validation Level: Level IV

Laboratory: Eurofins

Sample Delivery Group (SDG): PH212

Sample Identification

SL-653-SA5C-TR-0.5
SL-653-SA5C-TR-5.0
SL-653-SA5C-TR-10.0
SL-653-SA5C-TR-15.0

Introduction

This data review covers 4 soil samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA SW 846 Method 8015C for Glycols.

This review follows the Quality Assurance Project Plan for Santa Susana Field Laboratory (SSFL), RCRA Facility Investigation, Surficial Media Operable Unit (March 2009, Revision 4) and a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Superfund Organic Methods Data Review (June 2008).

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.

The following are definitions of the data qualifiers:

U Indicates the compound or analyte was analyzed for but not detected.

J Indicates an estimated value.

R Quality control indicates the data is not usable.

NJ Presumptive evidence of presence of the compound at an estimated quantity.

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 holding time requirements were met.

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

II. Initial Calibration

Initial calibration of compounds was performed as required by the method.

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

Retention time windows were evaluated and considered technically acceptable.

III. Continuing Calibration

Continuing calibration was performed at required frequencies.

The percent differences (%D) of calibration factors in continuing standard mixtures were within the 20.0% QC limits.

The percent differences (%D) of the second source calibration standard were less than or equal to 20.0% for all compounds.

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

IV. Blanks

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

Sample EB3-060414 (from SDG PH217) was identified as an equipment blank. No glycol contaminants were found.

Sample FB-052114 (from SDG PH191) was identified as a field blank. No glycol contaminants were found.

V. Surrogate Recovery

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

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. Laboratory Control Samples

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

VIII. Target Compound Identification

All target compound identifications were within validation criteria.

IX. Compound Quantitation

All compound quantitation were within validation criteria.

All compounds reported below the RL were qualified as follows:

Sample	Finding	Flag	A or P
All samples in SDG PH212	All compounds reported below the RL.	J (all detects)	A

X. System Performance

The system performance was acceptable.

XI. Overall Assessment of Data

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

XII. Field Duplicates

No field duplicates were identified in this SDG.

Santa Susana Field Laboratory
Glycols - Data Qualification Summary - SDG PH212

SDG	Sample	Compound	Flag	A or P	Reason (Code)
PH212	SL-653-SA5C-TR-0.5 SL-653-SA5C-TR-5.0 SL-653-SA5C-TR-10.0 SL-653-SA5C-TR-15.0	All compounds reported below the RL.	J (all detects)	A	Compound quantitation (Z)

Santa Susana Field Laboratory
Glycols - Laboratory Blank Data Qualification Summary - SDG PH212

No Sample Data Qualified in this SDG

Santa Susana Field Laboratory
Glycols - Field Blank Data Qualification Summary - SDG PH212

No Sample Data Qualified in this SDG

LDC #: 32184C45 **VALIDATION COMPLETENESS WORKSHEET** Date: 7/29/14

SDG #: PH212 Level IV Page: 1 of 1

Laboratory: Eurofins Reviewer: KR

2nd Reviewer: SM

METHOD: GC Glycols (EPA SW 846 Method 8015~~B~~C)

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

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 6/2/14
II	Initial calibration	~~A~~	(RSD ≤20)
III.	Calibration verification/ICV	A	(CV) CCV ≤20)
IV.	Blanks	A	
V	Surrogate recovery	A	
VI.	Matrix spike/Matrix spike duplicates	N	Client spec.
VII.	Laboratory control samples	A	LCS
VIII.	Target compound identification	A	
IX.	Compound quantitation/RL/LOQ/LODs	A	
X.	System Performance	A	
XI.	Overall assessment of data	A	
XII.	Field duplicates	N	
XIII.	Field blanks	ND	EB = EB3-060414 (PH 217)
			FB = FB-~~EB~~KR052114 (SDG ~~A~~ PH 191)

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: SO1)

1	SL-653-SA5C-TR-0.5	11		21		31	PBLK13155
2	SL-653-SA5C-TR-5.0	12		22		32	
3	SL-653-SA5C-TR-10.0	13		23		33	
4	SL-653-SA5C-TR-15.0	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 #: 32184C45

VALIDATION FINDINGS CHECKLIST

Reviewer: BR
2nd Reviewer: SM

Method: X GC _____ HPLC

Validation Area	Yes	No	NA	Findings/Comments
I. Technical holding times				
All technical holding times were met.	✓			
Cooler temperature criteria was met.	✓			
II. Initial calibration				
Did the laboratory perform a 5 point calibration prior to sample analysis?	✓			
Was a linear fit used for evaluation? If yes, were all percent relative standard deviations (%RSD) ≤ 20%?	✓			
Was a curve fit used for evaluation? If Yes, what was the acceptance criteria used?		✓		
Did the initial calibration meet the curve fit acceptance criteria?			✓	
Were the RT windows properly established?	✓			
IV. Continuing calibration				
What type of continuing calibration calculation was performed? X %D or __%R	✓			
Was a continuing calibration analyzed daily?	✓			
Were all percent differences (%D) ≤ 20%.0 or percent recoveries 80-120%?	✓			
Were all the retention times within the acceptance windows?	✓			
V. Blanks				
Was a method blank associated with every sample in this SDG?	✓			
Was a method blank analyzed for each matrix and concentration?	✓			
Was there contamination in the method blanks? If yes, please see the Blanks validation completeness worksheet.		✓		
VI. Surrogate spikes				
Were all surrogate %R within the QC limits?	✓			
If the percent recovery (%R) of one or more surrogates was outside QC limits, was a reanalysis performed to confirm %R?			✓	
If any %R was less than 10 percent, was a reanalysis performed to confirm %R?			✓	
VII. Matrix spike/Matrix spike duplicates				
Were a matrix spike (MS) and matrix spike duplicate (MSD) analyzed for each matrix in this SDG? If no, indicate which matrix does not have an associated MS/MSD. Soil / Water.		✓		
Was a MS/MSD analyzed every 20 samples of each matrix?			✓	
Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?			✓	
VIII. Laboratory control samples				
Was an LCS analyzed for this SDG?	✓			
Was an LCS analyzed per extraction batch?	✓			
Were the LCS percent recoveries (%R) and relative percent difference (RPD) within the QC limits?	✓			

Validation Area	Yes	No	NA	Findings/Comments
IX. Regional Quality Assurance and Quality Control				
Were performance evaluation (PE) samples performed?		✓		
Were the performance evaluation (PE) samples within the acceptance limits?			✓	
X. Target compound identification				
Were the retention times of reported detects within the RT windows?	✓			
XI. Compound quantitation/CRQLs				
Were compound quantitation and CRQLs adjusted to reflect all sample dilutions and dry weight factors applicable to level IV validation?	✓			
XII. System performance				
System performance was found to be acceptable.	✓			
XIII. Overall assessment of data				
Overall assessment of data was found to be acceptable.	✓			
XIV. Field duplicates				
Field duplicate pairs were identified in this SDG.		✓		
Target compounds were detected in the field duplicates.			✓	
XV. Field blanks				
Field blanks were identified in this SDG.	✓			
Target compounds were detected in the field blanks.		✓		

LDC #: 32184C45

VALIDATION FINDINGS WORKSHEET
Initial Calibration Calculation Verification

Reviewer: BR
2nd Reviewer: SM

METHOD: GC X HPLC _____

The calibration factors (CF), average CF, and relative standard deviation (%RSD) were recalculated for compounds identified below using the following calculations:

CF = A/C
average CF = sum of the CF/number of standards
%RSD = 100 * (S/X)

Where:
A = Area of compound
C = Concentration of compound
S = Standard deviation of calibration factors
X = Mean of calibration factors

#	Standard ID	Calibration Date	Compound	Reported CF (77600 std)	Recalculated CF (77600 std)	Reported Average CF (Initial)	Recalculated Average CF (Initial)	Reported %RSD	Recalculated %RSD
1	ICAL 10603B	12/11/2013	Ethylene glycol	918	918	904.0	904.5	8	8

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

LDC #: 32184C45

VALIDATION FINDINGS WORKSHEET
Continuing Calibration Calculation Verification

Reviewer: BR
2nd Reviewer: SM

METHOD: GC_____HPLC_____

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

Percent difference (%D) = 100 * (N - C)/N

Where: N = Initial Calibration Factor or Nominal Amount
C = Calibration Factor from Continuing Calibration Standard or Calculated Amount

#	Standard ID	Calibration Date	Compound	CCV Conc/CF	Reported Conc/CF	Recalculated Conc/CF	Reported % D	Recalculated %D
1	F157B.0015	6/6/2014	Ethylene glycol	102.73	101.44	101.44	1	1
2								
3								

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

LDC #: 32184C45

VALIDATION FINDINGS WORKSHEET
Surrogate Results Verification

Reviewer: BR
2nd reviewer: [illegible]

METHOD: x GC ___ HPLC

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

% Recovery: SF/SS * 100

Where: SF = Surrogate Found
SS = Surrogate Spiked

Sample ID: _____

Surrogate	Column/Detector	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
Tetramethylene glycol	B	198	186.458157	94	94	0

Sample ID: _____

Surrogate	Column/Detector	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference

Sample ID: _____

Surrogate	Column/Detector	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference

LDC #: 32184C45

VALIDATION FINDINGS WORKSHEET

Laboratory Control Sample/Laboratory Control Sample Duplicates Results Verification

Reviewer: BR

2nd Reviewer:

METHOD: X GC __HPLC

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

%Recovery = 100 * (SSC - SC)/SA

Where SSC = Spiked sample concentration; SA = Spike added; SC = Sample concentration

RPD =(({SSCLCS - SSCLCSD} * 2) / (SSCLCS + SSCLCSD))*100

LCS = Laboratory Control Sample; LCSD = Laboratory Control Sample duplicate

LCS/LCSD samples: LCS 13155

Compound	Spike Added (mg/kg)		Spike Sample Concentration (mg/kg)		LCS Percent Recovery		LCSD Percent Recovery		LCS/LCSD RPD	
	LCS	LCSD	LCS	LCSD	Reported	Recalc.	Reported	Recalc.	Reported	Recalc.
Gasoline (8015)										
Diesel (8015)										
Benzene (8021B)										
Methane (RSK-175)										
2,4-D (8151)										
Dinoseb (8151)										
Naphthalene (8310)										
Anthracene (8310)										
HMX (8330)										
2,4,6-Trinitrotoluene (8330)										
Ethylene glycol (8015c)	200	-	196.98	-	98	98.5	-	-	-	-

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

LDC #: 32184C45

VALIDATION FINDINGS WORKSHEET
Sample Calculation Verification

Page: 1 of 1
Reviewer: BR
2nd Reviewer: SZ

METHOD: X GC __ HPLC

Y N N/A Were all reported results recalculated and verified for all level IV samples?
Y N N/A Were all recalculated results for detected target compounds within 10% of the reported results?

Concentration= (A)(Fv)(Df) / (RF)(Vs or Ws)(%S/100)

A= Area or height of the compound to be measured
Fv= Final Volume of extract
Df= Dilution Factor
RF= Average response factor of the compound In the initial calibration
Vs= Initial volume of the sample
Ws= Initial weight of the sample
%S= Percent Solid

Example:

Sample ID. AW Compound Name ND

LCS B155: Ethylene glycol = 196.98

Concentration = 178162 / 904.4855986 = 196.9760495 ug/kg

#	Sample ID	Compound	Reported Concentrations ( )	Recalculated Results Concentrations ( )	Qualifications

Comments: _____

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: Santa Susana Field Laboratory

Collection Date: June 2, 2014

LDC Report Date: August 4, 2014

Matrix: Soil

Parameters: Perchlorate

Validation Level: Level IV

Laboratory: Eurofins

Sample Delivery Group (SDG): PH212

Sample Identification

SL-653-SA5C-TR-0.5
SL-653-SA5C-TR-5.0
SL-653-SA5C-TR-10.0
SL-653-SA5C-TR-15.0

Introduction

This data review covers 4 soil samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA SW 846 Method 6850 for Perchlorate.

This review follows the Quality Assurance Project Plan for Santa Susana Field Laboratory (SSFL), RCRA Facility Investigation, Surficial Media Operable Unit (March 2009, Revision 4) and a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Superfund Organic Methods Data Review (June 2008).

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.

The following are definitions of the data qualifiers:

U Indicates the compound or analyte was analyzed for but not detected.

J Indicates an estimated value.

R Quality control indicates the data is not usable.

NJ Presumptive evidence of presence of the compound at an estimated quantity.

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. GC/MS Instrument Performance Check

Instrument performance was checked at 12 hour intervals. All ion abundance requirements were met.

III. Initial Calibration

Initial calibration was performed using required standard concentrations.

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

IV. Continuing Calibration

Continuing calibration was performed at the required frequencies.

All of the continuing calibration percent differences (%D) between the initial calibration RRF and the continuing calibration RRF were less than or equal to 15.0% for unlabeled compounds and less than or equal to 50.0% for labeled compounds.

The percent differences (%D) of the second source calibration standard were less than or equal to 15.0% for unlabeled compounds and less than or equal to 50.0% for labeled compounds.

The percent differences (%D) of the limit of detection verification (LODV) calibration standard were less than or equal to 50.0% for perchlorate.

V. Blanks

Method blanks were reviewed for each matrix as applicable. No perchlorate was found in the method blanks.

Sample EB3-060414 (from SDG PH217) was identified as an equipment blank. No perchlorate was found.

Sample FB-052114 (from SDG PH191) was identified as a field blank. No perchlorate was found.

VI. Surrogate Spikes

Surrogate spikes were not required by the method.

VII. 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.

VIII. Laboratory Control Samples (LCS)

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

IX. Regional Quality Assurance and Quality Control

Not applicable.

X. Internal Standards

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

XI. Target Compound Identifications

All target compound identifications were within validation criteria.

XII. Compound Quantitation

All compound quantitations were within validation criteria.

All compounds reported below the RL were qualified as follows:

Sample	Finding	Flag	A or P
All samples in SDG PH212	All compounds reported below the RL.	J (all detects)	A

XIII. Tentatively Identified Compounds (TICs)

Tentatively identified compounds were not reported by the laboratory.

XIV. System Performance

The system performance was acceptable.

XV. Overall Assessment

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

XVI. Field Duplicates

No field duplicates were identified in this SDG.

Santa Susana Field Laboratory
Perchlorate - Data Qualification Summary - SDG PH212

SDG	Sample	Compound	Flag	A or P	Reason (Code)
PH212	SL-653-SA5C-TR-0.5 SL-653-SA5C-TR-5.0 SL-653-SA5C-TR-10.0 SL-653-SA5C-TR-15.0	All compounds reported below the RL.	J (all detects)	A	Compound quantitation (Z)

Santa Susana Field Laboratory
Perchlorate - Laboratory Blank Data Qualification Summary - SDG PH212

No Sample Data Qualified in this SDG

Santa Susana Field Laboratory
Perchlorate - Field Blank Data Qualification Summary - SDG PH212

No Sample Data Qualified in this SDG

LDC #: 32184C87 **VALIDATION COMPLETENESS WORKSHEET** Date: 7/29/14
SDG #: PH212 Level IV Page: 1 of 1
Laboratory: Eurofins Reviewer: BR
2nd Reviewer: SM

METHOD: LC/MS Perchlorate (EPA SW846 Method 6850)

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

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 6/2/14
II.	GC/MS Instrument performance check	A	
III.	Initial calibration	A	~~RSD ≤ 30%~~ r^2
IV.	Continuing calibration/ICV	A	ICV/CCV ≤ 15/50? LODV ≤ 50?
V.	Blanks	A	
VI.	Surrogate spikes	N	
VII.	Matrix spike/Matrix spike duplicates	N	Client spec.
VIII.	Laboratory control samples	A	LCS
IX.	Regional Quality Assurance and Quality Control	N	
X.	Internal standards	A	
XI.	Target compound identification	A	
XII.	Compound quantitation/RL/LOQ/LODs	A	
XIII.	Tentatively identified compounds (TICs)	N	
XIV.	System performance	A	
XV.	Overall assessment of data	A	
XVI.	Field duplicates	N	
XVII.	Field blanks	ND	EB = EB3-060414 (SDG # PH219) PB = FB052114 (SDG # PH191)

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

1	SL-653-SA5C-TR-0.5	11		21		31	PBLK02155
2	SL-653-SA5C-TR-5.0	12		22		32	
3	SL-653-SA5C-TR-10.0	13		23		33	
4	SL-653-SA5C-TR-15.0	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	

DC #: 32184C87

VALIDATION FINDINGS CHECKLIST

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

Method: LC/MS

Validation Area	Yes	No	NA	Findings/Comments
I. Technical holding times				
All technical holding times were met.	✓			
Cooler temperature criteria was met.	✓			
II. GC/MS Instrument performance check				
Were the instrument performance reviewed and found to be within the specified criteria?	✓			
Were all samples analyzed within the 12 hour clock criteria?	✓			
III. Initial calibration				
Did the laboratory perform a 5 point calibration prior to sample analysis?	✓			
Were all percent relative standard deviations (%RSD) ≤ 20%?		✓		
Was a curve fit used for evaluation?	✓			
Did the initial calibration meet the curve fit acceptance criteria of ≥ 0.990?	✓			
Were the RT windows properly established?	✓			
IV. Continuing calibration				
Was a continuing calibration analyzed daily?	✓			
Were all percent differences (%D) ≤ 20%?	✓			
Were all the retention times within the acceptance windows?	✓			
V. Blanks				
Was a method blank associated with every sample in this SDG?	✓			
Was a method blank analyzed for each matrix and concentration?	✓			
Was there contamination in the method blanks? If yes, please see the Blanks validation completeness worksheet.		✓		
VI. Matrix spike/Matrix spike duplicates				
Were a matrix spike (MS) and matrix spike duplicate (MSD) analyzed for each matrix in this SDG? If no, indicate which matrix does not have an associated MS/MSD. Soil / Water.		✓	✓	
Was a MS/MSD analyzed every 20 samples of each matrix?				
Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?			✓	
VII. Laboratory control samples				
Was an LCS analyzed for this SDG?	✓			
Was an LCS analyzed per extraction batch?	✓			
Were the LCS percent recoveries (%R) and relative percent difference (RPD) within the QC limits?	✓			
XIII. Regional Quality Assurance and Quality Control				
Were performance evaluation (PE) samples performed?		✓		
Were the performance evaluation (PE) samples within the acceptance limits?			✓	
IX. Internal standards				

VALIDATION FINDINGS CHECKLIST

Validation Area	Yes	No	NA	Findings/Comments
Were internal standard area counts within -50% or +100% of the associated calibration standard?	✓			
Were retention times within ± 30 seconds from the associated calibration standard?	✓			
X. Target compound identification				
Were relative retention times (RRT's) within ± 0.06 RRT units of the standard?	✓			
Did compound spectra meet specified EPA "Functional Guidelines" criteria?	✓			
Were chromatogram peaks verified and accounted for?	✓			
XI. Compound quantitation/CRQLs				
Were the correct internal standard (IS), quantitation ion and relative response factor (RRF) used to quantitate the compound?	✓			
Were compound quantitation and CRQLs adjusted to reflect all sample dilutions and dry weight factors applicable to level IV validation?	✓			
XII. System performance				
System performance was found to be acceptable.		✓		
XIII. Overall assessment of data				
Overall assessment of data was found to be acceptable.		✓		
XIV. Field duplicates				
Field duplicate pairs were identified in this SDG.		✓		
Target compounds were detected in the field duplicates.			✓	
XV. Field blanks				
Field blanks were identified in this SDG.	✓	✓ KR		
Target compounds were detected in the field blanks.		✓		

LDC#:32184C87

VALIDATION FINDINGS WORKSHEET

Initial Calibration Calculation Verification

Page: 1 of 1
Reviewer: BR
2nd Reviewer: SM

METHOD: LC/MS Perchlorate (EPA SW 846 Method 6850)

Calibration Date	Instrument	Compound	Standard	(Y) Response Ratio	(X) Concentration Ratio	CF
6/5/2014	MS2	Perchlorate	1	0.001759681	0.400	0.0044
			2	0.003477322	1.000	0.0035
			3	0.007113465	2.000	0.0036
			4	0.013907317	4.000	0.0035
			5	0.037627192	10.000	0.0038
			6	0.099977697	25.000	0.0040
					Ave	0.0038

Regression Output		*Calculated*	*Reported*
Constant	c =	*-1.045723E-03*	*-0.0001456800*
Std Err of Y Est			
R Squared	r2 =	*0.99923049*	*0.9970320*
Degrees of Freedom			
X Coefficient(s)	m =	*0.00401*	*0.00390*
Std Err of Coef.			
Correlation Coefficient		*1.000*	
Coefficient of Determination (r^2)		*0.999*	*0.997*

LDC#:31984C87

VALIDATION FINDINGS WORKSHEET
Continuing Calibration Calculation Verification

Reviewer: KM
2nd Reviewer: SM

METHOD: LCMS__X___HPLC_____

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

Percent difference (%D) = 100 * (N - C)/N

Where: N = Initial Calibration Factor or Nominal Amount
C = Calibration Factor from Continuing Calibration Standard or Calculated Amount

#	Standard ID	Calibration Date	Compound	CCV Conc	Reported Conc	Recalculated Conc	Reported % D	Recalculated %D
1	ms5p15614010	6/5/2014 16:48	Perchlorate	4	3.8	3.8	4	4
2	ms5p15614021	6/5/2014 19:08	Perchlorate	0.4	0.4	0.4	0	0

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

LDC #: 32184C87

VALIDATION FINDINGS WORKSHEET
Laboratory Control Sample Results Verification

Reviewer: BR
2nd Reviewer: SM

METHOD: LC/MS

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

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

RPD = I LCSC - LCSDC I * 2/(LCSC + LCSDC) LCSC = Laboraotry control sample concentration LCSDC = Laboratory control sample duplicate concentration

LCS ID: LCS02155

Compound	Spike Added (ug/kg)		Spiked Sample Concentration (ug/kg)		LCS Percent Recovery		LCSD Percent Recovery		LCS/LCSD RPD	
	LCS	LCSD	LCS	LCSD	Reported	Recalc.	Reported	Recalc.	Reported	Recalculated
Perchlorate	100	-	102	-	102	102	-	-	-	-

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

LDC #: 32184C87

VALIDATION FINDINGS WORKSHEET
Sample Calculation Verification

Page: 1 of 1
Reviewer: BR
2nd reviewer: SM

METHOD: LC/MS

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

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

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

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

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

RRF = Relative response factor of the calibration standard.

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

Df = Dilution factor.

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

Example:

Sample I.D. All, ND:

LCS = LCS02155

Conc. = $\frac{\left(\frac{70267}{1778166}\right)(+0.000014568)(10)}{(0.0039)(1)}$

= 101.6980465 ug/kg

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

Data Validation Report
Santa Susana Field Laboratory

Go Backs, Subgroup Trench

SDG: PH217

Prepared for

CDM Smith
555 17th Street, Suite 1100
Denver, CO 80202

Prepared by

Laboratory Data Consultants, Inc.
2701 Loker Ave West, Suite 220
Carlsbad, California 92010

August 12, 2014

INTRODUCTION

This Data Validation Report (DVR) presents Level III data validation results for samples collected on June 4, 2014. Data validation was performed in accordance with the Quality Assurance Project Plan (QAPP) for Santa Susana Field Laboratory (SSFL), RCRA Facility Investigation, Surficial Media Operable Unit (March 2009, Revision 4) and a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines (CLPNFGs) for Superfund Organic Methods Data Review (June 2008), Polychlorinated Dioxins/Dibenzofurans Data Review (September 2005) and for Inorganic Data Review (January 2010). Where specific guidance is not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following methods:

Semivolatiles (SVOCs) by Environmental Protection Agency (EPA) SW 846 Method 8270D
SVOCs by EPA SW 846 Method 8270D utilizing Selective Ion Monitoring (SIM)
Pesticides by EPA SW 846 Method 8081B
Polychlorinated Biphenyls (PCBs) by EPA SW 846 Method 8082A
Metals by EPA SW 846 Method 6010C, 6020A, 7470A and 7471B
Herbicides by EPA SW 846 Method 8151A
Perchlorate by EPA SW 846 Method 6850
Total Petroleum Hydrocarbons (TPH) as Gasoline by EPA SW 846 Method 8015M
TPH as Extractables with and without Silica Gel Clean Up by EPA SW 846 Method 8015M
Glycols by EPA SW 846 Method 8015B
Terphenyls by EPA SW 846 Method 8015B
Explosives by EPA SW 846 Method 8330A
Dioxins and Dibenzofurans by EPA Method 1613B
Hexavalent Chromium by EPA method 7199

The sample identification and methods of analyses performed on each sample is presented in Attachment 1. Overall data qualification summary is presented in Attachment 2. Level III Automated Data Review outliers are presented in Enclosure I.

All sample results were subjected to Level III data validation, which comprises an evaluation of quality control (QC) summary results for sample holding times, initial and continuing calibration blanks (ICB/CCBs), surrogates, internal standards (dioxins and dibenzofurans only), matrix spike/matrix spike duplicates (MS/MSD), laboratory duplicate samples (DUP), laboratory control sample/laboratory control sample duplicates (LCS/LCSD), ICP serial dilutions, method blanks, trip blanks, equipment blanks, and field blanks. No samples in this SDG were subjected to Level IV evaluation.

Automated data review was performed on all QC summary results using the Automated Data Review (ADR) software program (LDC, 2013) with the exception of ICB/CCBs and ICP serial dilutions, which were validated manually. Quality assurance (QA)/QC criteria specified in the QAPP and CLPNFGs were incorporated with the program's reference library to assess compliance with project requirements.

The following are definitions of the data qualifiers:

U Indicates the compound or analyte was analyzed for but not detected.

J Indicates an estimated value.

R Quality control indicates the data is not usable.

NJ Presumptive evidence of presence of the compound at an estimated quantity.

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

I. Technical Holding Times

All technical holding time requirements were met with the exception of one sample for hexavalent chromium and four samples for glycols. The associated sample results were qualified as detected estimated (J) or non-detected estimated (UJ) as applicable. The details regarding the qualification of data are provided in Enclosure I.

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

II. Initial Calibration

Initial Calibration data were not reviewed for level III.

III. Continuing Calibration

Continuing calibration data were not reviewed for level III.

IV. Blanks

Method blanks were performed at the required frequencies. No contaminant concentrations were detected in the method or preparation blanks with the exception of several blanks for SVOCs, metals, pesticides, and dioxins and dibenzofurans. The associated sample results were qualified as non-detected (U) due to method blank contamination as applicable. The sample results that were not detected or were significantly greater than the concentrations found in the associated blanks were not qualified. The details regarding the qualification of data are provided in Enclosure I.

No contaminant concentrations were detected in the initial or continuing calibration blanks with the following exceptions:

Method	Method Blank ID	Analyte	Maximum Concentration	Associated Samples
6010C	ICB/CCB	Zirconium	9.0 ug/L	EB3-060414
6010C	ICB/CCB	Cadmium	0.40 ug/L	SL-655-SA5C-TR-0.5 SL-655-SA5C-TR-5.0 SL-646-SA5C-TR-0.5 SL-646-SA5C-TR-5.0

Sample concentrations were compared to concentrations detected in the initial and continuing blanks. The sample concentrations were not detected or were significantly greater than the concentrations found in the associated blanks with the following exceptions:

Method	Sample	Compound	Reported Concentration	Modified Final Concentration
6010C	EB3-060414	Zirconium	0.0113 mg/L	0.0113U mg/L
6010C	SL-655-SA5C-TR-5.0	Cadmium	0.189 mg/kg	0.189U mg/kg

Method	Sample	Compound	Reported Concentration	Modified Final Concentration
6010C	SL-646-SA5C-TR-5.0	Cadmium	0.167 mg/Kg	0.167U mg/Kg

V. Surrogate Spikes

Surrogates were added to all samples and blanks as required by the method. All surrogate recoveries (%R) were within QC limits with the exception of three samples for PCBs. No data were qualified due to high %Rs since the associated results were non-detected.

VI. ICP Interference Check Sample (ICS) Analysis

ICP interference check data were not reviewed for level III.

VII. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) samples were performed at the required frequency. Percent recoveries (%R) and relative percent differences (RPD) were within QC limits with the exception of two MS/MSD pairs for SVOCs, metals, glycols, terphenyls and explosives. The triethylene glycol result in sample SL-655-SA5C-TR-0.5 was qualified as rejected (R) due to MS/MSD %Rs grossly outside QC limits (i.e., ≤ 0%). The remainder of the associated sample results were qualified as detected estimated (J) or non-detected estimated (UJ) as applicable. The details regarding the qualification of data are provided in Enclosure I.

VIII. Laboratory Duplicates Sample

Laboratory duplicates (DUP) sample analyses were reviewed for each matrix as applicable. Results were within QC limits.

IV. Laboratory Control Samples (LCS)

Laboratory control samples were reviewed for each matrix as applicable. Percent recoveries (%R) and relative percent differences (RPD) were within QC limits with the exception of several LCS/LCSD pairs for SVOCs, TPH as extractables with silica gel clean up, explosives, and herbicides. The benzidine result in sample EB3-060414, and the dinoseb result in samples SL-646-SA5C-TR-0.5, SL-646-SA5C-TR-5.0, SL-655-SA5C-TR-0.5, and SL-655-SA5C-TR-5.0 were qualified as rejected (R) due to LCS/LCSD %Rs grossly outside QC limits (i.e., < 10%). The remainder of the associated sample results were qualified as detected estimated (J) or non-detected estimated (UJ) as applicable. The details regarding the qualification of data are provided in Enclosure I.

X. Internal Standards

Internal standards were reviewed for dioxins and dibenzofurans. Percent recoveries (%R) were within QC limits.

XI. ICP Serial Dilution

ICP serial dilution analysis was performed by the laboratory. The analysis criteria were met with the following exceptions:

Diluted Sample	Analyte	%D (Limits)	Associated Samples	Flag	A or P
SL-655-SA5C-TR-0.5	Strontium	14 (≤10)	All soil samples in SDG PH217	J (all detects) UJ (all non-detects)	A

The associated sample results were qualified as detected estimated (J).

XII. Compound Quantitation

The laboratory reporting limits were evaluated. All laboratory reporting limits met the specified requirements.

All compounds reported below the RL as detected were qualified as follows:

Sample	Finding	Flag	A or P
All samples in SDG PH217	All compounds reported as detected below the RL.	J (all detects)	A

XIII. Field Duplicate Samples

No field duplicates were identified in this SDG.

XIV. Field Blank Samples

One trip blank was collected and analyzed for TPH as gasoline. No contaminant concentrations were detected in the trip blank.

One equipment blank was collected and analyzed for SVOCs, pesticides, PCBs, metals, herbicides, perchlorate, TPH as gasoline, TPH as extractables with and without silica gel clean up, glycols, explosives, terphenyls, hexavalent chromium, and dioxins and dibenzofurans. The equipment blank had detections for SVOCs, metals, and dioxins and dibenzofurans. The associated sample results were qualified as non-detected (U) due to equipment blank contamination as applicable. The sample results that were not detected or were significantly greater than the concentrations found in the equipment blanks were not qualified. The equipment blank outlier reports are presented in Enclosure I.

One field blank (from SDG PH191) was collected and analyzed for SVOCs, pesticides, PCBs, metals, herbicides, perchlorate, TPH as gasoline, TPH as extractables with and without silica gel clean up, glycols, explosives, terphenyls, hexavalent chromium, and dioxins and dibenzofurans. The field blank had detections for SVOCs, metals and dioxins and dibenzofurans. The associated sample results were qualified as non-detected (U) due to field blank contamination as applicable. The sample results that were not detected or were significantly greater than the concentrations found in the field blank were not qualified. The field blank outlier reports are presented in Enclosure I.

XV. Overall Assessment of Data

One glycol result was rejected due to MS/MSD %Rs grossly outside of QC limits. Four herbicide results and one SVOC result were rejected due to LCS/LCSD %Rs grossly outside of QC limits. These results are not useable for all purposes.

The overall assessment of QA/QC data review by automated and manual validation of this sampling event met project requirements and analytical completeness levels with the exceptions noted in the above sections. The remainder of the data are deemed useable for the intended use.

Data flags are summarized and are presented as Attachment 2.

Attachment 1

Sample Cross Reference

Sample Cross Reference

Date Collected	Field Sample ID	Lab Sample ID	Sample Type	Prep Method	Analytical Method	Review Level
04-Jun-2014	SL-655-SA5C-TR-0.5	7488115	N	3050B	6010C	III
04-Jun-2014	SL-655-SA5C-TR-0.5	7488115	N	3050B	6020A	III
04-Jun-2014	SL-655-SA5C-TR-0.5	7488115	N	3060A	7199	III
04-Jun-2014	SL-655-SA5C-TR-0.5	7488115	N	3546	8015M	III
04-Jun-2014	SL-655-SA5C-TR-0.5	7488115	N	3546	8081B	III
04-Jun-2014	SL-655-SA5C-TR-0.5	7488115	N	3546	8082A	III
04-Jun-2014	SL-655-SA5C-TR-0.5	7488115	N	3546	8270D	III
04-Jun-2014	SL-655-SA5C-TR-0.5	7488115	N	3546	8270D SIM	III
04-Jun-2014	SL-655-SA5C-TR-0.5	7488115	N	3550B	8015B	III
04-Jun-2014	SL-655-SA5C-TR-0.5	7488115	N	3550B	8151A	III
04-Jun-2014	SL-655-SA5C-TR-0.5	7488115	N	3550C	8015C	III
04-Jun-2014	SL-655-SA5C-TR-0.5	7488115	N	8330	8330A	III
04-Jun-2014	SL-655-SA5C-TR-0.5	7488115	N	METHOD	1613B	III
04-Jun-2014	SL-655-SA5C-TR-0.5	7488115	N	METHOD	6850	III
04-Jun-2014	SL-655-SA5C-TR-0.5	7488115	N	METHOD	7471B	III
04-Jun-2014	SL-655-SA5C-TR-0.5DUP	P488115D220551A	DUP	3050B	6020A	III
04-Jun-2014	SL-655-SA5C-TR-0.5DUP	P488115D220551B	DUP	3050B	6020A	III
04-Jun-2014	SL-655-SA5C-TR-0.5DUP	P488115D220845	DUP	3050B	6010C	III
04-Jun-2014	SL-655-SA5C-TR-0.5DUP	P488115D220904	DUP	METHOD	7471B	III
04-Jun-2014	SL-655-SA5C-TR-0.5MSD	P488115M220556A	MSD	3050B	6020A	III
04-Jun-2014	SL-655-SA5C-TR-0.5MSD	P488115M220556B	MSD	3050B	6020A	III
04-Jun-2014	SL-655-SA5C-TR-0.5MSD	P488115M220853	MSD	3050B	6010C	III
04-Jun-2014	SL-655-SA5C-TR-0.5MSD	P488115M220908	MSD	METHOD	7471B	III
04-Jun-2014	SL-655-SA5C-TR-0.5MSD	P488115M240833A	MSD	3546	8082A	III
04-Jun-2014	SL-655-SA5C-TR-0.5MSD	P488115M240909A	MSD	8330	8330A	III
04-Jun-2014	SL-655-SA5C-TR-0.5MSD	P488115M241559A	MSD	METHOD	6850	III

III = EPA Level 3 Data Review *N = Normal Sample* *TB = Trip Blank* *MS = Matrix Spike*
IV = EPA Level 4 Data Validation *FD = Field Duplicate* *FB = Field Blank* *MSD = Matrix Spike Duplicate*

Sample Cross Reference

Date Collected	Field Sample ID	Lab Sample ID	Sample Type	Prep Method	Analytical Method	Review Level
04-Jun-2014	SL-655-SA5C-TR-0.5MSD	P488115M321543A	MSD	3550B	8015B	III
04-Jun-2014	SL-655-SA5C-TR-0.5MSD	P488115M321804A	MSD	3550C	8015C	III
04-Jun-2014	SL-655-SA5C-TR-0.5MS	P488115R220553A	MS	3050B	6020A	III
04-Jun-2014	SL-655-SA5C-TR-0.5MS	P488115R220553B	MS	3050B	6020A	III
04-Jun-2014	SL-655-SA5C-TR-0.5MS	P488115R220849	MS	3050B	6010C	III
04-Jun-2014	SL-655-SA5C-TR-0.5MS	P488115R220906	MS	METHOD	7471B	III
04-Jun-2014	SL-655-SA5C-TR-0.5MS	P488115R240815A	MS	3546	8082A	III
04-Jun-2014	SL-655-SA5C-TR-0.5MS	P488115R240826A	MS	8330	8330A	III
04-Jun-2014	SL-655-SA5C-TR-0.5MS	P488115R241546A	MS	METHOD	6850	III
04-Jun-2014	SL-655-SA5C-TR-0.5MS	P488115R321521A	MS	3550B	8015B	III
04-Jun-2014	SL-655-SA5C-TR-0.5MS	P488115R321749A	MS	3550C	8015C	III
04-Jun-2014	TB2-060414	7488114	TB	5030B	8015M	III
04-Jun-2014	SL-655-SA5C-TR-5.0	7488116	N	3050B	6010C	III
04-Jun-2014	SL-655-SA5C-TR-5.0	7488116	N	3050B	6020A	III
04-Jun-2014	SL-655-SA5C-TR-5.0	7488116	N	3060A	7199	III
04-Jun-2014	SL-655-SA5C-TR-5.0	7488116	N	3546	8015M	III
04-Jun-2014	SL-655-SA5C-TR-5.0	7488116	N	3546	8081B	III
04-Jun-2014	SL-655-SA5C-TR-5.0	7488116	N	3546	8082A	III
04-Jun-2014	SL-655-SA5C-TR-5.0	7488116	N	3546	8270D	III
04-Jun-2014	SL-655-SA5C-TR-5.0	7488116	N	3546	8270D SIM	III
04-Jun-2014	SL-655-SA5C-TR-5.0	7488116	N	3550B	8015B	III
04-Jun-2014	SL-655-SA5C-TR-5.0	7488116	N	3550B	8151A	III
04-Jun-2014	SL-655-SA5C-TR-5.0	7488116	N	3550C	8015C	III
04-Jun-2014	SL-655-SA5C-TR-5.0	7488116	N	5035A	8015M	III
04-Jun-2014	SL-655-SA5C-TR-5.0	7488116	N	8330	8330A	III
04-Jun-2014	SL-655-SA5C-TR-5.0	7488116	N	METHOD	1613B	III

III = EPA Level 3 Data Review *N = Normal Sample* *TB = Trip Blank* *MS = Matrix Spike*
IV = EPA Level 4 Data Validation *FD = Field Duplicate* *FB = Field Blank* *MSD = Matrix Spike Duplicate*

Sample Cross Reference

Date Collected	Field Sample ID	Lab Sample ID	Sample Type	Prep Method	Analytical Method	Review Level
04-Jun-2014	SL-655-SA5C-TR-5.0	7488116	N	METHOD	6850	III
04-Jun-2014	SL-655-SA5C-TR-5.0	7488116	N	METHOD	7471B	III
04-Jun-2014	SL-655-SA5C-TR-5.0DUP	P488116D272107A	DUP	3060A	7199	III
04-Jun-2014	SL-655-SA5C-TR-5.0MSD	P488116M262300	MSD	3546	8270D	III
04-Jun-2014	SL-655-SA5C-TR-5.0MS	P488116R262234	MS	3546	8270D	III
04-Jun-2014	SL-655-SA5C-TR-5.0MS	P488116R272012A	MS	3060A	7199	III
04-Jun-2014	EB3-060414	7488113	EB	3005A	6010C	III
04-Jun-2014	EB3-060414	7488113	EB	3510C	8015B	III
04-Jun-2014	EB3-060414	7488113	EB	3510C	8015M	III
04-Jun-2014	EB3-060414	7488113	EB	3510C	8081B	III
04-Jun-2014	EB3-060414	7488113	EB	3510C	8082A	III
04-Jun-2014	EB3-060414	7488113	EB	3510C	8270D	III
04-Jun-2014	EB3-060414	7488113	EB	3510C	8270D SIM	III
04-Jun-2014	EB3-060414	7488113	EB	5030B	8015M	III
04-Jun-2014	EB3-060414	7488113	EB	8330	8330A	III
04-Jun-2014	EB3-060414	7488113	EB	Gen Prep	6850	III
04-Jun-2014	EB3-060414	7488113	EB	Gen Prep	7199	III
04-Jun-2014	EB3-060414	7488113	EB	Gen Prep	8015C	III
04-Jun-2014	EB3-060414	7488113	EB	M3010A	6020A	III
04-Jun-2014	EB3-060414	7488113	EB	METHOD	1613B	III
04-Jun-2014	EB3-060414	7488113	EB	METHOD	7470A	III
04-Jun-2014	EB3-060414	7488113	EB	METHOD	8151A	III
04-Jun-2014	EB3-060414MSD	P488113M241345A	MSD	Gen Prep	6850	III
04-Jun-2014	EB3-060414MSD	P488113M321855A	MSD	Gen Prep	8015C	III
04-Jun-2014	EB3-060414MS	P488113R241332A	MS	Gen Prep	6850	III
04-Jun-2014	EB3-060414MS	P488113R321840A	MS	Gen Prep	8015C	III

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IV = EPA Level 4 Data Validation *FD = Field Duplicate* *FB = Field Blank* *MSD = Matrix Spike Duplicate*

Sample Cross Reference

Date Collected	Field Sample ID	Lab Sample ID	Sample Type	Prep Method	Analytical Method	Review Level
04-Jun-2014	SL-646-SA5C-TR-0.5	7488117	N	3050B	6010C	III
04-Jun-2014	SL-646-SA5C-TR-0.5	7488117	N	3050B	6020A	III
04-Jun-2014	SL-646-SA5C-TR-0.5	7488117	N	3060A	7199	III
04-Jun-2014	SL-646-SA5C-TR-0.5	7488117	N	3546	8015M	III
04-Jun-2014	SL-646-SA5C-TR-0.5	7488117	N	3546	8081B	III
04-Jun-2014	SL-646-SA5C-TR-0.5	7488117	N	3546	8082A	III
04-Jun-2014	SL-646-SA5C-TR-0.5	7488117	N	3546	8270D	III
04-Jun-2014	SL-646-SA5C-TR-0.5	7488117	N	3546	8270D SIM	III
04-Jun-2014	SL-646-SA5C-TR-0.5	7488117	N	3550B	8015B	III
04-Jun-2014	SL-646-SA5C-TR-0.5	7488117	N	3550B	8151A	III
04-Jun-2014	SL-646-SA5C-TR-0.5	7488117	N	3550C	8015C	III
04-Jun-2014	SL-646-SA5C-TR-0.5	7488117	N	8330	8330A	III
04-Jun-2014	SL-646-SA5C-TR-0.5	7488117	N	METHOD	1613B	III
04-Jun-2014	SL-646-SA5C-TR-0.5	7488117	N	METHOD	6850	III
04-Jun-2014	SL-646-SA5C-TR-0.5	7488117	N	METHOD	7471B	III
04-Jun-2014	SL-646-SA5C-TR-5.0	7488118	N	3050B	6010C	III
04-Jun-2014	SL-646-SA5C-TR-5.0	7488118	N	3050B	6020A	III
04-Jun-2014	SL-646-SA5C-TR-5.0	7488118	N	3060A	7199	III
04-Jun-2014	SL-646-SA5C-TR-5.0	7488118	N	3546	8015M	III
04-Jun-2014	SL-646-SA5C-TR-5.0	7488118	N	3546	8081B	III
04-Jun-2014	SL-646-SA5C-TR-5.0	7488118	N	3546	8082A	III
04-Jun-2014	SL-646-SA5C-TR-5.0	7488118	N	3546	8270D	III
04-Jun-2014	SL-646-SA5C-TR-5.0	7488118	N	3546	8270D SIM	III
04-Jun-2014	SL-646-SA5C-TR-5.0	7488118	N	3550B	8015B	III
04-Jun-2014	SL-646-SA5C-TR-5.0	7488118	N	3550B	8151A	III
04-Jun-2014	SL-646-SA5C-TR-5.0	7488118	N	3550C	8015C	III

III = EPA Level 3 Data Review *N = Normal Sample* *TB = Trip Blank* *MS = Matrix Spike*
IV = EPA Level 4 Data Validation *FD = Field Duplicate* *FB = Field Blank* *MSD = Matrix Spike Duplicate*

Sample Cross Reference

Date Collected	Field Sample ID	Lab Sample ID	Sample Type	Prep Method	Analytical Method	Review Level
04-Jun-2014	SL-646-SA5C-TR-5.0	7488118	N	5035A	8015M	III
04-Jun-2014	SL-646-SA5C-TR-5.0	7488118	N	8330	8330A	III
04-Jun-2014	SL-646-SA5C-TR-5.0	7488118	N	METHOD	1613B	III
04-Jun-2014	SL-646-SA5C-TR-5.0	7488118	N	METHOD	6850	III
04-Jun-2014	SL-646-SA5C-TR-5.0	7488118	N	METHOD	7471B	III

III = EPA Level 3 Data Review *N = Normal Sample* *TB = Trip Blank* *MS = Matrix Spike*
IV = EPA Level 4 Data Validation *FD = Field Duplicate* *FB = Field Blank* *MSD = Matrix Spike Duplicate*

Attachment 2
Overall Data Qualification Summary

Data Qualifier Summary

Lab Reporting Batch ID: PH217 **Laboratory: LL**

EDD Filename: PrepPH217 **eQAPP Name: CDM_SSFL_140617_Lan**

Method Category: METALS

Method: 6010C **Matrix: AQ**

Sample ID: EB3-060414 **Collected: 6/4/2014 10:30:00** **Analysis Type: REA2** **Dilution: 1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
BARIUM	0.00070	J	0.00033	MDL	0.0100	PQL	mg/L	J	Z
CALCIUM	0.151	J	0.0334	MDL	0.400	PQL	mg/L	J	Z
Zirconium	0.0113	J	0.0084	MDL	0.100	PQL	mg/L	U	B, B
MANGANESE	0.0016	J	0.00083	MDL	0.0100	PQL	mg/L	U	B

Method Category: METALS

Method: 6010C **Matrix: SO**

Sample ID: SL-646-SA5C-TR-0.5 **Collected: 6/4/2014 11:30:00** **Analysis Type: REA** **Dilution: 1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
CADMIUM	0.228	J	0.0740	MDL	0.974	PQL	mg/Kg	J	Z

Sample ID: SL-646-SA5C-TR-0.5 **Collected: 6/4/2014 11:30:00** **Analysis Type: RES** **Dilution: 1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
ANTIMONY	3.90	U	0.721	MDL	3.90	PQL	mg/Kg	UJ	Q
ARSENIC	2.19	J	0.682	MDL	3.90	PQL	mg/Kg	J	Z
BERYLLIUM	0.518	J	0.0652	MDL	0.974	PQL	mg/Kg	J	Z
BORON	4.90	J	0.818	MDL	9.74	PQL	mg/Kg	J	Z
MOLYBDENUM	0.205	J	0.166	MDL	1.95	PQL	mg/Kg	J	Z
SODIUM	68.9	J	16.3	MDL	97.4	PQL	mg/Kg	J	Z
TIN	3.48	J	0.214	MDL	9.74	PQL	mg/Kg	U	B
Zirconium	2.44	J	0.818	MDL	4.87	PQL	mg/Kg	U	F, F

Sample ID: SL-646-SA5C-TR-5.0 **Collected: 6/4/2014 11:45:00** **Analysis Type: REA** **Dilution: 1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
CADMIUM	0.167	J	0.0794	MDL	1.04	PQL	mg/Kg	U	B

Sample ID: SL-646-SA5C-TR-5.0 **Collected: 6/4/2014 11:45:00** **Analysis Type: RES** **Dilution: 1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
ANTIMONY	4.18	U	0.773	MDL	4.18	PQL	mg/Kg	UJ	Q
ARSENIC	1.66	J	0.731	MDL	4.18	PQL	mg/Kg	J	Z

* denotes a non-reportable result

Project Name and Number: 1204-002-001-AL - SSFL Area IV Phase 3

Data Qualifier Summary

Lab Reporting Batch ID: PH217 **Laboratory: LL**

EDD Filename: PrepPH217 **eQAPP Name: CDM_SSFL_140617_Lan**

Method Category: **METALS**

Method: **6010C** ***Matrix:*** **SO**

Sample ID: **SL-646-SA5C-TR-5.0** ***Collected:*** **6/4/2014 11:45:00** ***Analysis Type:*** **RES** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
BERYLLIUM	0.923	J	0.0700	MDL	1.04	PQL	mg/Kg	J	Z
BORON	5.47	J	0.878	MDL	10.4	PQL	mg/Kg	J	Z
SODIUM	102	J	17.5	MDL	104	PQL	mg/Kg	J	Z
TIN	3.76	J	0.230	MDL	10.4	PQL	mg/Kg	U	B
Zirconium	2.29	J	0.878	MDL	5.22	PQL	mg/Kg	U	F, F

Sample ID: **SL-655-SA5C-TR-0.5** ***Collected:*** **6/4/2014 7:45:00 AM** ***Analysis Type:*** **REA** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
CADMIUM	0.301	J	0.0777	MDL	1.02	PQL	mg/Kg	J	Z

Sample ID: **SL-655-SA5C-TR-0.5** ***Collected:*** **6/4/2014 7:45:00 AM** ***Analysis Type:*** **RES** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
ANTIMONY	4.09	U	0.757	MDL	4.09	PQL	mg/Kg	UJ	Q
ARSENIC	2.39	J	0.716	MDL	4.09	PQL	mg/Kg	J	Z
BERYLLIUM	0.743	J	0.0685	MDL	1.02	PQL	mg/Kg	J	Z
BORON	8.10	J	0.859	MDL	10.2	PQL	mg/Kg	J	Z
MOLYBDENUM	0.466	J	0.174	MDL	2.05	PQL	mg/Kg	J	Z
SODIUM	84.0	J	17.1	MDL	102	PQL	mg/Kg	J	Z
TIN	3.42	J	0.225	MDL	10.2	PQL	mg/Kg	U	B
Zirconium	3.91	J	0.859	MDL	5.11	PQL	mg/Kg	U	F, F

Sample ID: **SL-655-SA5C-TR-5.0** ***Collected:*** **6/4/2014 8:00:00 AM** ***Analysis Type:*** **REA** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
CADMIUM	0.189	J	0.0748	MDL	0.984	PQL	mg/Kg	U	B

Sample ID: **SL-655-SA5C-TR-5.0** ***Collected:*** **6/4/2014 8:00:00 AM** ***Analysis Type:*** **RES** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
ANTIMONY	3.94	U	0.728	MDL	3.94	PQL	mg/Kg	UJ	Q
ARSENIC	1.72	J	0.689	MDL	3.94	PQL	mg/Kg	J	Z
BERYLLIUM	0.443	J	0.0659	MDL	0.984	PQL	mg/Kg	J	Z
BORON	4.67	J	0.826	MDL	9.84	PQL	mg/Kg	J	Z

* denotes a non-reportable result

Project Name and Number: 1204-002-001-AL - SSFL Area IV Phase 3

Data Qualifier Summary

Lab Reporting Batch ID: PH217 **Laboratory: LL**

EDD Filename: PrepPH217 **eQAPP Name: CDM_SSFL_140617_Lan**

Method Category: METALS

Method: 6010C **Matrix: SO**

Sample ID: SL-655-SA5C-TR-5.0 **Collected: 6/4/2014 8:00:00 AM** **Analysis Type: RES** **Dilution: 1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
TIN	3.09	J	0.216	MDL	9.84	PQL	mg/Kg	U	B
Zirconium	1.72	J	0.826	MDL	4.92	PQL	mg/Kg	U	F, F

Method Category: METALS

Method: 6020A **Matrix: AQ**

Sample ID: EB3-060414 **Collected: 6/4/2014 10:30:00** **Analysis Type: REA2** **Dilution: 1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
STRONTIUM	0.00069	J	0.00034	MDL	0.0020	PQL	mg/L	J	Z

Method Category: METALS

Method: 6020A **Matrix: SO**

Sample ID: SL-646-SA5C-TR-0.5 **Collected: 6/4/2014 11:30:00** **Analysis Type: REA** **Dilution: 2**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
SELENIUM	0.271	J	0.0974	MDL	0.390	PQL	mg/Kg	J	Z

Sample ID: SL-646-SA5C-TR-0.5 **Collected: 6/4/2014 11:30:00** **Analysis Type: RES** **Dilution: 2**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
STRONTIUM	16.3		0.0662	MDL	0.390	PQL	mg/Kg	J	A

Sample ID: SL-646-SA5C-TR-5.0 **Collected: 6/4/2014 11:45:00** **Analysis Type: REA** **Dilution: 2**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
SELENIUM	0.264	J	0.104	MDL	0.418	PQL	mg/Kg	J	Z

Sample ID: SL-646-SA5C-TR-5.0 **Collected: 6/4/2014 11:45:00** **Analysis Type: RES** **Dilution: 2**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
SILVER	0.0389	J	0.0272	MDL	0.209	PQL	mg/Kg	J	Z
STRONTIUM	25.0		0.0711	MDL	0.418	PQL	mg/Kg	J	A

* denotes a non-reportable result

Project Name and Number: 1204-002-001-AL - SSFL Area IV Phase 3

Data Qualifier Summary

Lab Reporting Batch ID: PH217 **Laboratory: LL**

EDD Filename: PrepPH217 **eQAPP Name: CDM_SSFL_140617_Lan**

Method Category: METALS

Method: 6020A **Matrix: SO**

Sample ID: SL-655-SA5C-TR-0.5 **Collected: 6/4/2014 7:45:00 AM** **Analysis Type: REA** **Dilution: 2**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
SELENIUM	0.306	J	0.102	MDL	0.409	PQL	mg/Kg	J	Z

Sample ID: SL-655-SA5C-TR-0.5 **Collected: 6/4/2014 7:45:00 AM** **Analysis Type: RES** **Dilution: 2**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
SILVER	0.0397	J	0.0266	MDL	0.205	PQL	mg/Kg	J	Z
STRONTIUM	23.0		0.0696	MDL	0.409	PQL	mg/Kg	J	A

Sample ID: SL-655-SA5C-TR-5.0 **Collected: 6/4/2014 8:00:00 AM** **Analysis Type: REA** **Dilution: 2**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
SELENIUM	0.261	J	0.0984	MDL	0.394	PQL	mg/Kg	J	Z

Sample ID: SL-655-SA5C-TR-5.0 **Collected: 6/4/2014 8:00:00 AM** **Analysis Type: RES** **Dilution: 2**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
STRONTIUM	14.2		0.0669	MDL	0.394	PQL	mg/Kg	J	A

Method Category: METALS

Method: 7199 **Matrix: AQ**

Sample ID: EB3-060414 **Collected: 6/4/2014 10:30:00** **Analysis Type: RES** **Dilution: 1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
HEXAVALENT CHROMIUM	10.0	U	5.0	MDL	10.0	PQL	ug/L	UJ	H

Method Category: METALS

Method: 7199 **Matrix: SO**

Sample ID: SL-646-SA5C-TR-0.5 **Collected: 6/4/2014 11:30:00** **Analysis Type: RES** **Dilution: 1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
HEXAVALENT CHROMIUM	0.35	J	0.15	MDL	0.42	PQL	mg/Kg	J	Z

* denotes a non-reportable result

Project Name and Number: 1204-002-001-AL - SSFL Area IV Phase 3

Data Qualifier Summary

Lab Reporting Batch ID: PH217 **Laboratory: LL**

EDD Filename: PrepPH217 **eQAPP Name: CDM_SSFL_140617_Lan**

Method Category: METALS

Method: 7199 **Matrix: SO**

Sample ID: SL-655-SA5C-TR-0.5 *Collected:* 6/4/2014 7:45:00 AM *Analysis Type:* RES *Dilution:* 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
HEXAVALENT CHROMIUM	0.29	J	0.15	MDL	0.44	PQL	mg/Kg	J	Z

Method Category: METALS

Method: 7471B **Matrix: SO**

Sample ID: SL-646-SA5C-TR-5.0 *Collected:* 6/4/2014 11:45:00 *Analysis Type:* RES *Dilution:* 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
MERCURY	0.0103	J	0.0099	MDL	0.0166	PQL	mg/Kg	J	Z

Method Category: SVOA

Method: 1613B **Matrix: AQ**

Sample ID: EB3-060414 *Collected:* 6/4/2014 10:30:00 *Analysis Type:* RES *Dilution:* 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
1,2,3,4,6,7,8-HPCDD	0.541	JBQ	0.159	MDL	9.57	PQL	pg/L	U	B
1,2,3,4,6,7,8-HPCDF	0.539	JBQ	0.0657	MDL	9.57	PQL	pg/L	U	B
1,2,3,4,7,8,9-HPCDF	0.408	JBQ	0.0940	MDL	9.57	PQL	pg/L	U	B
1,2,3,4,7,8-HxCDD	0.209	JBQ	0.148	MDL	9.57	PQL	pg/L	U	B
1,2,3,4,7,8-HXCDF	0.549	JBQ	0.104	MDL	9.57	PQL	pg/L	U	B
1,2,3,6,7,8-HXCDD	0.313	JQ	0.149	MDL	9.57	PQL	pg/L	J	Z
1,2,3,6,7,8-HXCDF	0.379	JBQ	0.0955	MDL	9.57	PQL	pg/L	U	B
1,2,3,7,8,9-HXCDF	0.423	JB	0.0984	MDL	9.57	PQL	pg/L	U	B
1,2,3,7,8-PECDD	0.331	JB	0.187	MDL	9.57	PQL	pg/L	U	B
1,2,3,7,8-PECDF	0.647	JBQ	0.0998	MDL	9.57	PQL	pg/L	U	B
2,3,4,6,7,8-HXCDF	0.388	JB	0.0999	MDL	9.57	PQL	pg/L	U	B
2,3,4,7,8-PECDF	0.375	JB	0.0997	MDL	9.57	PQL	pg/L	U	B
2,3,7,8-TCDD	0.262	JQ	0.169	MDL	1.91	PQL	pg/L	J	Z
OCDD	2.25	JB	0.216	MDL	19.1	PQL	pg/L	U	B
OCDF	1.21	JBQ	0.237	MDL	19.1	PQL	pg/L	U	B

* denotes a non-reportable result

Project Name and Number: 1204-002-001-AL - SSFL Area IV Phase 3

Data Qualifier Summary

Lab Reporting Batch ID: PH217 **Laboratory: LL**

EDD Filename: PrepPH217 **eQAPP Name: CDM_SSFL_140617_Lan**

Method Category: SVOA

Method: 1613B **Matrix: SO**

Sample ID: SL-646-SA5C-TR-0.5 **Collected: 6/4/2014 11:30:00** **Analysis Type: RES** **Dilution: 1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
1,2,3,4,6,7,8-HPCDD	3.24	JB	0.0342	MDL	4.98	PQL	ng/Kg	J	Z
1,2,3,4,6,7,8-HPCDF	0.602	JB	0.0155	MDL	4.98	PQL	ng/Kg	J	Z
1,2,3,4,7,8,9-HPCDF	0.0588	JB	0.0342	MDL	4.98	PQL	ng/Kg	U	B
1,2,3,4,7,8-HxCDD	0.0387	JQ	0.0311	MDL	4.98	PQL	ng/Kg	J	Z
1,2,3,4,7,8-HXCDF	0.123	JBQ	0.0268	MDL	4.98	PQL	ng/Kg	U	B
1,2,3,6,7,8-HXCDD	0.181	JB	0.0334	MDL	4.98	PQL	ng/Kg	U	B
1,2,3,6,7,8-HXCDF	0.129	JBQ	0.0231	MDL	4.98	PQL	ng/Kg	U	B
1,2,3,7,8,9-HXCDD	0.125	JBQ	0.0332	MDL	4.98	PQL	ng/Kg	J	Z
1,2,3,7,8,9-HXCDF	0.0486	JBQ	0.0279	MDL	4.98	PQL	ng/Kg	U	B
1,2,3,7,8-PECDF	0.256	JB	0.0187	MDL	4.98	PQL	ng/Kg	U	B
2,3,4,6,7,8-HXCDF	0.0930	JB	0.0245	MDL	4.98	PQL	ng/Kg	U	B
2,3,4,7,8-PECDF	0.0600	JBQ	0.0196	MDL	4.98	PQL	ng/Kg	U	B
2,3,7,8-TCDF	0.0959	JQ	0.0284	MDL	0.997	PQL	ng/Kg	J	Z
OCDF	1.26	JBQ	0.0383	MDL	9.97	PQL	ng/Kg	J	Z

Sample ID: SL-646-SA5C-TR-5.0 **Collected: 6/4/2014 11:45:00** **Analysis Type: RES** **Dilution: 1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
1,2,3,4,6,7,8-HPCDD	0.166	JBQ	0.0205	MDL	5.17	PQL	ng/Kg	U	B
1,2,3,4,6,7,8-HPCDF	0.0589	JBQ	0.00736	MDL	5.17	PQL	ng/Kg	U	B
1,2,3,4,7,8-HXCDF	0.0301	JBQ	0.0146	MDL	5.17	PQL	ng/Kg	U	B
1,2,3,6,7,8-HXCDD	0.0445	JBQ	0.0189	MDL	5.17	PQL	ng/Kg	U	B
1,2,3,6,7,8-HXCDF	0.0294	JBQ	0.0122	MDL	5.17	PQL	ng/Kg	U	B
1,2,3,7,8,9-HXCDD	0.0280	JBQ	0.0179	MDL	5.17	PQL	ng/Kg	U	B
1,2,3,7,8,9-HXCDF	0.0532	JBQ	0.0157	MDL	5.17	PQL	ng/Kg	U	B
2,3,4,6,7,8-HXCDF	0.0166	JBQ	0.0133	MDL	5.17	PQL	ng/Kg	U	B
2,3,4,7,8-PECDF	0.0392	JBQ	0.0135	MDL	5.17	PQL	ng/Kg	U	B
OCDD	1.62	JB	0.0283	MDL	10.3	PQL	ng/Kg	J	Z
OCDF	0.113	JBQ	0.0283	MDL	10.3	PQL	ng/Kg	U	B

Sample ID: SL-655-SA5C-TR-0.5 **Collected: 6/4/2014 7:45:00 AM** **Analysis Type: RES** **Dilution: 1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
1,2,3,4,6,7,8-HPCDD	1.27	JBQ	0.0351	MDL	5.08	PQL	ng/Kg	J	Z
1,2,3,4,6,7,8-HPCDF	0.208	JBQ	0.0196	MDL	5.08	PQL	ng/Kg	U	B

* denotes a non-reportable result

Project Name and Number: 1204-002-001-AL - SSFL Area IV Phase 3

Data Qualifier Summary

Lab Reporting Batch ID: PH217 **Laboratory: LL**

EDD Filename: PrepPH217 **eQAPP Name: CDM_SSFL_140617_Lan**

Method Category: SVOA

Method: 1613B **Matrix: SO**

Sample ID: **SL-655-SA5C-TR-0.5** ***Collected:*** **6/4/2014 7:45:00 AM** ***Analysis Type:*** **RES** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
1,2,3,4,7,8,9-HPCDF	0.0645	JB	0.0431	MDL	5.08	PQL	ng/Kg	U	B
1,2,3,4,7,8-HxCDD	0.0708	JQ	0.0256	MDL	5.08	PQL	ng/Kg	J	Z
1,2,3,4,7,8-HXCDF	0.150	JB	0.0267	MDL	5.08	PQL	ng/Kg	U	B
1,2,3,6,7,8-HXCDD	0.214	JBQ	0.0254	MDL	5.08	PQL	ng/Kg	J	Z
1,2,3,6,7,8-HXCDF	0.126	JBQ	0.0235	MDL	5.08	PQL	ng/Kg	U	B
1,2,3,7,8,9-HXCDD	0.320	JBQ	0.0267	MDL	5.08	PQL	ng/Kg	J	Z
1,2,3,7,8,9-HXCDF	0.204	JB	0.0266	MDL	5.08	PQL	ng/Kg	U	B
1,2,3,7,8-PECDD	0.152	JB	0.0301	MDL	5.08	PQL	ng/Kg	U	B
1,2,3,7,8-PECDF	0.293	JB	0.0155	MDL	5.08	PQL	ng/Kg	U	B
2,3,4,6,7,8-HXCDF	0.0890	JBQ	0.0261	MDL	5.08	PQL	ng/Kg	U	B
2,3,4,7,8-PECDF	0.157	JB	0.0175	MDL	5.08	PQL	ng/Kg	U	B
2,3,7,8-TCDD	0.0903	J	0.0227	MDL	1.02	PQL	ng/Kg	J	Z
2,3,7,8-TCDF	0.0773	J	0.0236	MDL	1.02	PQL	ng/Kg	J	Z
OCDF	0.496	JB	0.0479	MDL	10.2	PQL	ng/Kg	J	Z

Sample ID: **SL-655-SA5C-TR-5.0** ***Collected:*** **6/4/2014 8:00:00 AM** ***Analysis Type:*** **RES** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
1,2,3,4,6,7,8-HPCDD	0.795	JB	0.0331	MDL	5.03	PQL	ng/Kg	J	Z
1,2,3,4,6,7,8-HPCDF	0.194	JBQ	0.0197	MDL	5.03	PQL	ng/Kg	U	B
1,2,3,4,7,8,9-HPCDF	0.0770	JB	0.0441	MDL	5.03	PQL	ng/Kg	U	B
1,2,3,4,7,8-HXCDF	0.0652	JBQ	0.0239	MDL	5.03	PQL	ng/Kg	U	B
1,2,3,6,7,8-HXCDD	0.0616	JB	0.0224	MDL	5.03	PQL	ng/Kg	U	B
1,2,3,6,7,8-HXCDF	0.0538	JBQ	0.0203	MDL	5.03	PQL	ng/Kg	U	B
1,2,3,7,8,9-HXCDD	0.0345	JBQ	0.0225	MDL	5.03	PQL	ng/Kg	U	B
1,2,3,7,8,9-HXCDF	0.0438	JB	0.0249	MDL	5.03	PQL	ng/Kg	U	B
1,2,3,7,8-PECDF	0.0566	JBQ	0.0180	MDL	5.03	PQL	ng/Kg	U	B
2,3,4,6,7,8-HXCDF	0.0562	JBQ	0.0223	MDL	5.03	PQL	ng/Kg	U	B
2,3,4,7,8-PECDF	0.0618	JB	0.0192	MDL	5.03	PQL	ng/Kg	U	B
OCDD	5.01	JB	0.0380	MDL	10.1	PQL	ng/Kg	J	Z
OCDF	0.198	JBQ	0.0463	MDL	10.1	PQL	ng/Kg	U	B

* denotes a non-reportable result

Project Name and Number: 1204-002-001-AL - SSFL Area IV Phase 3

Data Qualifier Summary

Lab Reporting Batch ID: PH217 **Laboratory: LL**

EDD Filename: PrepPH217 **eQAPP Name: CDM_SSFL_140617_Lan**

Method Category: SVOA

Method: 8015C **Matrix: SO**

Sample ID: SL-646-SA5C-TR-0.5 **Collected: 6/4/2014 11:30:00** **Analysis Type: RES** **Dilution: 1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
DIETHYLENE GLYCOL	10	U	5.1	MDL	10	PQL	mg/Kg	UJ	H
ETHYLENE GLYCOL	10	U	5.1	MDL	10	PQL	mg/Kg	UJ	H
Propylene glycol	10	U	5.1	MDL	10	PQL	mg/Kg	UJ	H
Triethylene glycol	10	U	5.1	MDL	10	PQL	mg/Kg	UJ	H

Sample ID: SL-646-SA5C-TR-5.0 **Collected: 6/4/2014 11:45:00** **Analysis Type: RES** **Dilution: 1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
DIETHYLENE GLYCOL	10	U	5.2	MDL	10	PQL	mg/Kg	UJ	H
ETHYLENE GLYCOL	10	U	5.2	MDL	10	PQL	mg/Kg	UJ	H
Propylene glycol	10	U	5.2	MDL	10	PQL	mg/Kg	UJ	H
Triethylene glycol	10	U	5.2	MDL	10	PQL	mg/Kg	UJ	H

Sample ID: SL-655-SA5C-TR-0.5 **Collected: 6/4/2014 7:45:00 AM** **Analysis Type: RES** **Dilution: 1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
DIETHYLENE GLYCOL	11	U	5.3	MDL	11	PQL	mg/Kg	UJ	Q, H
ETHYLENE GLYCOL	11	U	5.3	MDL	11	PQL	mg/Kg	UJ	H
Propylene glycol	11	U	5.3	MDL	11	PQL	mg/Kg	UJ	H
Triethylene glycol	11	U	5.3	MDL	11	PQL	mg/Kg	R	Q

Sample ID: SL-655-SA5C-TR-5.0 **Collected: 6/4/2014 8:00:00 AM** **Analysis Type: RES** **Dilution: 1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
DIETHYLENE GLYCOL	10	U	5.2	MDL	10	PQL	mg/Kg	UJ	H
ETHYLENE GLYCOL	10	U	5.2	MDL	10	PQL	mg/Kg	UJ	H
Propylene glycol	10	U	5.2	MDL	10	PQL	mg/Kg	UJ	H
Triethylene glycol	10	U	5.2	MDL	10	PQL	mg/Kg	UJ	H

* denotes a non-reportable result

Project Name and Number: 1204-002-001-AL - SSFL Area IV Phase 3

Data Qualifier Summary

Lab Reporting Batch ID: PH217 **Laboratory: LL**

EDD Filename: PrepPH217 **eQAPP Name: CDM_SSFL_140617_Lan**

Method Category: SVOA

Method: 8015M **Matrix: AQ**

Sample ID: **EB3-060414** *Collected:* **6/4/2014 10:30:00** *Analysis Type:* **REA** *Dilution:* **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
EFH (C12-C14)	0.097	U	0.048	MDL	0.097	PQL	mg/L	UJ	L
EFH (C8-C11)	0.097	U	0.048	MDL	0.097	PQL	mg/L	UJ	L, E

Sample ID: **EB3-060414** *Collected:* **6/4/2014 10:30:00** *Analysis Type:* **REA2** *Dilution:* **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
EFH (C12-C14) SG	0.097	U	0.048	MDL	0.097	PQL	mg/L	UJ	L
EFH (C8-C11) SG	0.097	U	0.048	MDL	0.097	PQL	mg/L	UJ	L, E

Method Category: SVOA

Method: 8015M **Matrix: SO**

Sample ID: **SL-646-SA5C-TR-0.5** *Collected:* **6/4/2014 11:30:00** *Analysis Type:* **REA** *Dilution:* **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
EFH (C12-C14) SG	5.1	U	2.0	MDL	5.1	PQL	mg/Kg	UJ	L
EFH (C15-C20) SG	5.1	U	2.0	MDL	5.1	PQL	mg/Kg	UJ	L
EFH (C8-C11) SG	5.1	U	2.0	MDL	5.1	PQL	mg/Kg	UJ	L

Sample ID: **SL-646-SA5C-TR-5.0** *Collected:* **6/4/2014 11:45:00** *Analysis Type:* **REA** *Dilution:* **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
EFH (C12-C14) SG	5.2	U	2.1	MDL	5.2	PQL	mg/Kg	UJ	L
EFH (C15-C20) SG	5.2	U	2.1	MDL	5.2	PQL	mg/Kg	UJ	L
EFH (C8-C11) SG	5.2	U	2.1	MDL	5.2	PQL	mg/Kg	UJ	L

Sample ID: **SL-646-SA5C-TR-5.0** *Collected:* **6/4/2014 11:45:00** *Analysis Type:* **RES** *Dilution:* **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
EFH (C21-C30)	2.3	J	2.1	MDL	5.2	PQL	mg/Kg	J	Z

Sample ID: **SL-655-SA5C-TR-0.5** *Collected:* **6/4/2014 7:45:00 AM** *Analysis Type:* **REA** *Dilution:* **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
EFH (C12-C14) SG	5.3	U	2.1	MDL	5.3	PQL	mg/Kg	UJ	L

* denotes a non-reportable result

Project Name and Number: 1204-002-001-AL - SSFL Area IV Phase 3

Data Qualifier Summary

Lab Reporting Batch ID: PH217 **Laboratory: LL**

EDD Filename: PrepPH217 **eQAPP Name: CDM_SSFL_140617_Lan**

Method Category: SVOA

Method: 8015M **Matrix: SO**

Sample ID: **SL-655-SA5C-TR-0.5** *Collected:* **6/4/2014 7:45:00 AM** *Analysis Type:* **REA** *Dilution:* **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
EFH (C15-C20) SG	5.3	U	2.1	MDL	5.3	PQL	mg/Kg	UJ	L
EFH (C8-C11) SG	5.3	U	2.1	MDL	5.3	PQL	mg/Kg	UJ	L

Sample ID: **SL-655-SA5C-TR-0.5** *Collected:* **6/4/2014 7:45:00 AM** *Analysis Type:* **RES** *Dilution:* **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
EFH (C21-C30)	3.5	J	2.1	MDL	5.3	PQL	mg/Kg	J	Z
EFH (C30-C40)	5.0	J	4.3	MDL	11	PQL	mg/Kg	J	Z

Sample ID: **SL-655-SA5C-TR-5.0** *Collected:* **6/4/2014 8:00:00 AM** *Analysis Type:* **REA** *Dilution:* **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
EFH (C12-C14) SG	5.2	U	2.1	MDL	5.2	PQL	mg/Kg	UJ	L
EFH (C15-C20) SG	5.2	U	2.1	MDL	5.2	PQL	mg/Kg	UJ	L
EFH (C8-C11) SG	5.2	U	2.1	MDL	5.2	PQL	mg/Kg	UJ	L

Method Category: SVOA

Method: 8081B **Matrix: AQ**

Sample ID: **EB3-060414** *Collected:* **6/4/2014 10:30:00** *Analysis Type:* **RES** *Dilution:* **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
ALDRIN	0.0083	U	0.0017	MDL	0.0083	PQL	ug/L	UJ	L

Method Category: SVOA

Method: 8081B **Matrix: SO**

Sample ID: **SL-655-SA5C-TR-0.5** *Collected:* **6/4/2014 7:45:00 AM** *Analysis Type:* **RES** *Dilution:* **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
BETA-BHC	1.4	J	1.0	MDL	2.0	PQL	ug/Kg	J	Z

* denotes a non-reportable result

Project Name and Number: 1204-002-001-AL - SSFL Area IV Phase 3

Data Qualifier Summary

Lab Reporting Batch ID: PH217 **Laboratory: LL**

EDD Filename: PrepPH217 **eQAPP Name: CDM_SSFL_140617_Lan**

Method Category: SVOA

Method: 8082A **Matrix: SO**

Sample ID: **SL-646-SA5C-TR-0.5** *Collected:* **6/4/2014 11:30:00** *Analysis Type:* **RES** *Dilution:* **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
AROCLOR 1260	7.5	J	4.0	MDL	17	PQL	ug/Kg	J	Z

Method Category: SVOA

Method: 8151A **Matrix: SO**

Sample ID: **SL-646-SA5C-TR-0.5** *Collected:* **6/4/2014 11:30:00** *Analysis Type:* **RES** *Dilution:* **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
2,4-DB	15	J	6.3	MDL	17	PQL	ug/Kg	J	Z
DINOSEB	25	U	9.2	MDL	25	PQL	ug/Kg	R	L

Sample ID: **SL-646-SA5C-TR-5.0** *Collected:* **6/4/2014 11:45:00** *Analysis Type:* **RES** *Dilution:* **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
DINOSEB	25	U	9.4	MDL	25	PQL	ug/Kg	R	L

Sample ID: **SL-655-SA5C-TR-0.5** *Collected:* **6/4/2014 7:45:00 AM** *Analysis Type:* **RES** *Dilution:* **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
DINOSEB	26	U	9.6	MDL	26	PQL	ug/Kg	R	L

Sample ID: **SL-655-SA5C-TR-5.0** *Collected:* **6/4/2014 8:00:00 AM** *Analysis Type:* **RES** *Dilution:* **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
DINOSEB	25	U	9.3	MDL	25	PQL	ug/Kg	R	L

Method Category: SVOA

Method: 8270D **Matrix: AQ**

Sample ID: **EB3-060414** *Collected:* **6/4/2014 10:30:00** *Analysis Type:* **RES-BASE/NEUTRAL** *Dilution:* **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
1,2,4-TRICHLOROBENZENE	1	U	0.6	MDL	1	PQL	ug/L	UJ	L
BENZIDINE	69	U	23	MDL	69	PQL	ug/L	R	L
HEXACHLOROBUTADIENE	1	U	0.6	MDL	1	PQL	ug/L	UJ	L

* denotes a non-reportable result

Project Name and Number: 1204-002-001-AL - SSFL Area IV Phase 3

Data Qualifier Summary

Lab Reporting Batch ID: PH217 **Laboratory: LL**

EDD Filename: PrepPH217 **eQAPP Name: CDM_SSFL_140617_Lan**

Method Category: SVOA

Method: 8270D **Matrix: AQ**

Method Category: SVOA

Method: 8270D **Matrix: SO**

Sample ID: **SL-646-SA5C-TR-0.5** *Collected:* **6/4/2014 11:30:00** *Analysis Type:* **RES** *Dilution:* **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
Tetralin	170	U	34	MDL	170	PQL	ug/Kg	UJ	L

Sample ID: **SL-646-SA5C-TR-5.0** *Collected:* **6/4/2014 11:45:00** *Analysis Type:* **RES** *Dilution:* **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
Tetralin	170	U	35	MDL	170	PQL	ug/Kg	UJ	L

Sample ID: **SL-655-SA5C-TR-0.5** *Collected:* **6/4/2014 7:45:00 AM** *Analysis Type:* **RES** *Dilution:* **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
Tetralin	180	U	35	MDL	180	PQL	ug/Kg	UJ	L

Sample ID: **SL-655-SA5C-TR-5.0** *Collected:* **6/4/2014 8:00:00 AM** *Analysis Type:* **RES** *Dilution:* **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
Tetralin	170	U	34	MDL	170	PQL	ug/Kg	UJ	Q, L

Sample ID: **SL-655-SA5C-TR-5.0** *Collected:* **6/4/2014 8:00:00 AM** *Analysis Type:* **RES-BASE/NEUTRAL** *Dilution:* **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
BENZIDINE	1700	U	720	MDL	1700	PQL	ug/Kg	UJ	Q

Method Category: SVOA

Method: 8270D SIM **Matrix: AQ**

Sample ID: **EB3-060414** *Collected:* **6/4/2014 10:30:00** *Analysis Type:* **RES-BASE/NEUTRAL** *Dilution:* **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
1-METHYLNAPHTHALENE	0.020	J	0.011	MDL	0.057	PQL	ug/L	J	Z
2-METHYLNAPHTHALENE	0.028	J	0.011	MDL	0.057	PQL	ug/L	J	Z
BIS(2-ETHYLHEXYL)PHTHALATE	0.13	J	0.057	MDL	1.1	PQL	ug/L	UJ	L, E, B
Diethylphthalate	0.078	J	0.057	MDL	1.1	PQL	ug/L	U	B

* denotes a non-reportable result

Project Name and Number: 1204-002-001-AL - SSFL Area IV Phase 3

Data Qualifier Summary

Lab Reporting Batch ID: PH217 **Laboratory: LL**

EDD Filename: PrepPH217 **eQAPP Name: CDM_SSFL_140617_Lan**

Method Category: SVOA

Method: 8270D SIM **Matrix: AQ**

Sample ID: EB3-060414 *Collected:* 6/4/2014 10:30:00 *Analysis Type:* RES-BASE/NEUTRAL *Dilution:* 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
Di-n-butylphthalate	0.14	J	0.057	MDL	1.1	PQL	ug/L	J	Z

Method Category: SVOA

Method: 8270D SIM **Matrix: SO**

Sample ID: SL-646-SA5C-TR-0.5 *Collected:* 6/4/2014 11:30:00 *Analysis Type:* RES-BASE/NEUTRAL *Dilution:* 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
BENZO(K)FLUORANTHENE	1.4	J	0.68	MDL	1.7	PQL	ug/Kg	J	Z
CHRYSENE	0.72	J	0.34	MDL	1.7	PQL	ug/Kg	J	Z
N-NITROSODIMETHYLAMINE	1.7	U	0.68	MDL	1.7	PQL	ug/Kg	UJ	L

Sample ID: SL-646-SA5C-TR-5.0 *Collected:* 6/4/2014 11:45:00 *Analysis Type:* RES-BASE/NEUTRAL *Dilution:* 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
N-NITROSODIMETHYLAMINE	1.7	U	0.70	MDL	1.7	PQL	ug/Kg	UJ	L

Sample ID: SL-655-SA5C-TR-0.5 *Collected:* 6/4/2014 7:45:00 AM *Analysis Type:* RES-BASE/NEUTRAL *Dilution:* 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
CHRYSENE	1.6	J	0.35	MDL	1.8	PQL	ug/Kg	J	Z
N-NITROSODIMETHYLAMINE	1.8	U	0.71	MDL	1.8	PQL	ug/Kg	UJ	L

Sample ID: SL-655-SA5C-TR-5.0 *Collected:* 6/4/2014 8:00:00 AM *Analysis Type:* RES-BASE/NEUTRAL *Dilution:* 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
N-NITROSODIMETHYLAMINE	1.7	U	0.69	MDL	1.7	PQL	ug/Kg	UJ	L

Method Category: SVOA

Method: 8330A **Matrix: SO**

Sample ID: SL-646-SA5C-TR-0.5 *Collected:* 6/4/2014 11:30:00 *Analysis Type:* RES *Dilution:* 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
1,3-DINITROBENZENE	310	U	100	MDL	310	PQL	ug/Kg	UJ	L

* denotes a non-reportable result

Project Name and Number: 1204-002-001-AL - SSFL Area IV Phase 3

Data Qualifier Summary

Lab Reporting Batch ID: PH217 **Laboratory: LL**

EDD Filename: PrepPH217 **eQAPP Name: CDM_SSFL_140617_Lan**

Method Category: SVOA

Method: 8330A **Matrix: SO**

Sample ID: **SL-646-SA5C-TR-5.0** *Collected:* **6/4/2014 11:45:00** *Analysis Type:* **RES** *Dilution:* **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
1,3-DINITROBENZENE	310	U	100	MDL	310	PQL	ug/Kg	UJ	L

Sample ID: **SL-655-SA5C-TR-0.5** *Collected:* **6/4/2014 7:45:00 AM** *Analysis Type:* **RES** *Dilution:* **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
1,3-DINITROBENZENE	320	U	110	MDL	320	PQL	ug/Kg	UJ	L
2,4,6-TRINITROTOLUENE	320	U	110	MDL	320	PQL	ug/Kg	UJ	Q
4-NITROTOLUENE	320	U	210	MDL	320	PQL	ug/Kg	UJ	Q
HMX	430	U	210	MDL	430	PQL	ug/Kg	UJ	Q

Sample ID: **SL-655-SA5C-TR-5.0** *Collected:* **6/4/2014 8:00:00 AM** *Analysis Type:* **RES** *Dilution:* **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
1,3-DINITROBENZENE	310	U	100	MDL	310	PQL	ug/Kg	UJ	L

Method Category: VOA

Method: 8015B **Matrix: SO**

Sample ID: **SL-655-SA5C-TR-0.5** *Collected:* **6/4/2014 7:45:00 AM** *Analysis Type:* **RES** *Dilution:* **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
m-Terphenyl	0.51		0.071	MDL	0.18	PQL	mg/Kg	J	Q, Q
p-Terphenyl	0.98		0.071	MDL	0.18	PQL	mg/Kg	J	Q, Q

* denotes a non-reportable result

Project Name and Number: 1204-002-001-AL - SSFL Area IV Phase 3

Data Qualifier Summary

Lab Reporting Batch ID: PH217 **Laboratory: LL**

EDD Filename: PrepPH217 **eQAPP Name: CDM_SSFL_140617_Lan**

Reason Code Legend

Reason Code	*Description*
*#	Professional Judgment
A	ICP Serial Dilution
B	Calibration Blank Contamination
B	Method Blank Contamination
E	Laboratory Control Precision
E	Laboratory Duplicate Precision
E	Matrix Spike Precision
F	Equipment Blank Contamination
F	Field Blank Contamination
H	Sampling to Analysis Estimation
L	Laboratory Control Precision
L	Laboratory Control Spike Lower Estimation
L	Laboratory Control Spike Lower Rejection
L	Laboratory Control Spike Upper Estimation
Q	Laboratory Duplicate Precision
Q	Matrix Spike Lower Estimation
Q	Matrix Spike Lower Rejection
Q	Matrix Spike Precision
Q	Matrix Spike Upper Estimation
S	Surrogate/Tracer Recovery Upper Estimation
Z	Reporting Limit Trace Value

* denotes a non-reportable result

Project Name and Number: 1204-002-001-AL - SSFL Area IV Phase 3

Enclosure I

Level III ADR Outliers

(Including Manual Review Outliers)

Quality Control
Outlier Reports

PH217

QC Outlier Report: HoldingTimes

Lab Reporting Batch ID: PH217 **Laboratory: LL**

EDD Filename: PrepPH217 **eQAPP Name: CDM_SSFL_140617_Lan**

Method: 7199 **Preparation Method: Gen Prep**

Matrix: AQ

Sample ID	Type	Actual	Criteria	Units	Flag
EB3-060414 (RES)	Sampling To Analysis	25.50	24.00	HOURS	J (all detects) UJ (all non-detects)

Method: 8015C **Preparation Method: Gen Prep**

Matrix: SO

Sample ID	Type	Actual	Criteria	Units	Flag
SL-646-SA5C-TR-0.5 (RES)	Sampling To Analysis	8.00	7.00	DAYS	J(all detects)
SL-646-SA5C-TR-5.0 (RES)		8.00	7.00	DAYS	UJ(all non-detects)
SL-655-SA5C-TR-0.5 (RES)		8.00	7.00	DAYS	
SL-655-SA5C-TR-0.5MS (RES)		8.00	7.00	DAYS	
SL-655-SA5C-TR-0.5MSD (RES)		8.00	7.00	DAYS	
SL-655-SA5C-TR-5.0 (RES)		8.00	7.00	DAYS	

Method Blank Outlier Report

Lab Reporting Batch ID: PH217 **Laboratory: LL**

EDD Filename: PH217_v1. **eQAPP Name: CDM_SSFL_140617_Lan**

Method: **1613B**
Matrix: **AQ**

Method Blank Sample ID	Analysis Date	Analyte	Result	Associated Samples
BLK1620B370256	6/13/2014 2:56:00 AM	1,2,3,4,6,7,8-HPCDD	0.811 pg/L	EB3-060414
		1,2,3,4,6,7,8-HPCDF	0.621 pg/L	
		1,2,3,4,7,8,9-HPCDF	0.299 pg/L	
		1,2,3,4,7,8-HxCDD	0.280 pg/L	
		1,2,3,4,7,8-HXCDF	0.176 pg/L	
		1,2,3,6,7,8-HXCDF	0.258 pg/L	
		1,2,3,7,8,9-HXCDD	0.251 pg/L	
		1,2,3,7,8,9-HXCDF	0.465 pg/L	
		1,2,3,7,8-PECDD	0.241 pg/L	
		1,2,3,7,8-PECDF	0.172 pg/L	
		2,3,4,6,7,8-HXCDF	0.399 pg/L	
		2,3,4,7,8-PECDF	0.109 pg/L	
		OCDD	1.29 pg/L	
		OCDF	1.27 pg/L	

The following samples and their listed target analytes were qualified due to contamination reported in this blank

Sample ID	Analyte	Reported Result	Modified Final Result
EB3-060414(RES)	1,2,3,4,6,7,8-HPCDD	0.541 pg/L	0.541U pg/L
EB3-060414(RES)	1,2,3,4,6,7,8-HPCDF	0.539 pg/L	0.539U pg/L
EB3-060414(RES)	1,2,3,4,7,8,9-HPCDF	0.408 pg/L	0.408U pg/L
EB3-060414(RES)	1,2,3,4,7,8-HxCDD	0.209 pg/L	0.209U pg/L
EB3-060414(RES)	1,2,3,4,7,8-HXCDF	0.549 pg/L	0.549U pg/L
EB3-060414(RES)	1,2,3,6,7,8-HXCDF	0.379 pg/L	0.379U pg/L
EB3-060414(RES)	1,2,3,7,8,9-HXCDF	0.423 pg/L	0.423U pg/L
EB3-060414(RES)	1,2,3,7,8-PECDD	0.331 pg/L	0.331U pg/L
EB3-060414(RES)	1,2,3,7,8-PECDF	0.647 pg/L	0.647U pg/L
EB3-060414(RES)	2,3,4,6,7,8-HXCDF	0.388 pg/L	0.388U pg/L
EB3-060414(RES)	2,3,4,7,8-PECDF	0.375 pg/L	0.375U pg/L
EB3-060414(RES)	OCDD	2.25 pg/L	2.25U pg/L
EB3-060414(RES)	OCDF	1.21 pg/L	1.21U pg/L

Method: **1613B**
Matrix: **SO**

Method Blank Sample ID	Analysis Date	Analyte	Result	Associated Samples
BLK1620B370353	6/13/2014 3:53:00 AM	1,2,3,4,6,7,8-HPCDD	0.0740 ng/Kg	SL-646-SA5C-TR-0.5
		1,2,3,4,6,7,8-HPCDF	0.0797 ng/Kg	SL-646-SA5C-TR-5.0
		1,2,3,4,7,8,9-HPCDF	0.0398 ng/Kg	SL-655-SA5C-TR-0.5
		1,2,3,4,7,8-HXCDF	0.122 ng/Kg	SL-655-SA5C-TR-5.0
		1,2,3,6,7,8-HXCDD	0.0387 ng/Kg	
		1,2,3,6,7,8-HXCDF	0.0571 ng/Kg	
		1,2,3,7,8,9-HXCDD	0.0242 ng/Kg	
		1,2,3,7,8,9-HXCDF	0.0757 ng/Kg	
		1,2,3,7,8-PECDD	0.102 ng/Kg	
		1,2,3,7,8-PECDF	0.130 ng/Kg	
		2,3,4,6,7,8-HXCDF	0.0354 ng/Kg	
		2,3,4,7,8-PECDF	0.0960 ng/Kg	
		OCDD	0.176 ng/Kg	
		OCDF	0.0869 ng/Kg	

Method Blank Outlier Report

Lab Reporting Batch ID: PH217 **Laboratory: LL**

EDD Filename: PH217_v1. **eQAPP Name: CDM_SSFL_140617_Lan**

Method: **1613B**
Matrix: **SO**

Method Blank Sample ID	Analysis Date	Analyte	Result	Associated Samples

The following samples and their listed target analytes were qualified due to contamination reported in this blank

Sample ID	Analyte	Reported Result	Modified Final Result
SL-646-SA5C-TR-0.5(RES)	1,2,3,4,7,8,9-HPCDF	0.0588 ng/Kg	0.0588U ng/Kg
SL-646-SA5C-TR-0.5(RES)	1,2,3,4,7,8-HXCDF	0.123 ng/Kg	0.123U ng/Kg
SL-646-SA5C-TR-0.5(RES)	1,2,3,6,7,8-HXCDD	0.181 ng/Kg	0.181U ng/Kg
SL-646-SA5C-TR-0.5(RES)	1,2,3,6,7,8-HXCDF	0.129 ng/Kg	0.129U ng/Kg
SL-646-SA5C-TR-0.5(RES)	1,2,3,7,8,9-HXCDF	0.0486 ng/Kg	0.0486U ng/Kg
SL-646-SA5C-TR-0.5(RES)	1,2,3,7,8-PECDF	0.256 ng/Kg	0.256U ng/Kg
SL-646-SA5C-TR-0.5(RES)	2,3,4,6,7,8-HXCDF	0.0930 ng/Kg	0.0930U ng/Kg
SL-646-SA5C-TR-0.5(RES)	2,3,4,7,8-PECDF	0.0600 ng/Kg	0.0600U ng/Kg
SL-646-SA5C-TR-5.0(RES)	1,2,3,4,6,7,8-HPCDD	0.166 ng/Kg	0.166U ng/Kg
SL-646-SA5C-TR-5.0(RES)	1,2,3,4,6,7,8-HPCDF	0.0589 ng/Kg	0.0589U ng/Kg
SL-646-SA5C-TR-5.0(RES)	1,2,3,4,7,8-HXCDF	0.0301 ng/Kg	0.0301U ng/Kg
SL-646-SA5C-TR-5.0(RES)	1,2,3,6,7,8-HXCDD	0.0445 ng/Kg	0.0445U ng/Kg
SL-646-SA5C-TR-5.0(RES)	1,2,3,6,7,8-HXCDF	0.0294 ng/Kg	0.0294U ng/Kg
SL-646-SA5C-TR-5.0(RES)	1,2,3,7,8,9-HXCDD	0.0280 ng/Kg	0.0280U ng/Kg
SL-646-SA5C-TR-5.0(RES)	1,2,3,7,8,9-HXCDF	0.0532 ng/Kg	0.0532U ng/Kg
SL-646-SA5C-TR-5.0(RES)	2,3,4,6,7,8-HXCDF	0.0166 ng/Kg	0.0166U ng/Kg
SL-646-SA5C-TR-5.0(RES)	2,3,4,7,8-PECDF	0.0392 ng/Kg	0.0392U ng/Kg
SL-646-SA5C-TR-5.0(RES)	OCDF	0.113 ng/Kg	0.113U ng/Kg
SL-655-SA5C-TR-0.5(RES)	1,2,3,4,6,7,8-HPCDF	0.208 ng/Kg	0.208U ng/Kg
SL-655-SA5C-TR-0.5(RES)	1,2,3,4,7,8,9-HPCDF	0.0645 ng/Kg	0.0645U ng/Kg
SL-655-SA5C-TR-0.5(RES)	1,2,3,4,7,8-HXCDF	0.150 ng/Kg	0.150U ng/Kg
SL-655-SA5C-TR-0.5(RES)	1,2,3,6,7,8-HXCDF	0.126 ng/Kg	0.126U ng/Kg
SL-655-SA5C-TR-0.5(RES)	1,2,3,7,8,9-HXCDF	0.204 ng/Kg	0.204U ng/Kg
SL-655-SA5C-TR-0.5(RES)	1,2,3,7,8-PECDD	0.152 ng/Kg	0.152U ng/Kg
SL-655-SA5C-TR-0.5(RES)	1,2,3,7,8-PECDF	0.293 ng/Kg	0.293U ng/Kg
SL-655-SA5C-TR-0.5(RES)	2,3,4,6,7,8-HXCDF	0.0890 ng/Kg	0.0890U ng/Kg
SL-655-SA5C-TR-0.5(RES)	2,3,4,7,8-PECDF	0.157 ng/Kg	0.157U ng/Kg
SL-655-SA5C-TR-5.0(RES)	1,2,3,4,6,7,8-HPCDF	0.194 ng/Kg	0.194U ng/Kg
SL-655-SA5C-TR-5.0(RES)	1,2,3,4,7,8,9-HPCDF	0.0770 ng/Kg	0.0770U ng/Kg
SL-655-SA5C-TR-5.0(RES)	1,2,3,4,7,8-HXCDF	0.0652 ng/Kg	0.0652U ng/Kg
SL-655-SA5C-TR-5.0(RES)	1,2,3,6,7,8-HXCDD	0.0616 ng/Kg	0.0616U ng/Kg
SL-655-SA5C-TR-5.0(RES)	1,2,3,6,7,8-HXCDF	0.0538 ng/Kg	0.0538U ng/Kg
SL-655-SA5C-TR-5.0(RES)	1,2,3,7,8,9-HXCDD	0.0345 ng/Kg	0.0345U ng/Kg
SL-655-SA5C-TR-5.0(RES)	1,2,3,7,8,9-HXCDF	0.0438 ng/Kg	0.0438U ng/Kg
SL-655-SA5C-TR-5.0(RES)	1,2,3,7,8-PECDF	0.0566 ng/Kg	0.0566U ng/Kg
SL-655-SA5C-TR-5.0(RES)	2,3,4,6,7,8-HXCDF	0.0562 ng/Kg	0.0562U ng/Kg
SL-655-SA5C-TR-5.0(RES)	2,3,4,7,8-PECDF	0.0618 ng/Kg	0.0618U ng/Kg
SL-655-SA5C-TR-5.0(RES)	OCDF	0.198 ng/Kg	0.198U ng/Kg

Method Blank Outlier Report

Lab Reporting Batch ID: PH217 **Laboratory: LL**

EDD Filename: PH217_v1. **eQAPP Name: CDM_SSFL_140617_Lan**

Method: **6010C**
Matrix: **AQ**

Method Blank Sample ID	Analysis Date	Analyte	Result	Associated Samples
P16435AB222233	6/16/2014 10:33:00 PM	MANGANESE NICKEL ZINC Zirconium	0.0014 mg/L 0.0016 mg/L 0.0047 mg/L 0.0094 mg/L	EB3-060414

The following samples and their listed target analytes were qualified due to contamination reported in this blank

Sample ID	Analyte	Reported Result	Modified Final Result
EB3-060414(REA2)	MANGANESE	0.0016 mg/L	0.0016U mg/L
EB3-060414(REA2)	Zirconium	0.0113 mg/L	0.0113U mg/L

Method: **6010C**
Matrix: **SO**

Method Blank Sample ID	Analysis Date	Analyte	Result	Associated Samples
P16037AB220830	6/11/2014 8:30:00 AM	CALCIUM TIN ZINC	9.52 mg/Kg 1.47 mg/Kg 0.541 mg/Kg	SL-646-SA5C-TR-0.5 SL-646-SA5C-TR-5.0 SL-655-SA5C-TR-0.5 SL-655-SA5C-TR-5.0

The following samples and their listed target analytes were qualified due to contamination reported in this blank

Sample ID	Analyte	Reported Result	Modified Final Result
SL-646-SA5C-TR-0.5(RES)	TIN	3.48 mg/Kg	3.48U mg/Kg
SL-646-SA5C-TR-5.0(RES)	TIN	3.76 mg/Kg	3.76U mg/Kg
SL-655-SA5C-TR-0.5(RES)	TIN	3.42 mg/Kg	3.42U mg/Kg
SL-655-SA5C-TR-5.0(RES)	TIN	3.09 mg/Kg	3.09U mg/Kg

Method: **8081B**
Matrix: **AQ**

Method Blank Sample ID	Analysis Date	Analyte	Result	Associated Samples
P61614AB241115A	6/11/2014 11:15:00 AM	BETA-BHC	0.0038 ug/L	EB3-060414

Method: **8270D SIM**
Matrix: **AQ**

Method Blank Sample ID	Analysis Date	Analyte	Result	Associated Samples
PLKWH16B262347	6/11/2014 11:47:00 PM	BIS(2-ETHYLHEXYL)PHTHALATE Diethylphthalate	0.096 ug/L 0.069 ug/L	EB3-060414

The following samples and their listed target analytes were qualified due to contamination reported in this blank

Sample ID	Analyte	Reported Result	Modified Final Result
EB3-060414(RES)	BIS(2-ETHYLHEXYL)PHTHALATE	0.13 ug/L	1.1U ug/L

Project Name and Number: 1204-002-001-AL - SSFL Area IV Phase 3

Method Blank Outlier Report

Lab Reporting Batch ID: PH217 **Laboratory: LL**

EDD Filename: PH217_v1. **eQAPP Name: CDM_SSFL_140617_Lan**

Method: **8270D SIM**
Matrix: **AQ**

Method Blank Sample ID	Analysis Date	Analyte	Result	Associated Samples

The following samples and their listed target analytes were qualified due to contamination reported in this blank

Sample ID	Analyte	Reported Result	Modified Final Result
EB3-060414(RES)	Diethylphthalate	0.078 ug/L	1.1U ug/L

Equipment Rinsate Blank Outlier Report

Lab Reporting Batch ID: PH217 **Laboratory: LL**

EDD Filename: PrepPH217 **eQAPP Name: CDM_SSFL_140617_Lan**

Method: **6010C**
Matrix: **SO**

Equipment Blank Sample ID	Collected Date	Analyte	Result	Associated Samples
EB3-060414(REA2)	6/4/2014 10:30:00 AM	BARIUM	0.0007 mg/L	SL-646-SA5C-TR-0.5
		CALCIUM	0.151 mg/L	SL-646-SA5C-TR-5.0
		MANGANESE	0.0016 mg/L	SL-655-SA5C-TR-0.5
		Zirconium	0.0113 mg/L	SL-655-SA5C-TR-5.0

The following samples and their listed target analytes were qualified due to contamination reported in this blank

Sample ID	Analyte	Reported Result	Modified Final Result
SL-646-SA5C-TR-0.5(RES)	Zirconium	2.44 mg/Kg	2.44U mg/Kg
SL-646-SA5C-TR-5.0(RES)	Zirconium	2.29 mg/Kg	2.29U mg/Kg
SL-655-SA5C-TR-0.5(RES)	Zirconium	3.91 mg/Kg	3.91U mg/Kg
SL-655-SA5C-TR-5.0(RES)	Zirconium	1.72 mg/Kg	1.72U mg/Kg

Surrogate Outlier Report

Lab Reporting Batch ID: PH217 **Laboratory: LL**

EDD Filename: PH217_v1. **eQAPP Name: CDM_SSFL_140617_Lan**

Method: **8082A**
Matrix: **SO**

Sample ID (Analysis Type)	*Surrogate*	*Sample % Recovery*	*% Recovery Limits*	*Affected Compounds*	*Flag*
SL-646-SA5C-TR-5.0	DECACHLOROBIPHENYL TETRACHLORO-M-XYLENE	121 126	45.00-120.00 45.00-120.00	All Target Analytes	J (all detects)
SL-655-SA5C-TR-0.5	TETRACHLORO-M-XYLENE	126	45.00-120.00	All Target Analytes	J(all detects)
SL-655-SA5C-TR-5.0	TETRACHLORO-M-XYLENE	122	45.00-120.00	All Target Analytes	J(all detects)

Matrix Spike/Matrix Spike Duplicate Outlier Report

Lab Reporting Batch ID: PH217 **Laboratory: LL**

EDD Filename: PH217_v1. **eQAPP Name: CDM_SSFL_140617_Lan**

Method: 8015C
Matrix: AQ

QC Sample ID (Associated Samples)	Compound	MS %R	MSD %R	%R Limits	RPD (Limits)	Affected Compounds	Flag
EB3-060414MSD (EB3-060414)	ETHYLENE GLYCOL Propylene glycol Triethylene glycol	- - -	- - -	50.00-155.00 54.00-145.00 73.00-131.00	22 (20.00) 24 (20.00) 21 (20.00)	ETHYLENE GLYCOL Propylene glycol Triethylene glycol	J(all detects)

Method: 8015B
Matrix: SO

QC Sample ID (Associated Samples)	Compound	MS %R	MSD %R	%R Limits	RPD (Limits)	Affected Compounds	Flag
SL-655-SA5C-TR-0.5MS **SL-655-SA5C-TR-0.5MSD** (SL-655-SA5C-TR-0.5)	m-Terphenyl p-Terphenyl	339 181	- -	75.00-125.00 75.00-125.00	105 (20.00) 61 (20.00)	m-Terphenyl p-Terphenyl	J (all detects)

Method: 8330A
Matrix: SO

QC Sample ID (Associated Samples)	Compound	MS %R	MSD %R	%R Limits	RPD (Limits)	Affected Compounds	Flag
SL-655-SA5C-TR-0.5MS **SL-655-SA5C-TR-0.5MSD** (SL-655-SA5C-TR-0.5)	Nitroglycerin PETN	199 179	174 162	73.00-116.00 71.00-133.00	- -	Nitroglycerin PETN	J(all detects)
SL-655-SA5C-TR-0.5MSD (SL-655-SA5C-TR-0.5)	2,4,6-TRINITROTOLUENE 4-NITROTOLUENE HMX	- - -	86 82 64	92.00-114.00 90.00-118.00 72.00-107.00	- - -	2,4,6-TRINITROTOLUENE 4-NITROTOLUENE HMX	J(all detects) UJ(all non-detects)

Method: 8015C
Matrix: SO

QC Sample ID (Associated Samples)	Compound	MS %R	MSD %R	%R Limits	RPD (Limits)	Affected Compounds	Flag
SL-655-SA5C-TR-0.5MS **SL-655-SA5C-TR-0.5MSD** (SL-655-SA5C-TR-0.5)	Triethylene glycol	0	4	66.00-122.00	200 (20.00)	Triethylene glycol	J(all detects) R(all non-detects)
SL-655-SA5C-TR-0.5MS **SL-655-SA5C-TR-0.5MSD** (SL-655-SA5C-TR-0.5)	DIETHYLENE GLYCOL	12	15	59.00-109.00	22 (20.00)	DIETHYLENE GLYCOL	J(all detects) UJ(all non-detects)

Matrix Spike/Matrix Spike Duplicate Outlier Report

Lab Reporting Batch ID: PH217 **Laboratory: LL**

EDD Filename: PH217_v1. **eQAPP Name: CDM_SSFL_140617_Lan**

Method: 6010C
Matrix: SO

QC Sample ID (Associated Samples)	Compound	MS %R	MSD %R	%R Limits	RPD (Limits)	Affected Compounds	Flag
SL-655-SA5C-TR-0.5MS (TOT) SL-655-SA5C-TR-0.5MSD (TOT) (SL-646-SA5C-TR-0.5 SL-646-SA5C-TR-5.0 SL-655-SA5C-TR-0.5 SL-655-SA5C-TR-5.0)	ALUMINUM IRON MAGNESIUM TITANIUM	2266 1070 184 337	2288 177 131 359	75.00-125.00 75.00-125.00 75.00-125.00 75.00-125.00	- - - -	ALUMINUM IRON MAGNESIUM TITANIUM	No Qual, >4x
SL-655-SA5C-TR-0.5MS (TOT) SL-655-SA5C-TR-0.5MSD (TOT) (SL-646-SA5C-TR-0.5 SL-646-SA5C-TR-5.0 SL-655-SA5C-TR-0.5 SL-655-SA5C-TR-5.0)	ANTIMONY	34	35	75.00-125.00	-	ANTIMONY	J(all detects) UJ(all non-detects)

Method: 8270D
Matrix: SO

QC Sample ID (Associated Samples)	Compound	MS %R	MSD %R	%R Limits	RPD (Limits)	Affected Compounds	Flag
SL-655-SA5C-TR-5.0MS SL-655-SA5C-TR-5.0MSD (SL-655-SA5C-TR-5.0)	BENZIDINE Tetralin	23 30	14 37	35.00-141.00 70.00-130.00	52 (30.00) -	BENZIDINE Tetralin	J(all detects) UJ(all non-detects)

Lab Control Spike/Lab Control Spike Duplicate Outlier Report

Lab Reporting Batch ID: PH217 **Laboratory: LL**

EDD Filename: PH217_v1. **eQAPP Name: CDM_SSFL_140617_Lan**

Method: 8151A
Matrix: AQ

QC Sample ID (Associated Samples)	Compound	LCS %R	LCSD %R	%R Limits	RPD (Limits)	Affected Compounds	Flag
P41603AY240807A (EB3-060414)	MCPA	-	129	65.00-128.00	-	MCPA	J(all detects)

Method: 8015M
Matrix: AQ

QC Sample ID (Associated Samples)	Compound	LCS %R	LCSD %R	%R Limits	RPD (Limits)	Affected Compounds	Flag
P41602AQ321429A P41602AY321451A (EB3-060414)	EFH (C12-C14) EFH (C8-C11)	59 21	50 15	67.00-109.00 55.00-86.00	- 32 (30.00)	EFH (C12-C14) EFH (C8-C11)	J(all detects) UJ(all non-detects)
P41603AQ320358A P41603AY320420A (EB3-060414)	EFH (C12-C14) SG EFH (C8-C11) SG	52 16	44 12	67.00-109.00 55.00-86.00	- 34 (30.00)	EFH (C12-C14) SG EFH (C8-C11) SG	J(all detects) UJ(all non-detects)

Method: 8081B
Matrix: AQ

QC Sample ID (Associated Samples)	Compound	LCS %R	LCSD %R	%R Limits	RPD (Limits)	Affected Compounds	Flag
P41614AY241142A (EB3-060414)	ALDRIN	-	35	37.00-137.00	-	ALDRIN	J(all detects) UJ(all non-detects)

Method: 8330A
Matrix: AQ

QC Sample ID (Associated Samples)	Compound	LCS %R	LCSD %R	%R Limits	RPD (Limits)	Affected Compounds	Flag
P41619AQ240042A P41619AY240124A (EB3-060414)	1,3,5-TRINITROBENZENE	148	154	83.00-115.00	-	1,3,5-TRINITROBENZENE	J(all detects)

Method: 8270D SIM
Matrix: AQ

QC Sample ID (Associated Samples)	Compound	LCS %R	LCSD %R	%R Limits	RPD (Limits)	Affected Compounds	Flag
P1WHLCSY260042 (EB3-060414)	BIS(2-ETHYLHEXYL)PHTHALAT	-	639	70.00-143.00	149 (30.00)	BIS(2-ETHYLHEXYL)PHTHALA	J(all detects) UJ(all non-detects)

Lab Duplicate Outlier Report

Lab Reporting Batch ID: PH217 **Laboratory: LL**

EDD Filename: PrepPH217 **eQAPP Name: CDM_SSFL_140617_Lan**

Method: 6010C
Matrix: SO

QC Sample ID (Associated Sample ID)	*Analyte*	*Sample RPD*	*eQAPP RPD*	*Flag*
SL-655-SA5C-TR-0.5DUP (TOT) (SL-646-SA5C-TR-0.5 SL -646-SA5C-TR-5.0 SL -655-SA5C-TR-0.5 SL -655-SA5C-TR-5.0)	MOLYBDENUM	45	20.00	No Qual OK by Difference

Project Name and Number: 1204-002-001-AL - SSFL Area IV Phase 3

Lab Control Spike/Lab Control Spike Duplicate Outlier Report

Lab Reporting Batch ID: PH217 **Laboratory: LL**

EDD Filename: PH217_v1. **eQAPP Name: CDM_SSFL_140617_Lan**

Method: 8270D
Matrix: AQ

QC Sample ID (Associated Samples)	Compound	LCS %R	LCSD %R	%R Limits	RPD (Limits)	Affected Compounds	Flag
P1WILCSQ262230 P1WILCSY262259 (EB3-060414)	BENZOIC ACID	137	117	10.00-97.00	-	BENZOIC ACID	J(all detects)
P1WILCSQ262230 P1WILCSY262259 (EB3-060414)	BENZIDINE	0	-	20.00-94.00	200 (30.00)	BENZIDINE	J(all detects) R(all non-detects)
P1WILCSY262259 (EB3-060414)	1,2,4-TRICHLOROBENZENE HEXACHLOROBUTADIENE	- -	75 60	77.00-111.00 61.00-120.00	- -	1,2,4-TRICHLOROBENZENE HEXACHLOROBUTADIENE	J(all detects) UJ(all non-detects)

Method: 8151A
Matrix: SO

QC Sample ID (Associated Samples)	Compound	LCS %R	LCSD %R	%R Limits	RPD (Limits)	Affected Compounds	Flag
P41564AQ240051A (SL-646-SA5C-TR-0.5 SL-646-SA5C-TR-5.0 SL-655-SA5C-TR-0.5 SL-655-SA5C-TR-5.0)	DINOSEB	9	-	10.00-56.00	-	DINOSEB	J (all detects) R (all non-detects)

Method: 8015M
Matrix: SO

QC Sample ID (Associated Samples)	Compound	LCS %R	LCSD %R	%R Limits	RPD (Limits)	Affected Compounds	Flag
P41608AQ320608A (SL-646-SA5C-TR-0.5 SL-646-SA5C-TR-5.0 SL-655-SA5C-TR-0.5 SL-655-SA5C-TR-5.0)	EFH (C12-C14) SG EFH (C15-C20) SG EFH (C8-C11) SG	74 77 56	- - -	76.00-115.00 78.00-127.00 60.00-115.00	- - -	EFH (C12-C14) SG EFH (C15-C20) SG EFH (C8-C11) SG	J(all detects) UJ(all non-detects)

Method: 8330A
Matrix: SO

QC Sample ID (Associated Samples)	Compound	LCS %R	LCSD %R	%R Limits	RPD (Limits)	Affected Compounds	Flag
P41611AQ240536A (SL-646-SA5C-TR-0.5 SL-646-SA5C-TR-5.0 SL-655-SA5C-TR-0.5 SL-655-SA5C-TR-5.0)	1,3-DINITROBENZENE	90	-	94.00-124.00	-	1,3-DINITROBENZENE	J(all detects) UJ(all non-detects)

Lab Control Spike/Lab Control Spike Duplicate Outlier Report

Lab Reporting Batch ID: PH217 **Laboratory: LL**

EDD Filename: PH217_v1. **eQAPP Name: CDM_SSFL_140617_Lan**

Method: 8270D SIM
Matrix: SO

QC Sample ID (Associated Samples)	Compound	LCS %R	LCSD %R	%R Limits	RPD (Limits)	Affected Compounds	Flag
P3LBLCSQ260734 (SL-646-SA5C-TR-0.5 SL -646-SA5C-TR-5.0 SL -655-SA5C-TR-0.5 SL -655-SA5C-TR-5.0)	N-NITROSODIMETHYLAMINE	68	-	71.00-124.00	-	N-NITROSODIMETHYLAMINE	J(all detects) UJ(all non-detects)

Method: 8270D
Matrix: SO

QC Sample ID (Associated Samples)	Compound	LCS %R	LCSD %R	%R Limits	RPD (Limits)	Affected Compounds	Flag
P3LCLCSQ262024 (SL-646-SA5C-TR-0.5 SL -646-SA5C-TR-5.0 SL -655-SA5C-TR-0.5 SL -655-SA5C-TR-5.0)	Tetralin	40	-	70.00-130.00	-	Tetralin	J(all detects) UJ(all non-detects)

Reporting Limit Outliers

Lab Reporting Batch ID: PH217 **Laboratory: LL**

EDD Filename: PH217_v1. **eQAPP Name: CDM_SSFL_140617_Lan**

Method: 1613B

Matrix: AQ

SampleID	Analyte	Lab Qual	Result	Reporting Limit	RL Type	Units	Flag
EB3-060414	1,2,3,4,6,7,8-HPCDD	JBQ	0.541	9.57	PQL	pg/L	
	1,2,3,4,6,7,8-HPCDF	JBQ	0.539	9.57	PQL	pg/L	
	1,2,3,4,7,8,9-HPCDF	JBQ	0.408	9.57	PQL	pg/L	
	1,2,3,4,7,8-HxCDD	JBQ	0.209	9.57	PQL	pg/L	
	1,2,3,4,7,8-HXCDF	JBQ	0.549	9.57	PQL	pg/L	
	1,2,3,6,7,8-HXCDD	JQ	0.313	9.57	PQL	pg/L	
	1,2,3,6,7,8-HXCDF	JBQ	0.379	9.57	PQL	pg/L	
	1,2,3,7,8,9-HXCDF	JB	0.423	9.57	PQL	pg/L	J (all detects)
	1,2,3,7,8-PECDD	JB	0.331	9.57	PQL	pg/L	
	1,2,3,7,8-PECDF	JBQ	0.647	9.57	PQL	pg/L	
	2,3,4,6,7,8-HXCDF	JB	0.388	9.57	PQL	pg/L	
	2,3,4,7,8-PECDF	JB	0.375	9.57	PQL	pg/L	
	2,3,7,8-TCDD	JQ	0.262	1.91	PQL	pg/L	
	OCDD	JB	2.25	19.1	PQL	pg/L	
	OCDF	JBQ	1.21	19.1	PQL	pg/L	

Method: 6010C

Matrix: AQ

SampleID	Analyte	Lab Qual	Result	Reporting Limit	RL Type	Units	Flag
EB3-060414	BARIUM	J	0.00070	0.0100	PQL	mg/L	
	CALCIUM	J	0.151	0.400	PQL	mg/L	J (all detects)
	MANGANESE	J	0.0016	0.0100	PQL	mg/L	
	Zirconium	J	0.0113	0.100	PQL	mg/L	

Method: 6020A

Matrix: AQ

SampleID	Analyte	Lab Qual	Result	Reporting Limit	RL Type	Units	Flag
EB3-060414	STRONTIUM	J	0.00069	0.0020	PQL	mg/L	J (all detects)

Method: 8270D SIM

Matrix: AQ

SampleID	Analyte	Lab Qual	Result	Reporting Limit	RL Type	Units	Flag
EB3-060414	1-METHYLNAPHTHALENE	J	0.020	0.057	PQL	ug/L	
	2-METHYLNAPHTHALENE	J	0.028	0.057	PQL	ug/L	
	BIS(2-ETHYLHEXYL)PHTHALATE	J	0.13	1.1	PQL	ug/L	J (all detects)
	Diethylphthalate	J	0.078	1.1	PQL	ug/L	
	Di-n-butylphthalate	J	0.14	1.1	PQL	ug/L	

Reporting Limit Outliers

Lab Reporting Batch ID: PH217 **Laboratory: LL**

EDD Filename: PH217_v1. **eQAPP Name: CDM_SSFL_140617_Lan**

Method: **1613B**

Matrix: **SO**

SampleID	Analyte	Lab Qual	Result	Reporting Limit	RL Type	Units	Flag
SL-646-SA5C-TR-0.5	1,2,3,4,6,7,8-HPCDD	JB	3.24	4.98	PQL	ng/Kg	
	1,2,3,4,6,7,8-HPCDF	JB	0.602	4.98	PQL	ng/Kg	
	1,2,3,4,7,8,9-HPCDF	JB	0.0588	4.98	PQL	ng/Kg	
	1,2,3,4,7,8-HxCDD	JQ	0.0387	4.98	PQL	ng/Kg	
	1,2,3,4,7,8-HXCDF	JBQ	0.123	4.98	PQL	ng/Kg	
	1,2,3,6,7,8-HXCDD	JB	0.181	4.98	PQL	ng/Kg	
	1,2,3,6,7,8-HXCDF	JBQ	0.129	4.98	PQL	ng/Kg	J (all detects)
	1,2,3,7,8,9-HXCDD	JBQ	0.125	4.98	PQL	ng/Kg	
	1,2,3,7,8,9-HXCDF	JBQ	0.0486	4.98	PQL	ng/Kg	
	1,2,3,7,8-PECDF	JB	0.256	4.98	PQL	ng/Kg	
	2,3,4,6,7,8-HXCDF	JB	0.0930	4.98	PQL	ng/Kg	
	2,3,4,7,8-PECDF	JBQ	0.0600	4.98	PQL	ng/Kg	
	2,3,7,8-TCDF	JQ	0.0959	0.997	PQL	ng/Kg	
	OCDF	JBQ	1.26	9.97	PQL	ng/Kg	
SL-646-SA5C-TR-5.0	1,2,3,4,6,7,8-HPCDD	JBQ	0.166	5.17	PQL	ng/Kg	
	1,2,3,4,6,7,8-HPCDF	JBQ	0.0589	5.17	PQL	ng/Kg	
	1,2,3,4,7,8-HXCDF	JBQ	0.0301	5.17	PQL	ng/Kg	
	1,2,3,6,7,8-HXCDD	JBQ	0.0445	5.17	PQL	ng/Kg	
	1,2,3,6,7,8-HXCDF	JBQ	0.0294	5.17	PQL	ng/Kg	
	1,2,3,7,8,9-HXCDD	JBQ	0.0280	5.17	PQL	ng/Kg	J (all detects)
	1,2,3,7,8,9-HXCDF	JBQ	0.0532	5.17	PQL	ng/Kg	
	2,3,4,6,7,8-HXCDF	JBQ	0.0166	5.17	PQL	ng/Kg	
	2,3,4,7,8-PECDF	JBQ	0.0392	5.17	PQL	ng/Kg	
	OCDD	JB	1.62	10.3	PQL	ng/Kg	
	OCDF	JBQ	0.113	10.3	PQL	ng/Kg	
SL-655-SA5C-TR-0.5	1,2,3,4,6,7,8-HPCDD	JBQ	1.27	5.08	PQL	ng/Kg	
	1,2,3,4,6,7,8-HPCDF	JBQ	0.208	5.08	PQL	ng/Kg	
	1,2,3,4,7,8,9-HPCDF	JB	0.0645	5.08	PQL	ng/Kg	
	1,2,3,4,7,8-HxCDD	JQ	0.0708	5.08	PQL	ng/Kg	
	1,2,3,4,7,8-HXCDF	JB	0.150	5.08	PQL	ng/Kg	
	1,2,3,6,7,8-HXCDD	JBQ	0.214	5.08	PQL	ng/Kg	
	1,2,3,6,7,8-HXCDF	JBQ	0.126	5.08	PQL	ng/Kg	
	1,2,3,7,8,9-HXCDD	JBQ	0.320	5.08	PQL	ng/Kg	J (all detects)
	1,2,3,7,8,9-HXCDF	JB	0.204	5.08	PQL	ng/Kg	
	1,2,3,7,8-PECDD	JB	0.152	5.08	PQL	ng/Kg	
	1,2,3,7,8-PECDF	JB	0.293	5.08	PQL	ng/Kg	
	2,3,4,6,7,8-HXCDF	JBQ	0.0890	5.08	PQL	ng/Kg	
	2,3,4,7,8-PECDF	JB	0.157	5.08	PQL	ng/Kg	
	2,3,7,8-TCDD	J	0.0903	1.02	PQL	ng/Kg	
	2,3,7,8-TCDF	J	0.0773	1.02	PQL	ng/Kg	
	OCDF	JB	0.496	10.2	PQL	ng/Kg	
SL-655-SA5C-TR-5.0	1,2,3,4,6,7,8-HPCDD	JB	0.795	5.03	PQL	ng/Kg	
	1,2,3,4,6,7,8-HPCDF	JBQ	0.194	5.03	PQL	ng/Kg	
	1,2,3,4,7,8,9-HPCDF	JB	0.0770	5.03	PQL	ng/Kg	
	1,2,3,4,7,8-HXCDF	JBQ	0.0652	5.03	PQL	ng/Kg	
	1,2,3,6,7,8-HXCDD	JB	0.0616	5.03	PQL	ng/Kg	
	1,2,3,6,7,8-HXCDF	JBQ	0.0538	5.03	PQL	ng/Kg	
	1,2,3,7,8,9-HXCDD	JBQ	0.0345	5.03	PQL	ng/Kg	J (all detects)
	1,2,3,7,8,9-HXCDF	JB	0.0438	5.03	PQL	ng/Kg	
	1,2,3,7,8-PECDF	JBQ	0.0566	5.03	PQL	ng/Kg	
	2,3,4,6,7,8-HXCDF	JBQ	0.0562	5.03	PQL	ng/Kg	
	2,3,4,7,8-PECDF	JB	0.0618	5.03	PQL	ng/Kg	
	OCDD	JB	5.01	10.1	PQL	ng/Kg	
	OCDF	JBQ	0.198	10.1	PQL	ng/Kg	

Project Name and Number: 1204-002-001-AL - SSFL Area IV Phase 3

Reporting Limit Outliers

Lab Reporting Batch ID: PH217 **Laboratory: LL**

EDD Filename: PH217_v1. **eQAPP Name: CDM_SSFL_140617_Lan**

Method: 6010C

Matrix: SO

SampleID	Analyte	Lab Qual	Result	Reporting Limit	RL Type	Units	Flag
SL-646-SA5C-TR-0.5	ARSENIC	J	2.19	3.90	PQL	mg/Kg	J (all detects)
	BERYLLIUM	J	0.518	0.974	PQL	mg/Kg	
	BORON	J	4.90	9.74	PQL	mg/Kg	
	CADMIUM	J	0.228	0.974	PQL	mg/Kg	
	MOLYBDENUM	J	0.205	1.95	PQL	mg/Kg	
	SODIUM	J	68.9	97.4	PQL	mg/Kg	
	TIN	J	3.48	9.74	PQL	mg/Kg	
	Zirconium	J	2.44	4.87	PQL	mg/Kg	
SL-646-SA5C-TR-5.0	ARSENIC	J	1.66	4.18	PQL	mg/Kg	J (all detects)
	BERYLLIUM	J	0.923	1.04	PQL	mg/Kg	
	BORON	J	5.47	10.4	PQL	mg/Kg	
	CADMIUM	J	0.167	1.04	PQL	mg/Kg	
	SODIUM	J	102	104	PQL	mg/Kg	
	TIN	J	3.76	10.4	PQL	mg/Kg	
	Zirconium	J	2.29	5.22	PQL	mg/Kg	
SL-655-SA5C-TR-0.5	ARSENIC	J	2.39	4.09	PQL	mg/Kg	J (all detects)
	BERYLLIUM	J	0.743	1.02	PQL	mg/Kg	
	BORON	J	8.10	10.2	PQL	mg/Kg	
	CADMIUM	J	0.301	1.02	PQL	mg/Kg	
	MOLYBDENUM	J	0.466	2.05	PQL	mg/Kg	
	SODIUM	J	84.0	102	PQL	mg/Kg	
	TIN	J	3.42	10.2	PQL	mg/Kg	
	Zirconium	J	3.91	5.11	PQL	mg/Kg	
SL-655-SA5C-TR-5.0	ARSENIC	J	1.72	3.94	PQL	mg/Kg	J (all detects)
	BERYLLIUM	J	0.443	0.984	PQL	mg/Kg	
	BORON	J	4.67	9.84	PQL	mg/Kg	
	CADMIUM	J	0.189	0.984	PQL	mg/Kg	
	TIN	J	3.09	9.84	PQL	mg/Kg	
	Zirconium	J	1.72	4.92	PQL	mg/Kg	

Method: 6020A

Matrix: SO

SampleID	Analyte	Lab Qual	Result	Reporting Limit	RL Type	Units	Flag
SL-646-SA5C-TR-0.5	SELENIUM	J	0.271	0.390	PQL	mg/Kg	J (all detects)
SL-646-SA5C-TR-5.0	SELENIUM	J	0.264	0.418	PQL	mg/Kg	J (all detects)
	SILVER	J	0.0389	0.209	PQL	mg/Kg	
SL-655-SA5C-TR-0.5	SELENIUM	J	0.306	0.409	PQL	mg/Kg	J (all detects)
	SILVER	J	0.0397	0.205	PQL	mg/Kg	
SL-655-SA5C-TR-5.0	SELENIUM	J	0.261	0.394	PQL	mg/Kg	J (all detects)

Method: 7199

Matrix: SO

SampleID	Analyte	Lab Qual	Result	Reporting Limit	RL Type	Units	Flag
SL-646-SA5C-TR-0.5	HEXAVALENT CHROMIUM	J	0.35	0.42	PQL	mg/Kg	J (all detects)

Project Name and Number: 1204-002-001-AL - SSFL Area IV Phase 3

Reporting Limit Outliers

Lab Reporting Batch ID: PH217 **Laboratory: LL**

EDD Filename: PH217_v1. **eQAPP Name: CDM_SSFL_140617_Lan**

Method: 7199
Matrix: SO

SampleID	Analyte	Lab Qual	Result	Reporting Limit	RL Type	Units	Flag
SL-655-SA5C-TR-0.5	HEXAVALENT CHROMIUM	J	0.29	0.44	PQL	mg/Kg	J (all detects)

Method: 7471B
Matrix: SO

SampleID	Analyte	Lab Qual	Result	Reporting Limit	RL Type	Units	Flag
SL-646-SA5C-TR-5.0	MERCURY	J	0.0103	0.0166	PQL	mg/Kg	J (all detects)

Method: 8015M
Matrix: SO

SampleID	Analyte	Lab Qual	Result	Reporting Limit	RL Type	Units	Flag
SL-646-SA5C-TR-5.0	EFH (C21-C30)	J	2.3	5.2	PQL	mg/Kg	J (all detects)
SL-655-SA5C-TR-0.5	EFH (C21-C30) EFH (C30-C40)	J J	3.5 5.0	5.3 11	PQL PQL	mg/Kg mg/Kg	J (all detects)

Method: 8081B
Matrix: SO

SampleID	Analyte	Lab Qual	Result	Reporting Limit	RL Type	Units	Flag
SL-655-SA5C-TR-0.5	BETA-BHC	J	1.4	2.0	PQL	ug/Kg	J (all detects)

Method: 8082A
Matrix: SO

SampleID	Analyte	Lab Qual	Result	Reporting Limit	RL Type	Units	Flag
SL-646-SA5C-TR-0.5	AROCLOR 1260	J	7.5	17	PQL	ug/Kg	J (all detects)

Method: 8151A
Matrix: SO

SampleID	Analyte	Lab Qual	Result	Reporting Limit	RL Type	Units	Flag
SL-646-SA5C-TR-0.5	2,4-DB	J	15	17	PQL	ug/Kg	J (all detects)

Reporting Limit Outliers

Lab Reporting Batch ID: PH217 **Laboratory: LL**

EDD Filename: PH217_v1. **eQAPP Name: CDM_SSFL_140617_Lan**

Method: **8270D SIM**

Matrix: **SO**

SampleID	*Analyte*	*Lab Qual*	*Result*	*Reporting Limit*	*RL Type*	*Units*	*Flag*
SL-646-SA5C-TR-0.5	BENZO(K)FLUORANTHENE CHRYSENE	J J	1.4 0.72	1.7 1.7	PQL PQL	ug/Kg ug/Kg	J (all detects)
SL-655-SA5C-TR-0.5	CHRYSENE	J	1.6	1.8	PQL	ug/Kg	J (all detects)

LDC #: 32184D4 **VALIDATION COMPLETENESS WORKSHEET** Date: 7/31/14

SDG #: PH217 ADR Page: 1 of 1

Laboratory: Eurofins Lancaster Laboratories Reviewer: KK

2nd Reviewer: CR

METHOD: Metals (EPA SW 846 Method 6010C/6020A/~~7000~~ 7471A)

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	—	Sampling dates: 6/4/14
II.	ICP/MS Tune	—	
III.	Calibration	—	
IV.	Blanks	SW	
V.	ICP Interference Check Sample (ICS) Analysis	—	
VI.	Matrix Spike Analysis	SW N	MS/D
VII.	Duplicate Sample Analysis	SW N	DUP
VIII.	Laboratory Control Samples (LCS)	N	LCS
IX.	Internal Standard (ICP-MS)	N	
X.	Furnace Atomic Absorption QC	N	
XI.	ICP Serial Dilution	SW	
XII.	Sample Result Verification	N	
XIII.	Overall Assessment of Data	N	
XIV.	Field Duplicates	N	
XV	Field Blanks	SW	EB=1 FB= FB052114 SDG# PH191

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

Validated Samples: Soil + Water

1	EB3-060414 water	11		21		31	
2	SL-655-SA5C-TR-0.5 soil	12		22		32	
3	SL-655-SA5C-TR-5.0	13		23		33	
4	SL-646-SA5C-TR-0.5	14		24		34	
5	SL-646-SA5C-TR-5.0	15		25		35	
6	#2 MS	16		26		36	
7	#2 MSD	17		27		37	
8	#2 DUP	18		28		38	
9		19		29		39	
10		20		30		40	

Notes: _____

LDC #: 32184D4

VALIDATION FINDINGS WORKSHEET
Sample Specific Element Reference

Reviewer: KK
2nd reviewer: VC

All circled elements are applicable to each sample.

Sample ID	Matrix	Target Analyte List (TAL)
1-	W	~~Al~~, ~~Sb~~, As, Ba, Be, B, Cd, Ca, Cr, Co, Cu, Fe, Pb, Li, Mg, Mo, Mn, Hg, Ni, P, K, Se, Ag, Na, Sr, Tl, Sn, Ti, V, Zn, ~~Zr~~
		Al, Sb, As, Ba, Be, B, Cd, Ca, Cr, Co, Cu, Fe, Pb, Li, Mg, Mo, Mn, Hg, Ni, P, K, Se, Ag, Na, Sr, Tl, Sn, Ti, V, Zn, Zr
2-5	S	~~Al~~, ~~Sb~~, As, Ba, Be, B, Cd, Ca, Cr, Co, Cu, Fe, Pb, Li, Mg, Mo, Mn, Hg, Ni, P, K, Se, Ag, Na, Sr, Tl, Sn, Ti, V, Zn, ~~Zr~~
	↓	Al, Sb, As, Ba, Be, B, Cd, Ca, Cr, Co, Cu, Fe, Pb, Li, Mg, Mo, Mn, Hg, Ni, P, K, Se, Ag, Na, Sr, Tl, Sn, Ti, V, Zn, Zr
QC: 6/7/8	↓	~~Al~~, ~~Sb~~, As, Ba, Be, B, Cd, Ca, Cr, Co, Cu, Fe, Pb, Li, Mg, Mo, Mn, Hg, Ni, P, K, Se, Ag, Na, Sr, Tl, Sn, Ti, V, Zn, ~~Zr~~
		Al, Sb, As, Ba, Be, B, Cd, Ca, Cr, Co, Cu, Fe, Pb, Li, Mg, Mo, Mn, Hg, Ni, P, K, Se, Ag, Na, Sr, Tl, Sn, Ti, V, Zn, Zr
		Al, Sb, As, Ba, Be, B, Cd, Ca, Cr, Co, Cu, Fe, Pb, Li, Mg, Mo, Mn, Hg, Ni, P, K, Se, Ag, Na, Sr, Tl, Sn, Ti, V, Zn, Zr
		Al, Sb, As, Ba, Be, B, Cd, Ca, Cr, Co, Cu, Fe, Pb, Li, Mg, Mo, Mn, Hg, Ni, P, K, Se, Ag, Na, Sr, Tl, Sn, Ti, V, Zn, Zr
		Al, Sb, As, Ba, Be, B, Cd, Ca, Cr, Co, Cu, Fe, Pb, Li, Mg, Mo, Mn, Hg, Ni, P, K, Se, Ag, Na, Sr, Tl, Sn, Ti, V, Zn, Zr
		Al, Sb, As, Ba, Be, B, Cd, Ca, Cr, Co, Cu, Fe, Pb, Li, Mg, Mo, Mn, Hg, Ni, P, K, Se, Ag, Na, Sr, Tl, Sn, Ti, V, Zn, Zr
		Al, Sb, As, Ba, Be, B, Cd, Ca, Cr, Co, Cu, Fe, Pb, Li, Mg, Mo, Mn, Hg, Ni, P, K, Se, Ag, Na, Sr, Tl, Sn, Ti, V, Zn, Zr
		Al, Sb, As, Ba, Be, B, Cd, Ca, Cr, Co, Cu, Fe, Pb, Li, Mg, Mo, Mn, Hg, Ni, P, K, Se, Ag, Na, Sr, Tl, Sn, Ti, V, Zn, Zr
		Al, Sb, As, Ba, Be, B, Cd, Ca, Cr, Co, Cu, Fe, Pb, Li, Mg, Mo, Mn, Hg, Ni, P, K, Se, Ag, Na, Sr, Tl, Sn, Ti, V, Zn, Zr
		Al, Sb, As, Ba, Be, B, Cd, Ca, Cr, Co, Cu, Fe, Pb, Li, Mg, Mo, Mn, Hg, Ni, P, K, Se, Ag, Na, Sr, Tl, Sn, Ti, V, Zn, Zr
		Al, Sb, As, Ba, Be, B, Cd, Ca, Cr, Co, Cu, Fe, Pb, Li, Mg, Mo, Mn, Hg, Ni, P, K, Se, Ag, Na, Sr, Tl, Sn, Ti, V, Zn, Zr
		Al, Sb, As, Ba, Be, B, Cd, Ca, Cr, Co, Cu, Fe, Pb, Li, Mg, Mo, Mn, Hg, Ni, P, K, Se, Ag, Na, Sr, Tl, Sn, Ti, V, Zn, Zr
		Al, Sb, As, Ba, Be, B, Cd, Ca, Cr, Co, Cu, Fe, Pb, Li, Mg, Mo, Mn, Hg, Ni, P, K, Se, Ag, Na, Sr, Tl, Sn, Ti, V, Zn, Zr
		Al, Sb, As, Ba, Be, B, Cd, Ca, Cr, Co, Cu, Fe, Pb, Li, Mg, Mo, Mn, Hg, Ni, P, K, Se, Ag, Na, Sr, Tl, Sn, Ti, V, Zn, Zr
		Al, Sb, As, Ba, Be, B, Cd, Ca, Cr, Co, Cu, Fe, Pb, Li, Mg, Mo, Mn, Hg, Ni, P, K, Se, Ag, Na, Sr, Tl, Sn, Ti, V, Zn, Zr
		Al, Sb, As, Ba, Be, B, Cd, Ca, Cr, Co, Cu, Fe, Pb, Li, Mg, Mo, Mn, Hg, Ni, P, K, Se, Ag, Na, Sr, Tl, Sn, Ti, V, Zn, Zr
		Al, Sb, As, Ba, Be, B, Cd, Ca, Cr, Co, Cu, Fe, Pb, Li, Mg, Mo, Mn, Hg, Ni, P, K, Se, Ag, Na, Sr, Tl, Sn, Ti, V, Zn, Zr
		Al, Sb, As, Ba, Be, B, Cd, Ca, Cr, Co, Cu, Fe, Pb, Li, Mg, Mo, Mn, Hg, Ni, P, K, Se, Ag, Na, Sr, Tl, Sn, Ti, V, Zn, Zr
		Al, Sb, As, Ba, Be, B, Cd, Ca, Cr, Co, Cu, Fe, Pb, Li, Mg, Mo, Mn, Hg, Ni, P, K, Se, Ag, Na, Sr, Tl, Sn, Ti, V, Zn, Zr
		Al, Sb, As, Ba, Be, B, Cd, Ca, Cr, Co, Cu, Fe, Pb, Li, Mg, Mo, Mn, Hg, Ni, P, K, Se, Ag, Na, Sr, Tl, Sn, Ti, V, Zn, Zr
		Al, Sb, As, Ba, Be, B, Cd, Ca, Cr, Co, Cu, Fe, Pb, Li, Mg, Mo, Mn, Hg, Ni, P, K, Se, Ag, Na, Sr, Tl, Sn, Ti, V, Zn, Zr
		Al, Sb, As, Ba, Be, B, Cd, Ca, Cr, Co, Cu, Fe, Pb, Li, Mg, Mo, Mn, Hg, Ni, P, K, Se, Ag, Na, Sr, Tl, Sn, Ti, V, Zn, Zr
		Al, Sb, As, Ba, Be, B, Cd, Ca, Cr, Co, Cu, Fe, Pb, Li, Mg, Mo, Mn, Hg, Ni, P, K, Se, Ag, Na, Sr, Tl, Sn, Ti, V, Zn, Zr
		Al, Sb, As, Ba, Be, B, Cd, Ca, Cr, Co, Cu, Fe, Pb, Li, Mg, Mo, Mn, Hg, Ni, P, K, Se, Ag, Na, Sr, Tl, Sn, Ti, V, Zn, Zr
		Al, Sb, As, Ba, Be, B, Cd, Ca, Cr, Co, Cu, Fe, Pb, Li, Mg, Mo, Mn, Hg, Ni, P, K, Se, Ag, Na, Sr, Tl, Sn, Ti, V, Zn, Zr
		Al, Sb, As, Ba, Be, B, Cd, Ca, Cr, Co, Cu, Fe, Pb, Li, Mg, Mo, Mn, Hg, Ni, P, K, Se, Ag, Na, Sr, Tl, Sn, Ti, V, Zn, Zr
		Al, Sb, As, Ba, Be, B, Cd, Ca, Cr, Co, Cu, Fe, Pb, Li, Mg, Mo, Mn, Hg, Ni, P, K, Se, Ag, Na, Sr, Tl, Sn, Ti, V, Zn, Zr
		~~Al~~, ~~Sb~~, As, Ba, Be, B, Cd, Ca, Cr, Co, Cu, Fe, Pb, Li, Mg, Mo, Mn, Hg, Ni, P, K, Se, Ag, Na, Sr, Tl, Sn, Ti, V, Zn, ~~Zr~~
Analysis Method		
ICP		Al, Sb, As, Ba, Be, B, Cd, Ca, Cr, Co, Cu, Fe, Pb, Li, Mg, Mo, Mn, Hg, Ni, P, K, Se, Ag, Na, Sr, Tl, Sn, Ti, V, Zn, Zr
ICP-MS		Al, Sb, As, Ba, Be, B, Cd, Ca, Cr, Co, Cu, Fe, Pb, Li, Mg, Mo, Mn, Hg, Ni, P, K, Se, Ag, Na, Sr, Tl, Sn, Ti, V, Zn, Zr

Comments: Mercury by CVAA if performed

LDC #: 32184D4

VALIDATION FINDINGS WORKSHEET
PB/ICB/CCB QUALIFIED SAMPLES

Reviewer: KK
2nd Reviewer:

METHOD: Trace metals (EPA SW 864 Method 6010B/6020A/7471A) Soil preparation factor applied: 100
Sample Concentration units, unless otherwise noted: ug/L Associated Samples: 1

					Sample Identification										
Analyte	Maximum PB[a] (mg/Kg)	Maximum PB[a] (mg/L)	Maximum ICB/CCB[a] (ug/L)	Action Level	1										
Zr			9.0	45	11.3										

METHOD: Trace metals (EPA SW 864 Method 6010B/6020A/7471A) Soil preparation factor applied: 100
Sample Concentration units, unless otherwise noted: mg/kg Associated Samples: 2-5

					Sample Identification										
Analyte	Maximum PB[a] (mg/Kg)	Maximum PB[a] (mg/L)	Maximum ICB/CCB[a] (ug/L)	Action Level	3	5									
Cd			0.40	0.20	0.189	0.167									

Samples with analyte concentrations within five times the associated ICB, CCB or PB concentration are listed above with the identifications from the Validation Completeness Worksheet. These sample results were qualified as not detected, "U".
Note : a - The listed analyte concentration is the highest ICB, CCB, or PB detected in the analysis of each element.

LDC #: 32184D4

VALIDATION FINDINGS WORKSHEET
Field Blanks

Reviewer: KK
2nd Reviewer: [signature]

METHOD: Trace Metals (EPA SW846 6010B/6020A/7471A)

Blank units: ug/L **Associated sample units:** mg/kg
Sampling date: 5/21/14 and 6/4/14 Soil factor applied 100
Field blank type: (circle one) Field Blank / Rinsate / Other: (EB) Associated Samples: 2-5

Analyte	Blank ID	Blank ID	Sample Identification									
	1	FB-052114 SDG#PH191	Action Limit	2	3	4	5					
Zr	11.3	11	5.65	3.91 ~~3.7~~	1.72	2.44	2.29					
Ba	0.70		0.35									
Ca	151		75.5									
Mn	1.6		0.80									
Sr	0.69		~~0.69(@2x)~~ 0.345									

CIRCLED RESULTS WERE NOT QUALIFIED. ALL RESULTS NOT CIRCLED WERE QUALIFIED BY THE FOLLOWING STATEMENT:
Samples with analyte concentrations within five times the associated field blank concentration are listed above, these sample results were qualified as not detected, "U".

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QUALITY ASSURANCE SUMMARY
FORM 5A(MS/MSD)
MATRIX SPIKE/MATRIX SPIKE DUPLICATE
SDG No.: PH217
Matrix: SOIL Level (low/med): LOW

Background Lab Sample ID: 7488115BKG Matrix Spike Lab Sample ID: 7488115MS Matrix Spike Duplicate Lab Sample ID: 7488115MSD
Batch Id(s): P16037A, P16038A

Analyte	Mass	BKG Sample Result	C	MS Sample Result	C	MSD Sample Result	C	MS Spike Added	MSD Spike Added	Units	MS %R	Q	MSD %R	Q	RPD	Q	Control Limit %R	Control Limit RPD	M
Aluminum		17904.2644		22262.8346		22434.7505		192.3077	198.0198	MG/KG	2266		2288		1			20	P
Antimony		0.7115	U	16.4663		17.2683		48.0769	49.5050	MG/KG	34	N	35	N	5		75 - 125	20	P
Arsenic		2.2510	B	17.0663		17.1139		14.4231	14.8515	MG/KG	103		100		0		75 - 125	20	P
Barium		102.1702		300.7817		309.1525		192.3077	198.0198	MG/KG	103		105		3		75 - 125	20	P
Beryllium		0.6981	B	5.6404		5.8000		4.8077	4.9505	MG/KG	103		103		3		75 - 125	20	P
Boron		7.6173	B	197.1365		204.0238		192.3077	198.0198	MG/KG	99		99		3		75 - 125	20	P
Cadmium		0.2827	B	4.8029		4.9020		4.8077	4.9505	MG/KG	94		93		2		75 - 125	20	P
Calcium		3176.6615		3603.2673		3586.5248		384.6154	396.0396	MG/KG	111		103		0			20	P
Chromium		20.5154		41.4740		41.5653		19.2308	19.8020	MG/KG	109		106		0		75 - 125	20	P
Cobalt		5.9673		50.8452		51.7366		48.0769	49.5050	MG/KG	93		92		2		75 - 125	20	P
Copper		9.5712		34.9452		35.8099		24.0385	24.7525	MG/KG	106		106		2		75 - 125	20	P
Iron		21757.9029		22786.7846		21933.4000		96.1538	99.0099	MG/KG	1070		177		4			20	P
Lead		9.3404		22.3462		22.3624		14.4231	14.8515	MG/KG	90		88		0		75 - 125	20	P
Lithium		19.3817		117.3279		120.5455		96.1538	99.0099	MG/KG	102		102		3		75 - 125	20	P
Magnesium		4131.6635		4484.9260		4390.1970		192.3077	198.0198	MG/KG	184		131		2			20	P
Manganese		316.8183		366.9413		364.4436		48.0769	49.5050	MG/KG	104		96		1			20	P
Mercury		0.0093	U	0.1635		0.1683		0.1608	0.1636	MG/KG	102		103		3		65 - 135	20	CV
Molybdenum		0.4385	B	178.3760		182.9792		192.3077	198.0198	MG/KG	93		92		3		75 - 125	20	P
Nickel		11.6702		57.7760		58.6158		48.0769	49.5050	MG/KG	96		95		1		75 - 125	20	P
Phosphorus		229.3673		314.6538		304.6139		96.1538	99.0099	MG/KG	89		76		3		75 - 125	20	P
Potassium		2790.0048		3987.7981		3992.4901		961.5385	990.0990	MG/KG	125		121		0		75 - 125	20	P
Selenium	78	0.2879	B	2.2379		2.1875		1.9231	1.9802	MG/KG	101		96		2		75 - 125	20	MS
Silver	107	0.0373	B	10.3163		10.4576		9.6154	9.9010	MG/KG	107		105		1		75 - 125	20	MS
Sodium		78.9365	B	1033.0702		1064.8931		961.5385	990.0990	MG/KG	99		100		3		75 - 125	20	P
Strontium	88	21.6648		28.7660		28.4444		7.6923	7.9208	MG/KG	92		86		1		75 - 125	20	MS
Thallium	203	0.2879		0.7098		0.7016		0.3846	0.3960	MG/KG	110		104		1		75 - 125	20	MS
Tin		3.2125	B	337.5606		343.3752		384.6154	396.0396	MG/KG	87		86		2		75 - 125	20	P
Titanium		990.7615		1314.4096		1345.9446		96.1538	99.0099	MG/KG	337		359		2			20	P
Vanadium		38.8096		91.6942		93.1683		48.0769	49.5050	MG/KG	110		110		2		75 - 125	20	P
Zinc		49.0856		94.1442		94.1554		48.0769	49.5050	MG/KG	94		91		0		75 - 125	20	P
Zirconium		3.6779	B	96.6260		99.3386		96.1538	99.0099	MG/KG	97		97		3		75 - 125	20	P

>4x

Note: Results shown are reported on an as-received basis.

METHODS:
P = ICP Atomic Emission Spectrometer CV = Cold Vapor
MS = ICP Mass Spectrometry AF = Cold Vapor Atomic Fluorescence

CONCENTRATION QUALIFIERS:
U= Below MDL, B= Below LOQ
FLAGS:
N = Matrix Spike OOS, * = Duplicate OOS

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QUALITY ASSURANCE SUMMARY
FORM 6
DUPLICATES
SDG No.: PH217
Matrix: SOIL Level (low/med): LOW

Background Lab Sample ID: 7488115BKG
Duplicate Lab Sample ID: 7488115DUP
Batch ID(s): P16037A, P16038A
Concentration Units: MG/KG

Analyte	Mass	Control Limit	Samples (S)	C	Duplicate (D)	C	RPD	Q	M
Aluminum			17904.2644		18747.4020		5		P
Antimony			-1.5115	B	-1.7990	B	-17		P
Arsenic			2.2510	B	2.7471	B	20		P
Barium			102.1702		107.4275		5		P
Beryllium			0.6981	B	0.7510	B	7		P
Boron			7.6173	B	7.1814	B	6		P
Cadmium			0.2827	B	0.2441	B	15		P
Calcium			3176.6615		3190.0569		0		P
Chromium			20.5154		21.4961		5		P
Cobalt			5.9673		6.3412		6		P
Copper		1.9	9.5712		9.7765		2		P
Iron			21757.9029		23187.1078		6		P
Lead		2.9	9.3404		10.0245		7		P
Lithium			19.3817		20.1206		4		P
Magnesium			4131.6635		4209.2873		2		P
Manganese			316.8183		345.7725		9		P
Mercury			0.0093	U	0.0099	U			CV
Molybdenum			0.4385	B	0.2765	B	45		P
Nickel			11.6702		11.9216		2		P
Phosphorus			229.3673		230.0186		0		P
Potassium			2790.0048		2768.0480		1		P
Selenium	78		0.2879	B	0.3243	B	12		MS
Silver	107		0.0373	B	0.0429	B	14		MS
Sodium			78.9365	B	79.0353	B	0		P
Strontium	88		21.6648		24.5294		12		MS
Thallium	203	0.2	0.2879		0.3406		17		MS
Tin			3.2125	B	3.2794	B	2		P
Titanium			990.7615		1022.1706		3		P
Vanadium			38.8096		41.4137		6		P
Zinc			49.0856		48.3324		2		P
Zirconium			3.6779	B	4.3578	B	17		P

NOTE: An asterisk (*) in column "Q" indicates poor duplicate precision (RPD > 20% OR |(S) - (D)| > LOQ for values < 5x LOQ).
The data are considered to be valid because the laboratory control sample is within the control limits. See the Laboratory Control Sample.

Note: Results shown are reported on an as-received basis.

METHODS:	CONCENTRATION QUALIFIERS:
P = ICP Atomic Emission Spectrometer	U= Below MDL
MS = ICP Mass Spectrometry	B= Below LOQ
CV = Cold Vapor	FLAGS:
AF = Cold Vapor Atomic Fluorescence	* = Duplicate Out of Spec

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QUALITY ASSURANCE SUMMARY
FORM 9
SERIAL DILUTIONS
SDG No.: PH217
Matrix: SOIL Level (low/med): LOW

Background Lab Sample ID: 7488115BKG Serial Dilution Lab Sample ID: 7488115L
Batch ID(s): P16037A
Concentration Units: UG/L

Analyte	Mass	Initial Sample Result (I)	C	Serial Dilution Result (S)	C	% Diff.	Q	M
Aluminum		186204.3500		188319.6000		1		P
Antimony		7.4000	U	37.0000	U			P
Arsenic		23.4100	B	35.0000	U	100		P
Barium		1062.5700		1057.8000		0		P
Beryllium		7.2600	B	6.9500	B	4		P
Boron		79.2200	B	93.4000	B	18		P
Cadmium		2.9400	B	4.0000	B	36		P
Calcium		33037.2800		33231.3000		1		P
Chromium		213.3600		209.1500		2		P
Cobalt		62.0600		62.8000		1		P
Copper		99.5400		99.0500	B	0		P
Iron		226282.1900		212053.6000		6		P
Lead		97.1400		99.3000	B	2		P
Lithium		201.5700		217.6000		8		P
Magnesium		42969.3000		42970.7000		0		P
Manganese		3294.9100		3277.4500		1		P
Molybdenum		4.5600	B	12.4000	B	172		P
Nickel		121.3700		129.7000		7		P
Phosphorus		2385.4200		2342.1500		2		P
Potassium		29016.0500		29427.0000		1		P
Selenium	78	1.4970	B	2.5000	U	100		MS
Silver	107	0.1940	B	0.6500	U	100		MS
Sodium		820.9400	B	835.0000	U	100		P
Strontium	88	112.6570		96.4800		14	E	MS
Thallium	203	1.4970		1.3450	B	10		MS
Tin		33.4100	B	27.2500	B	18		P
Titanium		10303.9200		10296.5000		0		P
Vanadium		403.6200		397.7500		1		P
Zinc		510.4900		501.5500		2		P
Zirconium		38.2500	B	42.0000	U	100		P

NOTE: An E in column Q indicates the presence of a chemical or physical interference in the matrix when the % difference is greater than 10%. This applies only when (I) is greater than or equal to 50x MDL for ICP, 100x MDL for ICP-MS (6020), 50x MDL for ICP-MS (200.8), or 25x MDL for GFAA.

J/UJ/A all soil

METHODS:	CONCENTRATION QUALIFIERS:
P = ICP Atomic Emission Spectrometer	U= Below MDL
MS = ICP Mass Spectrometry	B= Below LOQ
	FLAGS:
	E = Matrix Effects exist as proven by Serial Dilution or Spiked Dilution

LABORATORY DATA CONSULTANTS, INC.

2701 Loker Ave. West, Suite 220, Carlsbad, CA 92010 Bus: 760-827-1100 Fax: 760-827-1099

August 13, 2014

CDM
555 17th Street, Suite 1100
Denver, CO 80202
ATTN: Mrs. Cherie Zakowski

SUBJECT: Santa Susana Field Laboratory, Trench, Data Validation

Dear Mrs. Zakowski,

Enclosed are the final validation reports for the fractions listed below. This SDG was received on July 21, 2014. Attachment 1 is a summary of the samples that were reviewed for each analysis.

LDC Project #32267:

SDG #	Fraction
PH207	Volatiles, Semivolatiles, Semivolatiles (SIM), Chlorinated Pesticides, Polychlorinated Biphenyls, Metals, Herbicides, Total Petroleum Hydrocarbons as Gasoline, Total Petroleum Hydrocarbons as Extractables, Dioxins/Dibenzofurans, Explosives, Glycols, Terphenyls, Perchlorate, Hexavalent Chromium

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

- Quality Assurance Project Plan for Santa Susana Field Laboratory, RCRA Facility Investigation, Surficial Media Operable Unit, March 2009, Revision 4
- USEPA, Contract Laboratory Program National Functional Guidelines for Superfund Organic Methods Data Review, June 2008
- USEPA, Contract Laboratory Program National Functional Guidelines for Inorganic Data Review, January 2010
- USEPA, Contract Laboratory Program National Functional Guidelines for Polychlorinated Dioxins/Dibenzofurans Data Review, September 2005
- EPA 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; IIIB, November 2004; Update IV, February 2007

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

Sincerely,

Shauna McKellar
Project Manager/Chemist

93 pages-CD

Attachment 1

90/10 ADR/IV

LDC #32267 (CDM Federal Programs-Chantilly VA / Santa Susana Field Laboratory, Trench)

LDC	SDG#	DATE REC'D	(4) DATE DUE	VOA (8260B)		SVOA (8270D)		SVOA (8270D -SIM)		Pest. (8081B)		PCBs (8082A)		Metals & Hg (SW846)		Herbs. (8151A)		TPH-G (8015M)		TPH-E (8015M)		Dioxins (1613B)		Expl. (8330A)		Glycols (8015B)		Ter phenyls (8015B)		CLO_4 (6850)		Cr(VI) (7199)							
Matrix:	Water/Soil			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	W	S
A	PH207	07/21/14	08/18/14	1	0	1	0	1	6	1	0	1	6	1	6	1	0	2	4	2	12	1	6	1	0	1	0	1	0	1	6	1	0						
Total	T/SM			1	0	1	0	1	6	1	0	1	6	1	6	1	0	2	4	2	12	1	6	1	0	1	0	1	0	1	6	1	0	0	0	0	0	0	63

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

Data Validation Report
Santa Susana Field Laboratory

Go Backs, Subgroup Trench

SDG: PH207

Prepared for

CDM Smith
555 17th Street, Suite 1100
Denver, CO 80202

Prepared by

Laboratory Data Consultants, Inc.
2701 Loker Ave West, Suite 220
Carlsbad, California 92010

August 13, 2014

INTRODUCTION

This Data Validation Report (DVR) presents Level III data validation results for samples collected on May 29, 2014. Data validation was performed in accordance with the Quality Assurance Project Plan (QAPP) for Santa Susana Field Laboratory (SSFL), RCRA Facility Investigation, Surficial Media Operable Unit (March 2009, Revision 4) and a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines (CLPNFGs) for Superfund Organic Methods Data Review (June 2008), Polychlorinated Dioxins/Dibenzofurans Data Review (September 2005) and for Inorganic Data Review (January 2010). Where specific guidance is not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following methods:

Volatiles (VOCs) by Environmental Protection Agency (EPA) SW 846 Method 8260B
Semivolatiles (SVOCs) by EPA SW 846 Method 8270D
SVOCs by EPA SW 846 Method 8270D utilizing Selective Ion Monitoring (SIM)
Pesticides by EPA SW 846 Method 8081B
Polychlorinated Biphenyls (PCBs) by EPA SW 846 Method 8082A
Metals by EPA SW 846 Method 6010C, 6020A, 7470A and 7471B
Herbicides by EPA SW 846 Method 8151A
Perchlorate by EPA SW 846 Method 6850
Total Petroleum Hydrocarbons (TPH) as Gasoline by EPA SW 846 Method 8015M
TPH as Extractables with and without Silica Gel Clean Up by EPA SW 846 Method 8015M
Glycols by EPA SW 846 Method 8015B
Terphenyls by EPA SW 846 Method 8015B
Explosives by EPA SW 846 Method 8330A
Dioxins and Dibenzofurans by EPA Method 1613B
Hexavalent Chromium by EPA method 7199

The sample identification and methods of analyses performed on each sample is presented in Attachment 1. Overall data qualification summary is presented in Attachment 2. Level III Automated Data Review outliers are presented in Enclosure I.

All sample results were subjected to Level III data validation, which comprises an evaluation of quality control (QC) summary results for sample holding times, initial and continuing calibration blanks (ICB/CCBs), surrogates, internal standards (dioxins and dibenzofurans only), matrix spike/matrix spike duplicates (MS/MSD), laboratory duplicate samples (DUP), laboratory control sample/laboratory control sample duplicates (LCS/LCSD), ICP serial dilutions, method blanks, trip blanks, equipment blanks, and field blanks. No samples in this SDG were subjected to Level IV evaluation.

Automated data review was performed on all QC summary results using the Automated Data Review (ADR) software program (LDC, 2013) with the exception of ICB/CCBs and ICP serial dilutions, which were validated manually. Quality assurance (QA)/QC criteria specified in the QAPP and CLPNFGs were incorporated with the program's reference library to assess compliance with project requirements.

The following are definitions of the data qualifiers:

U Indicates the compound or analyte was analyzed for but not detected.

J Indicates an estimated value.

R Quality control indicates the data is not usable.

NJ Presumptive evidence of presence of the compound at an estimated quantity.

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

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 QC criteria.

II. Initial Calibration

Initial Calibration data were not reviewed for level III.

III. Continuing Calibration

Continuing calibration data were not reviewed for level III.

IV. Blanks

Method blanks were performed at the required frequencies. No contaminant concentrations were detected in the method or preparation blanks with the exception of several blanks for SVOCs, metals, pesticides, and dioxins and dibenzofurans. The associated sample results were qualified as non-detected (U) due to method blank contamination as applicable. The sample results that were not detected or were significantly greater than the concentrations found in the associated blanks were not qualified. The details regarding the qualification of data are provided in Enclosure I.

No contaminant concentrations were detected in the initial or continuing calibration blanks with the following exceptions:

Method	Method Blank ID	Analyte	Maximum Concentration	Associated Samples
6010C	ICB/CCB	Magnesium	27.6 ug/L	EB1-052914

Sample concentrations were compared to concentrations detected in the initial and continuing blanks. The sample concentrations were not detected or were significantly greater than the concentrations found in the associated blanks with the following exceptions:

Method	Sample	Compound	Reported Concentration	Modified Final Concentration
6010C	EB1-052914	Magnesium	0.0252 mg/L	0.0252U mg/L

V. Surrogate Spikes

Surrogates were added to all samples and blanks as required by the method. All surrogate recoveries (%R) were within QC limits with the exception of four samples for TPH as extractables with silica gel clean up and two samples for PCBs. The associated sample results were qualified as detected estimated (J) or non-detected estimated (UJ) as applicable. The details regarding the qualification of data are provided in Enclosure I.

VI. ICP Interference Check Sample (ICS) Analysis

ICP interference check data were not reviewed for level III.

VII. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) samples were performed at the required frequency. Percent recoveries (%R) and relative percent differences (RPD) were within QC limits with the exception of two MS/MSD pairs for glycols in this SDG and metals from SDG PH209. The associated sample results were qualified as detected estimated (J) or non-detected estimated (UJ) as applicable. The details regarding the qualification of data are provided in Enclosure I.

VIII. Laboratory Duplicates Sample

Laboratory duplicates (DUP) sample analyses were reviewed for each matrix as applicable. Results were within QC limits.

IV. Laboratory Control Samples (LCS)

Laboratory control samples were reviewed for each matrix as applicable. Percent recoveries (%R) and relative percent differences (RPD) were within QC limits with the exception of several LCS/LCSD pairs for SVOCs, TPH as extractables with silica gel clean up, explosives, and herbicides. The associated sample results were qualified as detected estimated (J) or non-detected estimated (UJ) as applicable. The details regarding the qualification of data are provided in Enclosure I.

X. Internal Standards

Internal standards were reviewed for dioxins and dibenzofurans. Percent recoveries (%R) were within QC limits.

XI. ICP Serial Dilution

ICP serial dilution analysis was performed by the laboratory. The analysis criteria were met.

XII. Compound Quantitation

The laboratory reporting limits were evaluated. All laboratory reporting limits met the specified requirements.

All compounds reported below the RL as detected were qualified as follows:

Sample	Finding	Flag	A or P
All samples in SDG PH207	All compounds reported as detected below the RL.	J (all detects)	A

XIII. Field Duplicate Samples

No field duplicates were identified in this SDG.

XIV. Field Blank Samples

One trip blank was collected and analyzed for TPH as gasoline. No contaminant concentrations were detected in the trip blank.

One equipment blank was collected and analyzed for VOCs, SVOCs, pesticides, PCBs, metals, herbicides, perchlorate, TPH as gasoline, TPH as extractables with and without silica gel clean up, glycols, explosives, terphenyls, hexavalent chromium, and dioxins and dibenzofurans. The equipment blank had detections for VOCs, SVOCs, metals, and dioxins and dibenzofurans. The associated sample results were qualified as non-detected (U) due to equipment blank contamination as applicable. The sample results that were not detected or were significantly greater than the concentrations found in the equipment blanks were not qualified. The equipment blank outlier reports are presented in Enclosure I.

One field blank (from SDG PH191) was collected and analyzed for VOCs, SVOCs, pesticides, PCBs, metals, herbicides, perchlorate, TPH as gasoline, TPH as extractables with and without silica gel clean up, glycols, explosives, terphenyls, hexavalent chromium, and dioxins and dibenzofurans. The field blank had detections for VOCs, SVOCs, metals, and dioxins and dibenzofurans. The associated sample results were qualified as non-detected (U) due to field blank contamination as applicable. The sample results that were not detected or were significantly greater than the concentrations found in the field blank were not qualified. The field blank outlier reports are presented in Enclosure I.

XV. Overall Assessment of Data

No data associated with this sampling event were rejected. The overall assessment of QA/QC data review by automated and manual validation of this sampling event met project requirements and analytical completeness levels with the exceptions noted in the above sections. All data are deemed useable for the intended use.

Data flags are summarized and are presented as Attachment 2.

Attachment 1

Sample Cross Reference

Sample Cross Reference

Date Collected	Field Sample ID	Lab Sample ID	Sample Type	Prep Method	Analytical Method	Review Level
29-May-2014	TB3-052914	7482395	TB	5030B	8015M	III
29-May-2014	SL-503-SA5C-TR-0.5	7482392	N	3050B	6010C	III
29-May-2014	SL-503-SA5C-TR-0.5	7482392	N	3050B	6020A	III
29-May-2014	SL-503-SA5C-TR-0.5	7482392	N	3546	8015M	III
29-May-2014	SL-503-SA5C-TR-0.5	7482392	N	3546	8082A	III
29-May-2014	SL-503-SA5C-TR-0.5	7482392	N	3546	8270D SIM	III
29-May-2014	SL-503-SA5C-TR-0.5	7482392	N	METHOD	1613B	III
29-May-2014	SL-503-SA5C-TR-0.5	7482392	N	METHOD	6850	III
29-May-2014	SL-503-SA5C-TR-0.5	7482392	N	METHOD	7471B	III
29-May-2014	SL-503-SA5C-TR-5.0	7482393	N	3050B	6010C	III
29-May-2014	SL-503-SA5C-TR-5.0	7482393	N	3050B	6020A	III
29-May-2014	SL-503-SA5C-TR-5.0	7482393	N	3546	8015M	III
29-May-2014	SL-503-SA5C-TR-5.0	7482393	N	3546	8082A	III
29-May-2014	SL-503-SA5C-TR-5.0	7482393	N	3546	8270D SIM	III
29-May-2014	SL-503-SA5C-TR-5.0	7482393	N	5035A	8015M	III
29-May-2014	SL-503-SA5C-TR-5.0	7482393	N	METHOD	1613B	III
29-May-2014	SL-503-SA5C-TR-5.0	7482393	N	METHOD	6850	III
29-May-2014	SL-503-SA5C-TR-5.0	7482393	N	METHOD	7471B	III
29-May-2014	SL-503-SA5C-TR-7.5	7482394	N	3050B	6010C	III
29-May-2014	SL-503-SA5C-TR-7.5	7482394	N	3050B	6020A	III
29-May-2014	SL-503-SA5C-TR-7.5	7482394	N	3546	8015M	III
29-May-2014	SL-503-SA5C-TR-7.5	7482394	N	3546	8082A	III
29-May-2014	SL-503-SA5C-TR-7.5	7482394	N	3546	8270D SIM	III
29-May-2014	SL-503-SA5C-TR-7.5	7482394	N	5035A	8015M	III
29-May-2014	SL-503-SA5C-TR-7.5	7482394	N	METHOD	1613B	III
29-May-2014	SL-503-SA5C-TR-7.5	7482394	N	METHOD	6850	III

III = EPA Level 3 Data Review
IV = EPA Level 4 Data Validation
N = Normal Sample
FD = Field Duplicate
TB = Trip Blank
FB = Field Blank
MS = Matrix Spike
MSD = Matrix Spike Duplicate

Sample Cross Reference

Date Collected	Field Sample ID	Lab Sample ID	Sample Type	Prep Method	Analytical Method	Review Level
29-May-2014	SL-503-SA5C-TR-7.5	7482394	N	METHOD	7471B	III
29-May-2014	SL-605-SA5C-TR-0.5	7482396	N	3050B	6010C	III
29-May-2014	SL-605-SA5C-TR-0.5	7482396	N	3050B	6020A	III
29-May-2014	SL-605-SA5C-TR-0.5	7482396	N	3546	8015M	III
29-May-2014	SL-605-SA5C-TR-0.5	7482396	N	3546	8082A	III
29-May-2014	SL-605-SA5C-TR-0.5	7482396	N	3546	8270D SIM	III
29-May-2014	SL-605-SA5C-TR-0.5	7482396	N	METHOD	1613B	III
29-May-2014	SL-605-SA5C-TR-0.5	7482396	N	METHOD	6850	III
29-May-2014	SL-605-SA5C-TR-0.5	7482396	N	METHOD	7471B	III
29-May-2014	SL-605-SA5C-TR-5.0	7482397	N	3050B	6010C	III
29-May-2014	SL-605-SA5C-TR-5.0	7482397	N	3050B	6020A	III
29-May-2014	SL-605-SA5C-TR-5.0	7482397	N	3546	8015M	III
29-May-2014	SL-605-SA5C-TR-5.0	7482397	N	3546	8082A	III
29-May-2014	SL-605-SA5C-TR-5.0	7482397	N	3546	8270D SIM	III
29-May-2014	SL-605-SA5C-TR-5.0	7482397	N	5035A	8015M	III
29-May-2014	SL-605-SA5C-TR-5.0	7482397	N	METHOD	1613B	III
29-May-2014	SL-605-SA5C-TR-5.0	7482397	N	METHOD	6850	III
29-May-2014	SL-605-SA5C-TR-5.0	7482397	N	METHOD	7471B	III
29-May-2014	SL-605-SA5C-TR-10.0	7482398	N	3050B	6010C	III
29-May-2014	SL-605-SA5C-TR-10.0	7482398	N	3050B	6020A	III
29-May-2014	SL-605-SA5C-TR-10.0	7482398	N	3546	8015M	III
29-May-2014	SL-605-SA5C-TR-10.0	7482398	N	3546	8082A	III
29-May-2014	SL-605-SA5C-TR-10.0	7482398	N	3546	8270D SIM	III
29-May-2014	SL-605-SA5C-TR-10.0	7482398	N	5035A	8015M	III
29-May-2014	SL-605-SA5C-TR-10.0	7482398	N	METHOD	1613B	III
29-May-2014	SL-605-SA5C-TR-10.0	7482398	N	METHOD	6850	III

III = EPA Level 3 Data Review
IV = EPA Level 4 Data Validation
N = Normal Sample
FD = Field Duplicate
TB = Trip Blank
FB = Field Blank
MS = Matrix Spike
MSD = Matrix Spike Duplicate

Sample Cross Reference

Date Collected	Field Sample ID	Lab Sample ID	Sample Type	Prep Method	Analytical Method	Review Level
29-May-2014	SL-605-SA5C-TR-10.0	7482398	N	METHOD	7471B	III
29-May-2014	EB1-052914	7482399	EB	3005A	6010C	III
29-May-2014	EB1-052914	7482399	EB	3510C	8015B	III
29-May-2014	EB1-052914	7482399	EB	3510C	8015M	III
29-May-2014	EB1-052914	7482399	EB	3510C	8081B	III
29-May-2014	EB1-052914	7482399	EB	3510C	8082A	III
29-May-2014	EB1-052914	7482399	EB	3510C	8270D	III
29-May-2014	EB1-052914	7482399	EB	3510C	8270D SIM	III
29-May-2014	EB1-052914	7482399	EB	5030B	8015M	III
29-May-2014	EB1-052914	7482399	EB	5030B	8260B	III
29-May-2014	EB1-052914	7482399	EB	8330	8330A	III
29-May-2014	EB1-052914	7482399	EB	Gen Prep	6850	III
29-May-2014	EB1-052914	7482399	EB	Gen Prep	7199	III
29-May-2014	EB1-052914	7482399	EB	Gen Prep	8015C	III
29-May-2014	EB1-052914	7482399	EB	M3010A	6020A	III
29-May-2014	EB1-052914	7482399	EB	METHOD	1613B	III
29-May-2014	EB1-052914	7482399	EB	METHOD	7470A	III
29-May-2014	EB1-052914	7482399	EB	METHOD	8151A	III
29-May-2014	EB1-052914MSD	P482399M241447A	MSD	Gen Prep	6850	III
29-May-2014	EB1-052914MSD	P482399M321928A	MSD	Gen Prep	8015C	III
29-May-2014	EB1-052914MS	P482399R241434A	MS	Gen Prep	6850	III
29-May-2014	EB1-052914MS	P482399R321913A	MS	Gen Prep	8015C	III

III = EPA Level 3 Data Review
IV = EPA Level 4 Data Validation
N = Normal Sample
FD = Field Duplicate
TB = Trip Blank
FB = Field Blank
MS = Matrix Spike
MSD = Matrix Spike Duplicate

Attachment 2
Overall Data Qualification Summary

Data Qualifier Summary

Lab Reporting Batch ID: PH207 **Laboratory: LL**

EDD Filename: PH207_v1. **eQAPP Name: CDM_SSFL_140617_Lan**

Method Category: METALS

Method: 6010C **Matrix: AQ**

Sample ID: EB1-052914 **Collected: 5/29/2014 3:00:00** **Analysis Type: REA2** **Dilution: 1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
CALCIUM	0.108	J	0.0334	MDL	0.400	PQL	mg/L	U	B
MOLYBDENUM	0.0054	J	0.0017	MDL	0.0200	PQL	mg/L	J	Z
MAGNESIUM	0.0252	J	0.0167	MDL	0.200	PQL	mg/L	U	B, B

Method Category: METALS

Method: 6010C **Matrix: SO**

Sample ID: SL-503-SA5C-TR-0.5 **Collected: 5/29/2014 8:05:00** **Analysis Type: RES** **Dilution: 1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
ANTIMONY	4.25	U	0.786	MDL	4.25	PQL	mg/Kg	UJ	Q
BORON	4.11	J	0.892	MDL	10.6	PQL	mg/Kg	J	Z
CALCIUM	3880		3.55	MDL	21.2	PQL	mg/Kg	J	E
IRON	27900		3.84	MDL	42.5	PQL	mg/Kg	J	E
MAGNESIUM	4990		1.77	MDL	10.6	PQL	mg/Kg	J	E
MOLYBDENUM	0.201	J	0.180	MDL	2.12	PQL	mg/Kg	U	F
PHOSPHORUS	224		3.07	MDL	10.6	PQL	mg/Kg	J	Q, E
POTASSIUM	3370		8.85	MDL	106	PQL	mg/Kg	J	Q
SODIUM	103	J	17.7	MDL	106	PQL	mg/Kg	J	Z
TIN	2.94	J	0.234	MDL	10.6	PQL	mg/Kg	U	B
Zirconium	5.44		0.892	MDL	5.31	PQL	mg/Kg	U	F

Sample ID: SL-503-SA5C-TR-5.0 **Collected: 5/29/2014 8:20:00** **Analysis Type: RES** **Dilution: 1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
ANTIMONY	4.25	U	0.787	MDL	4.25	PQL	mg/Kg	UJ	Q
BERYLLIUM	0.976	J	0.0712	MDL	1.06	PQL	mg/Kg	J	Z
BORON	3.55	J	0.893	MDL	10.6	PQL	mg/Kg	J	Z
CALCIUM	4420		3.55	MDL	21.3	PQL	mg/Kg	J	E
IRON	27600		3.85	MDL	42.5	PQL	mg/Kg	J	E
MAGNESIUM	5720		1.78	MDL	10.6	PQL	mg/Kg	J	E
PHOSPHORUS	200		3.07	MDL	10.6	PQL	mg/Kg	J	Q, E
POTASSIUM	1950		8.86	MDL	106	PQL	mg/Kg	J	Q
TIN	2.80	J	0.234	MDL	10.6	PQL	mg/Kg	U	B

* denotes a non-reportable result

Project Name and Number: 1204-002-001-AL - SSFL Area IV Phase 3

Data Qualifier Summary

Lab Reporting Batch ID: PH207 **Laboratory: LL**

EDD Filename: PH207_v1. **eQAPP Name: CDM_SSFL_140617_Lan**

Method Category: METALS

Method: 6010C **Matrix: SO**

Sample ID: **SL-503-SA5C-TR-5.0** ***Collected:*** **5/29/2014 8:20:00** ***Analysis Type:*** **RES** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
Zirconium	5.57		0.893	MDL	5.31	PQL	mg/Kg	U	F

Sample ID: **SL-503-SA5C-TR-7.5** ***Collected:*** **5/29/2014 9:00:00** ***Analysis Type:*** **RES** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
ANTIMONY	4.07	U	0.752	MDL	4.07	PQL	mg/Kg	UJ	Q
BERYLLIUM	0.541	J	0.0681	MDL	1.02	PQL	mg/Kg	J	Z
BORON	0.959	J	0.854	MDL	10.2	PQL	mg/Kg	J	Z
CALCIUM	7750		3.39	MDL	20.3	PQL	mg/Kg	J	E
IRON	21700		3.68	MDL	40.7	PQL	mg/Kg	J	E
MAGNESIUM	6070		1.70	MDL	10.2	PQL	mg/Kg	J	E
PHOSPHORUS	629		2.94	MDL	10.2	PQL	mg/Kg	J	Q, E
POTASSIUM	2300		8.48	MDL	102	PQL	mg/Kg	J	Q
TIN	2.64	J	0.224	MDL	10.2	PQL	mg/Kg	U	B
Zirconium	3.88	J	0.854	MDL	5.08	PQL	mg/Kg	U	F

Sample ID: **SL-605-SA5C-TR-0.5** ***Collected:*** **5/29/2014 1:15:00** ***Analysis Type:*** **RES** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
ANTIMONY	4.14	U	0.765	MDL	4.14	PQL	mg/Kg	UJ	Q
CALCIUM	3980		3.45	MDL	20.7	PQL	mg/Kg	J	E
IRON	27800		3.74	MDL	41.4	PQL	mg/Kg	J	E
MAGNESIUM	4360		1.73	MDL	10.3	PQL	mg/Kg	J	E
MOLYBDENUM	0.197	J	0.176	MDL	2.07	PQL	mg/Kg	U	F
PHOSPHORUS	148		2.99	MDL	10.3	PQL	mg/Kg	J	Q, E
POTASSIUM	1870		8.62	MDL	103	PQL	mg/Kg	J	Q
TIN	3.12	J	0.227	MDL	10.3	PQL	mg/Kg	U	B
Zirconium	4.09	J	0.869	MDL	5.17	PQL	mg/Kg	U	F

Sample ID: **SL-605-SA5C-TR-10.0** ***Collected:*** **5/29/2014 1:45:00** ***Analysis Type:*** **REA** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
CALCIUM	2430		3.67	MDL	22.0	PQL	mg/Kg	J	E

* denotes a non-reportable result

Project Name and Number: 1204-002-001-AL - SSFL Area IV Phase 3

Data Qualifier Summary

Lab Reporting Batch ID: PH207 **Laboratory: LL**

EDD Filename: PH207_v1. **eQAPP Name: CDM_SSFL_140617_Lan**

Method Category: METALS

Method: 6010C **Matrix: SO**

Sample ID: SL-605-SA5C-TR-10.0 **Collected: 5/29/2014 1:45:00** **Analysis Type: RES** **Dilution: 1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
ANTIMONY	4.39	U	0.812	MDL	4.39	PQL	mg/Kg	UJ	Q
ARSENIC	4.02	J	0.768	MDL	4.39	PQL	mg/Kg	J	Z
BERYLLIUM	0.913	J	0.0735	MDL	1.10	PQL	mg/Kg	J	Z
BORON	1.48	J	0.922	MDL	11.0	PQL	mg/Kg	J	Z
IRON	19500		3.97	MDL	43.9	PQL	mg/Kg	J	E
MAGNESIUM	4380		1.83	MDL	11.0	PQL	mg/Kg	J	E
MOLYBDENUM	0.392	J	0.187	MDL	2.20	PQL	mg/Kg	U	F
PHOSPHORUS	348		3.17	MDL	11.0	PQL	mg/Kg	J	Q, E
POTASSIUM	1980		9.15	MDL	110	PQL	mg/Kg	J	Q
TIN	2.96	J	0.241	MDL	11.0	PQL	mg/Kg	U	B
Zirconium	3.48	J	0.922	MDL	5.49	PQL	mg/Kg	U	F

Sample ID: SL-605-SA5C-TR-5.0 **Collected: 5/29/2014 1:30:00** **Analysis Type: RES** **Dilution: 1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
ANTIMONY	4.19	U	0.776	MDL	4.19	PQL	mg/Kg	UJ	Q
BERYLLIUM	0.935	J	0.0702	MDL	1.05	PQL	mg/Kg	J	Z
BORON	3.87	J	0.881	MDL	10.5	PQL	mg/Kg	J	Z
CALCIUM	4760		3.50	MDL	21.0	PQL	mg/Kg	J	E
IRON	25900		3.80	MDL	41.9	PQL	mg/Kg	J	E
MAGNESIUM	4790		1.75	MDL	10.5	PQL	mg/Kg	J	E
PHOSPHORUS	260		3.03	MDL	10.5	PQL	mg/Kg	J	Q, E
POTASSIUM	2580		8.74	MDL	105	PQL	mg/Kg	J	Q
TIN	2.81	J	0.231	MDL	10.5	PQL	mg/Kg	U	B
Zirconium	4.89	J	0.881	MDL	5.24	PQL	mg/Kg	U	F

Method Category: METALS

Method: 6020A **Matrix: AQ**

Sample ID: EB1-052914 **Collected: 5/29/2014 3:00:00** **Analysis Type: REA2** **Dilution: 1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
STRONTIUM	0.00042	J	0.00034	MDL	0.0020	PQL	mg/L	J	Z

* denotes a non-reportable result

Project Name and Number: 1204-002-001-AL - SSFL Area IV Phase 3

Data Qualifier Summary

Lab Reporting Batch ID: PH207 **Laboratory: LL**

EDD Filename: PH207_v1. **eQAPP Name: CDM_SSFL_140617_Lan**

Method Category: METALS

Method: 6020A **Matrix: SO**

Sample ID: **SL-503-SA5C-TR-0.5** ***Collected:*** **5/29/2014 8:05:00** ***Analysis Type:*** **REA** ***Dilution:*** **2**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
SELENIUM	0.226	J	0.106	MDL	0.425	PQL	mg/Kg	J	Z

Sample ID: **SL-503-SA5C-TR-0.5** ***Collected:*** **5/29/2014 8:05:00** ***Analysis Type:*** **RES** ***Dilution:*** **2**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
SILVER	0.0728	J	0.0276	MDL	0.212	PQL	mg/Kg	J	Z

Sample ID: **SL-503-SA5C-TR-5.0** ***Collected:*** **5/29/2014 8:20:00** ***Analysis Type:*** **RES** ***Dilution:*** **2**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
SILVER	0.0707	J	0.0276	MDL	0.213	PQL	mg/Kg	J	Z

Sample ID: **SL-503-SA5C-TR-7.5** ***Collected:*** **5/29/2014 9:00:00** ***Analysis Type:*** **RES** ***Dilution:*** **2**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
SILVER	0.0271	J	0.0264	MDL	0.203	PQL	mg/Kg	J	Z

Sample ID: **SL-605-SA5C-TR-0.5** ***Collected:*** **5/29/2014 1:15:00** ***Analysis Type:*** **REA** ***Dilution:*** **2**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
SELENIUM	0.164	J	0.103	MDL	0.414	PQL	mg/Kg	J	Z

Sample ID: **SL-605-SA5C-TR-0.5** ***Collected:*** **5/29/2014 1:15:00** ***Analysis Type:*** **RES** ***Dilution:*** **2**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
SILVER	0.0583	J	0.0269	MDL	0.207	PQL	mg/Kg	J	Z

Sample ID: **SL-605-SA5C-TR-10.0** ***Collected:*** **5/29/2014 1:45:00** ***Analysis Type:*** **RES** ***Dilution:*** **2**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
SILVER	0.0374	J	0.0285	MDL	0.220	PQL	mg/Kg	J	Z

Sample ID: **SL-605-SA5C-TR-5.0** ***Collected:*** **5/29/2014 1:30:00** ***Analysis Type:*** **REA** ***Dilution:*** **2**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
SELENIUM	0.156	J	0.105	MDL	0.419	PQL	mg/Kg	J	Z

* denotes a non-reportable result

Project Name and Number: 1204-002-001-AL - SSFL Area IV Phase 3

Data Qualifier Summary

Lab Reporting Batch ID: PH207 **Laboratory: LL**

EDD Filename: PH207_v1. **eQAPP Name: CDM_SSFL_140617_Lan**

Method Category: METALS

Method: 6020A **Matrix: SO**

Sample ID: SL-605-SA5C-TR-5.0 *Collected:* 5/29/2014 1:30:00 *Analysis Type:* RES *Dilution:* 2

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
SILVER	0.0312	J	0.0273	MDL	0.210	PQL	mg/Kg	J	Z

Method Category: METALS

Method: 7471B **Matrix: SO**

Sample ID: SL-503-SA5C-TR-7.5 *Collected:* 5/29/2014 9:00:00 *Analysis Type:* RES *Dilution:* 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
MERCURY	0.0109	J	0.0105	MDL	0.0174	PQL	mg/Kg	J	Z

Method Category: SVOA

Method: 1613B **Matrix: AQ**

Sample ID: EB1-052914 *Collected:* 5/29/2014 3:00:00 *Analysis Type:* RES *Dilution:* 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
1,2,3,4,6,7,8-HPCDD	0.642	JBQ	0.222	MDL	9.60	PQL	pg/L	U	B
1,2,3,4,6,7,8-HPCDF	0.396	JB	0.0914	MDL	9.60	PQL	pg/L	U	B
1,2,3,4,7,8-HxCDD	0.293	JQ	0.179	MDL	9.60	PQL	pg/L	J	Z
1,2,3,4,7,8-HXCDF	0.151	JB	0.137	MDL	9.60	PQL	pg/L	U	B
1,2,3,6,7,8-HXCDF	0.303	JB	0.134	MDL	9.60	PQL	pg/L	U	B
1,2,3,7,8,9-HXCDF	0.547	JBQ	0.145	MDL	9.60	PQL	pg/L	U	B
1,2,3,7,8-PECDF	0.298	JBQ	0.164	MDL	9.60	PQL	pg/L	U	B
2,3,4,6,7,8-HXCDF	0.224	JB	0.131	MDL	9.60	PQL	pg/L	U	B
2,3,4,7,8-PECDF	0.216	JQ	0.150	MDL	9.60	PQL	pg/L	J	Z
OCDD	3.20	JBQ	0.231	MDL	19.2	PQL	pg/L	U	B
OCDF	0.317	JBQ	0.293	MDL	19.2	PQL	pg/L	U	B

* denotes a non-reportable result

Project Name and Number: 1204-002-001-AL - SSFL Area IV Phase 3

Data Qualifier Summary

Lab Reporting Batch ID: PH207 **Laboratory: LL**

EDD Filename: PH207_v1. **eQAPP Name: CDM_SSFL_140617_Lan**

Method Category: SVOA

Method: 1613B **Matrix: SO**

Sample ID: **SL-503-SA5C-TR-0.5** ***Collected:*** **5/29/2014 8:05:00** ***Analysis Type:*** **RES** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
1,2,3,4,7,8,9-HPCDF	0.442	JBQ	0.0513	MDL	5.12	PQL	ng/Kg	U	B
1,2,3,4,7,8-HxCDD	2.07	JB	0.0688	MDL	5.12	PQL	ng/Kg	J	Z
1,2,3,4,7,8-HXCDF	0.481	JB	0.0569	MDL	5.12	PQL	ng/Kg	J	Z
1,2,3,6,7,8-HXCDD	4.94	JB	0.0703	MDL	5.12	PQL	ng/Kg	J	Z
1,2,3,6,7,8-HXCDF	0.332	JBQ	0.0506	MDL	5.12	PQL	ng/Kg	J	Z
1,2,3,7,8,9-HXCDD	4.88	JB	0.0661	MDL	5.12	PQL	ng/Kg	J	Z
1,2,3,7,8,9-HXCDF	0.474	JB	0.0582	MDL	5.12	PQL	ng/Kg	J	Z
1,2,3,7,8-PECDD	1.48	JB	0.0854	MDL	5.12	PQL	ng/Kg	J	Z
1,2,3,7,8-PECDF	0.379	JQ	0.0307	MDL	5.12	PQL	ng/Kg	J	Z
2,3,4,6,7,8-HXCDF	0.387	JB	0.0527	MDL	5.12	PQL	ng/Kg	U	B
2,3,4,7,8-PECDF	0.288	JB	0.0309	MDL	5.12	PQL	ng/Kg	U	B
2,3,7,8-TCDD	0.189	JQ	0.0784	MDL	1.02	PQL	ng/Kg	J	Z
2,3,7,8-TCDF	0.129	JBQ	0.0790	MDL	1.02	PQL	ng/Kg	U	B

Sample ID: **SL-503-SA5C-TR-5.0** ***Collected:*** **5/29/2014 8:20:00** ***Analysis Type:*** **RES** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
1,2,3,4,6,7,8-HPCDD	0.814	JB	0.0365	MDL	5.53	PQL	ng/Kg	J	Z
1,2,3,4,6,7,8-HPCDF	0.119	JBQ	0.0119	MDL	5.53	PQL	ng/Kg	U	B
1,2,3,4,7,8,9-HPCDF	0.0861	JBQ	0.0214	MDL	5.53	PQL	ng/Kg	U	B
1,2,3,4,7,8-HXCDF	0.0565	JB	0.0245	MDL	5.53	PQL	ng/Kg	U	B
1,2,3,6,7,8-HXCDD	0.0373	JBQ	0.0278	MDL	5.53	PQL	ng/Kg	U	B
1,2,3,7,8,9-HXCDD	0.123	JB	0.0260	MDL	5.53	PQL	ng/Kg	U	B
1,2,3,7,8,9-HXCDF	0.105	JBQ	0.0277	MDL	5.53	PQL	ng/Kg	U	B
1,2,3,7,8-PECDF	0.0542	J	0.0190	MDL	5.53	PQL	ng/Kg	J	Z
2,3,4,6,7,8-HXCDF	0.0401	JBQ	0.0219	MDL	5.53	PQL	ng/Kg	U	B
2,3,4,7,8-PECDF	0.0328	JBQ	0.0188	MDL	5.53	PQL	ng/Kg	U	B
OCDF	0.436	JBQ	0.0480	MDL	11.1	PQL	ng/Kg	U	B

Sample ID: **SL-503-SA5C-TR-7.5** ***Collected:*** **5/29/2014 9:00:00** ***Analysis Type:*** **RES** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
1,2,3,4,6,7,8-HPCDD	0.745	JB	0.0332	MDL	5.20	PQL	ng/Kg	U	B
1,2,3,4,6,7,8-HPCDF	0.0841	JBQ	0.00908	MDL	5.20	PQL	ng/Kg	U	B
1,2,3,4,7,8,9-HPCDF	0.0665	JBQ	0.0151	MDL	5.20	PQL	ng/Kg	U	B

* denotes a non-reportable result

Project Name and Number: 1204-002-001-AL - SSFL Area IV Phase 3

Data Qualifier Summary

Lab Reporting Batch ID: PH207 **Laboratory: LL**

EDD Filename: PH207_v1. **eQAPP Name: CDM_SSFL_140617_Lan**

Method Category: SVOA

Method: 1613B **Matrix: SO**

Sample ID: SL-503-SA5C-TR-7.5 **Collected: 5/29/2014 9:00:00** **Analysis Type: RES** **Dilution: 1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
1,2,3,4,7,8-HXCDF	0.0338	JBQ	0.0199	MDL	5.20	PQL	ng/Kg	U	B
1,2,3,6,7,8-HXCDD	0.0681	JBQ	0.0256	MDL	5.20	PQL	ng/Kg	U	B
1,2,3,6,7,8-HXCDF	0.0431	JBQ	0.0188	MDL	5.20	PQL	ng/Kg	U	B
1,2,3,7,8,9-HXCDD	0.0308	JBQ	0.0232	MDL	5.20	PQL	ng/Kg	U	B
1,2,3,7,8,9-HXCDF	0.0614	JB	0.0220	MDL	5.20	PQL	ng/Kg	U	B
1,2,3,7,8-PECDD	0.0683	JBQ	0.0323	MDL	5.20	PQL	ng/Kg	U	B
1,2,3,7,8-PECDF	0.0412	JQ	0.0149	MDL	5.20	PQL	ng/Kg	J	Z
2,3,4,6,7,8-HXCDF	0.0355	JBQ	0.0181	MDL	5.20	PQL	ng/Kg	U	B
OCDD	9.95	JB	0.0273	MDL	10.4	PQL	ng/Kg	J	Z
OCDF	0.342	JBQ	0.0406	MDL	10.4	PQL	ng/Kg	U	B

Sample ID: SL-605-SA5C-TR-0.5 **Collected: 5/29/2014 1:15:00** **Analysis Type: RES** **Dilution: 1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
1,2,3,4,6,7,8-HPCDF	1.66	JB	0.0168	MDL	5.31	PQL	ng/Kg	J	Z
1,2,3,4,7,8,9-HPCDF	0.165	JBQ	0.0247	MDL	5.31	PQL	ng/Kg	U	B
1,2,3,4,7,8-HxCDD	0.0661	JB	0.0391	MDL	5.31	PQL	ng/Kg	U	B
1,2,3,4,7,8-HXCDF	0.311	JB	0.0404	MDL	5.31	PQL	ng/Kg	U	B
1,2,3,6,7,8-HXCDD	0.256	JB	0.0409	MDL	5.31	PQL	ng/Kg	J	Z
1,2,3,6,7,8-HXCDF	0.540	JB	0.0376	MDL	5.31	PQL	ng/Kg	J	Z
1,2,3,7,8,9-HXCDD	0.219	JB	0.0381	MDL	5.31	PQL	ng/Kg	U	B
1,2,3,7,8,9-HXCDF	0.199	JBQ	0.0429	MDL	5.31	PQL	ng/Kg	U	B
1,2,3,7,8-PECDF	2.63	J	0.0273	MDL	5.31	PQL	ng/Kg	J	Z
2,3,4,6,7,8-HXCDF	0.0965	JB	0.0385	MDL	5.31	PQL	ng/Kg	U	B
2,3,4,7,8-PECDF	0.0996	JBQ	0.0257	MDL	5.31	PQL	ng/Kg	U	B
OCDF	4.40	JB	0.0395	MDL	10.6	PQL	ng/Kg	J	Z

Sample ID: SL-605-SA5C-TR-10.0 **Collected: 5/29/2014 1:45:00** **Analysis Type: RES** **Dilution: 1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
1,2,3,4,6,7,8-HPCDD	0.465	JB	0.0254	MDL	5.45	PQL	ng/Kg	U	B
1,2,3,4,6,7,8-HPCDF	0.109	JB	0.00704	MDL	5.45	PQL	ng/Kg	U	B
1,2,3,4,7,8,9-HPCDF	0.0264	JBQ	0.0131	MDL	5.45	PQL	ng/Kg	U	B
1,2,3,4,7,8-HxCDD	0.0182	JB	0.0155	MDL	5.45	PQL	ng/Kg	U	B
1,2,3,4,7,8-HXCDF	0.0259	JB	0.0139	MDL	5.45	PQL	ng/Kg	U	B

* denotes a non-reportable result

Project Name and Number: 1204-002-001-AL - SSFL Area IV Phase 3

Data Qualifier Summary

Lab Reporting Batch ID: PH207 **Laboratory: LL**

EDD Filename: PH207_v1. **eQAPP Name: CDM_SSFL_140617_Lan**

Method Category: SVOA

Method: 1613B **Matrix: SO**

Sample ID: SL-605-SA5C-TR-10.0 **Collected: 5/29/2014 1:45:00** **Analysis Type: RES** **Dilution: 1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
1,2,3,6,7,8-HXCDD	0.0534	JBQ	0.0164	MDL	5.45	PQL	ng/Kg	U	B
1,2,3,6,7,8-HXCDF	0.0419	JB	0.0124	MDL	5.45	PQL	ng/Kg	U	B
1,2,3,7,8,9-HXCDD	0.0368	JBQ	0.0157	MDL	5.45	PQL	ng/Kg	U	B
1,2,3,7,8,9-HXCDF	0.0596	JBQ	0.0153	MDL	5.45	PQL	ng/Kg	U	B
1,2,3,7,8-PECDD	0.0292	JBQ	0.0193	MDL	5.45	PQL	ng/Kg	U	B
1,2,3,7,8-PECDF	0.125	JQ	0.0101	MDL	5.45	PQL	ng/Kg	J	Z
2,3,4,6,7,8-HXCDF	0.0442	JBQ	0.0125	MDL	5.45	PQL	ng/Kg	U	B
2,3,4,7,8-PECDF	0.0263	JB	0.0100	MDL	5.45	PQL	ng/Kg	U	B
2,3,7,8-TCDF	0.0243	JBQ	0.0209	MDL	1.09	PQL	ng/Kg	U	B
OCDD	5.73	JB	0.0198	MDL	10.9	PQL	ng/Kg	J	Z
OCDF	0.294	JB	0.0208	MDL	10.9	PQL	ng/Kg	U	B

Sample ID: SL-605-SA5C-TR-5.0 **Collected: 5/29/2014 1:30:00** **Analysis Type: RES** **Dilution: 1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
1,2,3,4,6,7,8-HPCDF	0.769	JB	0.0166	MDL	5.37	PQL	ng/Kg	J	Z
1,2,3,4,7,8,9-HPCDF	0.0963	JB	0.0279	MDL	5.37	PQL	ng/Kg	U	B
1,2,3,4,7,8-HXCDF	0.111	JBQ	0.0299	MDL	5.37	PQL	ng/Kg	U	B
1,2,3,6,7,8-HXCDD	0.171	JBQ	0.0332	MDL	5.37	PQL	ng/Kg	U	B
1,2,3,6,7,8-HXCDF	0.120	JB	0.0275	MDL	5.37	PQL	ng/Kg	U	B
1,2,3,7,8,9-HXCDD	0.289	JB	0.0317	MDL	5.37	PQL	ng/Kg	U	B
1,2,3,7,8,9-HXCDF	0.192	JBQ	0.0321	MDL	5.37	PQL	ng/Kg	U	B
1,2,3,7,8-PECDD	0.0515	JBQ	0.0347	MDL	5.37	PQL	ng/Kg	U	B
1,2,3,7,8-PECDF	0.265	J	0.0231	MDL	5.37	PQL	ng/Kg	J	Z
2,3,4,6,7,8-HXCDF	0.0844	JBQ	0.0278	MDL	5.37	PQL	ng/Kg	U	B
2,3,4,7,8-PECDF	0.0966	JBQ	0.0230	MDL	5.37	PQL	ng/Kg	U	B
2,3,7,8-TCDD	0.0572	JQ	0.0553	MDL	1.07	PQL	ng/Kg	J	Z
2,3,7,8-TCDF	0.0668	JBQ	0.0534	MDL	1.07	PQL	ng/Kg	U	B
OCDF	2.40	JB	0.0438	MDL	10.7	PQL	ng/Kg	J	Z

* denotes a non-reportable result

Project Name and Number: 1204-002-001-AL - SSFL Area IV Phase 3

Data Qualifier Summary

Lab Reporting Batch ID: PH207 **Laboratory: LL**

EDD Filename: PH207_v1. **eQAPP Name: CDM_SSFL_140617_Lan**

Method Category: SVOA

Method: 8015M **Matrix: AQ**

Sample ID: EB1-052914 **Collected: 5/29/2014 3:00:00** **Analysis Type: REA2** **Dilution: 1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
EFH (C8-C11) SG	0.095	U	0.048	MDL	0.095	PQL	mg/L	UJ	L

Method Category: SVOA

Method: 8015M **Matrix: SO**

Sample ID: SL-503-SA5C-TR-0.5 **Collected: 5/29/2014 8:05:00** **Analysis Type: REA** **Dilution: 1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
EFH (C12-C14) SG	5.3	U	2.1	MDL	5.3	PQL	mg/Kg	UJ	L
EFH (C15-C20) SG	5.3	U	2.1	MDL	5.3	PQL	mg/Kg	UJ	L
EFH (C21-C30) SG	5.3	U	2.1	MDL	5.3	PQL	mg/Kg	UJ	L
EFH (C8-C11) SG	5.3	U	2.1	MDL	5.3	PQL	mg/Kg	UJ	L

Sample ID: SL-503-SA5C-TR-0.5 **Collected: 5/29/2014 8:05:00** **Analysis Type: RES** **Dilution: 1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
EFH (C15-C20)	4.3	J	2.1	MDL	5.3	PQL	mg/Kg	J	Z

Sample ID: SL-503-SA5C-TR-5.0 **Collected: 5/29/2014 8:20:00** **Analysis Type: REA2** **Dilution: 1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
EFH (C12-C14) SG	5.6	U	2.2	MDL	5.6	PQL	mg/Kg	UJ	L, S
EFH (C15-C20) SG	5.6	U	2.2	MDL	5.6	PQL	mg/Kg	UJ	L, S
EFH (C21-C30) SG	5.6	U	2.2	MDL	5.6	PQL	mg/Kg	UJ	L, S
EFH (C30-C40) SG	11	U	4.5	MDL	11	PQL	mg/Kg	UJ	S
EFH (C8-C11) SG	5.6	U	2.2	MDL	5.6	PQL	mg/Kg	UJ	L, S

Sample ID: SL-503-SA5C-TR-7.5 **Collected: 5/29/2014 9:00:00** **Analysis Type: REA2** **Dilution: 1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
EFH (C12-C14) SG	5.3	U	2.1	MDL	5.3	PQL	mg/Kg	UJ	L, S
EFH (C15-C20) SG	5.3	U	2.1	MDL	5.3	PQL	mg/Kg	UJ	L, S
EFH (C21-C30) SG	5.3	U	2.1	MDL	5.3	PQL	mg/Kg	UJ	L, S
EFH (C30-C40) SG	11	U	4.3	MDL	11	PQL	mg/Kg	UJ	S
EFH (C8-C11) SG	5.3	U	2.1	MDL	5.3	PQL	mg/Kg	UJ	L, S

* denotes a non-reportable result

Project Name and Number: 1204-002-001-AL - SSFL Area IV Phase 3

Data Qualifier Summary

Lab Reporting Batch ID: PH207 **Laboratory: LL**

EDD Filename: PH207_v1. **eQAPP Name: CDM_SSFL_140617_Lan**

Method Category: SVOA

Method: 8015M **Matrix: SO**

Sample ID: **SL-605-SA5C-TR-0.5** ***Collected:*** **5/29/2014 1:15:00** ***Analysis Type:*** **REA** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
EFH (C12-C14) SG	5.3	U	2.1	MDL	5.3	PQL	mg/Kg	UJ	L, S
EFH (C15-C20) SG	5.3	U	2.1	MDL	5.3	PQL	mg/Kg	UJ	L, S
EFH (C21-C30) SG	3.9	J	2.1	MDL	5.3	PQL	mg/Kg	J	Z, L, S
EFH (C30-C40) SG	5.1	J	4.3	MDL	11	PQL	mg/Kg	J	Z, S
EFH (C8-C11) SG	5.3	U	2.1	MDL	5.3	PQL	mg/Kg	UJ	L, S

Sample ID: **SL-605-SA5C-TR-0.5** ***Collected:*** **5/29/2014 1:15:00** ***Analysis Type:*** **RES** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
EFH (C15-C20)	2.3	J	2.1	MDL	5.3	PQL	mg/Kg	J	Z

Sample ID: **SL-605-SA5C-TR-10.0** ***Collected:*** **5/29/2014 1:45:00** ***Analysis Type:*** **REA** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
EFH (C21-C30)	3.5	J	2.2	MDL	5.5	PQL	mg/Kg	J	Z
EFH (C30-C40)	8.4	J	4.4	MDL	11	PQL	mg/Kg	J	Z

Sample ID: **SL-605-SA5C-TR-10.0** ***Collected:*** **5/29/2014 1:45:00** ***Analysis Type:*** **REA2** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
EFH (C12-C14) SG	5.5	U	2.2	MDL	5.5	PQL	mg/Kg	UJ	L, S
EFH (C15-C20) SG	5.5	U	2.2	MDL	5.5	PQL	mg/Kg	UJ	L, S
EFH (C21-C30) SG	5.5	U	2.2	MDL	5.5	PQL	mg/Kg	UJ	L, S
EFH (C30-C40) SG	11	U	4.4	MDL	11	PQL	mg/Kg	UJ	S
EFH (C8-C11) SG	5.5	U	2.2	MDL	5.5	PQL	mg/Kg	UJ	L, S

Sample ID: **SL-605-SA5C-TR-5.0** ***Collected:*** **5/29/2014 1:30:00** ***Analysis Type:*** **REA2** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
EFH (C12-C14) SG	5.4	U	2.2	MDL	5.4	PQL	mg/Kg	UJ	L
EFH (C15-C20) SG	5.4	U	2.2	MDL	5.4	PQL	mg/Kg	UJ	L
EFH (C21-C30) SG	3.5	J	2.2	MDL	5.4	PQL	mg/Kg	J	Z, L
EFH (C30-C40) SG	5.0	J	4.3	MDL	11	PQL	mg/Kg	J	Z
EFH (C8-C11) SG	5.4	U	2.2	MDL	5.4	PQL	mg/Kg	UJ	L

* denotes a non-reportable result

Project Name and Number: 1204-002-001-AL - SSFL Area IV Phase 3

Data Qualifier Summary

Lab Reporting Batch ID: PH207 **Laboratory: LL**

EDD Filename: PH207_v1. **eQAPP Name: CDM_SSFL_140617_Lan**

Method Category: SVOA

Method: 8082A **Matrix: SO**

Sample ID: SL-503-SA5C-TR-0.5 **Collected: 5/29/2014 8:05:00** **Analysis Type: RES** **Dilution: 1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
AROCLOR 1254	7.1	J	4.6	MDL	18	PQL	ug/Kg	J	Z

Method Category: SVOA

Method: 8151A **Matrix: AQ**

Sample ID: EB1-052914 **Collected: 5/29/2014 3:00:00** **Analysis Type: RES** **Dilution: 1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
DICAMBA	0.29	U	0.077	MDL	0.29	PQL	ug/L	UJ	E

Method Category: SVOA

Method: 8270D **Matrix: AQ**

Sample ID: EB1-052914 **Collected: 5/29/2014 3:00:00** **Analysis Type: RES-ACID** **Dilution: 1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
BENZOIC ACID	15	U	6	MDL	15	PQL	ug/L	UJ	E

Method Category: SVOA

Method: 8270D SIM **Matrix: AQ**

Sample ID: EB1-052914 **Collected: 5/29/2014 3:00:00** **Analysis Type: RES-BASE/NEUTRAL** **Dilution: 1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
1-METHYLNAPHTHALENE	0.023	J	0.010	MDL	0.051	PQL	ug/L	J	Z
2-METHYLNAPHTHALENE	0.033	J	0.010	MDL	0.051	PQL	ug/L	J	Z
BIS(2-ETHYLHEXYL)PHTHALATE	0.12	J	0.051	MDL	1.0	PQL	ug/L	UJ	L, E, B
Diethylphthalate	0.057	J	0.051	MDL	1.0	PQL	ug/L	J	Z
Di-n-butylphthalate	0.13	J	0.051	MDL	1.0	PQL	ug/L	U	B

* denotes a non-reportable result

Project Name and Number: 1204-002-001-AL - SSFL Area IV Phase 3

Data Qualifier Summary

Lab Reporting Batch ID: PH207 **Laboratory: LL**

EDD Filename: PH207_v1. **eQAPP Name: CDM_SSFL_140617_Lan**

Method Category: SVOA

Method: 8270D SIM **Matrix:** SO

Sample ID: **SL-503-SA5C-TR-0.5** ***Collected:*** **5/29/2014 8:05:00** ***Analysis Type:*** **RES-BASE/NEUTRAL** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
1-METHYLNAPHTHALENE	1.6	J	0.71	MDL	1.8	PQL	ug/Kg	J	Z
ACENAPHTHYLENE	0.62	J	0.35	MDL	1.8	PQL	ug/Kg	J	Z
ANTHRACENE	0.92	J	0.35	MDL	1.8	PQL	ug/Kg	J	Z
BENZO(A)ANTHRACENE	1.4	J	0.71	MDL	1.8	PQL	ug/Kg	J	Z
BENZO(A)PYRENE	0.94	J	0.71	MDL	1.8	PQL	ug/Kg	J	Z
BENZO(E)PYRENE	18	U	3.5	MDL	18	PQL	ug/Kg	UJ	L
BENZO(K)FLUORANTHENE	0.79	J	0.71	MDL	1.8	PQL	ug/Kg	J	Z
FLUORENE	0.84	J	0.71	MDL	1.8	PQL	ug/Kg	J	Z

Sample ID: **SL-503-SA5C-TR-5.0** ***Collected:*** **5/29/2014 8:20:00** ***Analysis Type:*** **RES-BASE/NEUTRAL** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
ANTHRACENE	0.90	J	0.37	MDL	1.9	PQL	ug/Kg	J	Z
BENZO(A)ANTHRACENE	0.93	J	0.74	MDL	1.9	PQL	ug/Kg	J	Z
BENZO(E)PYRENE	19	U	3.7	MDL	19	PQL	ug/Kg	UJ	L
CHRYSENE	0.76	J	0.37	MDL	1.9	PQL	ug/Kg	J	Z
FLUORENE	0.90	J	0.74	MDL	1.9	PQL	ug/Kg	J	Z
NAPHTHALENE	1.4	J	0.74	MDL	1.9	PQL	ug/Kg	J	Z

Sample ID: **SL-503-SA5C-TR-7.5** ***Collected:*** **5/29/2014 9:00:00** ***Analysis Type:*** **RES-BASE/NEUTRAL** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
BENZO(E)PYRENE	18	U	3.6	MDL	18	PQL	ug/Kg	UJ	L

Sample ID: **SL-605-SA5C-TR-0.5** ***Collected:*** **5/29/2014 1:15:00** ***Analysis Type:*** **RES-BASE/NEUTRAL** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
ANTHRACENE	0.58	J	0.35	MDL	1.8	PQL	ug/Kg	J	Z
BENZO(A)ANTHRACENE	0.92	J	0.71	MDL	1.8	PQL	ug/Kg	J	Z
BENZO(A)PYRENE	1.5	J	0.71	MDL	1.8	PQL	ug/Kg	J	Z
BENZO(E)PYRENE	18	U	3.5	MDL	18	PQL	ug/Kg	UJ	L
BENZO(K)FLUORANTHENE	0.80	J	0.71	MDL	1.8	PQL	ug/Kg	J	Z
CHRYSENE	1.4	J	0.35	MDL	1.8	PQL	ug/Kg	J	Z
FLUORANTHENE	1.7	J	0.71	MDL	1.8	PQL	ug/Kg	J	Z
INDENO(1,2,3-CD)PYRENE	1.3	J	0.71	MDL	1.8	PQL	ug/Kg	J	Z

* denotes a non-reportable result

Project Name and Number: 1204-002-001-AL - SSFL Area IV Phase 3

Data Qualifier Summary

Lab Reporting Batch ID: PH207 **Laboratory: LL**

EDD Filename: PH207_v1. **eQAPP Name: CDM_SSFL_140617_Lan**

Method Category: SVOA

Method: 8270D SIM **Matrix: SO**

Sample ID: SL-605-SA5C-TR-0.5 **Collected: 5/29/2014 1:15:00** **Analysis Type: RES-BASE/NEUTRAL** **Dilution: 1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
PHENANTHRENE	1.0	J	0.71	MDL	1.8	PQL	ug/Kg	J	Z
PYRENE	1.6	J	0.71	MDL	1.8	PQL	ug/Kg	J	Z

Sample ID: SL-605-SA5C-TR-10.0 **Collected: 5/29/2014 1:45:00** **Analysis Type: RES-BASE/NEUTRAL** **Dilution: 1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
ANTHRACENE	1.3	J	0.37	MDL	1.8	PQL	ug/Kg	J	Z
BENZO(A)ANTHRACENE	1.0	J	0.73	MDL	1.8	PQL	ug/Kg	J	Z
BENZO(E)PYRENE	19	U	3.7	MDL	19	PQL	ug/Kg	UJ	L
CHRYSENE	0.87	J	0.37	MDL	1.8	PQL	ug/Kg	J	Z
FLUORENE	0.79	J	0.73	MDL	1.8	PQL	ug/Kg	J	Z
NAPHTHALENE	0.80	J	0.73	MDL	1.8	PQL	ug/Kg	J	Z

Sample ID: SL-605-SA5C-TR-5.0 **Collected: 5/29/2014 1:30:00** **Analysis Type: RES-BASE/NEUTRAL** **Dilution: 1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
2-METHYLNAPHTHALENE	0.74	J	0.72	MDL	1.8	PQL	ug/Kg	J	Z
ANTHRACENE	0.59	J	0.36	MDL	1.8	PQL	ug/Kg	J	Z
BENZO(B)FLUORANTHENE	0.72	J	0.72	MDL	1.8	PQL	ug/Kg	J	Z
BENZO(E)PYRENE	18	U	3.6	MDL	18	PQL	ug/Kg	UJ	L
BENZO(G,H,I)PERYLENE	1.1	J	0.72	MDL	1.8	PQL	ug/Kg	J	Z
CHRYSENE	1.6	J	0.36	MDL	1.8	PQL	ug/Kg	J	Z
FLUORANTHENE	1.1	J	0.72	MDL	1.8	PQL	ug/Kg	J	Z
NAPHTHALENE	1.0	J	0.72	MDL	1.8	PQL	ug/Kg	J	Z
PHENANTHRENE	1.2	J	0.72	MDL	1.8	PQL	ug/Kg	J	Z
PYRENE	1.0	J	0.72	MDL	1.8	PQL	ug/Kg	J	Z

* denotes a non-reportable result

Project Name and Number: 1204-002-001-AL - SSFL Area IV Phase 3

Data Qualifier Summary

Lab Reporting Batch ID: PH207 **Laboratory: LL**

EDD Filename: PH207_v1. **eQAPP Name: CDM_SSFL_140617_Lan**

Reason Code Legend

Reason Code	*Description*
B	Calibration Blank Contamination
B	Method Blank Contamination
E	Laboratory Control Precision
E	Matrix Spike Precision
F	Equipment Blank Contamination
F	Field Blank Contamination
L	Laboratory Control Precision
L	Laboratory Control Spike Lower Estimation
L	Laboratory Control Spike Upper Estimation
Q	Matrix Spike Lower Estimation
Q	Matrix Spike Precision
Q	Matrix Spike Upper Estimation
S	Surrogate/Tracer Recovery Lower Estimation
S	Surrogate/Tracer Recovery Upper Estimation
Z	Reporting Limit Trace Value

* denotes a non-reportable result

Project Name and Number: 1204-002-001-AL - SSFL Area IV Phase 3

Enclosure I

Level III ADR Outliers

(Including Manual Review Outliers)

Quality Control
Outlier Reports

PH207

Method Blank Outlier Report

Lab Reporting Batch ID: PH207 **Laboratory: LL**

EDD Filename: PH207_v1. **eQAPP Name: CDM_SSFL_140617_Lan**

Method: **1613B**
Matrix: **AQ**

Method Blank Sample ID	Analysis Date	Analyte	Result	Associated Samples
BLK1560B371438	6/6/2014 2:38:00 PM	1,2,3,4,6,7,8-HPCDD	0.511 pg/L	EB1-052914
		1,2,3,4,6,7,8-HPCDF	0.570 pg/L	
		1,2,3,4,7,8,9-HPCDF	0.509 pg/L	
		1,2,3,4,7,8-HXCDF	0.334 pg/L	
		1,2,3,6,7,8-HXCDF	0.154 pg/L	
		1,2,3,7,8,9-HXCDD	0.359 pg/L	
		1,2,3,7,8,9-HXCDF	0.265 pg/L	
		1,2,3,7,8-PECDD	0.291 pg/L	
		1,2,3,7,8-PECDF	0.654 pg/L	
		2,3,4,6,7,8-HXCDF	0.272 pg/L	
		2,3,7,8-TCDD	0.350 pg/L	
		OCDD	3.21 pg/L	
		OCDF	1.26 pg/L	

The following samples and their listed target analytes were qualified due to contamination reported in this blank

Sample ID	Analyte	Reported Result	Modified Final Result
EB1-052914(RES)	1,2,3,4,6,7,8-HPCDD	0.642 pg/L	0.642U pg/L
EB1-052914(RES)	1,2,3,4,6,7,8-HPCDF	0.396 pg/L	0.396U pg/L
EB1-052914(RES)	1,2,3,4,7,8-HXCDF	0.151 pg/L	0.151U pg/L
EB1-052914(RES)	1,2,3,6,7,8-HXCDF	0.303 pg/L	0.303U pg/L
EB1-052914(RES)	1,2,3,7,8,9-HXCDF	0.547 pg/L	0.547U pg/L
EB1-052914(RES)	1,2,3,7,8-PECDF	0.298 pg/L	0.298U pg/L
EB1-052914(RES)	2,3,4,6,7,8-HXCDF	0.224 pg/L	0.224U pg/L
EB1-052914(RES)	OCDD	3.20 pg/L	3.20U pg/L
EB1-052914(RES)	OCDF	0.317 pg/L	0.317U pg/L

Method: **1613B**
Matrix: **SO**

Method Blank Sample ID	Analysis Date	Analyte	Result	Associated Samples
BLK1570B371737	6/9/2014 5:37:00 PM	1,2,3,4,6,7,8-HPCDD	0.151 ng/Kg	SL-503-SA5C-TR-0.5
		1,2,3,4,6,7,8-HPCDF	0.0827 ng/Kg	SL-503-SA5C-TR-5.0
		1,2,3,4,7,8,9-HPCDF	0.0955 ng/Kg	SL-503-SA5C-TR-7.5
		1,2,3,4,7,8-HxCDD	0.0591 ng/Kg	SL-605-SA5C-TR-0.5
		1,2,3,4,7,8-HXCDF	0.0920 ng/Kg	SL-605-SA5C-TR-10.0
		1,2,3,6,7,8-HXCDD	0.0425 ng/Kg	SL-605-SA5C-TR-5.0
		1,2,3,6,7,8-HXCDF	0.0449 ng/Kg	
		1,2,3,7,8,9-HXCDD	0.0758 ng/Kg	
		1,2,3,7,8,9-HXCDF	0.0932 ng/Kg	
		1,2,3,7,8-PECDD	0.101 ng/Kg	
		2,3,4,6,7,8-HXCDF	0.0780 ng/Kg	
		2,3,4,7,8-PECDF	0.0664 ng/Kg	
		2,3,7,8-TCDF	0.0476 ng/Kg	
		OCDD	0.599 ng/Kg	
		OCDF	0.338 ng/Kg	

The following samples and their listed target analytes were qualified due to contamination reported in this blank

Sample ID	Analyte	Reported Result	Modified Final Result
SL-503-SA5C-TR-0.5(RES)	1,2,3,4,7,8,9-HPCDF	0.442 ng/Kg	0.442U ng/Kg
SL-503-SA5C-TR-0.5(RES)	2,3,4,6,7,8-HXCDF	0.387 ng/Kg	0.387U ng/Kg

Method Blank Outlier Report

Lab Reporting Batch ID: PH207 **Laboratory: LL**

EDD Filename: PH207_v1. **eQAPP Name: CDM_SSFL_140617_Lan**

Method: **1613B**
Matrix: **SO**

Method Blank Sample ID	Analysis Date	Analyte	Result	Associated Samples

The following samples and their listed target analytes were qualified due to contamination reported in this blank

Sample ID	Analyte	Reported Result	Modified Final Result
SL-503-SA5C-TR-0.5(RES)	2,3,4,7,8-PECDF	0.288 ng/Kg	0.288U ng/Kg
SL-503-SA5C-TR-0.5(RES)	2,3,7,8-TCDF	0.129 ng/Kg	0.129U ng/Kg
SL-503-SA5C-TR-5.0(RES)	1,2,3,4,6,7,8-HPCDF	0.119 ng/Kg	0.119U ng/Kg
SL-503-SA5C-TR-5.0(RES)	1,2,3,4,7,8,9-HPCDF	0.0861 ng/Kg	0.0861U ng/Kg
SL-503-SA5C-TR-5.0(RES)	1,2,3,4,7,8-HXCDF	0.0565 ng/Kg	0.0565U ng/Kg
SL-503-SA5C-TR-5.0(RES)	1,2,3,6,7,8-HXCDD	0.0373 ng/Kg	0.0373U ng/Kg
SL-503-SA5C-TR-5.0(RES)	1,2,3,7,8,9-HXCDD	0.123 ng/Kg	0.123U ng/Kg
SL-503-SA5C-TR-5.0(RES)	1,2,3,7,8,9-HXCDF	0.105 ng/Kg	0.105U ng/Kg
SL-503-SA5C-TR-5.0(RES)	2,3,4,6,7,8-HXCDF	0.0401 ng/Kg	0.0401U ng/Kg
SL-503-SA5C-TR-5.0(RES)	2,3,4,7,8-PECDF	0.0328 ng/Kg	0.0328U ng/Kg
SL-503-SA5C-TR-5.0(RES)	OCDF	0.436 ng/Kg	0.436U ng/Kg
SL-503-SA5C-TR-7.5(RES)	1,2,3,4,6,7,8-HPCDD	0.745 ng/Kg	0.745U ng/Kg
SL-503-SA5C-TR-7.5(RES)	1,2,3,4,6,7,8-HPCDF	0.0841 ng/Kg	0.0841U ng/Kg
SL-503-SA5C-TR-7.5(RES)	1,2,3,4,7,8,9-HPCDF	0.0665 ng/Kg	0.0665U ng/Kg
SL-503-SA5C-TR-7.5(RES)	1,2,3,4,7,8-HXCDF	0.0338 ng/Kg	0.0338U ng/Kg
SL-503-SA5C-TR-7.5(RES)	1,2,3,6,7,8-HXCDD	0.0681 ng/Kg	0.0681U ng/Kg
SL-503-SA5C-TR-7.5(RES)	1,2,3,6,7,8-HXCDF	0.0431 ng/Kg	0.0431U ng/Kg
SL-503-SA5C-TR-7.5(RES)	1,2,3,7,8,9-HXCDD	0.0308 ng/Kg	0.0308U ng/Kg
SL-503-SA5C-TR-7.5(RES)	1,2,3,7,8,9-HXCDF	0.0614 ng/Kg	0.0614U ng/Kg
SL-503-SA5C-TR-7.5(RES)	1,2,3,7,8-PECDD	0.0683 ng/Kg	0.0683U ng/Kg
SL-503-SA5C-TR-7.5(RES)	2,3,4,6,7,8-HXCDF	0.0355 ng/Kg	0.0355U ng/Kg
SL-503-SA5C-TR-7.5(RES)	OCDF	0.342 ng/Kg	0.342U ng/Kg
SL-605-SA5C-TR-0.5(RES)	1,2,3,4,7,8,9-HPCDF	0.165 ng/Kg	0.165U ng/Kg
SL-605-SA5C-TR-0.5(RES)	1,2,3,4,7,8-HxCDD	0.0661 ng/Kg	0.0661U ng/Kg
SL-605-SA5C-TR-0.5(RES)	1,2,3,4,7,8-HXCDF	0.311 ng/Kg	0.311U ng/Kg
SL-605-SA5C-TR-0.5(RES)	1,2,3,7,8,9-HXCDD	0.219 ng/Kg	0.219U ng/Kg
SL-605-SA5C-TR-0.5(RES)	1,2,3,7,8,9-HXCDF	0.199 ng/Kg	0.199U ng/Kg
SL-605-SA5C-TR-0.5(RES)	2,3,4,6,7,8-HXCDF	0.0965 ng/Kg	0.0965U ng/Kg
SL-605-SA5C-TR-0.5(RES)	2,3,4,7,8-PECDF	0.0996 ng/Kg	0.0996U ng/Kg
SL-605-SA5C-TR-10.0(RES)	1,2,3,4,6,7,8-HPCDD	0.465 ng/Kg	0.465U ng/Kg
SL-605-SA5C-TR-10.0(RES)	1,2,3,4,6,7,8-HPCDF	0.109 ng/Kg	0.109U ng/Kg
SL-605-SA5C-TR-10.0(RES)	1,2,3,4,7,8,9-HPCDF	0.0264 ng/Kg	0.0264U ng/Kg
SL-605-SA5C-TR-10.0(RES)	1,2,3,4,7,8-HxCDD	0.0182 ng/Kg	0.0182U ng/Kg
SL-605-SA5C-TR-10.0(RES)	1,2,3,4,7,8-HXCDF	0.0259 ng/Kg	0.0259U ng/Kg
SL-605-SA5C-TR-10.0(RES)	1,2,3,6,7,8-HXCDD	0.0534 ng/Kg	0.0534U ng/Kg
SL-605-SA5C-TR-10.0(RES)	1,2,3,6,7,8-HXCDF	0.0419 ng/Kg	0.0419U ng/Kg
SL-605-SA5C-TR-10.0(RES)	1,2,3,7,8,9-HXCDD	0.0368 ng/Kg	0.0368U ng/Kg
SL-605-SA5C-TR-10.0(RES)	1,2,3,7,8,9-HXCDF	0.0596 ng/Kg	0.0596U ng/Kg
SL-605-SA5C-TR-10.0(RES)	1,2,3,7,8-PECDD	0.0292 ng/Kg	0.0292U ng/Kg
SL-605-SA5C-TR-10.0(RES)	2,3,4,6,7,8-HXCDF	0.0442 ng/Kg	0.0442U ng/Kg

Method Blank Outlier Report

Lab Reporting Batch ID: PH207 **Laboratory: LL**

EDD Filename: PH207_v1. **eQAPP Name: CDM_SSFL_140617_Lan**

Method: **1613B**
Matrix: **SO**

Method Blank Sample ID	Analysis Date	Analyte	Result	Associated Samples

The following samples and their listed target analytes were qualified due to contamination reported in this blank

Sample ID	Analyte	Reported Result	Modified Final Result
SL-605-SA5C-TR-10.0(RES)	2,3,4,7,8-PECDF	0.0263 ng/Kg	0.0263U ng/Kg
SL-605-SA5C-TR-10.0(RES)	2,3,7,8-TCDF	0.0243 ng/Kg	0.0243U ng/Kg
SL-605-SA5C-TR-10.0(RES)	OCDF	0.294 ng/Kg	0.294U ng/Kg
SL-605-SA5C-TR-5.0(RES)	1,2,3,4,7,8,9-HPCDF	0.0963 ng/Kg	0.0963U ng/Kg
SL-605-SA5C-TR-5.0(RES)	1,2,3,4,7,8-HXCDF	0.111 ng/Kg	0.111U ng/Kg
SL-605-SA5C-TR-5.0(RES)	1,2,3,6,7,8-HXCDD	0.171 ng/Kg	0.171U ng/Kg
SL-605-SA5C-TR-5.0(RES)	1,2,3,6,7,8-HXCDF	0.120 ng/Kg	0.120U ng/Kg
SL-605-SA5C-TR-5.0(RES)	1,2,3,7,8,9-HXCDD	0.289 ng/Kg	0.289U ng/Kg
SL-605-SA5C-TR-5.0(RES)	1,2,3,7,8,9-HXCDF	0.192 ng/Kg	0.192U ng/Kg
SL-605-SA5C-TR-5.0(RES)	1,2,3,7,8-PECDD	0.0515 ng/Kg	0.0515U ng/Kg
SL-605-SA5C-TR-5.0(RES)	2,3,4,6,7,8-HXCDF	0.0844 ng/Kg	0.0844U ng/Kg
SL-605-SA5C-TR-5.0(RES)	2,3,4,7,8-PECDF	0.0966 ng/Kg	0.0966U ng/Kg
SL-605-SA5C-TR-5.0(RES)	2,3,7,8-TCDF	0.0668 ng/Kg	0.0668U ng/Kg

Method: **6010C**
Matrix: **AQ**

Method Blank Sample ID	Analysis Date	Analyte	Result	Associated Samples
P15535AB221810	6/5/2014 6:10:00 PM	CALCIUM MAGNESIUM MANGANESE ZINC	0.0347 mg/L 0.0232 mg/L 0.00085 mg/L 0.0020 mg/L	EB1-052914

The following samples and their listed target analytes were qualified due to contamination reported in this blank

Sample ID	Analyte	Reported Result	Modified Final Result
EB1-052914(REA2)	CALCIUM	0.108 mg/L	0.108U mg/L
EB1-052914(REA2)	MAGNESIUM	0.0252 mg/L	0.0252U mg/L

Method: **6010C**
Matrix: **SO**

Method Blank Sample ID	Analysis Date	Analyte	Result	Associated Samples
P15437AB221115	6/5/2014 11:15:00 AM	CALCIUM	9.64 mg/Kg	SL-503-SA5C-TR-0.5 SL-503-SA5C-TR-5.0 SL-503-SA5C-TR-7.5 SL-605-SA5C-TR-0.5 SL-605-SA5C-TR-10.0 SL-605-SA5C-TR-5.0
P15437AB222203	6/4/2014 10:03:00 PM	TIN	1.45 mg/Kg	SL-503-SA5C-TR-0.5 SL-503-SA5C-TR-5.0 SL-503-SA5C-TR-7.5 SL-605-SA5C-TR-0.5 SL-605-SA5C-TR-10.0 SL-605-SA5C-TR-5.0

Method Blank Outlier Report

Lab Reporting Batch ID: PH207 **Laboratory: LL**

EDD Filename: PH207_v1. **eQAPP Name: CDM_SSFL_140617_Lan**

Method: **6010C**
Matrix: **SO**

Method Blank Sample ID	Analysis Date	Analyte	Result	Associated Samples

The following samples and their listed target analytes were qualified due to contamination reported in this blank

Sample ID	Analyte	Reported Result	Modified Final Result
SL-503-SA5C-TR-0.5(RES)	TIN	2.94 mg/Kg	2.94U mg/Kg
SL-503-SA5C-TR-5.0(RES)	TIN	2.80 mg/Kg	2.80U mg/Kg
SL-503-SA5C-TR-7.5(RES)	TIN	2.64 mg/Kg	2.64U mg/Kg
SL-605-SA5C-TR-0.5(RES)	TIN	3.12 mg/Kg	3.12U mg/Kg
SL-605-SA5C-TR-10.0(RES)	TIN	2.96 mg/Kg	2.96U mg/Kg
SL-605-SA5C-TR-5.0(RES)	TIN	2.81 mg/Kg	2.81U mg/Kg

Method: **8081B**
Matrix: **AQ**

Method Blank Sample ID	Analysis Date	Analyte	Result	Associated Samples
P53539AB240542A	6/5/2014 5:42:00 AM	4,4'-DDD	0.0046 ug/L	EB1-052914

Method: **8270D SIM**
Matrix: **AQ**

Method Blank Sample ID	Analysis Date	Analyte	Result	Associated Samples
PLKWH15B261325	6/11/2014 1:25:00 PM	BIS(2-ETHYLHEXYL)PHTHALATE Di-n-butylphthalate	0.38 ug/L 0.073 ug/L	EB1-052914

The following samples and their listed target analytes were qualified due to contamination reported in this blank

Sample ID	Analyte	Reported Result	Modified Final Result
EB1-052914(RES)	BIS(2-ETHYLHEXYL)PHTHALATE	0.12 ug/L	1.0U ug/L
EB1-052914(RES)	Di-n-butylphthalate	0.13 ug/L	1.0U ug/L

Equipment Rinsate Blank Outlier Report

Lab Reporting Batch ID: PH207 **Laboratory: LL**

EDD Filename: PH207_v1. **eQAPP Name: CDM_SSFL_140617_Lan**

Method: **6010C**
Matrix: **SO**

Equipment Blank Sample ID	Collected Date	Analyte	Result	Associated Samples
EB1-052914(REA2)	5/29/2014 3:00:00 PM	CALCIUM MAGNESIUM MOLYBDENUM	0.108 mg/L 0.0252 mg/L 0.0054 mg/L	SL-503-SA5C-TR-0.5 SL-503-SA5C-TR-5.0 SL-503-SA5C-TR-7.5 SL-605-SA5C-TR-0.5 SL-605-SA5C-TR-10.0 SL-605-SA5C-TR-5.0

The following samples and their listed target analytes were qualified due to contamination reported in this blank

Sample ID	Analyte	Reported Result	Modified Final Result
SL-503-SA5C-TR-0.5(RES)	MOLYBDENUM	0.201 mg/Kg	0.201U mg/Kg
SL-605-SA5C-TR-0.5(RES)	MOLYBDENUM	0.197 mg/Kg	0.197U mg/Kg
SL-605-SA5C-TR-10.0(RES)	MOLYBDENUM	0.392 mg/Kg	0.392U mg/Kg

Field Blank Outlier Report

Lab Reporting Batch ID: PH207 **Laboratory: LL**

EDD Filename: PH207_v1. **eQAPP Name: CDM_SSFL_140617_Lan**

Method: **6010C**
Matrix: **SO**

Field Blank Sample ID	Collected Date	Analyte	Result	Associated Samples
FB-052114(RES)	5/21/2014 2:00:00 PM	Zirconium	0.011 mg/L	SL-503-SA5C-TR-0.5 SL-503-SA5C-TR-5.0 SL-503-SA5C-TR-7.5 SL-605-SA5C-TR-0.5 SL-605-SA5C-TR-10.0 SL-605-SA5C-TR-5.0

The following samples and their listed target analytes were qualified due to contamination reported in this blank

Sample ID	Analyte	Reported Result	Modified Final Result
SL-503-SA5C-TR-0.5(RES)	Zirconium	5.44 mg/Kg	5.44U mg/Kg
SL-503-SA5C-TR-5.0(RES)	Zirconium	5.57 mg/Kg	5.57U mg/Kg
SL-503-SA5C-TR-7.5(RES)	Zirconium	3.88 mg/Kg	3.88U mg/Kg
SL-605-SA5C-TR-0.5(RES)	Zirconium	4.09 mg/Kg	4.09U mg/Kg
SL-605-SA5C-TR-10.0(RES)	Zirconium	3.48 mg/Kg	3.48U mg/Kg
SL-605-SA5C-TR-5.0(RES)	Zirconium	4.89 mg/Kg	4.89U mg/Kg

Surrogate Outlier Report

Lab Reporting Batch ID: PH207 **Laboratory: LL**

EDD Filename: PH207_v1. **eQAPP Name: CDM_SSFL_140617_Lan**

Method: 8015M
Matrix: SO

Sample ID (Analysis Type)	Surrogate	Sample % Recovery	% Recovery Limits	Affected Compounds	Flag
SL-503-SA5C-TR-5.0 (REA2)	O-TERPHENYL	62	66.00-123.00	All Target Analytes	J (all detects) UJ (all non-detects)
SL-503-SA5C-TR-7.5 (REA2)	O-TERPHENYL	65	66.00-123.00	All Target Analytes	J(all detects) UJ(all non-detects)
SL-605-SA5C-TR-0.5 (REA)	O-TERPHENYL	65	66.00-123.00	All Target Analytes	J(all detects) UJ(all non-detects)
SL-605-SA5C-TR-10.0 (REA2)	O-TERPHENYL	64	66.00-123.00	All Target Analytes	J(all detects) UJ(all non-detects)

Method: 8082A
Matrix: SO

Sample ID (Analysis Type)	Surrogate	Sample % Recovery	% Recovery Limits	Affected Compounds	Flag
SL-503-SA5C-TR-7.5	TETRACHLORO-M-XYLENE	121	45.00-120.00	All Target Analytes	J(all detects)
SL-605-SA5C-TR-5.0	TETRACHLORO-M-XYLENE	122	45.00-120.00	All Target Analytes	J(all detects)

Matrix Spike/Matrix Spike Duplicate Outlier Report

Lab Reporting Batch ID: PH207 **Laboratory: LL**

EDD Filename: PH207_v1. **eQAPP Name: CDM_SSFL_140617_Lan**

Method: **8015C**
Matrix: **AQ**

QC Sample ID (Associated Samples)	*Compound*	*MS %R*	*MSD %R*	*%R Limits*	*RPD (Limits)*	*Affected Compounds*	*Flag*
EB1-052914MSD (EB1-052914)	DIETHYLENE GLYCOL	-	-	83.00-130.00	25 (20.00)	DIETHYLENE GLYCOL	J (all detects)
	ETHYLENE GLYCOL	-	-	50.00-155.00	26 (20.00)	ETHYLENE GLYCOL	
	Propylene glycol	-	-	54.00-145.00	27 (20.00)	Propylene glycol	

Lab Control Spike/Lab Control Spike Duplicate Outlier Report

Lab Reporting Batch ID: PH207 **Laboratory: LL**

EDD Filename: PH207_v1. **eQAPP Name: CDM_SSFL_140617_Lan**

Method: 8151A
Matrix: AQ

QC Sample ID (Associated Samples)	Compound	LCS %R	LCSD %R	%R Limits	RPD (Limits)	Affected Compounds	Flag
P41512AQ241740A P41512AY241807A (EB1-052914)	MCPA	136	137	65.00-128.00	-	MCPA	J (all detects)
P41512AQ241740A P41512AY241807A (EB1-052914)	DICAMBA	178	-	65.00-142.00	39 (30.00)	DICAMBA	J(all detects) UJ(all non-detects)

Method: 8015M
Matrix: AQ

QC Sample ID (Associated Samples)	Compound	LCS %R	LCSD %R	%R Limits	RPD (Limits)	Affected Compounds	Flag
P41550AQ321921A P41550AY321942A (EB1-052914)	EFH (C8-C11) SG	50	52	55.00-86.00	-	EFH (C8-C11)	J(all detects) UJ(all non-detects)

Method: 8330A
Matrix: AQ

QC Sample ID (Associated Samples)	Compound	LCS %R	LCSD %R	%R Limits	RPD (Limits)	Affected Compounds	Flag
P41551AQ241101A P41551AY241143A (EB1-052914)	1,3,5-TRINITROBENZENE	156	153	83.00-115.00	-	1,3,5-TRINITROBENZENE	J(all detects)

Method: 8270D
Matrix: AQ

QC Sample ID (Associated Samples)	Compound	LCS %R	LCSD %R	%R Limits	RPD (Limits)	Affected Compounds	Flag
P5WGLCSQ261350 P5WGLCSY261419 (EB1-052914)	BENZOIC ACID	98	-	10.00-97.00	76 (30.00)	BENZOIC ACID	J(all detects) UJ(all non-detects)

Method: 8270D SIM
Matrix: AQ

QC Sample ID (Associated Samples)	Compound	LCS %R	LCSD %R	%R Limits	RPD (Limits)	Affected Compounds	Flag
P5WHLCSY261421 (EB1-052914)	BIS(2-ETHYLHEXYL)PHTHALAT	-	182	70.00-143.00	71 (30.00)	BIS(2-ETHYLHEXYL)PHTHALA	J(all detects) UJ(all non-detects)

Lab Control Spike/Lab Control Spike Duplicate Outlier Report

Lab Reporting Batch ID: PH207 **Laboratory: LL**

EDD Filename: PH207_v1. **eQAPP Name: CDM_SSFL_140617_Lan**

Method: 8015M
Matrix: SO

QC Sample ID (Associated Samples)	Compound	LCS %R	LCSD %R	%R Limits	RPD (Limits)	Affected Compounds	Flag
P41547AQ321653A (SL-503-SA5C-TR-0.5 SL-503-SA5C-TR-5.0 SL-503-SA5C-TR-7.5 SL-605-SA5C-TR-0.5 SL-605-SA5C-TR-10.0 SL-605-SA5C-TR-5.0)	EFH (C12-C14) SG EFH (C15-C20) SG EFH (C21-C30) SG EFH (C8-C11) SG	66 68 68 54	- - - -	76.00-115.00 78.00-127.00 77.00-127.00 60.00-115.00	- - - -	EFH (C12-C14) SG EFH (C15-C20) SG EFH (C21-C30) SG EFH (C8-C11) SG	J(all detects) UJ(all non-detects)

Method: 8270D SIM
Matrix: SO

QC Sample ID (Associated Samples)	Compound	LCS %R	LCSD %R	%R Limits	RPD (Limits)	Affected Compounds	Flag
P1LELCSQ260406 (SL-503-SA5C-TR-0.5 SL-503-SA5C-TR-5.0 SL-503-SA5C-TR-7.5 SL-605-SA5C-TR-0.5 SL-605-SA5C-TR-10.0 SL-605-SA5C-TR-5.0)	BENZO(E)PYRENE	79	-	81.00-110.00	-	BENZO(E)PYRENE	J(all detects) UJ(all non-detects)

Reporting Limit Outliers

Lab Reporting Batch ID: PH207 **Laboratory: LL**

EDD Filename: PH207_v1. **eQAPP Name: CDM_SSFL_140617_Lan**

Method: 1613B

Matrix: AQ

SampleID	Analyte	Lab Qual	Result	Reporting Limit	RL Type	Units	Flag
EB1-052914	1,2,3,4,6,7,8-HPCDD	JBQ	0.642	9.60	PQL	pg/L	J (all detects)
	1,2,3,4,6,7,8-HPCDF	JB	0.396	9.60	PQL	pg/L	
	1,2,3,4,7,8-HxCDD	JQ	0.293	9.60	PQL	pg/L	
	1,2,3,4,7,8-HXCDF	JB	0.151	9.60	PQL	pg/L	
	1,2,3,6,7,8-HXCDF	JB	0.303	9.60	PQL	pg/L	
	1,2,3,7,8,9-HXCDF	JBQ	0.547	9.60	PQL	pg/L	
	1,2,3,7,8-PECDF	JBQ	0.298	9.60	PQL	pg/L	
	2,3,4,6,7,8-HXCDF	JB	0.224	9.60	PQL	pg/L	
	2,3,4,7,8-PECDF	JQ	0.216	9.60	PQL	pg/L	
	OCDD	JBQ	3.20	19.2	PQL	pg/L	
	OCDF	JBQ	0.317	19.2	PQL	pg/L	

Method: 6010C

Matrix: AQ

SampleID	Analyte	Lab Qual	Result	Reporting Limit	RL Type	Units	Flag
EB1-052914	CALCIUM	J	0.108	0.400	PQL	mg/L	J (all detects)
	MAGNESIUM	J	0.0252	0.200	PQL	mg/L	
	MOLYBDENUM	J	0.0054	0.0200	PQL	mg/L	

Method: 6020A

Matrix: AQ

SampleID	Analyte	Lab Qual	Result	Reporting Limit	RL Type	Units	Flag
EB1-052914	STRONTIUM	J	0.00042	0.0020	PQL	mg/L	J (all detects)

Method: 8270D SIM

Matrix: AQ

SampleID	Analyte	Lab Qual	Result	Reporting Limit	RL Type	Units	Flag
EB1-052914	1-METHYLNAPHTHALENE	J	0.023	0.051	PQL	ug/L	J (all detects)
	2-METHYLNAPHTHALENE	J	0.033	0.051	PQL	ug/L	
	BIS(2-ETHYLHEXYL)PHTHALATE	J	0.12	1.0	PQL	ug/L	
	Diethylphthalate	J	0.057	1.0	PQL	ug/L	
	Di-n-butylphthalate	J	0.13	1.0	PQL	ug/L	

Reporting Limit Outliers

Lab Reporting Batch ID: PH207 **Laboratory: LL**

EDD Filename: PH207_v1. **eQAPP Name: CDM_SSFL_140617_Lan**

Method: **1613B**

Matrix: **SO**

SampleID	Analyte	Lab Qual	Result	Reporting Limit	RL Type	Units	Flag
SL-503-SA5C-TR-0.5	1,2,3,4,7,8,9-HPCDF	JBQ	0.442	5.12	PQL	ng/Kg	
	1,2,3,4,7,8-HxCDD	JB	2.07	5.12	PQL	ng/Kg	
	1,2,3,4,7,8-HXCDF	JB	0.481	5.12	PQL	ng/Kg	
	1,2,3,6,7,8-HXCDD	JB	4.94	5.12	PQL	ng/Kg	
	1,2,3,6,7,8-HXCDF	JBQ	0.332	5.12	PQL	ng/Kg	
	1,2,3,7,8,9-HXCDD	JB	4.88	5.12	PQL	ng/Kg	
	1,2,3,7,8,9-HXCDF	JB	0.474	5.12	PQL	ng/Kg	J (all detects)
	1,2,3,7,8-PECDD	JB	1.48	5.12	PQL	ng/Kg	
	1,2,3,7,8-PECDF	JQ	0.379	5.12	PQL	ng/Kg	
	2,3,4,6,7,8-HXCDF.	JB	0.387	5.12	PQL	ng/Kg	
	2,3,4,7,8-PECDF	JB	0.288	5.12	PQL	ng/Kg	
	2,3,7,8-TCDD	JQ	0.189	1.02	PQL	ng/Kg	
	2,3,7,8-TCDF	JBQ	0.129	1.02	PQL	ng/Kg	
SL-503-SA5C-TR-5.0	1,2,3,4,6,7,8-HPCDD	JB	0.814	5.53	PQL	ng/Kg	
	1,2,3,4,6,7,8-HPCDF	JBQ	0.119	5.53	PQL	ng/Kg	
	1,2,3,4,7,8,9-HPCDF	JBQ	0.0861	5.53	PQL	ng/Kg	
	1,2,3,4,7,8-HXCDF	JB	0.0565	5.53	PQL	ng/Kg	
	1,2,3,6,7,8-HXCDD	JBQ	0.0373	5.53	PQL	ng/Kg	
	1,2,3,7,8,9-HXCDD	JB	0.123	5.53	PQL	ng/Kg	J (all detects)
	1,2,3,7,8,9-HXCDF	JBQ	0.105	5.53	PQL	ng/Kg	
	1,2,3,7,8-PECDF	J	0.0542	5.53	PQL	ng/Kg	
	2,3,4,6,7,8-HXCDF	JBQ	0.0401	5.53	PQL	ng/Kg	
	2,3,4,7,8-PECDF	JBQ	0.0328	5.53	PQL	ng/Kg	
	OCDF	JBQ	0.436	11.1	PQL	ng/Kg	
SL-503-SA5C-TR-7.5	1,2,3,4,6,7,8-HPCDD	JB	0.745	5.20	PQL	ng/Kg	
	1,2,3,4,6,7,8-HPCDF	JBQ	0.0841	5.20	PQL	ng/Kg	
	1,2,3,4,7,8,9-HPCDF	JBQ	0.0665	5.20	PQL	ng/Kg	
	1,2,3,4,7,8-HXCDF	JBQ	0.0338	5.20	PQL	ng/Kg	
	1,2,3,6,7,8-HXCDD	JBQ	0.0681	5.20	PQL	ng/Kg	
	1,2,3,6,7,8-HXCDF	JBQ	0.0431	5.20	PQL	ng/Kg	
	1,2,3,7,8,9-HXCDD	JBQ	0.0308	5.20	PQL	ng/Kg	J (all detects)
	1,2,3,7,8,9-HXCDF	JB	0.0614	5.20	PQL	ng/Kg	
	1,2,3,7,8-PECDD	JBQ	0.0683	5.20	PQL	ng/Kg	
	1,2,3,7,8-PECDF	JQ	0.0412	5.20	PQL	ng/Kg	
	2,3,4,6,7,8-HXCDF	JBQ	0.0355	5.20	PQL	ng/Kg	
	OCDD	JB	9.95	10.4	PQL	ng/Kg	
	OCDF	JBQ	0.342	10.4	PQL	ng/Kg	
SL-605-SA5C-TR-0.5	1,2,3,4,6,7,8-HPCDF	JB	1.66	5.31	PQL	ng/Kg	
	1,2,3,4,7,8,9-HPCDF	JBQ	0.165	5.31	PQL	ng/Kg	
	1,2,3,4,7,8-HxCDD	JB	0.0661	5.31	PQL	ng/Kg	
	1,2,3,4,7,8-HXCDF	JB	0.311	5.31	PQL	ng/Kg	
	1,2,3,6,7,8-HXCDD	JB	0.256	5.31	PQL	ng/Kg	
	1,2,3,6,7,8-HXCDF	JB	0.540	5.31	PQL	ng/Kg	J (all detects)
	1,2,3,7,8,9-HXCDD	JB	0.219	5.31	PQL	ng/Kg	
	1,2,3,7,8,9-HXCDF	JBQ	0.199	5.31	PQL	ng/Kg	
	1,2,3,7,8-PECDF	J	2.63	5.31	PQL	ng/Kg	
	2,3,4,6,7,8-HXCDF	JB	0.0965	5.31	PQL	ng/Kg	
	2,3,4,7,8-PECDF	JBQ	0.0996	5.31	PQL	ng/Kg	
	OCDF	JB	4.40	10.6	PQL	ng/Kg	

Reporting Limit Outliers

Lab Reporting Batch ID: PH207 **Laboratory: LL**

EDD Filename: PH207_v1. **eQAPP Name: CDM_SSFL_140617_Lan**

Method: 1613B

Matrix: SO

SampleID	Analyte	Lab Qual	Result	Reporting Limit	RL Type	Units	Flag
SL-605-SA5C-TR-10.0	1,2,3,4,6,7,8-HPCDD	JB	0.465	5.45	PQL	ng/Kg	J (all detects)
	1,2,3,4,6,7,8-HPCDF	JB	0.109	5.45	PQL	ng/Kg	
	1,2,3,4,7,8,9-HPCDF	JBQ	0.0264	5.45	PQL	ng/Kg	
	1,2,3,4,7,8-HxCDD	JB	0.0182	5.45	PQL	ng/Kg	
	1,2,3,4,7,8-HXCDF	JB	0.0259	5.45	PQL	ng/Kg	
	1,2,3,6,7,8-HXCDD	JBQ	0.0534	5.45	PQL	ng/Kg	
	1,2,3,6,7,8-HXCDF	JB	0.0419	5.45	PQL	ng/Kg	
	1,2,3,7,8,9-HXCDD	JBQ	0.0368	5.45	PQL	ng/Kg	
	1,2,3,7,8,9-HXCDF	JBQ	0.0596	5.45	PQL	ng/Kg	
	1,2,3,7,8-PECDD	JBQ	0.0292	5.45	PQL	ng/Kg	
	1,2,3,7,8-PECDF	JQ	0.125	5.45	PQL	ng/Kg	
	2,3,4,6,7,8-HXCDF	JBQ	0.0442	5.45	PQL	ng/Kg	
	2,3,4,7,8-PECDF	JB	0.0263	5.45	PQL	ng/Kg	
	2,3,7,8-TCDF	JBQ	0.0243	1.09	PQL	ng/Kg	
	OCDD	JB	5.73	10.9	PQL	ng/Kg	
	OCDF	JB	0.294	10.9	PQL	ng/Kg	
SL-605-SA5C-TR-5.0	1,2,3,4,6,7,8-HPCDF	JB	0.769	5.37	PQL	ng/Kg	J (all detects)
	1,2,3,4,7,8,9-HPCDF	JB	0.0963	5.37	PQL	ng/Kg	
	1,2,3,4,7,8-HXCDF	JBQ	0.111	5.37	PQL	ng/Kg	
	1,2,3,6,7,8-HXCDD	JBQ	0.171	5.37	PQL	ng/Kg	
	1,2,3,6,7,8-HXCDF	JB	0.120	5.37	PQL	ng/Kg	
	1,2,3,7,8,9-HXCDD	JB	0.289	5.37	PQL	ng/Kg	
	1,2,3,7,8,9-HXCDF	JBQ	0.192	5.37	PQL	ng/Kg	
	1,2,3,7,8-PECDD	JBQ	0.0515	5.37	PQL	ng/Kg	
	1,2,3,7,8-PECDF	J	0.265	5.37	PQL	ng/Kg	
	2,3,4,6,7,8-HXCDF	JBQ	0.0844	5.37	PQL	ng/Kg	
	2,3,4,7,8-PECDF	JBQ	0.0966	5.37	PQL	ng/Kg	
	2,3,7,8-TCDD	JQ	0.0572	1.07	PQL	ng/Kg	
	2,3,7,8-TCDF	JBQ	0.0668	1.07	PQL	ng/Kg	
	OCDF	JB	2.40	10.7	PQL	ng/Kg	

Method: 6010C

Matrix: SO

SampleID	Analyte	Lab Qual	Result	Reporting Limit	RL Type	Units	Flag
SL-503-SA5C-TR-0.5	BORON	J	4.11	10.6	PQL	mg/Kg	J (all detects)
	MOLYBDENUM	J	0.201	2.12	PQL	mg/Kg	
	SODIUM	J	103	106	PQL	mg/Kg	
	TIN	J	2.94	10.6	PQL	mg/Kg	
SL-503-SA5C-TR-5.0	BERYLLIUM	J	0.976	1.06	PQL	mg/Kg	J (all detects)
	BORON	J	3.55	10.6	PQL	mg/Kg	
	TIN	J	2.80	10.6	PQL	mg/Kg	
SL-503-SA5C-TR-7.5	BERYLLIUM	J	0.541	1.02	PQL	mg/Kg	J (all detects)
	BORON	J	0.959	10.2	PQL	mg/Kg	
	TIN	J	2.64	10.2	PQL	mg/Kg	
	Zirconium	J	3.88	5.08	PQL	mg/Kg	
SL-605-SA5C-TR-0.5	MOLYBDENUM	J	0.197	2.07	PQL	mg/Kg	J (all detects)
	TIN	J	3.12	10.3	PQL	mg/Kg	
	Zirconium	J	4.09	5.17	PQL	mg/Kg	

Reporting Limit Outliers

Lab Reporting Batch ID: PH207 **Laboratory: LL**

EDD Filename: PH207_v1. **eQAPP Name: CDM_SSFL_140617_Lan**

Method: 6010C

Matrix: SO

SampleID	Analyte	Lab Qual	Result	Reporting Limit	RL Type	Units	Flag
SL-605-SA5C-TR-10.0	ARSENIC	J	4.02	4.39	PQL	mg/Kg	J (all detects)
	BERYLLIUM	J	0.913	1.10	PQL	mg/Kg	
	BORON	J	1.48	11.0	PQL	mg/Kg	
	MOLYBDENUM	J	0.392	2.20	PQL	mg/Kg	
	TIN	J	2.96	11.0	PQL	mg/Kg	
	Zirconium	J	3.48	5.49	PQL	mg/Kg	
SL-605-SA5C-TR-5.0	BERYLLIUM	J	0.935	1.05	PQL	mg/Kg	J (all detects)
	BORON	J	3.87	10.5	PQL	mg/Kg	
	TIN	J	2.81	10.5	PQL	mg/Kg	
	Zirconium	J	4.89	5.24	PQL	mg/Kg	

Method: 6020A

Matrix: SO

SampleID	Analyte	Lab Qual	Result	Reporting Limit	RL Type	Units	Flag
SL-503-SA5C-TR-0.5	SELENIUM	J	0.226	0.425	PQL	mg/Kg	J (all detects)
	SILVER	J	0.0728	0.212	PQL	mg/Kg	
SL-503-SA5C-TR-5.0	SILVER	J	0.0707	0.213	PQL	mg/Kg	J (all detects)
SL-503-SA5C-TR-7.5	SILVER	J	0.0271	0.203	PQL	mg/Kg	J (all detects)
SL-605-SA5C-TR-0.5	SELENIUM	J	0.164	0.414	PQL	mg/Kg	J (all detects)
	SILVER	J	0.0583	0.207	PQL	mg/Kg	
SL-605-SA5C-TR-10.0	SILVER	J	0.0374	0.220	PQL	mg/Kg	J (all detects)
SL-605-SA5C-TR-5.0	SELENIUM	J	0.156	0.419	PQL	mg/Kg	J (all detects)
	SILVER	J	0.0312	0.210	PQL	mg/Kg	

Method: 7471B

Matrix: SO

SampleID	Analyte	Lab Qual	Result	Reporting Limit	RL Type	Units	Flag
SL-503-SA5C-TR-7.5	MERCURY	J	0.0109	0.0174	PQL	mg/Kg	J (all detects)

Method: 8015M

Matrix: SO

SampleID	Analyte	Lab Qual	Result	Reporting Limit	RL Type	Units	Flag
SL-503-SA5C-TR-0.5	EFH (C15-C20)	J	4.3	5.3	PQL	mg/Kg	J (all detects)
SL-605-SA5C-TR-0.5	EFH (C15-C20)	J	2.3	5.3	PQL	mg/Kg	J (all detects)
	EFH (C21-C30) SG	J	3.9	5.3	PQL	mg/Kg	
	EFH (C30-C40) SG	J	5.1	11	PQL	mg/Kg	
SL-605-SA5C-TR-10.0	EFH (C21-C30)	J	3.5	5.5	PQL	mg/Kg	J (all detects)
	EFH (C30-C40)	J	8.4	11	PQL	mg/Kg	
SL-605-SA5C-TR-5.0	EFH (C21-C30) SG	J	3.5	5.4	PQL	mg/Kg	J (all detects)
	EFH (C30-C40) SG	J	5.0	11	PQL	mg/Kg	

Reporting Limit Outliers

Lab Reporting Batch ID: PH207 **Laboratory: LL**

EDD Filename: PH207_v1. **eQAPP Name: CDM_SSFL_140617_Lan**

Method: 8082A

Matrix: SO

SampleID	Analyte	Lab Qual	Result	Reporting Limit	RL Type	Units	Flag
SL-503-SA5C-TR-0.5	AROCLOR 1254	J	7.1	18	PQL	ug/Kg	J (all detects)

Method: 8270D SIM

Matrix: SO

SampleID	Analyte	Lab Qual	Result	Reporting Limit	RL Type	Units	Flag
SL-503-SA5C-TR-0.5	1-METHYLNAPHTHALENE	J	1.6	1.8	PQL	ug/Kg	
	ACENAPHTHYLENE	J	0.62	1.8	PQL	ug/Kg	
	ANTHRACENE	J	0.92	1.8	PQL	ug/Kg	
	BENZO(A)ANTHRACENE	J	1.4	1.8	PQL	ug/Kg	J (all detects)
	BENZO(A)PYRENE	J	0.94	1.8	PQL	ug/Kg	
	BENZO(K)FLUORANTHENE	J	0.79	1.8	PQL	ug/Kg	
	FLUORENE	J	0.84	1.8	PQL	ug/Kg	
SL-503-SA5C-TR-5.0	ANTHRACENE	J	0.90	1.9	PQL	ug/Kg	
	BENZO(A)ANTHRACENE	J	0.93	1.9	PQL	ug/Kg	
	CHRYSENE	J	0.76	1.9	PQL	ug/Kg	J (all detects)
	FLUORENE	J	0.90	1.9	PQL	ug/Kg	
	NAPHTHALENE	J	1.4	1.9	PQL	ug/Kg	
SL-605-SA5C-TR-0.5	ANTHRACENE	J	0.58	1.8	PQL	ug/Kg	
	BENZO(A)ANTHRACENE	J	0.92	1.8	PQL	ug/Kg	
	BENZO(A)PYRENE	J	1.5	1.8	PQL	ug/Kg	
	BENZO(K)FLUORANTHENE	J	0.80	1.8	PQL	ug/Kg	
	CHRYSENE	J	1.4	1.8	PQL	ug/Kg	J (all detects)
	FLUORANTHENE	J	1.7	1.8	PQL	ug/Kg	
	INDENO(1,2,3-CD)PYRENE	J	1.3	1.8	PQL	ug/Kg	
	PHENANTHRENE	J	1.0	1.8	PQL	ug/Kg	
	PYRENE	J	1.6	1.8	PQL	ug/Kg	
SL-605-SA5C-TR-10.0	ANTHRACENE	J	1.3	1.8	PQL	ug/Kg	
	BENZO(A)ANTHRACENE	J	1.0	1.8	PQL	ug/Kg	
	CHRYSENE	J	0.87	1.8	PQL	ug/Kg	J (all detects)
	FLUORENE	J	0.79	1.8	PQL	ug/Kg	
	NAPHTHALENE	J	0.80	1.8	PQL	ug/Kg	
SL-605-SA5C-TR-5.0	2-METHYLNAPHTHALENE	J	0.74	1.8	PQL	ug/Kg	
	ANTHRACENE	J	0.59	1.8	PQL	ug/Kg	
	BENZO(B)FLUORANTHENE	J	0.72	1.8	PQL	ug/Kg	
	BENZO(G,H,I)PERYLENE	J	1.1	1.8	PQL	ug/Kg	
	CHRYSENE	J	1.6	1.8	PQL	ug/Kg	J (all detects)
	FLUORANTHENE	J	1.1	1.8	PQL	ug/Kg	
	NAPHTHALENE	J	1.0	1.8	PQL	ug/Kg	
	PHENANTHRENE	J	1.2	1.8	PQL	ug/Kg	
	PYRENE	J	1.0	1.8	PQL	ug/Kg	

LDC #: 32267A4
SDG #: PH207
Laboratory: Eurofins Lancaster Laboratories

VALIDATION COMPLETENESS WORKSHEET
ADR

Date: 8/1/14
Page: 1 of 1
Reviewer: KV
2nd Reviewer: OZ

METHOD: Metals (EPA SW 846 Method 6010C/6020A/~~7000~~ 7471A)

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	—	Sampling dates: 5/29/14
II.	ICP/MS Tune	—	
III.	Calibration	—	
IV.	Blanks	~~SW~~ SW	
V.	ICP Interference Check Sample (ICS) Analysis	—	
VI.	Matrix Spike Analysis	SW N	MS/D from SDG# PH209
VII.	Duplicate Sample Analysis	~~SW N~~ A	DUP from SDG# PH209
VIII.	Laboratory Control Samples (LCS)	A ~~N~~	LCS
IX.	Internal Standard (ICP-MS)	N	
X.	Furnace Atomic Absorption QC	N	
XI.	ICP Serial Dilution	~~SW A~~ A	From SDG# PH209
XII.	Sample Result Verification	N	
XIII.	Overall Assessment of Data	N	
XIV.	Field Duplicates	N	
XV	Field Blanks	SW	EB=7 FB= FB-052114 SDG# PH191

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

1	SL-503-SA5C-TR-0.5	11		21		31	
2	SL-503-SA5C-TR-5.0	12		22		32	
3	SL-503-SA5C-TR-7.5	13		23		33	
4	SL-605-SA5C-TR-0.5	14		24		34	
5	SL-605-SA5C-TR-5.0	15		25		35	
6	SL-605-SA5C-TR-10.0	16		26		36	
7	EB1-052914 water	17		27		37	
8		18		28		38	
9		19		29		39	
10		20		30		40	

Notes: _____

LDC #: 32267A4

VALIDATION FINDINGS WORKSHEET
Sample Specific Element Reference

Reviewer: KK
2nd reviewer: CL

All circled elements are applicable to each sample.

Sample ID	Matrix	Target Analyte List (TAL)
1-6	S	~~Al, Sb, As, Ba, Be, B, Cd, Ca, Cr, Co, Cu, Fe, Pb, Li, Mg, Mo, Mn, Hg, Ni, P, K, Se, Ag, Na, Sr, Tl, Sn, Ti, V, Zn, Zr~~
		Al, Sb, As, Ba, Be, B, Cd, Ca, Cr, Co, Cu, Fe, Pb, Li, Mg, Mo, Mn, Hg, Ni, P, K, Se, Ag, Na, Sr, Tl, Sn, Ti, V, Zn, Zr
7	W	~~Al, Sb, As, Ba, Be, B, Cd, Ca, Cr, Co, Cu, Fe, Pb, Li, Mg, Mo, Mn, Hg, Ni, P, K, Se, Ag, Na, Sr, Tl, Sn, Ti, V, Zn, Zr~~
		Al, Sb, As, Ba, Be, B, Cd, Ca, Cr, Co, Cu, Fe, Pb, Li, Mg, Mo, Mn, Hg, Ni, P, K, Se, Ag, Na, Sr, Tl, Sn, Ti, V, Zn, Zr
		Al, Sb, As, Ba, Be, B, Cd, Ca, Cr, Co, Cu, Fe, Pb, Li, Mg, Mo, Mn, Hg, Ni, P, K, Se, Ag, Na, Sr, Tl, Sn, Ti, V, Zn, Zr
		Al, Sb, As, Ba, Be, B, Cd, Ca, Cr, Co, Cu, Fe, Pb, Li, Mg, Mo, Mn, Hg, Ni, P, K, Se, Ag, Na, Sr, Tl, Sn, Ti, V, Zn, Zr
		Al, Sb, As, Ba, Be, B, Cd, Ca, Cr, Co, Cu, Fe, Pb, Li, Mg, Mo, Mn, Hg, Ni, P, K, Se, Ag, Na, Sr, Tl, Sn, Ti, V, Zn, Zr
		Al, Sb, As, Ba, Be, B, Cd, Ca, Cr, Co, Cu, Fe, Pb, Li, Mg, Mo, Mn, Hg, Ni, P, K, Se, Ag, Na, Sr, Tl, Sn, Ti, V, Zn, Zr
		Al, Sb, As, Ba, Be, B, Cd, Ca, Cr, Co, Cu, Fe, Pb, Li, Mg, Mo, Mn, Hg, Ni, P, K, Se, Ag, Na, Sr, Tl, Sn, Ti, V, Zn, Zr
		Al, Sb, As, Ba, Be, B, Cd, Ca, Cr, Co, Cu, Fe, Pb, Li, Mg, Mo, Mn, Hg, Ni, P, K, Se, Ag, Na, Sr, Tl, Sn, Ti, V, Zn, Zr
		Al, Sb, As, Ba, Be, B, Cd, Ca, Cr, Co, Cu, Fe, Pb, Li, Mg, Mo, Mn, Hg, Ni, P, K, Se, Ag, Na, Sr, Tl, Sn, Ti, V, Zn, Zr
		Al, Sb, As, Ba, Be, B, Cd, Ca, Cr, Co, Cu, Fe, Pb, Li, Mg, Mo, Mn, Hg, Ni, P, K, Se, Ag, Na, Sr, Tl, Sn, Ti, V, Zn, Zr
		Al, Sb, As, Ba, Be, B, Cd, Ca, Cr, Co, Cu, Fe, Pb, Li, Mg, Mo, Mn, Hg, Ni, P, K, Se, Ag, Na, Sr, Tl, Sn, Ti, V, Zn, Zr
		Al, Sb, As, Ba, Be, B, Cd, Ca, Cr, Co, Cu, Fe, Pb, Li, Mg, Mo, Mn, Hg, Ni, P, K, Se, Ag, Na, Sr, Tl, Sn, Ti, V, Zn, Zr
		Al, Sb, As, Ba, Be, B, Cd, Ca, Cr, Co, Cu, Fe, Pb, Li, Mg, Mo, Mn, Hg, Ni, P, K, Se, Ag, Na, Sr, Tl, Sn, Ti, V, Zn, Zr
		Al, Sb, As, Ba, Be, B, Cd, Ca, Cr, Co, Cu, Fe, Pb, Li, Mg, Mo, Mn, Hg, Ni, P, K, Se, Ag, Na, Sr, Tl, Sn, Ti, V, Zn, Zr
		Al, Sb, As, Ba, Be, B, Cd, Ca, Cr, Co, Cu, Fe, Pb, Li, Mg, Mo, Mn, Hg, Ni, P, K, Se, Ag, Na, Sr, Tl, Sn, Ti, V, Zn, Zr
		Al, Sb, As, Ba, Be, B, Cd, Ca, Cr, Co, Cu, Fe, Pb, Li, Mg, Mo, Mn, Hg, Ni, P, K, Se, Ag, Na, Sr, Tl, Sn, Ti, V, Zn, Zr
		Al, Sb, As, Ba, Be, B, Cd, Ca, Cr, Co, Cu, Fe, Pb, Li, Mg, Mo, Mn, Hg, Ni, P, K, Se, Ag, Na, Sr, Tl, Sn, Ti, V, Zn, Zr
		Al, Sb, As, Ba, Be, B, Cd, Ca, Cr, Co, Cu, Fe, Pb, Li, Mg, Mo, Mn, Hg, Ni, P, K, Se, Ag, Na, Sr, Tl, Sn, Ti, V, Zn, Zr
		Al, Sb, As, Ba, Be, B, Cd, Ca, Cr, Co, Cu, Fe, Pb, Li, Mg, Mo, Mn, Hg, Ni, P, K, Se, Ag, Na, Sr, Tl, Sn, Ti, V, Zn, Zr
		Al, Sb, As, Ba, Be, B, Cd, Ca, Cr, Co, Cu, Fe, Pb, Li, Mg, Mo, Mn, Hg, Ni, P, K, Se, Ag, Na, Sr, Tl, Sn, Ti, V, Zn, Zr
		Al, Sb, As, Ba, Be, B, Cd, Ca, Cr, Co, Cu, Fe, Pb, Li, Mg, Mo, Mn, Hg, Ni, P, K, Se, Ag, Na, Sr, Tl, Sn, Ti, V, Zn, Zr
		Al, Sb, As, Ba, Be, B, Cd, Ca, Cr, Co, Cu, Fe, Pb, Li, Mg, Mo, Mn, Hg, Ni, P, K, Se, Ag, Na, Sr, Tl, Sn, Ti, V, Zn, Zr
Analysis Method		
ICP		~~Al, Sb, As, Ba, Be, B, Cd, Ca, Cr, Co, Cu, Fe, Pb, Li, Mg, Mo, Mn~~ Hg, Ni, P, K, Se, Ag, Na, Sr, Tl, Sn, Ti, V, Zn, Zr
ICP-MS		Al, Sb, As, Ba, Be, B, Cd, Ca, Cr, Co, Cu, Fe, Pb, Li, Mg, Mo, Mn, Hg, Ni, P, K, Se, Ag, Na, Sr, Tl, Sn, Ti, V, Zn, Zr

Comments: ~~Mercury by CVAA if performed~~

LDC #: 32267A4

VALIDATION FINDINGS WORKSHEET
PB/ICB/CCB QUALIFIED SAMPLES

Reviewer: KK
2nd Reviewer: a

METHOD: Trace metals (EPA SW 864 Method 6010C/6020A/7471A)
Soil preparation factor applied: NA
Sample Concentration units, unless otherwise noted: ~~ug/L~~ mg/L
Associated Samples: 7

					Sample Identification										
Analyte	Maximum PB[a] (mg/Kg)	Maximum PB[a] (mg/l)	Maximum ICB/CCB[a] (ug/l)	Action Level	7										
Mg			27.6	138	0.02528 ~~25.2~~										

Samples with analyte concentrations within five times the associated ICB, CCB or PB concentration are listed above with the identifications from the Validation Completeness Worksheet. These sample results were qualified as not detected, "U".
Note : a - The listed analyte concentration is the highest ICB, CCB, or PB detected in the analysis of each element.

LDC #: 32267A4

VALIDATION FINDINGS WORKSHEET
Field Blanks

Reviewer: KK
2nd Reviewer: GR

METHOD: Trace Metals (EPA SW846 6010B/6020A/7471A)

Blank units: ug/L **Associated sample units:** mg/kg
Sampling date: 5/21/14 and 5/29/14 Soil factor applied 100
Field blank type: (circle one) Field Blank / Rinsate / Other: EB Associated Samples: 1-6 (F)

Analyte	Blank ID	Blank ID	Sample Identification								
	EB1-052914 SDG#PH207	FB-052114 SDG#PH191	Action Limit	1	2	3	4	5	6		
Zr		11	5.65	5.44	5.57	3.88	4.09	4.89	3.48		
Ca	108		54								
Mg	25.2		12.6								
Mo	5.4		2.7	0.201	~~2.13~~ SM	~~2.03~~ SM	0.197	~~2.10~~ SM	0.392		
Sr	0.42		0.21								

CIRCLED RESULTS WERE NOT QUALIFIED. ALL RESULTS NOT CIRCLED WERE QUALIFIED BY THE FOLLOWING STATEMENT:
Samples with analyte concentrations within five times the associated field blank concentration are listed above, these sample results were qualified as not detected, "U".

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K: Jdet
Sb: J/UJ %R
Ca, Fe, Mg: J/UJ RPD
P: J/UJ %R, RPD
all soil

QUALITY ASSURANCE SUMMARY
FORM 5A(MS/MSD)
MATRIX SPIKE/MATRIX SPIKE DUPLICATE
SDG No.: PH209
Matrix: SOIL Level (low/med): LOW

Background Lab Sample ID: 7483434BKG Matrix Spike Lab Sample ID: 7483438MS Matrix Spike Duplicate Lab Sample ID: 7483439MSD
Batch Id(s): P15437A, P15438A

Analyte	Mass	BKG Sample Result	C	MS Sample Result	C	MSD Sample Result	C	MS Spike Added	MSD Spike Added	Units	MS %R	Q	MSD %R	Q	RPD	Q	Control Limit %R	Control Limit RPD	M
Aluminum		9065.6683		10253.3452		12550.0686		192.3077	196.0784	MG/KG	618		1777		20			20	P
Antimony		0.7327	U	34.2519		32.6196		48.0769	49.0196	MG/KG	71	N	67	N	5		75 - 125	20	P
Arsenic		3.0198	B	17.0077		18.1480		14.4231	14.7059	MG/KG	97		103		6		75 - 125	20	P
Barium		57.9297		245.5721		261.1667		192.3077	196.0784	MG/KG	98		104		6		75 - 125	20	P
Beryllium		0.4277	B	5.2692		5.6147		4.8077	4.9020	MG/KG	101		106		6		75 - 125	20	P
Boron		1.6693	B	183.5183		190.6706		192.3077	196.0784	MG/KG	95		96		4		75 - 125	20	P
Cadmium		0.0752	U	4.7433		4.7863		4.8077	4.9020	MG/KG	99		98		1		75 - 125	20	P
Calcium		2035.2327		2163.9692		2854.6480		384.6154	392.1569	MG/KG	33		209		28	*		20	P
Chromium		8.9475		26.6433		30.2843		19.2308	19.6078	MG/KG	92		109		13		75 - 125	20	P
Cobalt		3.2911		50.0317		50.8931		48.0769	49.0196	MG/KG	97		97		2		75 - 125	20	P
Copper		4.2168		28.1490		32.4873		24.0385	24.5098	MG/KG	100		115		14		75 - 125	20	P
Iron		15454.3941		14536.1721		18320.5382		96.1538	98.0392	MG/KG	-955		2923		23	*		20	P
Lead		4.7238		18.0365		20.3784		14.4231	14.7059	MG/KG	92		106		12		75 - 125	20	P
Lithium		21.3911		120.3000		125.7951		96.1538	98.0392	MG/KG	103		106		4		75 - 125	20	P
Magnesium		3187.4792		3272.0212		4037.2569		192.3077	196.0784	MG/KG	44		433		21	*		20	P
Manganese		236.9327		267.6288		288.7676		48.0769	49.0196	MG/KG	64		106		8			20	P
Mercury		0.0094	U	0.1795		0.1828		0.1635	0.1641	MG/KG	110		111		2		65 - 135	20	CV
Molybdenum		0.2941	B	186.7808		189.7931		192.3077	196.0784	MG/KG	97		97		2		75 - 125	20	P
Nickel		5.5208		52.4163		54.2098		48.0769	49.0196	MG/KG	98		99		3		75 - 125	20	P
Phosphorus		318.2149		390.5760		480.5716		96.1538	98.0392	MG/KG	75		166	N	21	*	75 - 125	20	P
Potassium		2706.2139		3823.3904		4125.1598		961.5385	980.3922	MG/KG	116		145	N	8		75 - 125	20	P
Selenium	78	0.0990	U	2.0423		2.1353		1.9231	1.9608	MG/KG	106		109		4		75 - 125	20	MS
Silver	107	0.0257	U	9.7519		9.9569		9.6154	9.8039	MG/KG	101		102		2		75 - 125	20	MS
Sodium		67.9980	B	1020.6875		1047.9657		961.5385	980.3922	MG/KG	99		100		3		75 - 125	20	P
Strontium	88	9.0178		16.5173		17.3882		7.6923	7.8431	MG/KG	97		107		5		75 - 125	20	MS
Thallium	203	0.2164		0.6137		0.6053		0.3846	0.3922	MG/KG	103		99		1		75 - 125	20	MS
Tin		2.5050	B	357.7250		360.8118		384.6154	392.1569	MG/KG	92		91		1		75 - 125	20	P
Titanium		837.6356		1048.3481		1137.0647		96.1538	98.0392	MG/KG	219		305		8			20	P
Vanadium		19.9327		68.0788		75.2794		48.0769	49.0196	MG/KG	100		113		10		75 - 125	20	P
Zinc		54.1188		100.3692		111.5912		48.0769	49.0196	MG/KG	96		117		11		75 - 125	20	P
Zirconium		1.8535	B	99.6577		101.6451		96.1538	98.0392	MG/KG	102		102		2		75 - 125	20	P

Note: Results shown are reported on an as-received basis.

METHODS:
P = ICP Atomic Emission Spectrometer
CV = Cold Vapor
MS = ICP Mass Spectrometry
AF = Cold Vapor Atomic Fluorescence

CONCENTRATION QUALIFIERS:
U= Below MDL, B= Below LOQ
FLAGS:
N = Matrix Spike OOS, * = Duplicate OOS

LABORATORY DATA CONSULTANTS, INC.
2701 Loker Ave. West, Suite 220, Carlsbad, CA 92010 Bus: 760-827-1100 Fax: 760-827-1099

CDM
555 17th Street, Suite 1100
Denver, CO 80202
ATTN: Mrs. Cherie Zakowski

August 26, 2014

SUBJECT: Santa Susana Field Laboratory, FDG Block 2, Data Validation

Dear Mrs. Zakowski,

Enclosed are the final validation reports for the fractions listed below. These SDGs were received on July 21, 2014. Attachment 1 is a summary of the samples that were reviewed for each analysis.

LDC Project #32270:

SDG #	Fraction
PH229, PH231 PH233, PH234 PH235, PH237	Volatiles, 1,4-Dioxane, Semivolatiles, Chlorinated Pesticides, Polychlorinated Biphenyls, Metals, Herbicides, Total Petroleum Hydrocarbons as Gasoline, Total Petroleum Hydrocarbons as Extractables, Dioxins/Dibenzofurans

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

- Quality Assurance Project Plan for Santa Susana Field Laboratory, RCRA Facility Investigation, Surficial Media Operable Unit, March 2009, Revision 4
- USEPA Contract Laboratory Program National Functional Guidelines for Superfund Organic Methods Data Review, June 2008
- USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review, January 2010
- USEPA, Contract Laboratory Program National Functional Guidelines for Polychlorinated Dioxins/Dibenzofurans Data Review, September 2005
- EPA 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; IIIB, November 2004; Update IV, February 2007

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

Sincerely,

Shauna McKellar
Project Manager/Chemist

3,659 pages-CD

Attachment 1

90/10 ADR/IV

LDC #32270 (CDM Federal Programs-Chantilly VA / Santa Susana Field Laboratory, FDG Block 2)

LDC	SDG#	DATE REC'D	(4) DATE DUE	VOA (8260B)		1,4-Dioxane (8260B)		SVOA (8270D -SIM)		Pest. (8081B)		PCBs (8082A)		Metals & Hg (SW846)		Herbs. (8151A)		TPH-G (8015M)		TPH-E (8015M)		Dioxins (1613B)																	
Matrix:	Water/Soil			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	W	S
A	PH229	07/21/14	08/18/14	-	-	-	-	0	2	-	-	0	3	0	2	-	-	1	1	0	16	-	-															
B	PH231	07/21/14	08/18/14	-	-	-	-	2	4	2	2	2	5	2	4	1	0	2	0	4	10	2	2															
C	PH233	07/21/14	08/18/14	-	-	-	-	-	-	-	-	0	5	-	-	-	-	1	1	0	10	-	-															
D	PH234	07/21/14	08/18/14	1	2	1	2	0	7	-	-	0	3	0	3	-	-	1	4	0	14	0	5															
E	PH235	07/21/14	08/18/14	-	-	-	-	0	2	-	-	0	2	0	2	-	-	-	-	0	6	-	-															
F	PH237	07/21/14	08/18/14	1	0	1	0	1	1	-	-	1	2	1	2	-	-	1	0	2	6	1	0															
Total	T/SM			2	2	2	2	3	16	2	2	3	20	3	13	1	0	6	6	6	62	3	7	0	0	0	0	0	0	0	0	0	0	0	0	0	161

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

Data Validation Report
Santa Susana Field Laboratory

Go Backs, Subgroup FDG Block 2

SDG: PH229

Prepared for

CDM Smith
555 17th Street, Suite 1100
Denver, CO 80202

Prepared by

Laboratory Data Consultants, Inc.
2701 Loker Ave West, Suite 220
Carlsbad, California 92010

August 23, 2014

INTRODUCTION

This Data Validation Report (DVR) presents Level III data validation results for samples collected on June 11, 2014. Data validation was performed in accordance with the Quality Assurance Project Plan (QAPP) for Santa Susana Field Laboratory (SSFL), RCRA Facility Investigation, Surficial Media Operable Unit (March 2009, Revision 4) and a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines (CLPNFGs) for Superfund Organic Methods Data Review (June 2008) and for Inorganic Data Review (January 2010). Where specific guidance is not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following methods:

Semivolatiles (SVOCs) by Environmental Protection Agency (EPA) SW 846 Method 8270D utilizing Selective Ion Monitoring (SIM)
Polychlorinated Biphenyls (PCBs) by EPA SW 846 Method 8082A
Metals by EPA SW 846 Method 6010C, 6020A, and 7471B.
Total Petroleum Hydrocarbons (TPH) as Gasoline by EPA SW 846 Method 8015M
TPH as Extractables with and without Silica Gel Clean Up by EPA SW 846 Method 8015M

The sample identification and methods of analyses performed on each sample is presented in Attachment 1. Overall data qualification summary is presented in Attachment 2. Level III Automated Data Review outliers are presented in Enclosure I.

All sample results were subjected to Level III data validation, which comprises an evaluation of quality control (QC) summary results for sample holding times, initial and continuing calibration blanks (ICB/CCBs), surrogates, matrix spike/matrix spike duplicates (MS/MSD), laboratory duplicates (DUP), laboratory control sample/laboratory control sample duplicates (LCS/LCSD), ICP serial dilutions, method blanks, trip blanks, equipment blanks, and field blanks. No samples in this SDG were subjected to Level IV evaluation.

Automated data review was performed on all QC summary results using the Automated Data Review (ADR) software program (LDC, 2013) with the exception of ICB/CCBs and ICP serial dilutions which were validated manually. Quality assurance (QA)/QC criteria specified in the QAPP and CLPNFGs were incorporated with the program's reference library to assess compliance with project requirements.

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.

NJ Presumptive evidence of presence of the compound at an estimated quantity.

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

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 QC criteria.

II. Initial Calibration

Initial Calibration data were not reviewed for level III.

III. Continuing Calibration

Continuing calibration data were not reviewed for level III.

IV. Blanks

Method blanks were performed at the required frequencies. No contaminant concentrations were detected in the method or preparation blanks with the exception of two blanks for several metals. The associated sample results were qualified as non-detected (U) due to method blank contamination as applicable. The sample results that were not detected or were significantly greater than the concentrations found in the associated blanks were not qualified. The details regarding the qualification of data are provided in Enclosure I.

No contaminant concentrations were detected in the initial or continuing calibration blanks.

V. Surrogate Spikes

Surrogate percent recoveries (%R) were within QC limits.

VI. ICP Interference Check Sample (ICS) Analysis

ICP interference check data were not reviewed for level III.

VII. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) samples were performed at the required frequency. Percent recoveries (%R) and relative percent differences (RPD) were within QC limits with the exception of one MS/MSD pair for metals from SDG PH234. The associated sample results were qualified as detected estimated (J) or non-detected estimated (UJ) as applicable. The details regarding the qualification of data are provided in Enclosures I and II of the DVR for PH234.

VIII. Laboratory Duplicates Sample

Laboratory duplicates (DUP) sample analyses were reviewed for each matrix as applicable. Results were within QC limits.

IV. Laboratory Control Samples (LCS)

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

LCS for THP as extractables with silica gel clean up. The associated sample results were qualified as detected estimated (J) or non-detected estimated (UJ) as applicable. The details regarding the qualification of data are provided in Enclosure I.

X. Internal Standards

Internal standards were not reviewed for Level III.

XI. ICP Serial Dilution

ICP serial dilution analysis was performed by the laboratory. The analysis criteria were met.

XII. Compound Quantitation

The laboratory reporting limits were evaluated. All laboratory reporting limits met the specified requirements.

All compounds reported below the RL as detected were qualified as follows:

Sample	Finding	Flag	A or P
All samples in SDG PH229	All compounds reported as detected below the RL.	J (all detects)	A

XIII. Field Duplicate Samples

No field duplicates were identified in this SDG.

XIV. Field Blank Samples

One trip blanks was collected and analyzed for TPH as gasoline. No TPH as gasoline contaminants were found in the trip blank.

Two equipment blanks (from SDG PH231) were collected and analyzed for SVOCs, PCBs, metals, TPH as gasoline, and TPH as extractables with and without silica gel clean up. The equipment blank had detections for SVOCs and metals. The associated sample results were qualified as non-detected (U) due to equipment blank contamination as applicable. The sample results that were not detected or were significantly greater than the concentrations found in the equipment blanks were not qualified. The equipment blank outlier reports are presented in Enclosure I.

One field blank (from SDG PH191) was collected and analyzed for SVOCs, PCBs, metals, TPH as gasoline, and TPH as extractables with and without silica gel clean up. The field blank had detections for SVOCs and metals. The associated sample results were qualified as non-detected (U) due to field blank contamination as applicable. The sample results that were not detected or were significantly greater than the concentrations found in the field blank were not qualified. The field blank outlier reports are presented in Enclosure I.

XV. Overall Assessment of Data

The overall assessment of QA/QC data review by automated and manual validation of this sampling event met project requirements and analytical completeness levels with the exceptions noted in the above sections. The remainder of the data are deemed useable for the intended use.

Data flags are summarized and are presented as Attachment 2.

Attachment 1

Sample Cross Reference

Sample Cross Reference

Date Collected	Field Sample ID	Lab Sample ID	Sample Type	Prep Method	Analytical Method	Review Level
11-Jun-2014	TB1-061114	7496175	TB	5030B	8015M	III
11-Jun-2014	FDG2-SL-878-SA5A-SB-0.0-0	7496176	N	3546	8015M	III
11-Jun-2014	FDG2-SL-878-SA5A-SB-0.0-0	7496176	N	3546	8082A	III
11-Jun-2014	FDG2-SL-878-SA5A-SB-4.0-5	7496177	N	3050B	6010C	III
11-Jun-2014	FDG2-SL-878-SA5A-SB-4.0-5	7496177	N	3050B	6020A	III
11-Jun-2014	FDG2-SL-878-SA5A-SB-4.0-5	7496177	N	3546	8015M	III
11-Jun-2014	FDG2-SL-878-SA5A-SB-4.0-5	7496177	N	3546	8082A	III
11-Jun-2014	FDG2-SL-878-SA5A-SB-4.0-5	7496177	N	3546	8270D SIM	III
11-Jun-2014	FDG2-SL-878-SA5A-SB-4.0-5	7496177	N	5035A	8015M	III
11-Jun-2014	FDG2-SL-878-SA5A-SB-4.0-5	7496177	N	METHOD	7471B	III
11-Jun-2014	FDG2-SL-695-SA6-SB-0.0-0.	7496179	N	3546	8015M	III
11-Jun-2014	FDG2-SL-694-SA6-SB-0.0-0.	7496178	N	3546	8015M	III
11-Jun-2014	FDG2-SL-560-NBZ-SB-0.0-0.	7496180	N	3050B	6010C	III
11-Jun-2014	FDG2-SL-560-NBZ-SB-0.0-0.	7496180	N	3050B	6020A	III
11-Jun-2014	FDG2-SL-560-NBZ-SB-0.0-0.	7496180	N	3546	8015M	III
11-Jun-2014	FDG2-SL-560-NBZ-SB-0.0-0.	7496180	N	3546	8082A	III
11-Jun-2014	FDG2-SL-560-NBZ-SB-0.0-0.	7496180	N	3546	8270D SIM	III
11-Jun-2014	FDG2-SL-560-NBZ-SB-0.0-0.	7496180	N	METHOD	7471B	III
11-Jun-2014	FDG2-SL-577-NBZ-SB-0.0-0.	7496181	N	3546	8015M	III
11-Jun-2014	FDG2-SL-629-SA8-SB-0.0-0.	7496182	N	3546	8015M	III
11-Jun-2014	FDG2-SL-571-NBZ-SB-0.0-0.	7496183	N	3546	8015M	III

III = EPA Level 3 Data Review *N = Normal Sample* *TB = Trip Blank* *MS = Matrix Spike*
IV = EPA Level 4 Data Validation *FD = Field Duplicate* *FB = Field Blank* *MSD = Matrix Spike Duplicate*

Attachment 2
Overall Data Qualification Summary

Data Qualifier Summary

Lab Reporting Batch ID: PH229 **Laboratory: LL**

EDD Filename: PH229_v1 **eQAPP Name: CDM_SSFL_140617_Lan**

Method Category: METALS

Method: 6010C **Matrix: SO**

Sample ID: **FDG2-SL-560-NBZ-SB-0.0-0.5** *Collected:* **6/11/2014 11:35:00** *Analysis Type:* **RES** *Dilution:* **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
ANTIMONY	3.92	U	0.724	MDL	3.92	PQL	mg/Kg	UJ	Q
BERYLLIUM	0.567	J	0.0656	MDL	0.979	PQL	mg/Kg	J	Z
BORON	5.38	J	0.822	MDL	9.79	PQL	mg/Kg	U	B
TIN	2.64	J	0.215	MDL	9.79	PQL	mg/Kg	U	B
Zirconium	4.25	J	0.822	MDL	4.89	PQL	mg/Kg	U	F, F
LEAD	9.06		0.489	MDL	2.94	PQL	mg/Kg	J	Q, E

Sample ID: **FDG2-SL-878-SA5A-SB-4.0-5.0** *Collected:* **6/11/2014 8:55:00** *Analysis Type:* **RES** *Dilution:* **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
ANTIMONY	4.11	U	0.761	MDL	4.11	PQL	mg/Kg	UJ	Q
BERYLLIUM	0.588	J	0.0689	MDL	1.03	PQL	mg/Kg	J	Z
BORON	3.90	J	0.863	MDL	10.3	PQL	mg/Kg	U	B
LEAD	7.29		0.514	MDL	3.08	PQL	mg/Kg	J	Q, E
MOLYBDENUM	0.417	J	0.175	MDL	2.06	PQL	mg/Kg	J	Z
SODIUM	80.1	J	17.2	MDL	103	PQL	mg/Kg	J	Z
TIN	2.58	J	0.226	MDL	10.3	PQL	mg/Kg	U	B
Zirconium	2.72	J	0.863	MDL	5.14	PQL	mg/Kg	U	F, F

Method Category: METALS

Method: 6020A **Matrix: SO**

Sample ID: **FDG2-SL-560-NBZ-SB-0.0-0.5** *Collected:* **6/11/2014 11:35:00** *Analysis Type:* **REA** *Dilution:* **2**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
SELENIUM	0.368	J	0.0979	MDL	0.392	PQL	mg/Kg	J	Z

Sample ID: **FDG2-SL-560-NBZ-SB-0.0-0.5** *Collected:* **6/11/2014 11:35:00** *Analysis Type:* **RES** *Dilution:* **2**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
SILVER	0.0581	J	0.0254	MDL	0.196	PQL	mg/Kg	J	Z, Q
STRONTIUM	29.0		0.0666	MDL	0.392	PQL	mg/Kg	J	Q, Q, E

* denotes a non-reportable result

Project Name and Number: 1204-002-001-AL - SSFL Area IV Phase 3

Data Qualifier Summary

Lab Reporting Batch ID: PH229 **Laboratory: LL**

EDD Filename: PH229_v1 **eQAPP Name: CDM_SSFL_140617_Lan**

Method Category: METALS

Method: 6020A **Matrix: SO**

Sample ID: **FDG2-SL-878-SA5A-SB-4.0-5.0** *Collected:* **6/11/2014 8:55:00** *Analysis Type:* **REA** *Dilution:* **2**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
SELENIUM	0.229	J	0.103	MDL	0.411	PQL	mg/Kg	J	Z

Sample ID: **FDG2-SL-878-SA5A-SB-4.0-5.0** *Collected:* **6/11/2014 8:55:00** *Analysis Type:* **RES** *Dilution:* **2**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
SILVER	0.0779	J	0.0267	MDL	0.206	PQL	mg/Kg	J	Z, Q
STRONTIUM	19.9		0.0699	MDL	0.411	PQL	mg/Kg	J	Q, Q, E

Method Category: SVOA

Method: 8015M **Matrix: SO**

Sample ID: **FDG2-SL-560-NBZ-SB-0.0-0.5** *Collected:* **6/11/2014 11:35:00** *Analysis Type:* **REA** *Dilution:* **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
EFH (C12-C14) SG	5.1	U	2.1	MDL	5.1	PQL	mg/Kg	UJ	L
EFH (C15-C20) SG	5.1	U	2.1	MDL	5.1	PQL	mg/Kg	UJ	L
EFH (C21-C30) SG	12		2.1	MDL	5.1	PQL	mg/Kg	J	L
EFH (C30-C40) SG	5.0	J	4.1	MDL	10	PQL	mg/Kg	J	Z
EFH (C8-C11) SG	5.1	U	2.1	MDL	5.1	PQL	mg/Kg	UJ	L

Sample ID: **FDG2-SL-571-NBZ-SB-0.0-0.5** *Collected:* **6/11/2014 2:40:00** *Analysis Type:* **DL** *Dilution:* **2**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
EFH (C15-C20)	11	J	4.2	MDL	11	PQL	mg/Kg	J	Z

Sample ID: **FDG2-SL-571-NBZ-SB-0.0-0.5** *Collected:* **6/11/2014 2:40:00** *Analysis Type:* **REA** *Dilution:* **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
EFH (C12-C14) SG	5.3	U	2.1	MDL	5.3	PQL	mg/Kg	UJ	L
EFH (C15-C20) SG	5.3	U	2.1	MDL	5.3	PQL	mg/Kg	UJ	L
EFH (C21-C30) SG	12		2.1	MDL	5.3	PQL	mg/Kg	J	L
EFH (C30-C40) SG	10	J	4.2	MDL	11	PQL	mg/Kg	J	Z
EFH (C8-C11) SG	5.3	U	2.1	MDL	5.3	PQL	mg/Kg	UJ	L

* denotes a non-reportable result

Project Name and Number: 1204-002-001-AL - SSFL Area IV Phase 3

Data Qualifier Summary

Lab Reporting Batch ID: PH229 **Laboratory: LL**

EDD Filename: PH229_v1 **eQAPP Name: CDM_SSFL_140617_Lan**

Method Category: SVOA

Method: 8015M **Matrix: SO**

***Sample ID:* FDG2-SL-577-NBZ-SB-0.0-0.5** ***Collected:* 6/11/2014 1:45:00** ***Analysis Type:* REA** ***Dilution:* 1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
EFH (C12-C14) SG	5.1	U	2.0	MDL	5.1	PQL	mg/Kg	UJ	L
EFH (C15-C20) SG	5.1	U	2.0	MDL	5.1	PQL	mg/Kg	UJ	L
EFH (C21-C30) SG	2.1	J	2.0	MDL	5.1	PQL	mg/Kg	J	Z, L
EFH (C8-C11) SG	5.1	U	2.0	MDL	5.1	PQL	mg/Kg	UJ	L

***Sample ID:* FDG2-SL-577-NBZ-SB-0.0-0.5** ***Collected:* 6/11/2014 1:45:00** ***Analysis Type:* RES** ***Dilution:* 1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
EFH (C15-C20)	3.0	J	2.0	MDL	5.1	PQL	mg/Kg	J	Z

***Sample ID:* FDG2-SL-629-SA8-SB-0.0-0.5** ***Collected:* 6/11/2014 2:05:00** ***Analysis Type:* REA** ***Dilution:* 1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
EFH (C12-C14) SG	5.1	U	2.0	MDL	5.1	PQL	mg/Kg	UJ	L
EFH (C15-C20) SG	5.1	U	2.0	MDL	5.1	PQL	mg/Kg	UJ	L
EFH (C21-C30) SG	3.8	J	2.0	MDL	5.1	PQL	mg/Kg	J	Z, L
EFH (C8-C11) SG	5.1	U	2.0	MDL	5.1	PQL	mg/Kg	UJ	L

***Sample ID:* FDG2-SL-629-SA8-SB-0.0-0.5** ***Collected:* 6/11/2014 2:05:00** ***Analysis Type:* RES** ***Dilution:* 1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
EFH (C15-C20)	2.8	J	2.0	MDL	5.1	PQL	mg/Kg	J	Z

***Sample ID:* FDG2-SL-694-SA6-SB-0.0-0.5** ***Collected:* 6/11/2014 11:10:00** ***Analysis Type:* REA** ***Dilution:* 1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
EFH (C12-C14) SG	5.0	U	2.0	MDL	5.0	PQL	mg/Kg	UJ	L
EFH (C15-C20) SG	5.0	U	2.0	MDL	5.0	PQL	mg/Kg	UJ	L
EFH (C21-C30) SG	5.0	U	2.0	MDL	5.0	PQL	mg/Kg	UJ	L
EFH (C8-C11) SG	5.0	U	2.0	MDL	5.0	PQL	mg/Kg	UJ	L

***Sample ID:* FDG2-SL-694-SA6-SB-0.0-0.5** ***Collected:* 6/11/2014 11:10:00** ***Analysis Type:* RES** ***Dilution:* 1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
EFH (C15-C20)	2.3	J	2.0	MDL	5.0	PQL	mg/Kg	J	Z

* denotes a non-reportable result

Project Name and Number: 1204-002-001-AL - SSFL Area IV Phase 3

Data Qualifier Summary

Lab Reporting Batch ID: PH229 **Laboratory: LL**

EDD Filename: PH229_v1 **eQAPP Name: CDM_SSFL_140617_Lan**

Method Category: SVOA

Method: 8015M **Matrix: SO**

Sample ID: **FDG2-SL-695-SA6-SB-0.0-0.5** *Collected:* **6/11/2014 10:30:00** *Analysis Type:* **REA** *Dilution:* **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
EFH (C12-C14) SG	5.0	U	2.0	MDL	5.0	PQL	mg/Kg	UJ	L
EFH (C15-C20) SG	5.0	U	2.0	MDL	5.0	PQL	mg/Kg	UJ	L
EFH (C21-C30) SG	5.0	U	2.0	MDL	5.0	PQL	mg/Kg	UJ	L
EFH (C8-C11) SG	5.0	U	2.0	MDL	5.0	PQL	mg/Kg	UJ	L

Sample ID: **FDG2-SL-878-SA5A-SB-0.0-0.5** *Collected:* **6/11/2014 8:25:00** *Analysis Type:* **REA** *Dilution:* **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
EFH (C12-C14) SG	5.1	U	2.0	MDL	5.1	PQL	mg/Kg	UJ	L
EFH (C15-C20) SG	5.1	U	2.0	MDL	5.1	PQL	mg/Kg	UJ	L
EFH (C21-C30) SG	6.5		2.0	MDL	5.1	PQL	mg/Kg	J	L
EFH (C30-C40) SG	4.6	J	4.1	MDL	10	PQL	mg/Kg	J	Z
EFH (C8-C11) SG	5.1	U	2.0	MDL	5.1	PQL	mg/Kg	UJ	L

Sample ID: **FDG2-SL-878-SA5A-SB-0.0-0.5** *Collected:* **6/11/2014 8:25:00** *Analysis Type:* **RES** *Dilution:* **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
EFH (C15-C20)	2.3	J	2.0	MDL	5.1	PQL	mg/Kg	J	Z

Sample ID: **FDG2-SL-878-SA5A-SB-4.0-5.0** *Collected:* **6/11/2014 8:55:00** *Analysis Type:* **REA2** *Dilution:* **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
EFH (C12-C14) SG	5.1	U	2.1	MDL	5.1	PQL	mg/Kg	UJ	L
EFH (C15-C20) SG	5.1	U	2.1	MDL	5.1	PQL	mg/Kg	UJ	L
EFH (C21-C30) SG	2.1	J	2.1	MDL	5.1	PQL	mg/Kg	J	Z, L
EFH (C8-C11) SG	5.1	U	2.1	MDL	5.1	PQL	mg/Kg	UJ	L

Method Category: SVOA

Method: 8082A **Matrix: SO**

Sample ID: **FDG2-SL-560-NBZ-SB-0.0-0.5** *Collected:* **6/11/2014 11:35:00** *Analysis Type:* **RES** *Dilution:* **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
AROCLOR 1254	8.9	J	4.5	MDL	17	PQL	ug/Kg	J	Z

* denotes a non-reportable result

Project Name and Number: 1204-002-001-AL - SSFL Area IV Phase 3

Data Qualifier Summary

Lab Reporting Batch ID: PH229 **Laboratory: LL**

EDD Filename: PH229_v1 **eQAPP Name: CDM_SSFL_140617_Lan**

Method Category: SVOA

Method: 8270D SIM **Matrix: SO**

Sample ID: FDG2-SL-560-NBZ-SB-0.0-0.5 **Collected: 6/11/2014 11:35:00** **Analysis Type: RES-BASE/NEUTRAL** **Dilution: 1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
CHRYSENE	1.1	J	0.34	MDL	1.7	PQL	ug/Kg	J	Z
FLUORANTHENE	0.85	J	0.69	MDL	1.7	PQL	ug/Kg	J	Z
NAPHTHALENE	0.76	J	0.69	MDL	1.7	PQL	ug/Kg	J	Z
PHENANTHRENE	0.75	J	0.69	MDL	1.7	PQL	ug/Kg	J	Z

Sample ID: FDG2-SL-878-SA5A-SB-4.0-5.0 **Collected: 6/11/2014 8:55:00** **Analysis Type: RES-BASE/NEUTRAL** **Dilution: 1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
BENZO(B)FLUORANTHENE	0.88	J	0.69	MDL	1.7	PQL	ug/Kg	J	Z
BIS(2-ETHYLHEXYL)PHTHALATE	10	J	6.2	MDL	19	PQL	ug/Kg	J	Z
CHRYSENE	1.1	J	0.34	MDL	1.7	PQL	ug/Kg	J	Z
FLUORANTHENE	0.95	J	0.69	MDL	1.7	PQL	ug/Kg	J	Z
PHENANTHRENE	0.78	J	0.69	MDL	1.7	PQL	ug/Kg	J	Z
PYRENE	0.75	J	0.69	MDL	1.7	PQL	ug/Kg	J	Z

* denotes a non-reportable result

Project Name and Number: 1204-002-001-AL - SSFL Area IV Phase 3

Data Qualifier Summary

Lab Reporting Batch ID: PH229 **Laboratory: LL**

EDD Filename: PH229_v1 **eQAPP Name: CDM_SSFL_140617_Lan**

Reason Code Legend

Reason Code	*Description*
B	Method Blank Contamination
E	Matrix Spike Precision
F	Equipment Blank Contamination
F	Field Blank Contamination
L	Laboratory Control Spike Lower Estimation
Q	Matrix Spike Lower Estimation
Q	Matrix Spike Precision
Q	Matrix Spike Upper Estimation
Z	Reporting Limit Trace Value

* denotes a non-reportable result

Project Name and Number: 1204-002-001-AL - SSFL Area IV Phase 3

Enclosure I

Level III ADR Outliers

(Including Manual Review Outliers)

Quality Control
Outlier Reports

PH229

Method Blank Outlier Report

Lab Reporting Batch ID: PH229 **Laboratory: LL**

EDD Filename: PH229_v1. **eQAPP Name: CDM_SSFL_140617_Lan**

Method: **6010C**
Matrix: **SO**

Method Blank Sample ID	Analysis Date	Analyte	Result	Associated Samples
P16837BB221618	6/19/2014 4:18:00 PM	ALUMINUM BORON CALCIUM TIN ZINC	10.0 mg/Kg 1.76 mg/Kg 24.6 mg/Kg 1.46 mg/Kg 0.386 mg/Kg	FDG2-SL-560-NBZ-SB-0.0-0.5 FDG2-SL-878-SA5A-SB-4.0-5.0

The following samples and their listed target analytes were qualified due to contamination reported in this blank

Sample ID	Analyte	Reported Result	Modified Final Result
FDG2-SL-560-NBZ-SB-0.0-0.5(RES)	BORON	5.38 mg/Kg	5.38U mg/Kg
FDG2-SL-560-NBZ-SB-0.0-0.5(RES)	TIN	2.64 mg/Kg	2.64U mg/Kg
FDG2-SL-878-SA5A-SB-4.0-5.0(RES)	BORON	3.90 mg/Kg	3.90U mg/Kg
FDG2-SL-878-SA5A-SB-4.0-5.0(RES)	TIN	2.58 mg/Kg	2.58U mg/Kg

Method: **6020A**
Matrix: **SO**

Method Blank Sample ID	Analysis Date	Analyte	Result	Associated Samples
P16837BB220645A	6/19/2014 6:45:00 AM	STRONTIUM	0.134 mg/Kg	FDG2-SL-560-NBZ-SB-0.0-0.5 FDG2-SL-878-SA5A-SB-4.0-5.0

Field Blank Outlier Report

Lab Reporting Batch ID: PH229 **Laboratory: LL**

EDD Filename: PH229_v1 **eQAPP Name: CDM_SSFL_140617_Lan**

Method: **6010C**
Matrix: **SO**

Field Blank Sample ID	Collected Date	Analyte	Result	Associated Samples
FB-052114(RES)	5/21/2014 2:00:00 PM	Zirconium	0.011 mg/L	FDG2-SL-560-NBZ-SB-0.0-0.5 FDG2-SL-571-NBZ-SB-0.0-0.5 FDG2-SL-577-NBZ-SB-0.0-0.5 FDG2-SL-629-SA8-SB-0.0-0.5 FDG2-SL-694-SA6-SB-0.0-0.5 FDG2-SL-695-SA6-SB-0.0-0.5 FDG2-SL-878-SA5A-SB-0.0-0.5 FDG2-SL-878-SA5A-SB-4.0-5.0

The following samples and their listed target analytes were qualified due to contamination reported in this blank

Sample ID	Analyte	Reported Result	Modified Final Result
FDG2-SL-560-NBZ-SB-0.0-0.5(RES)	Zirconium	4.25 mg/Kg	4.25U mg/Kg
FDG2-SL-878-SA5A-SB-4.0-5.0(RES)	Zirconium	2.72 mg/Kg	2.72U mg/Kg

Equipment Rinsate Blank Outlier Report

Lab Reporting Batch ID: PH229 **Laboratory: LL**

EDD Filename: PH229_v1 **eQAPP Name: CDM_SSFL_140617_Lan**

Method: **6010C**
Matrix: **SO**

Equipment Blank Sample ID	Collected Date	Analyte	Result	Associated Samples
EB1-061214(RES)	6/12/2014 3:00:00 PM	MANGANESE Zirconium	0.0013 mg/L 0.0099 mg/L	FDG2-SL-629-SA8-SB-0.0-0.5 FDG2-SL-694-SA6-SB-0.0-0.5 FDG2-SL-695-SA6-SB-0.0-0.5 FDG2-SL-878-SA5A-SB-0.0-0.5 FDG2-SL-878-SA5A-SB-4.0-5.0
EB2-061214(RES)	6/12/2014 3:30:00 PM	MANGANESE Zirconium	0.0013 mg/L 0.0097 mg/L	FDG2-SL-560-NBZ-SB-0.0-0.5 FDG2-SL-571-NBZ-SB-0.0-0.5 FDG2-SL-577-NBZ-SB-0.0-0.5

The following samples and their listed target analytes were qualified due to contamination reported in this blank

Sample ID	Analyte	Reported Result	Modified Final Result
FDG2-SL-560-NBZ-SB-0.0-0.5(RES)	Zirconium	4.25 mg/Kg	4.25U mg/Kg
FDG2-SL-878-SA5A-SB-4.0-5.0(RES)	Zirconium	2.72 mg/Kg	2.72U mg/Kg

Lab Control Spike/Lab Control Spike Duplicate Outlier Report

Lab Reporting Batch ID: PH229 **Laboratory: LL**

EDD Filename: PH229_v1 **eQAPP Name: CDM_SSFL_140617_Lan**

Method: **8015M**
Matrix: **SO**

QC Sample ID (Associated Samples)	*Compound*	*LCS %R*	*LCSD %R*	*%R Limits*	*RPD (Limits)*	*Affected Compounds*	*Flag*
P41688AQ321840A	EFH (C12-C14) SG	71	-	76.00-115.00	-	EFH (C12-C14) SG	
(FDG2-SL-560-NBZ-SB-0.0-0.5	EFH (C15-C20) SG	75	-	78.00-127.00	-	EFH (C15-C20) SG	
FDG2-SL-571-NBZ-SB-0.0-0.5	EFH (C21-C30) SG	76	-	77.00-127.00	-	EFH (C21-C30) SG	
FDG2-SL-577-NBZ-SB-0.0-0.5	EFH (C8-C11) SG	53	-	60.00-115.00	-	EFH (C8-C11) SG	
FDG2-SL-629-SA8-SB-0.0-0.5							J (all detects) UJ (all non-detects)
FDG2-SL-694-SA6-SB-0.0-0.5							
FDG2-SL-695-SA6-SB-0.0-0.5							
FDG2-SL-878-SA5A-SB-0.0-0.5							
FDG2-SL-878-SA5A-SB-4.0-5.0)							

Project Name and Number: 1204-002-001-AL - SSFL Area IV Phase 3

Reporting Limit Outliers

Lab Reporting Batch ID: PH229 **Laboratory: LL**

EDD Filename: PH229_v1 **eQAPP Name: CDM_SSFL_140617_Lan**

Method: 6010C

Matrix: SO

SampleID	Analyte	Lab Qual	Result	Reporting Limit	RL Type	Units	Flag
FDG2-SL-560-NBZ-SB-0.0-0.5	BERYLLIUM	J	0.567	0.979	PQL	mg/Kg	J (all detects)
	BORON	J	5.38	9.79	PQL	mg/Kg	
	TIN	J	2.64	9.79	PQL	mg/Kg	
	Zirconium	J	4.25	4.89	PQL	mg/Kg	
FDG2-SL-878-SA5A-SB-4.0-5.0	BERYLLIUM	J	0.588	1.03	PQL	mg/Kg	J (all detects)
	BORON	J	3.90	10.3	PQL	mg/Kg	
	MOLYBDENUM	J	0.417	2.06	PQL	mg/Kg	
	SODIUM	J	80.1	103	PQL	mg/Kg	
	TIN	J	2.58	10.3	PQL	mg/Kg	
	Zirconium	J	2.72	5.14	PQL	mg/Kg	

Method: 6020A

Matrix: SO

SampleID	Analyte	Lab Qual	Result	Reporting Limit	RL Type	Units	Flag
FDG2-SL-560-NBZ-SB-0.0-0.5	SELENIUM	J	0.368	0.392	PQL	mg/Kg	J (all detects)
	SILVER	J	0.0581	0.196	PQL	mg/Kg	
FDG2-SL-878-SA5A-SB-4.0-5.0	SELENIUM	J	0.229	0.411	PQL	mg/Kg	J (all detects)
	SILVER	J	0.0779	0.206	PQL	mg/Kg	

Method: 8015M

Matrix: SO

SampleID	Analyte	Lab Qual	Result	Reporting Limit	RL Type	Units	Flag
FDG2-SL-560-NBZ-SB-0.0-0.5	EFH (C30-C40) SG	J	5.0	10	PQL	mg/Kg	J (all detects)
FDG2-SL-571-NBZ-SB-0.0-0.5	EFH (C15-C20)	J	11	11	PQL	mg/Kg	J (all detects)
	EFH (C30-C40) SG	J	10	11	PQL	mg/Kg	
FDG2-SL-577-NBZ-SB-0.0-0.5	EFH (C15-C20)	J	3.0	5.1	PQL	mg/Kg	J (all detects)
	EFH (C21-C30) SG	J	2.1	5.1	PQL	mg/Kg	
FDG2-SL-629-SA8-SB-0.0-0.5	EFH (C15-C20)	J	2.8	5.1	PQL	mg/Kg	J (all detects)
	EFH (C21-C30) SG	J	3.8	5.1	PQL	mg/Kg	
FDG2-SL-694-SA6-SB-0.0-0.5	EFH (C15-C20)	J	2.3	5.0	PQL	mg/Kg	J (all detects)
FDG2-SL-878-SA5A-SB-0.0-0.5	EFH (C15-C20)	J	2.3	5.1	PQL	mg/Kg	J (all detects)
	EFH (C30-C40) SG	J	4.6	10	PQL	mg/Kg	
FDG2-SL-878-SA5A-SB-4.0-5.0	EFH (C21-C30) SG	J	2.1	5.1	PQL	mg/Kg	J (all detects)

Method: 8082A

Matrix: SO

SampleID	Analyte	Lab Qual	Result	Reporting Limit	RL Type	Units	Flag
FDG2-SL-560-NBZ-SB-0.0-0.5	AROCLOR 1254	J	8.9	17	PQL	ug/Kg	J (all detects)

Reporting Limit Outliers

Lab Reporting Batch ID: PH229 **Laboratory: LL**

EDD Filename: PH229_v1 **eQAPP Name: CDM_SSFL_140617_Lan**

Method: **8270D SIM**

Matrix: **SO**

SampleID	*Analyte*	*Lab Qual*	*Result*	*Reporting Limit*	*RL Type*	*Units*	*Flag*
FDG2-SL-560-NBZ-SB-0.0-0.5	CHRYSENE	J	1.1	1.7	PQL	ug/Kg	J (all detects)
	FLUORANTHENE	J	0.85	1.7	PQL	ug/Kg	
	NAPHTHALENE	J	0.76	1.7	PQL	ug/Kg	
	PHENANTHRENE	J	0.75	1.7	PQL	ug/Kg	
FDG2-SL-878-SA5A-SB-4.0-5.0	BENZO(B)FLUORANTHENE	J	0.88	1.7	PQL	ug/Kg	J (all detects)
	BIS(2-ETHYLHEXYL)PHTHALATE	J	10	19	PQL	ug/Kg	
	CHRYSENE	J	1.1	1.7	PQL	ug/Kg	
	FLUORANTHENE	J	0.95	1.7	PQL	ug/Kg	
	PHENANTHRENE	J	0.78	1.7	PQL	ug/Kg	
	PYRENE	J	0.75	1.7	PQL	ug/Kg	

LDC #: 32270A4 **VALIDATION COMPLETENESS WORKSHEET** Date: 8/6/14
SDG #: PH229 ADR Page: 1 of 1
Laboratory: Eurofins Lancaster Laboratories 7471A Reviewer: VK
2nd Reviewer: OR

METHOD: Metals (EPA SW 846 Method 6010C/6020A~~/7000~~)

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

	Validation Area		Comments
I.	Technical holding times	—	Sampling dates: 6/11/14
II.	ICP/MS Tune	—	
III.	Calibration	—	
IV.	Blanks	~~SW~~ -	CCB hits, no quals
V.	ICP Interference Check Sample (ICS) Analysis	—	
VI.	Matrix Spike Analysis	N	MS/D from SDG PH234
VII.	Duplicate Sample Analysis	N	DUP ↓
VIII.	Laboratory Control Samples (LCS)	~~A~~ ~~N~~ N	LCS
IX.	Internal Standard (ICP-MS)	N	
X.	Furnace Atomic Absorption QC	N	
XI.	ICP Serial Dilution	A	
XII.	Sample Result Verification	N	
XIII.	Overall Assessment of Data	N	
XIV.	Field Duplicates	N	
XV	Field Blanks	SW	EB1-061214 SDG# ~~FB-052114~~ 4 SDG# PH191 EB2-061214 ~~PH231~~

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

1	FDG2-SL-878-SA5A-SB-4.0-5.0	11		21		31	
2	FDG2-SL-560-NBZ-SB-0.0-0.5	12		22		32	
3		13		23		33	
4		14		24		34	
5		15		25		35	
6		16		26		36	
7		17		27		37	
8		18		28		38	
9		19		29		39	
10		20		30		40	

Notes: _____

LDC #: 32270 A4

VALIDATION FINDINGS WORKSHEET
Sample Specific Element Reference

Reviewer: MC
2nd reviewer: dl

All circled elements are applicable to each sample.

Sample ID	Matrix	Target Analyte List (TAL)
1-2	S	Al, Sb, As, Ba, Be, B, Cd, Ca, Cr, Co, Cu, Fe, Pb, Li, Mg, Mo, Mn, Hg, Ni, P, K, Se, Ag, Na, Sr, Tl, Sn, Ti, V, Zn, Zr
		Al, Sb, As, Ba, Be, B, Cd, Ca, Cr, Co, Cu, Fe, Pb, Li, Mg, Mo, Mn, Hg, Ni, P, K, Se, Ag, Na, Sr, Tl, Sn, Ti, V, Zn, Zr
		Al, Sb, As, Ba, Be, B, Cd, Ca, Cr, Co, Cu, Fe, Pb, Li, Mg, Mo, Mn, Hg, Ni, P, K, Se, Ag, Na, Sr, Tl, Sn, Ti, V, Zn, Zr
		Al, Sb, As, Ba, Be, B, Cd, Ca, Cr, Co, Cu, Fe, Pb, Li, Mg, Mo, Mn, Hg, Ni, P, K, Se, Ag, Na, Sr, Tl, Sn, Ti, V, Zn, Zr
		Al, Sb, As, Ba, Be, B, Cd, Ca, Cr, Co, Cu, Fe, Pb, Li, Mg, Mo, Mn, Hg, Ni, P, K, Se, Ag, Na, Sr, Tl, Sn, Ti, V, Zn, Zr
		Al, Sb, As, Ba, Be, B, Cd, Ca, Cr, Co, Cu, Fe, Pb, Li, Mg, Mo, Mn, Hg, Ni, P, K, Se, Ag, Na, Sr, Tl, Sn, Ti, V, Zn, Zr
		Al, Sb, As, Ba, Be, B, Cd, Ca, Cr, Co, Cu, Fe, Pb, Li, Mg, Mo, Mn, Hg, Ni, P, K, Se, Ag, Na, Sr, Tl, Sn, Ti, V, Zn, Zr
		Al, Sb, As, Ba, Be, B, Cd, Ca, Cr, Co, Cu, Fe, Pb, Li, Mg, Mo, Mn, Hg, Ni, P, K, Se, Ag, Na, Sr, Tl, Sn, Ti, V, Zn, Zr
		Al, Sb, As, Ba, Be, B, Cd, Ca, Cr, Co, Cu, Fe, Pb, Li, Mg, Mo, Mn, Hg, Ni, P, K, Se, Ag, Na, Sr, Tl, Sn, Ti, V, Zn, Zr
		Al, Sb, As, Ba, Be, B, Cd, Ca, Cr, Co, Cu, Fe, Pb, Li, Mg, Mo, Mn, Hg, Ni, P, K, Se, Ag, Na, Sr, Tl, Sn, Ti, V, Zn, Zr
		Al, Sb, As, Ba, Be, B, Cd, Ca, Cr, Co, Cu, Fe, Pb, Li, Mg, Mo, Mn, Hg, Ni, P, K, Se, Ag, Na, Sr, Tl, Sn, Ti, V, Zn, Zr
		Al, Sb, As, Ba, Be, B, Cd, Ca, Cr, Co, Cu, Fe, Pb, Li, Mg, Mo, Mn, Hg, Ni, P, K, Se, Ag, Na, Sr, Tl, Sn, Ti, V, Zn, Zr
		Al, Sb, As, Ba, Be, B, Cd, Ca, Cr, Co, Cu, Fe, Pb, Li, Mg, Mo, Mn, Hg, Ni, P, K, Se, Ag, Na, Sr, Tl, Sn, Ti, V, Zn, Zr
		Al, Sb, As, Ba, Be, B, Cd, Ca, Cr, Co, Cu, Fe, Pb, Li, Mg, Mo, Mn, Hg, Ni, P, K, Se, Ag, Na, Sr, Tl, Sn, Ti, V, Zn, Zr
		Al, Sb, As, Ba, Be, B, Cd, Ca, Cr, Co, Cu, Fe, Pb, Li, Mg, Mo, Mn, Hg, Ni, P, K, Se, Ag, Na, Sr, Tl, Sn, Ti, V, Zn, Zr
		Al, Sb, As, Ba, Be, B, Cd, Ca, Cr, Co, Cu, Fe, Pb, Li, Mg, Mo, Mn, Hg, Ni, P, K, Se, Ag, Na, Sr, Tl, Sn, Ti, V, Zn, Zr
		Al, Sb, As, Ba, Be, B, Cd, Ca, Cr, Co, Cu, Fe, Pb, Li, Mg, Mo, Mn, Hg, Ni, P, K, Se, Ag, Na, Sr, Tl, Sn, Ti, V, Zn, Zr
		Al, Sb, As, Ba, Be, B, Cd, Ca, Cr, Co, Cu, Fe, Pb, Li, Mg, Mo, Mn, Hg, Ni, P, K, Se, Ag, Na, Sr, Tl, Sn, Ti, V, Zn, Zr
		Al, Sb, As, Ba, Be, B, Cd, Ca, Cr, Co, Cu, Fe, Pb, Li, Mg, Mo, Mn, Hg, Ni, P, K, Se, Ag, Na, Sr, Tl, Sn, Ti, V, Zn, Zr
		Al, Sb, As, Ba, Be, B, Cd, Ca, Cr, Co, Cu, Fe, Pb, Li, Mg, Mo, Mn, Hg, Ni, P, K, Se, Ag, Na, Sr, Tl, Sn, Ti, V, Zn, Zr
		Al, Sb, As, Ba, Be, B, Cd, Ca, Cr, Co, Cu, Fe, Pb, Li, Mg, Mo, Mn, Hg, Ni, P, K, Se, Ag, Na, Sr, Tl, Sn, Ti, V, Zn, Zr
		Al, Sb, As, Ba, Be, B, Cd, Ca, Cr, Co, Cu, Fe, Pb, Li, Mg, Mo, Mn, Hg, Ni, P, K, Se, Ag, Na, Sr, Tl, Sn, Ti, V, Zn, Zr
		Al, Sb, As, Ba, Be, B, Cd, Ca, Cr, Co, Cu, Fe, Pb, Li, Mg, Mo, Mn, Hg, Ni, P, K, Se, Ag, Na, Sr, Tl, Sn, Ti, V, Zn, Zr
Analysis Method		
ICP		Al, Sb, As, Ba, Be, B, Cd, Ca, Cr, Co, Cu, Fe, Pb, Li, Mg, Mo, Mn, Hg, Ni, P, K, Se, Ag, Na, Sr, Tl, Sn, Ti, V, Zn, Zr
ICP-MS		Al, Sb, As, Ba, Be, B, Cd, Ca, Cr, Co, Cu, Fe, Pb, Li, Mg, Mo, Mn, Hg, Ni, P, K, Se, Ag, Na, Sr, Tl, Sn, Ti, V, Zn, Zr

Comments: Mercury by CVAA if performed

LDC #: 32270A4

VALIDATION FINDINGS WORKSHEET
Field Blanks

Reviewer: LK
2nd Reviewer: CR

METHOD: Trace Metals (EPA SW846 6010C/6020A/7471A)

Blank units: ug/L **Associated sample units:** mg/kg
Sampling date: 5/21/14 and ~~6/12/14~~ Soil factor applied 100
Field blank type: (circle one) Field Blank / Rinsate / Other: EB Associated Samples: 1 (F)

Analyte	Blank ID	Blank ID	Sample Identification								
	EB1-061214 SDG#PH231	FB-052114 SDG#PH191	Action Limit	1							
Zr	9.9	11.0	5.5	2.7							
Mn	1.3		0.65								

METHOD: Trace Metals (EPA SW846 6010C/6020A/7471A)

Blank units: ug/L **Associated sample units:** mg/kg
Sampling date: 5/21/14 and 6/12/14 Soil factor applied 100
Field blank type: (circle one) Field Blank / Rinsate / Other: EB Associated Samples: 2 (F)

Analyte	Blank ID	Blank ID	Sample Identification								
	EB2-061214 SDG#PH231	FB-052114 SDG#PH191	Action Limit	2							
Zr	9.7	11.0	5.5	4.2							
Mn	1.3		0.65								

CIRCLED RESULTS WERE NOT QUALIFIED. ALL RESULTS NOT CIRCLED WERE QUALIFIED BY THE FOLLOWING STATEMENT:
Samples with analyte concentrations within five times the associated field blank concentration are listed above, these sample results were qualified as not detected, "U".

Data Validation Report
Santa Susana Field Laboratory

Go Backs, Subgroup FDG Block 2

SDG: PH231

Prepared for

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Prepared by

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August 23, 2014

INTRODUCTION

This Data Validation Report (DVR) presents Level III data validation results for samples collected on June 12, 2014. Data validation was performed in accordance with the Quality Assurance Project Plan (QAPP) for Santa Susana Field Laboratory (SSFL), RCRA Facility Investigation, Surficial Media Operable Unit (March 2009, Revision 4) and a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines (CLPNFGs) for Superfund Organic Methods Data Review (June 2008), Polychlorinated Dioxins/Dibenzofurans Data Review (September 2005) and for Inorganic Data Review (January 2010). Where specific guidance is not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following methods:

Semivolatiles (SVOCs) by Environmental Protection Agency (EPA) SW 846 Method 8270D utilizing Selective Ion Monitoring (SIM)
Pesticides by EPA SW 846 Method 8081B
Polychlorinated Biphenyls (PCBs) by EPA SW 846 Method 8082A
Metals by EPA SW 846 Method 6010C, 6020A, 7470A, and 7471B.
Herbicides by EPA SW 846 Method 8151A
Total Petroleum Hydrocarbons (TPH) as Gasoline by EPA SW 846 Method 8015M
TPH as Extractables with and without Silica Gel Clean Up by EPA SW 846 Method 8015M
Dioxins and Dibenzofurans by EPA Method 1613B

The sample identification and methods of analyses performed on each sample is presented in Attachment 1. Please note field sample IDs have been truncated due to database limitations. Overall data qualification summary is presented in Attachment 2. Level III Automated Data Review outliers are presented in Enclosure I.

All sample results were subjected to Level III data validation, which comprises an evaluation of quality control (QC) summary results for sample holding times, initial and continuing calibration blanks (ICB/CCBs), surrogates, internal standards (dioxins and dibenzofurans only), matrix spike/matrix spike duplicates (MS/MSD), laboratory duplicates (DUP), laboratory control sample/laboratory control sample duplicates (LCS/LCSD), ICP serial dilutions, method blanks, equipment blanks, and field blanks. No samples in this SDG were subjected to Level IV evaluation.

Automated data review was performed on all QC summary results using the Automated Data Review (ADR) software program (LDC, 2013) with the exception of ICB/CCBs and ICP serial dilutions, which were validated manually. Quality assurance (QA)/QC criteria specified in the QAPP and CLPNFGs were incorporated with the program's reference library to assess compliance with project requirements.

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.

NJ Presumptive evidence of presence of the compound at an estimated quantity.

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

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 QC criteria.

II. Initial Calibration

Initial Calibration data were not reviewed for level III.

III. Continuing Calibration

Continuing calibration data were not reviewed for level III.

IV. Blanks

Method blanks were performed at the required frequencies. No contaminant concentrations were detected in the method or preparation blanks with the exception of several blanks for SVOCs, herbicides, metals, and dioxins and dibenzofurans. The associated sample results were qualified as non-detected (U) due to method blank contamination as applicable. The sample results that were not detected or were significantly greater than the concentrations found in the associated blanks were not qualified. The details regarding the qualification of data are provided in Enclosure I.

No contaminant concentrations were detected in the initial or continuing calibration blanks with the following exceptions:

SDG/ Method	Method Blank ID	Analyte	Maximum Concentration	Associated Samples
PH231 (6010C)	ICB/CCB	Zirconium	9.0 ug/L	EB1-061214 EB2-061214

Sample concentrations were compared to concentrations detected in the initial and continuing blanks. The sample concentrations were not detected or were significantly greater than the concentrations found in the associated blanks with the following exceptions:

SDG/Method	Sample	Compound	Reported Concentration	Modified Final Concentration
PH231 (6010C)	EB1-061214	Zirconium	0.0099 mg/L	0.0099U mg/L
PH231 (6010C)	EB2-061214	Zirconium	0.0097 mg/L	0.0097U mg/L

V. Surrogate Spikes

Surrogates were added to all samples and blanks as required by the method. All surrogate recoveries (%R) were within QC limits with the exception of one sample for TPH as extractables

with silica gel clean up. The associated sample results were qualified as non-detected estimated (UJ). The details regarding the qualification of data are provided in Enclosure I.

VI. ICP Interference Check Sample (ICS) Analysis

ICP interference check data were not reviewed for level III.

VII. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) samples were performed at the required frequency. Percent recoveries (%R) and relative percent differences (RPD) were within QC limits with the exception of one MS/MSD pair for pesticides in this SDG, and one MS/MSD pair for metals from SDG PH234. The associated sample results were qualified as detected estimated (J) or non-detected estimated (UJ) as applicable. The details regarding the qualification of data are provided in Enclosure I of this DVR and Enclosures I and II of the DVR for PH234.

VIII. Laboratory Duplicates Sample

Laboratory duplicates (DUP) sample analyses were reviewed for each matrix as applicable. Results were within QC limits.

IV. Laboratory Control Samples (LCS)

Laboratory control samples were reviewed for each matrix as applicable. Percent recoveries (%R) and relative percent differences (RPD) were within QC limits with the exception of several LCS/LCSD pairs for SVOCs, PCBs, and TPH as extractables with and without silica gel clean up. The associated sample result was qualified as as detected estimated (J) or non-detected estimated (UJ) as applicable. The details regarding the qualification of data are provided in Enclosure I.

X. Internal Standards

Internal standards were reviewed for dioxins/dibenzofurans. Percent recoveries (%R) were within QC limits.

XI. ICP Serial Dilution

ICP serial dilution analysis was performed by the laboratory. The analysis criteria were met.

XII. Compound Quantitation

The laboratory reporting limits were evaluated. All laboratory reporting limits met the specified requirements.

All compounds reported below the RL as detected were qualified as follows:

Sample	Finding	Flag	A or P
All samples in SDG PH231	All compounds reported as detected below the RL.	J (all detects)	A

XIII. Field Duplicate Samples

No field duplicates were identified in this SDG.

XIV. Field Blank Samples

No trip blank was identified this SDG.

Two equipment blanks were collected and analyzed for SVOCs, pesticides, PCBs, metals, herbicides, TPH as gasoline, TPH as extractables with and without silica gel clean up, and dioxins and dibenzofurans. The equipment blank had detections for SVOCs, metals, and dioxins and dibenzofurans. The associated sample results were qualified as non-detected (U) due to equipment blank contamination as applicable. The sample results that were not detected or were significantly greater than the concentrations found in the equipment blanks were not qualified. The equipment blank outlier reports are presented in Enclosure I.

One field blank (from SDG PH191) was collected and analyzed for SVOCs, pesticides, PCBs, metals, herbicides, TPH as gasoline, TPH as extractables with and without silica gel clean up, and dioxins and dibenzofurans. The field blank had detections for SVOCs, metals, and dioxins and dibenzofurans. The associated sample results were qualified as non-detected (U) due to field blank contamination as applicable. The sample results that were not detected or were significantly greater than the concentrations found in the field blanks were not qualified. The field blank outlier reports are presented in Enclosure I.

XV. Overall Assessment of Data

The overall assessment of QA/QC data review by automated and manual validation of this sampling event met project requirements and analytical completeness levels with the exceptions noted in the above sections. The remainder of the data are deemed useable for the intended use.

Data flags are summarized and are presented as Attachment 2.

Attachment 1

Sample Cross Reference

Sample Cross Reference

Date Collected	Field Sample ID	Lab Sample ID	Sample Type	Prep Method	Analytical Method	Review Level
12-Jun-2014	SL-570-NBZ-SB-0.0-0.5	7497923	N	3050B	6010C	III
12-Jun-2014	SL-570-NBZ-SB-0.0-0.5	7497923	N	3050B	6020A	III
12-Jun-2014	SL-570-NBZ-SB-0.0-0.5	7497923	N	3546	8015M	III
12-Jun-2014	SL-570-NBZ-SB-0.0-0.5	7497923	N	3546	8082A	III
12-Jun-2014	SL-570-NBZ-SB-0.0-0.5	7497923	N	3546	8270D SIM	III
12-Jun-2014	SL-570-NBZ-SB-0.0-0.5	7497923	N	METHOD	7471B	III
12-Jun-2014	SL-562-NBZ-SB-0.0-0.5	7497920	N	3050B	6010C	III
12-Jun-2014	SL-562-NBZ-SB-0.0-0.5	7497920	N	3050B	6020A	III
12-Jun-2014	SL-562-NBZ-SB-0.0-0.5	7497920	N	3546	8015M	III
12-Jun-2014	SL-562-NBZ-SB-0.0-0.5	7497920	N	3546	8081B	III
12-Jun-2014	SL-562-NBZ-SB-0.0-0.5	7497920	N	3546	8082A	III
12-Jun-2014	SL-562-NBZ-SB-0.0-0.5	7497920	N	3546	8270D SIM	III
12-Jun-2014	SL-562-NBZ-SB-0.0-0.5	7497920	N	METHOD	1613B	III
12-Jun-2014	SL-562-NBZ-SB-0.0-0.5	7497920	N	METHOD	7471B	III
12-Jun-2014	SL-562-NBZ-SB-0.0-0.5MSD	P497920M241711A	MSD	3546	8081B	III
12-Jun-2014	SL-562-NBZ-SB-0.0-0.5MS	P497920R241659A	MS	3546	8081B	III
12-Jun-2014	SL-569-NBZ-SB-0.0-0.5	7497922	N	3050B	6010C	III
12-Jun-2014	SL-569-NBZ-SB-0.0-0.5	7497922	N	3050B	6020A	III
12-Jun-2014	SL-569-NBZ-SB-0.0-0.5	7497922	N	3546	8015M	III
12-Jun-2014	SL-569-NBZ-SB-0.0-0.5	7497922	N	3546	8082A	III
12-Jun-2014	SL-569-NBZ-SB-0.0-0.5	7497922	N	3546	8270D SIM	III
12-Jun-2014	SL-569-NBZ-SB-0.0-0.5	7497922	N	METHOD	7471B	III
12-Jun-2014	SL-563-NBZ-SB-0.0-0.5	7497921	N	3050B	6010C	III
12-Jun-2014	SL-563-NBZ-SB-0.0-0.5	7497921	N	3050B	6020A	III
12-Jun-2014	SL-563-NBZ-SB-0.0-0.5	7497921	N	3546	8015M	III
12-Jun-2014	SL-563-NBZ-SB-0.0-0.5	7497921	N	3546	8081B	III

III = EPA Level 3 Data Review *N = Normal Sample* *TB = Trip Blank* *MS = Matrix Spike*
IV = EPA Level 4 Data Validation *FD = Field Duplicate* *FB = Field Blank* *MSD = Matrix Spike Duplicate*

Sample Cross Reference

Date Collected	Field Sample ID	Lab Sample ID	Sample Type	Prep Method	Analytical Method	Review Level
12-Jun-2014	SL-563-NBZ-SB-0.0-0.5	7497921	N	3546	8082A	III
12-Jun-2014	SL-563-NBZ-SB-0.0-0.5	7497921	N	3546	8270D SIM	III
12-Jun-2014	SL-563-NBZ-SB-0.0-0.5	7497921	N	METHOD	1613B	III
12-Jun-2014	SL-563-NBZ-SB-0.0-0.5	7497921	N	METHOD	7471B	III
12-Jun-2014	SL-583-NBZ-SB-0.0-0.5	7497924	N	3546	8015M	III
12-Jun-2014	SL-583-NBZ-SB-0.0-0.5	7497924	N	3546	8082A	III
12-Jun-2014	EB1-061214	7497925	EB	3005A	6010C	III
12-Jun-2014	EB1-061214	7497925	EB	3510C	8015M	III
12-Jun-2014	EB1-061214	7497925	EB	3510C	8081B	III
12-Jun-2014	EB1-061214	7497925	EB	3510C	8082A	III
12-Jun-2014	EB1-061214	7497925	EB	3510C	8270D SIM	III
12-Jun-2014	EB1-061214	7497925	EB	5030B	8015M	III
12-Jun-2014	EB1-061214	7497925	EB	M3010A	6020A	III
12-Jun-2014	EB1-061214	7497925	EB	METHOD	1613B	III
12-Jun-2014	EB1-061214	7497925	EB	METHOD	7470A	III
12-Jun-2014	EB1-061214	7497925	EB	METHOD	8151A	III
12-Jun-2014	EB2-061214	7497926	EB	3005A	6010C	III
12-Jun-2014	EB2-061214	7497926	EB	3510C	8015M	III
12-Jun-2014	EB2-061214	7497926	EB	3510C	8081B	III
12-Jun-2014	EB2-061214	7497926	EB	3510C	8082A	III
12-Jun-2014	EB2-061214	7497926	EB	3510C	8270D SIM	III
12-Jun-2014	EB2-061214	7497926	EB	5030B	8015M	III
12-Jun-2014	EB2-061214	7497926	EB	M3010A	6020A	III
12-Jun-2014	EB2-061214	7497926	EB	METHOD	1613B	III
12-Jun-2014	EB2-061214	7497926	EB	METHOD	7470A	III

III = EPA Level 3 Data Review *N = Normal Sample* *TB = Trip Blank* *MS = Matrix Spike*
IV = EPA Level 4 Data Validation *FD = Field Duplicate* *FB = Field Blank* *MSD = Matrix Spike Duplicate*

Attachment 2
Overall Data Qualification Summary

Data Qualifier Summary

Lab Reporting Batch ID: PH231 **Laboratory: LL**

EDD Filename: PH231_v1 **eQAPP Name: CDM_SSFL_140617_Lan**

Method Category: METALS

Method: 6010C **Matrix: AQ**

Sample ID: **EB1-061214** *Collected:* **6/12/2014 3:00:00** *Analysis Type:* **RES** *Dilution:* **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
Zirconium	0.0099	J	0.0084	MDL	0.100	PQL	mg/L	U	B, B
MANGANESE	0.0013	J	0.00083	MDL	0.0100	PQL	mg/L	U	B

Sample ID: **EB2-061214** *Collected:* **6/12/2014 3:30:00** *Analysis Type:* **RES** *Dilution:* **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
MANGANESE	0.0013	J	0.00083	MDL	0.0100	PQL	mg/L	U	B
Zirconium	0.0097	J	0.0084	MDL	0.100	PQL	mg/L	U	B, B

Method Category: METALS

Method: 6010C **Matrix: SO**

Sample ID: **FDG2-SL-562-NBZ-SB-0.0-0.5** *Collected:* **6/12/2014 8:50:00** *Analysis Type:* **REA** *Dilution:* **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
ANTIMONY	4.91	U	0.908	MDL	4.91	PQL	mg/Kg	UJ	Q
BERYLLIUM	0.453	J	0.0822	MDL	1.23	PQL	mg/Kg	J	Z
BORON	2.89	J	1.03	MDL	12.3	PQL	mg/Kg	U	B
LEAD	9.95		0.613	MDL	3.68	PQL	mg/Kg	J	Q, E
SODIUM	119	J	20.5	MDL	123	PQL	mg/Kg	J	Z
TIN	2.76	J	0.270	MDL	12.3	PQL	mg/Kg	U	B
Zirconium	1.84	J	1.03	MDL	6.13	PQL	mg/Kg	U	F, F

Sample ID: **FDG2-SL-563-NBZ-SB-0.0-0.5** *Collected:* **6/12/2014 9:25:00** *Analysis Type:* **REA** *Dilution:* **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
ANTIMONY	3.95	U	0.731	MDL	3.95	PQL	mg/Kg	UJ	Q
ARSENIC	3.74	J	0.691	MDL	3.95	PQL	mg/Kg	J	Z
BERYLLIUM	0.281	J	0.0661	MDL	0.987	PQL	mg/Kg	J	Z
BORON	4.70	J	0.829	MDL	9.87	PQL	mg/Kg	U	B
LEAD	4.97		0.494	MDL	2.96	PQL	mg/Kg	J	Q, E
MOLYBDENUM	0.184	J	0.168	MDL	1.97	PQL	mg/Kg	J	Z
TIN	2.02	J	0.217	MDL	9.87	PQL	mg/Kg	U	B
Zirconium	1.77	J	0.829	MDL	4.94	PQL	mg/Kg	U	F, F

* denotes a non-reportable result

Project Name and Number: 1204-002-001-AL - SSFL Area IV Phase 3

Data Qualifier Summary

Lab Reporting Batch ID: PH231 **Laboratory: LL**

EDD Filename: PH231_v1 **eQAPP Name: CDM_SSFL_140617_Lan**

Method Category: METALS

Method: 6010C **Matrix: SO**

Sample ID: **FDG2-SL-569-NBZ-SB-0.0-0.5** *Collected:* **6/12/2014 8:55:00** *Analysis Type:* **REA** *Dilution:* **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
ANTIMONY	3.92	U	0.726	MDL	3.92	PQL	mg/Kg	UJ	Q
BERYLLIUM	0.505	J	0.0657	MDL	0.980	PQL	mg/Kg	J	Z
BORON	3.06	J	0.824	MDL	9.80	PQL	mg/Kg	U	B
LEAD	13.2		0.490	MDL	2.94	PQL	mg/Kg	J	Q, E
MOLYBDENUM	0.180	J	0.167	MDL	1.96	PQL	mg/Kg	J	Z
SODIUM	51.8	J	16.4	MDL	98.0	PQL	mg/Kg	J	Z
TIN	2.50	J	0.216	MDL	9.80	PQL	mg/Kg	U	B
Zirconium	1.94	J	0.824	MDL	4.90	PQL	mg/Kg	U	F, F

Sample ID: **FDG2-SL-570-NBZ-SB-0.0-0.5** *Collected:* **6/12/2014 8:10:00** *Analysis Type:* **REA** *Dilution:* **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
ANTIMONY	3.96	U	0.732	MDL	3.96	PQL	mg/Kg	UJ	Q
BERYLLIUM	0.795	J	0.0663	MDL	0.989	PQL	mg/Kg	J	Z
BORON	4.24	J	0.831	MDL	9.89	PQL	mg/Kg	U	B
LEAD	8.27		0.495	MDL	2.97	PQL	mg/Kg	J	Q, E
MOLYBDENUM	0.387	J	0.168	MDL	1.98	PQL	mg/Kg	J	Z
SODIUM	93.0	J	16.5	MDL	98.9	PQL	mg/Kg	J	Z
TIN	2.70	J	0.218	MDL	9.89	PQL	mg/Kg	U	B
Zirconium	3.29	J	0.831	MDL	4.95	PQL	mg/Kg	U	F, F

Method Category: METALS

Method: 6020A **Matrix: SO**

Sample ID: **FDG2-SL-562-NBZ-SB-0.0-0.5** *Collected:* **6/12/2014 8:50:00** *Analysis Type:* **REA2** *Dilution:* **2**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
STRONTIUM	20.9		0.0834	MDL	0.491	PQL	mg/Kg	J	Q, Q, E
THALLIUM	0.151	J	0.0368	MDL	0.245	PQL	mg/Kg	J	Z

Sample ID: **FDG2-SL-563-NBZ-SB-0.0-0.5** *Collected:* **6/12/2014 9:25:00** *Analysis Type:* **REA2** *Dilution:* **2**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
STRONTIUM	21.4		0.0671	MDL	0.395	PQL	mg/Kg	J	Q, Q, E
THALLIUM	0.167	J	0.0296	MDL	0.197	PQL	mg/Kg	J	Z

* denotes a non-reportable result

Project Name and Number: 1204-002-001-AL - SSFL Area IV Phase 3

Data Qualifier Summary

Lab Reporting Batch ID: PH231 **Laboratory: LL**

EDD Filename: PH231_v1 **eQAPP Name: CDM_SSFL_140617_Lan**

Method Category: METALS

Method: 6020A **Matrix: SO**

Sample ID: **FDG2-SL-563-NBZ-SB-0.0-0.5** *Collected:* **6/12/2014 9:25:00** *Analysis Type:* **REA3** *Dilution:* **2**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
SELENIUM	0.171	J	0.0987	MDL	0.395	PQL	mg/Kg	J	Z

Sample ID: **FDG2-SL-569-NBZ-SB-0.0-0.5** *Collected:* **6/12/2014 8:55:00** *Analysis Type:* **REA2** *Dilution:* **2**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
SILVER	0.0306	J	0.0255	MDL	0.196	PQL	mg/Kg	J	Z, Q
STRONTIUM	16.3		0.0667	MDL	0.392	PQL	mg/Kg	J	Q, Q, E

Sample ID: **FDG2-SL-569-NBZ-SB-0.0-0.5** *Collected:* **6/12/2014 8:55:00** *Analysis Type:* **REA3** *Dilution:* **2**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
SELENIUM	0.337	J	0.0980	MDL	0.392	PQL	mg/Kg	J	Z

Sample ID: **FDG2-SL-570-NBZ-SB-0.0-0.5** *Collected:* **6/12/2014 8:10:00** *Analysis Type:* **REA2** *Dilution:* **2**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
SILVER	0.0382	J	0.0257	MDL	0.198	PQL	mg/Kg	J	Z, Q
STRONTIUM	26.2		0.0673	MDL	0.396	PQL	mg/Kg	J	Q, Q, E

Method Category: METALS

Method: 7471B **Matrix: SO**

Sample ID: **FDG2-SL-562-NBZ-SB-0.0-0.5** *Collected:* **6/12/2014 8:50:00** *Analysis Type:* **RES** *Dilution:* **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
MERCURY	0.0138	J	0.0121	MDL	0.0202	PQL	mg/Kg	J	Z

Sample ID: **FDG2-SL-563-NBZ-SB-0.0-0.5** *Collected:* **6/12/2014 9:25:00** *Analysis Type:* **RES** *Dilution:* **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
MERCURY	0.0152	J	0.0097	MDL	0.0161	PQL	mg/Kg	J	Z

* denotes a non-reportable result

Project Name and Number: 1204-002-001-AL - SSFL Area IV Phase 3

Data Qualifier Summary

Lab Reporting Batch ID: PH231 **Laboratory: LL**

EDD Filename: PH231_v1 **eQAPP Name: CDM_SSFL_140617_Lan**

Method Category: SVOA

Method: 1613B **Matrix: AQ**

Sample ID: **EB1-061214** *Collected:* **6/12/2014 3:00:00** *Analysis Type:* **RES** *Dilution:* **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
1,2,3,4,6,7,8-HPCDD	1.41	JBQ	0.137	MDL	10.2	PQL	pg/L	U	B
1,2,3,4,6,7,8-HPCDF	0.414	JBQ	0.0413	MDL	10.2	PQL	pg/L	U	B
1,2,3,4,7,8-HXCDF	0.107	JB	0.0664	MDL	10.2	PQL	pg/L	U	B
1,2,3,6,7,8-HXCDF	0.175	JBQ	0.0606	MDL	10.2	PQL	pg/L	U	B
1,2,3,7,8-PECDF	0.0952	JBQ	0.0549	MDL	10.2	PQL	pg/L	U	B
2,3,4,7,8-PECDF	0.0938	JQ	0.0565	MDL	10.2	PQL	pg/L	J	Z
2,3,7,8-TCDF	0.0871	JQ	0.0709	MDL	2.04	PQL	pg/L	J	Z
OCDD	21.3	QB	0.146	MDL	20.4	PQL	pg/L	U	B
OCDF	0.740	JQ	0.102	MDL	20.4	PQL	pg/L	J	Z

Sample ID: **EB2-061214** *Collected:* **6/12/2014 3:30:00** *Analysis Type:* **RES** *Dilution:* **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
1,2,3,4,6,7,8-HPCDD	1.68	JB	0.140	MDL	9.86	PQL	pg/L	U	B
1,2,3,4,6,7,8-HPCDF	0.365	JB	0.0601	MDL	9.86	PQL	pg/L	U	B
1,2,3,4,7,8,9-HPCDF	0.367	JQ	0.0701	MDL	9.86	PQL	pg/L	J	Z
1,2,3,4,7,8-HXCDF	0.207	JBQ	0.0719	MDL	9.86	PQL	pg/L	U	B
1,2,3,7,8,9-HXCDD	0.244	JBQ	0.132	MDL	9.86	PQL	pg/L	U	B
1,2,3,7,8,9-HXCDF	0.190	JBQ	0.0721	MDL	9.86	PQL	pg/L	U	B
1,2,3,7,8-PECDD	0.251	JQ	0.171	MDL	9.86	PQL	pg/L	J	Z
2,3,4,6,7,8-HXCDF	0.257	JBQ	0.0660	MDL	9.86	PQL	pg/L	U	B
2,3,4,7,8-PECDF	0.234	JQ	0.0682	MDL	9.86	PQL	pg/L	J	Z
OCDD	13.9	JB	0.136	MDL	19.7	PQL	pg/L	U	B
OCDF	1.06	JQ	0.103	MDL	19.7	PQL	pg/L	J	Z

Method Category: SVOA

Method: 1613B **Matrix: SO**

Sample ID: **FDG2-SL-562-NBZ-SB-0.0-0.5** *Collected:* **6/12/2014 8:50:00** *Analysis Type:* **RES** *Dilution:* **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
1,2,3,4,6,7,8-HPCDF	1.86	JB	0.0228	MDL	6.00	PQL	ng/Kg	J	Z
1,2,3,4,7,8,9-HPCDF	0.193	JBQ	0.0466	MDL	6.00	PQL	ng/Kg	U	B
1,2,3,4,7,8-HxCDD	0.129	J	0.0585	MDL	6.00	PQL	ng/Kg	J	Z

* denotes a non-reportable result

Project Name and Number: 1204-002-001-AL - SSFL Area IV Phase 3

Data Qualifier Summary

Lab Reporting Batch ID: PH231 **Laboratory: LL**

EDD Filename: PH231_v1 **eQAPP Name: CDM_SSFL_140617_Lan**

Method Category: SVOA

Method: 1613B **Matrix: SO**

***Sample ID:* FDG2-SL-562-NBZ-SB-0.0-0.5** ***Collected:* 6/12/2014 8:50:00** ***Analysis Type:* RES** ***Dilution:* 1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
1,2,3,4,7,8-HXCDF	0.100	JQ	0.0596	MDL	6.00	PQL	ng/Kg	J	Z
1,2,3,6,7,8-HXCDD	0.399	J	0.0579	MDL	6.00	PQL	ng/Kg	J	Z
1,2,3,6,7,8-HXCDF	0.167	J	0.0495	MDL	6.00	PQL	ng/Kg	J	Z
1,2,3,7,8,9-HXCDD	0.149	JQ	0.0595	MDL	6.00	PQL	ng/Kg	J	Z
1,2,3,7,8,9-HXCDF	0.0682	JQ	0.0619	MDL	6.00	PQL	ng/Kg	J	Z
1,2,3,7,8-PECDF	0.0931	JBQ	0.0286	MDL	6.00	PQL	ng/Kg	U	B
2,3,4,6,7,8-HXCDF	0.146	JBQ	0.0517	MDL	6.00	PQL	ng/Kg	U	B
2,3,4,7,8-PECDF	0.0559	JBQ	0.0283	MDL	6.00	PQL	ng/Kg	U	B
2,3,7,8-TCDF	0.102	JBQ	0.0785	MDL	1.20	PQL	ng/Kg	U	B
OCDF	4.50	JB	0.0701	MDL	12.0	PQL	ng/Kg	J	Z

***Sample ID:* FDG2-SL-563-NBZ-SB-0.0-0.5** ***Collected:* 6/12/2014 9:25:00** ***Analysis Type:* RES** ***Dilution:* 1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
1,2,3,4,6,7,8-HPCDF	3.47	JB	0.0147	MDL	5.07	PQL	ng/Kg	J	Z
1,2,3,4,7,8,9-HPCDF	0.393	JBQ	0.0336	MDL	5.07	PQL	ng/Kg	J	Z
1,2,3,4,7,8-HxCDD	0.147	JQ	0.0457	MDL	5.07	PQL	ng/Kg	J	Z
1,2,3,4,7,8-HXCDF	0.143	J	0.0411	MDL	5.07	PQL	ng/Kg	J	Z
1,2,3,6,7,8-HXCDD	0.747	J	0.0442	MDL	5.07	PQL	ng/Kg	J	Z
1,2,3,6,7,8-HXCDF	0.194	J	0.0336	MDL	5.07	PQL	ng/Kg	J	Z
1,2,3,7,8,9-HXCDD	0.305	J	0.0435	MDL	5.07	PQL	ng/Kg	J	Z
1,2,3,7,8,9-HXCDF	0.0742	JQ	0.0405	MDL	5.07	PQL	ng/Kg	J	Z
1,2,3,7,8-PECDD	0.128	JQ	0.0529	MDL	5.07	PQL	ng/Kg	J	Z
1,2,3,7,8-PECDF	0.121	JBQ	0.0263	MDL	5.07	PQL	ng/Kg	U	B
2,3,4,6,7,8-HXCDF	0.225	JBQ	0.0360	MDL	5.07	PQL	ng/Kg	U	B
2,3,4,7,8-PECDF	0.0682	JB	0.0280	MDL	5.07	PQL	ng/Kg	U	B
2,3,7,8-TCDF	0.111	JBQ	0.0553	MDL	1.01	PQL	ng/Kg	U	B
OCDF	8.22	JB	0.0579	MDL	10.1	PQL	ng/Kg	J	Z

* denotes a non-reportable result

Project Name and Number: 1204-002-001-AL - SSFL Area IV Phase 3

Data Qualifier Summary

Lab Reporting Batch ID: PH231 **Laboratory: LL**

EDD Filename: PH231_v1 **eQAPP Name: CDM_SSFL_140617_Lan**

Method Category: SVOA

Method: 8015M **Matrix: AQ**

Sample ID: **EB1-061214** *Collected:* **6/12/2014 3:00:00** *Analysis Type:* **REA2** *Dilution:* **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
EFH (C12-C14) SG	0.10	U	0.051	MDL	0.10	PQL	mg/L	UJ	L
EFH (C21-C30) SG	0.10	U	0.051	MDL	0.10	PQL	mg/L	UJ	L
EFH (C8-C11) SG	0.10	U	0.051	MDL	0.10	PQL	mg/L	UJ	L

Sample ID: **EB2-061214** *Collected:* **6/12/2014 3:30:00** *Analysis Type:* **REA2** *Dilution:* **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
EFH (C12-C14) SG	0.099	U	0.049	MDL	0.099	PQL	mg/L	UJ	L
EFH (C21-C30) SG	0.099	U	0.049	MDL	0.099	PQL	mg/L	UJ	L
EFH (C8-C11) SG	0.099	U	0.049	MDL	0.099	PQL	mg/L	UJ	L

Method Category: SVOA

Method: 8015M **Matrix: SO**

Sample ID: **FDG2-SL-562-NBZ-SB-0.0-0.5** *Collected:* **6/12/2014 8:50:00** *Analysis Type:* **REA** *Dilution:* **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
EFH (C12-C14) SG	6.2	U	2.5	MDL	6.2	PQL	mg/Kg	UJ	L
EFH (C15-C20) SG	6.2	U	2.5	MDL	6.2	PQL	mg/Kg	UJ	L
EFH (C21-C30) SG	2.6	J	2.5	MDL	6.2	PQL	mg/Kg	J	Z, L
EFH (C8-C11) SG	6.2	U	2.5	MDL	6.2	PQL	mg/Kg	UJ	L

Sample ID: **FDG2-SL-562-NBZ-SB-0.0-0.5** *Collected:* **6/12/2014 8:50:00** *Analysis Type:* **RES** *Dilution:* **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
EFH (C15-C20)	3.3	J	2.5	MDL	6.2	PQL	mg/Kg	J	Z

Sample ID: **FDG2-SL-563-NBZ-SB-0.0-0.5** *Collected:* **6/12/2014 9:25:00** *Analysis Type:* **REA** *Dilution:* **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
EFH (C12-C14) SG	5.1	U	2.1	MDL	5.1	PQL	mg/Kg	UJ	L
EFH (C15-C20) SG	5.1	U	2.1	MDL	5.1	PQL	mg/Kg	UJ	L
EFH (C21-C30) SG	5.1	U	2.1	MDL	5.1	PQL	mg/Kg	UJ	L
EFH (C8-C11) SG	5.1	U	2.1	MDL	5.1	PQL	mg/Kg	UJ	L

* denotes a non-reportable result

Project Name and Number: 1204-002-001-AL - SSFL Area IV Phase 3

Data Qualifier Summary

Lab Reporting Batch ID: PH231 **Laboratory: LL**

EDD Filename: PH231_v1 **eQAPP Name: CDM_SSFL_140617_Lan**

Method Category: SVOA

Method: 8015M **Matrix: SO**

Sample ID: **FDG2-SL-569-NBZ-SB-0.0-0.5** *Collected:* **6/12/2014 8:55:00** *Analysis Type:* **REA** *Dilution:* **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
EFH (C12-C14) SG	5.0	U	2.0	MDL	5.0	PQL	mg/Kg	UJ	L, S
EFH (C15-C20) SG	5.0	U	2.0	MDL	5.0	PQL	mg/Kg	UJ	L, S
EFH (C21-C30) SG	5.0	U	2.0	MDL	5.0	PQL	mg/Kg	UJ	L, S
EFH (C30-C40) SG	10	U	4.0	MDL	10	PQL	mg/Kg	UJ	S
EFH (C8-C11) SG	5.0	U	2.0	MDL	5.0	PQL	mg/Kg	UJ	L, S

Sample ID: **FDG2-SL-570-NBZ-SB-0.0-0.5** *Collected:* **6/12/2014 8:10:00** *Analysis Type:* **REA** *Dilution:* **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
EFH (C12-C14) SG	5.0	U	2.0	MDL	5.0	PQL	mg/Kg	UJ	L
EFH (C15-C20) SG	5.0	U	2.0	MDL	5.0	PQL	mg/Kg	UJ	L
EFH (C21-C30) SG	5.0	U	2.0	MDL	5.0	PQL	mg/Kg	UJ	L
EFH (C8-C11) SG	5.0	U	2.0	MDL	5.0	PQL	mg/Kg	UJ	L

Sample ID: **FDG2-SL-583-NBZ-SB-0.0-0.5** *Collected:* **6/12/2014 1:35:00** *Analysis Type:* **REA** *Dilution:* **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
EFH (C12-C14) SG	5.0	U	2.0	MDL	5.0	PQL	mg/Kg	UJ	L
EFH (C15-C20) SG	5.0	U	2.0	MDL	5.0	PQL	mg/Kg	UJ	L
EFH (C21-C30) SG	5.0	U	2.0	MDL	5.0	PQL	mg/Kg	UJ	L
EFH (C8-C11) SG	5.0	U	2.0	MDL	5.0	PQL	mg/Kg	UJ	L

Method Category: SVOA

Method: 8081B **Matrix: SO**

Sample ID: **FDG2-SL-562-NBZ-SB-0.0-0.5** *Collected:* **6/12/2014 8:50:00** *Analysis Type:* **RES** *Dilution:* **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
4,4'-DDE	0.53	J	0.41	MDL	2.1	PQL	ug/Kg	J	Z
gamma-BHC (Lindane)	0.34	J	0.21	MDL	1.0	PQL	ug/Kg	J	Z
HEPTACHLOR EPOXIDE	0.24	J	0.21	MDL	1.0	PQL	ug/Kg	J	Z

* denotes a non-reportable result

Project Name and Number: 1204-002-001-AL - SSFL Area IV Phase 3

Data Qualifier Summary

Lab Reporting Batch ID: PH231 **Laboratory: LL**

EDD Filename: PH231_v1 **eQAPP Name: CDM_SSFL_140617_Lan**

Method Category: SVOA

Method: 8081B **Matrix: SO**

Sample ID: **FDG2-SL-563-NBZ-SB-0.0-0.5** ***Collected:*** **6/12/2014 9:25:00** ***Analysis Type:*** **RES** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
4,4'-DDE	0.44	J	0.34	MDL	1.7	PQL	ug/Kg	J	Z
4,4'-DDT	0.39	J	0.36	MDL	1.7	PQL	ug/Kg	J	Z
BETA-BHC	1.3	J	0.99	MDL	2.0	PQL	ug/Kg	J	Z

Method Category: SVOA

Method: 8082A **Matrix: AQ**

Sample ID: **EB1-061214** ***Collected:*** **6/12/2014 3:00:00** ***Analysis Type:*** **RES** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
AROCLOR 1016	0.43	U	0.085	MDL	0.43	PQL	ug/L	UJ	L, E
AROCLOR 1221	0.43	U	0.085	MDL	0.43	PQL	ug/L	UJ	L, E
AROCLOR 1232	0.43	U	0.17	MDL	0.43	PQL	ug/L	UJ	L, E
AROCLOR 1242	0.43	U	0.085	MDL	0.43	PQL	ug/L	UJ	L, E
AROCLOR 1248	0.43	U	0.085	MDL	0.43	PQL	ug/L	UJ	L, E
AROCLOR 1254	0.43	U	0.085	MDL	0.43	PQL	ug/L	UJ	L, E
AROCLOR 1260	0.43	U	0.13	MDL	0.43	PQL	ug/L	UJ	L, E
Aroclor 1262	0.43	U	0.17	MDL	0.43	PQL	ug/L	UJ	L, E
Aroclor 1268	0.43	U	0.14	MDL	0.43	PQL	ug/L	UJ	L, E

Sample ID: **EB2-061214** ***Collected:*** **6/12/2014 3:30:00** ***Analysis Type:*** **RES** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
AROCLOR 1016	0.42	U	0.084	MDL	0.42	PQL	ug/L	UJ	L, E
AROCLOR 1221	0.42	U	0.084	MDL	0.42	PQL	ug/L	UJ	L, E
AROCLOR 1232	0.42	U	0.17	MDL	0.42	PQL	ug/L	UJ	L, E
AROCLOR 1242	0.42	U	0.084	MDL	0.42	PQL	ug/L	UJ	L, E
AROCLOR 1248	0.42	U	0.084	MDL	0.42	PQL	ug/L	UJ	L, E
AROCLOR 1254	0.42	U	0.084	MDL	0.42	PQL	ug/L	UJ	L, E
AROCLOR 1260	0.42	U	0.13	MDL	0.42	PQL	ug/L	UJ	L, E
Aroclor 1262	0.42	U	0.17	MDL	0.42	PQL	ug/L	UJ	L, E
Aroclor 1268	0.42	U	0.14	MDL	0.42	PQL	ug/L	UJ	L, E

* denotes a non-reportable result

Project Name and Number: 1204-002-001-AL - SSFL Area IV Phase 3

Data Qualifier Summary

Lab Reporting Batch ID: PH231 **Laboratory: LL**

EDD Filename: PH231_v1 **eQAPP Name: CDM_SSFL_140617_Lan**

Method Category: SVOA

Method: 8082A **Matrix: SO**

Sample ID: **FDG2-SL-569-NBZ-SB-0.0-0.5** *Collected:* **6/12/2014 8:55:00** *Analysis Type:* **RES** *Dilution:* **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
AROCLOR 1254	9.5	J	4.4	MDL	17	PQL	ug/Kg	J	Z

Sample ID: **FDG2-SL-583-NBZ-SB-0.0-0.5** *Collected:* **6/12/2014 1:35:00** *Analysis Type:* **RES** *Dilution:* **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
AROCLOR 1254	15	J	4.4	MDL	17	PQL	ug/Kg	J	Z

Method Category: SVOA

Method: 8151A **Matrix: AQ**

Sample ID: **EB1-061214** *Collected:* **6/12/2014 3:00:00** *Analysis Type:* **RES** *Dilution:* **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
2,4-DB	0.59	J	0.29	MDL	0.97	PQL	ug/L	J	Z

Method Category: SVOA

Method: 8270D SIM **Matrix: AQ**

Sample ID: **EB1-061214** *Collected:* **6/12/2014 3:00:00** *Analysis Type:* **RES-BASE/NEUTRAL** *Dilution:* **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
1-METHYLNAPHTHALENE	0.020	J	0.011	MDL	0.056	PQL	ug/L	J	Z
2-METHYLNAPHTHALENE	0.027	J	0.011	MDL	0.056	PQL	ug/L	J	Z
BIS(2-ETHYLHEXYL)PHTHALATE	0.12	J	0.056	MDL	1.1	PQL	ug/L	UJ	L, B
Diethylphthalate	0.069	J	0.056	MDL	1.1	PQL	ug/L	U	B
Di-n-butylphthalate	0.11	J	0.056	MDL	1.1	PQL	ug/L	U	B
Di-n-octylphthalate	1.1	U	0.056	MDL	1.1	PQL	ug/L	UJ	L
N-NITROSODIMETHYLAMINE	0.056	U	0.011	MDL	0.056	PQL	ug/L	UJ	L

Sample ID: **EB2-061214** *Collected:* **6/12/2014 3:30:00** *Analysis Type:* **RES-BASE/NEUTRAL** *Dilution:* **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
1-METHYLNAPHTHALENE	0.020	J	0.011	MDL	0.057	PQL	ug/L	J	Z
2-METHYLNAPHTHALENE	0.028	J	0.011	MDL	0.057	PQL	ug/L	J	Z
BIS(2-ETHYLHEXYL)PHTHALATE	0.15	J	0.057	MDL	1.1	PQL	ug/L	UJ	L, B

* denotes a non-reportable result

Project Name and Number: 1204-002-001-AL - SSFL Area IV Phase 3

Data Qualifier Summary

Lab Reporting Batch ID: PH231 **Laboratory: LL**

EDD Filename: PH231_v1 **eQAPP Name: CDM_SSFL_140617_Lan**

Method Category: SVOA

Method: 8270D SIM **Matrix: AQ**

Sample ID: **EB2-061214** ***Collected:*** **6/12/2014 3:30:00** ***Analysis Type:*** **RES-BASE/NEUTRAL** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
Diethylphthalate	0.080	J	0.057	MDL	1.1	PQL	ug/L	U	B
Di-n-butylphthalate	0.094	J	0.057	MDL	1.1	PQL	ug/L	U	B
Di-n-octylphthalate	1.1	U	0.057	MDL	1.1	PQL	ug/L	UJ	L
N-NITROSODIMETHYLAMINE	0.057	U	0.011	MDL	0.057	PQL	ug/L	UJ	L

Method Category: SVOA

Method: 8270D SIM **Matrix: SO**

Sample ID: **FDG2-SL-562-NBZ-SB-0.0-0.5** ***Collected:*** **6/12/2014 8:50:00** ***Analysis Type:*** **RES-BASE/NEUTRAL** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
1-METHYLNAPHTHALENE	2.0	J	0.83	MDL	2.1	PQL	ug/Kg	J	Z
ACENAPHTHYLENE	0.48	J	0.41	MDL	2.1	PQL	ug/Kg	J	Z
ANTHRACENE	0.55	J	0.41	MDL	2.1	PQL	ug/Kg	J	Z
BENZO(B)FLUORANTHENE	0.91	J	0.83	MDL	2.1	PQL	ug/Kg	J	Z
CHRYSENE	1.4	J	0.41	MDL	2.1	PQL	ug/Kg	J	Z
FLUORANTHENE	1.8	J	0.83	MDL	2.1	PQL	ug/Kg	J	Z
PYRENE	1.5	J	0.83	MDL	2.1	PQL	ug/Kg	J	Z

Sample ID: **FDG2-SL-563-NBZ-SB-0.0-0.5** ***Collected:*** **6/12/2014 9:25:00** ***Analysis Type:*** **RES-BASE/NEUTRAL** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
BENZO(B)FLUORANTHENE	0.95	J	0.68	MDL	1.7	PQL	ug/Kg	J	Z
CHRYSENE	0.94	J	0.34	MDL	1.7	PQL	ug/Kg	J	Z
FLUORANTHENE	0.93	J	0.68	MDL	1.7	PQL	ug/Kg	J	Z
FLUORENE	1.0	J	0.68	MDL	1.7	PQL	ug/Kg	J	Z
NAPHTHALENE	0.75	J	0.68	MDL	1.7	PQL	ug/Kg	J	Z
PHENANTHRENE	0.69	J	0.68	MDL	1.7	PQL	ug/Kg	J	Z
PYRENE	0.86	J	0.68	MDL	1.7	PQL	ug/Kg	J	Z

Sample ID: **FDG2-SL-569-NBZ-SB-0.0-0.5** ***Collected:*** **6/12/2014 8:55:00** ***Analysis Type:*** **RES-BASE/NEUTRAL** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
1-METHYLNAPHTHALENE	0.89	J	0.67	MDL	1.7	PQL	ug/Kg	J	Z
2-METHYLNAPHTHALENE	1.2	J	0.67	MDL	1.7	PQL	ug/Kg	J	Z

* denotes a non-reportable result

Project Name and Number: 1204-002-001-AL - SSFL Area IV Phase 3

Data Qualifier Summary

Lab Reporting Batch ID: PH231 **Laboratory: LL**

EDD Filename: PH231_v1 **eQAPP Name: CDM_SSFL_140617_Lan**

Method Category: SVOA

Method: 8270D SIM **Matrix: SO**

Sample ID: FDG2-SL-569-NBZ-SB-0.0-0.5 **Collected: 6/12/2014 8:55:00** **Analysis Type: RES-BASE/NEUTRAL** **Dilution: 1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
BENZO(A)ANTHRACENE	1.3	J	0.67	MDL	1.7	PQL	ug/Kg	J	Z
BENZO(A)PYRENE	1.4	J	0.67	MDL	1.7	PQL	ug/Kg	J	Z
BENZO(G,H,I)PERYLENE	0.75	J	0.67	MDL	1.7	PQL	ug/Kg	J	Z
Butylbenzylphthalate	17	J	6.1	MDL	18	PQL	ug/Kg	J	Z
FLUORENE	1.1	J	0.67	MDL	1.7	PQL	ug/Kg	J	Z
INDENO(1,2,3-CD)PYRENE	0.67	J	0.67	MDL	1.7	PQL	ug/Kg	J	Z

Sample ID: FDG2-SL-570-NBZ-SB-0.0-0.5 **Collected: 6/12/2014 8:10:00** **Analysis Type: RES-BASE/NEUTRAL** **Dilution: 1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
2-METHYLNAPHTHALENE	0.88	J	0.67	MDL	1.7	PQL	ug/Kg	J	Z
BENZO(B)FLUORANTHENE	0.88	J	0.67	MDL	1.7	PQL	ug/Kg	J	Z
BENZO(K)FLUORANTHENE	1.3	J	0.67	MDL	1.7	PQL	ug/Kg	J	Z
BIS(2-ETHYLHEXYL)PHTHALATE	15	J	6.1	MDL	18	PQL	ug/Kg	J	Z
CHRYSENE	0.80	J	0.34	MDL	1.7	PQL	ug/Kg	J	Z
FLUORANTHENE	0.78	J	0.67	MDL	1.7	PQL	ug/Kg	J	Z
PHENANTHRENE	0.68	J	0.67	MDL	1.7	PQL	ug/Kg	J	Z
PYRENE	0.70	J	0.67	MDL	1.7	PQL	ug/Kg	J	Z

* denotes a non-reportable result

Project Name and Number: 1204-002-001-AL - SSFL Area IV Phase 3

Data Qualifier Summary

Lab Reporting Batch ID: PH231 **Laboratory: LL**

EDD Filename: PH231_v1 **eQAPP Name: CDM_SSFL_140617_Lan**

Reason Code Legend

Reason Code	*Description*
B	Calibration Blank Contamination
B	Method Blank Contamination
E	Laboratory Control Precision
E	Matrix Spike Precision
F	Equipment Blank Contamination
F	Field Blank Contamination
L	Laboratory Control Precision
L	Laboratory Control Spike Lower Estimation
Q	Matrix Spike Lower Estimation
Q	Matrix Spike Precision
Q	Matrix Spike Upper Estimation
S	Surrogate/Tracer Recovery Lower Estimation
S	Surrogate/Tracer Recovery Upper Estimation
Z	Reporting Limit Trace Value

* denotes a non-reportable result

Project Name and Number: 1204-002-001-AL - SSFL Area IV Phase 3

Enclosure I

Level III ADR Outliers

(Including Manual Review Outliers)

Quality Control
Outlier Reports

PH231

Method Blank Outlier Report

Lab Reporting Batch ID: PH231 **Laboratory: LL**

EDD Filename: PH231_v1 **eQAPP Name: CDM_SSFL_140617_Lan**

Method: **1613B**
Matrix: **AQ**

Method Blank Sample ID	Analysis Date	Analyte	Result	Associated Samples
BLK1710B372046	6/24/2014 8:46:00 PM	1,2,3,4,6,7,8-HPCDD	1.63 pg/L	EB1-061214
		1,2,3,4,6,7,8-HPCDF	0.324 pg/L	EB2-061214
		1,2,3,4,7,8-HXCDF	0.271 pg/L	
		1,2,3,6,7,8-HXCDF	0.341 pg/L	
		1,2,3,7,8,9-HXCDD	0.332 pg/L	
		1,2,3,7,8,9-HXCDF	0.269 pg/L	
		1,2,3,7,8-PECDF	0.375 pg/L	
		2,3,4,6,7,8-HXCDF	0.297 pg/L	
		OCDD	6.91 pg/L	

The following samples and their listed target analytes were qualified due to contamination reported in this blank

Sample ID	Analyte	Reported Result	Modified Final Result
EB1-061214(RES)	1,2,3,4,6,7,8-HPCDD	1.41 pg/L	1.41U pg/L
EB1-061214(RES)	1,2,3,4,6,7,8-HPCDF	0.414 pg/L	0.414U pg/L
EB1-061214(RES)	1,2,3,4,7,8-HXCDF	0.107 pg/L	0.107U pg/L
EB1-061214(RES)	1,2,3,6,7,8-HXCDF	0.175 pg/L	0.175U pg/L
EB1-061214(RES)	1,2,3,7,8-PECDF	0.0952 pg/L	0.0952U pg/L
EB1-061214(RES)	OCDD	21.3 pg/L	21.3U pg/L
EB2-061214(RES)	1,2,3,4,6,7,8-HPCDD	1.68 pg/L	1.68U pg/L
EB2-061214(RES)	1,2,3,4,6,7,8-HPCDF	0.365 pg/L	0.365U pg/L
EB2-061214(RES)	1,2,3,4,7,8-HXCDF	0.207 pg/L	0.207U pg/L
EB2-061214(RES)	1,2,3,7,8,9-HXCDD	0.244 pg/L	0.244U pg/L
EB2-061214(RES)	1,2,3,7,8,9-HXCDF	0.190 pg/L	0.190U pg/L
EB2-061214(RES)	2,3,4,6,7,8-HXCDF	0.257 pg/L	0.257U pg/L
EB2-061214(RES)	OCDD	13.9 pg/L	13.9U pg/L

Method: **1613B**
Matrix: **SO**

Method Blank Sample ID	Analysis Date	Analyte	Result	Associated Samples
BLK1670B372213	6/18/2014 10:13:00 PM	1,2,3,4,6,7,8-HPCDD	0.114 ng/Kg	FDG2-SL-562-NBZ-SB-0.0-0.5
		1,2,3,4,6,7,8-HPCDF	0.0502 ng/Kg	FDG2-SL-563-NBZ-SB-0.0-0.5
		1,2,3,4,7,8,9-HPCDF	0.0604 ng/Kg	
		1,2,3,7,8-PECDF	0.0617 ng/Kg	
		2,3,4,6,7,8-HXCDF	0.0544 ng/Kg	
		2,3,4,7,8-PECDF	0.0610 ng/Kg	
		2,3,7,8-TCDF	0.0972 ng/Kg	
		OCDD	0.525 ng/Kg	
		OCDF	0.298 ng/Kg	

The following samples and their listed target analytes were qualified due to contamination reported in this blank

Sample ID	Analyte	Reported Result	Modified Final Result
FDG2-SL-562-NBZ-SB-0.0-0.5(RES)	1,2,3,4,7,8,9-HPCDF	0.193 ng/Kg	0.193U ng/Kg
FDG2-SL-562-NBZ-SB-0.0-0.5(RES)	1,2,3,7,8-PECDF	0.0931 ng/Kg	0.0931U ng/Kg
FDG2-SL-562-NBZ-SB-0.0-0.5(RES)	2,3,4,6,7,8-HXCDF	0.146 ng/Kg	0.146U ng/Kg
FDG2-SL-562-NBZ-SB-0.0-0.5(RES)	2,3,4,7,8-PECDF	0.0559 ng/Kg	0.0559U ng/Kg
FDG2-SL-562-NBZ-SB-0.0-0.5(RES)	2,3,7,8-TCDF	0.102 ng/Kg	0.102U ng/Kg

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Method Blank Outlier Report

Lab Reporting Batch ID: PH231 **Laboratory: LL**

EDD Filename: PH231_v1 **eQAPP Name: CDM_SSFL_140617_Lan**

Method: **1613B**
Matrix: **SO**

Method Blank Sample ID	Analysis Date	Analyte	Result	Associated Samples

The following samples and their listed target analytes were qualified due to contamination reported in this blank

Sample ID	Analyte	Reported Result	Modified Final Result
FDG2-SL-563-NBZ-SB-0.0-0.5(RES)	1,2,3,7,8-PECDF	0.121 ng/Kg	0.121U ng/Kg
FDG2-SL-563-NBZ-SB-0.0-0.5(RES)	2,3,4,6,7,8-HXCDF	0.225 ng/Kg	0.225U ng/Kg
FDG2-SL-563-NBZ-SB-0.0-0.5(RES)	2,3,4,7,8-PECDF	0.0682 ng/Kg	0.0682U ng/Kg
FDG2-SL-563-NBZ-SB-0.0-0.5(RES)	2,3,7,8-TCDF	0.111 ng/Kg	0.111U ng/Kg

Method: **6010C**
Matrix: **AQ**

Method Blank Sample ID	Analysis Date	Analyte	Result	Associated Samples
P16435AB222233	6/16/2014 10:33:00 PM	MANGANESE NICKEL ZINC Zirconium	0.0014 mg/L 0.0016 mg/L 0.0047 mg/L 0.0094 mg/L	EB1-061214 EB2-061214

The following samples and their listed target analytes were qualified due to contamination reported in this blank

Sample ID	Analyte	Reported Result	Modified Final Result
EB1-061214(RES)	MANGANESE	0.0013 mg/L	0.0013U mg/L
EB1-061214(RES)	Zirconium	0.0099 mg/L	0.0099U mg/L
EB2-061214(RES)	MANGANESE	0.0013 mg/L	0.0013U mg/L
EB2-061214(RES)	Zirconium	0.0097 mg/L	0.0097U mg/L

Method: **6010C**
Matrix: **SO**

Method Blank Sample ID	Analysis Date	Analyte	Result	Associated Samples
P16837BB221618	6/19/2014 4:18:00 PM	ALUMINUM BORON CALCIUM TIN ZINC	10.0 mg/Kg 1.76 mg/Kg 24.6 mg/Kg 1.46 mg/Kg 0.386 mg/Kg	FDG2-SL-562-NBZ-SB-0.0-0.5 FDG2-SL-563-NBZ-SB-0.0-0.5 FDG2-SL-569-NBZ-SB-0.0-0.5 FDG2-SL-570-NBZ-SB-0.0-0.5

The following samples and their listed target analytes were qualified due to contamination reported in this blank

Sample ID	Analyte	Reported Result	Modified Final Result
FDG2-SL-562-NBZ-SB-0.0-0.5(REA)	BORON	2.89 mg/Kg	2.89U mg/Kg
FDG2-SL-562-NBZ-SB-0.0-0.5(REA)	TIN	2.76 mg/Kg	2.76U mg/Kg
FDG2-SL-563-NBZ-SB-0.0-0.5(REA)	BORON	4.70 mg/Kg	4.70U mg/Kg
FDG2-SL-563-NBZ-SB-0.0-0.5(REA)	TIN	2.02 mg/Kg	2.02U mg/Kg
FDG2-SL-569-NBZ-SB-0.0-0.5(REA)	BORON	3.06 mg/Kg	3.06U mg/Kg
FDG2-SL-569-NBZ-SB-0.0-0.5(REA)	TIN	2.50 mg/Kg	2.50U mg/Kg
FDG2-SL-570-NBZ-SB-0.0-0.5(REA)	BORON	4.24 mg/Kg	4.24U mg/Kg

Method Blank Outlier Report

Lab Reporting Batch ID: PH231 **Laboratory: LL**

EDD Filename: PH231_v1 **eQAPP Name: CDM_SSFL_140617_Lan**

Method: 6010C
Matrix: SO

Method Blank Sample ID	Analysis Date	Analyte	Result	Associated Samples

The following samples and their listed target analytes were qualified due to contamination reported in this blank

Sample ID	Analyte	Reported Result	Modified Final Result
FDG2-SL-570-NBZ-SB-0.0-0.5(REA)	TIN	2.70 mg/Kg	2.70U mg/Kg

Method: 6020A
Matrix: SO

Method Blank Sample ID	Analysis Date	Analyte	Result	Associated Samples
P16837BB220645A	6/19/2014 6:45:00 AM	STRONTIUM	0.134 mg/Kg	FDG2-SL-562-NBZ-SB-0.0-0.5 FDG2-SL-563-NBZ-SB-0.0-0.5 FDG2-SL-569-NBZ-SB-0.0-0.5 FDG2-SL-570-NBZ-SB-0.0-0.5

Method: 8151A
Matrix: AQ

Method Blank Sample ID	Analysis Date	Analyte	Result	Associated Samples
P68683AB241512A	6/20/2014 3:12:00 PM	2,4,5-TP (Silvex)	0.012 ug/L	EB1-061214

Method: 8270D SIM
Matrix: AQ

Method Blank Sample ID	Analysis Date	Analyte	Result	Associated Samples
PLKWD16B260300	6/20/2014 3:00:00 AM	BIS(2-ETHYLHEXYL)PHTHALATE Diethylphthalate Di-n-butylphthalate	0.16 ug/L 0.013 ug/L 0.024 ug/L	EB1-061214 EB2-061214

The following samples and their listed target analytes were qualified due to contamination reported in this blank

Sample ID	Analyte	Reported Result	Modified Final Result
EB1-061214(RES)	BIS(2-ETHYLHEXYL)PHTHALATE	0.12 ug/L	1.1U ug/L
EB1-061214(RES)	Diethylphthalate	0.069 ug/L	1.1U ug/L
EB1-061214(RES)	Di-n-butylphthalate	0.11 ug/L	1.1U ug/L
EB2-061214(RES)	BIS(2-ETHYLHEXYL)PHTHALATE	0.15 ug/L	1.1U ug/L
EB2-061214(RES)	Diethylphthalate	0.080 ug/L	1.1U ug/L
EB2-061214(RES)	Di-n-butylphthalate	0.094 ug/L	1.1U ug/L

Field Blank Outlier Report

Lab Reporting Batch ID: PH231 **Laboratory: LL**

EDD Filename: PH231_v1 **eQAPP Name: CDM_SSFL_140617_Lan**

Method: **6010C**
Matrix: **SO**

Field Blank Sample ID	Collected Date	Analyte	Result	Associated Samples
FB-052114(RES)	5/21/2014 2:00:00 PM	Zirconium	0.011 mg/L	FDG2-SL-562-NBZ-SB-0.0-0.5 FDG2-SL-563-NBZ-SB-0.0-0.5 FDG2-SL-569-NBZ-SB-0.0-0.5 FDG2-SL-570-NBZ-SB-0.0-0.5 FDG2-SL-583-NBZ-SB-0.0-0.5

The following samples and their listed target analytes were qualified due to contamination reported in this blank

Sample ID	Analyte	Reported Result	Modified Final Result
FDG2-SL-562-NBZ-SB-0.0-0.5(REA)	Zirconium	1.84 mg/Kg	1.84U mg/Kg
FDG2-SL-563-NBZ-SB-0.0-0.5(REA)	Zirconium	1.77 mg/Kg	1.77U mg/Kg
FDG2-SL-569-NBZ-SB-0.0-0.5(REA)	Zirconium	1.94 mg/Kg	1.94U mg/Kg
FDG2-SL-570-NBZ-SB-0.0-0.5(REA)	Zirconium	3.29 mg/Kg	3.29U mg/Kg

Equipment Rinsate Blank Outlier Report

Lab Reporting Batch ID: PH231 **Laboratory: LL**

EDD Filename: PH231_v1 **eQAPP Name: CDM_SSFL_140617_Lan**

Method: **6010C**
Matrix: **SO**

Equipment Blank Sample ID	Collected Date	Analyte	Result	Associated Samples
EB1-061214(RES)	6/12/2014 3:00:00 PM	MANGANESE Zirconium	0.0013 mg/L 0.0099 mg/L	FDG2-SL-569-NBZ-SB-0.0-0.5 FDG2-SL-570-NBZ-SB-0.0-0.5
EB2-061214(RES)	6/12/2014 3:30:00 PM	MANGANESE Zirconium	0.0013 mg/L 0.0097 mg/L	FDG2-SL-562-NBZ-SB-0.0-0.5 FDG2-SL-563-NBZ-SB-0.0-0.5 FDG2-SL-583-NBZ-SB-0.0-0.5

The following samples and their listed target analytes were qualified due to contamination reported in this blank

Sample ID	Analyte	Reported Result	Modified Final Result
FDG2-SL-562-NBZ-SB-0.0-0.5(REA)	Zirconium	1.84 mg/Kg	1.84U mg/Kg
FDG2-SL-563-NBZ-SB-0.0-0.5(REA)	Zirconium	1.77 mg/Kg	1.77U mg/Kg
FDG2-SL-569-NBZ-SB-0.0-0.5(REA)	Zirconium	1.94 mg/Kg	1.94U mg/Kg
FDG2-SL-570-NBZ-SB-0.0-0.5(REA)	Zirconium	3.29 mg/Kg	3.29U mg/Kg

Surrogate Outlier Report

Lab Reporting Batch ID: PH231 **Laboratory: LL**

EDD Filename: PH231_v1. **eQAPP Name: CDM_SSFL_140617_Lan**

Method: **8015M**
Matrix: **SO**

Sample ID (Analysis Type)	*Surrogate*	*Sample % Recovery*	*% Recovery Limits*	*Affected Compounds*	*Flag*
FDG2-SL-569-NBZ-SB-0.0-0.5 (REA)	O-TERPHENYL	60	66.00-123.00	All Target Analytes	J (all detects) UJ (all non-detects)

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Matrix Spike/Matrix Spike Duplicate Outlier Report

Lab Reporting Batch ID: PH231 **Laboratory: LL**

EDD Filename: PH231_v1 **eQAPP Name: CDM_SSFL_140617_Lan**

Method: **8081B**
Matrix: **SO**

QC Sample ID (Associated Samples)	*Compound*	*MS %R*	*MSD %R*	*%R Limits*	*RPD (Limits)*	*Affected Compounds*	*Flag*
FDG2-SL-562-NBZ-SB-0.0-0.5MS (FDG2-SL-562-NBZ-SB-0.0-0.5)	BETA-BHC	153	-	42.00-133.00	-	BETA-BHC	J (all detects)

Lab Control Spike/Lab Control Spike Duplicate Outlier Report

Lab Reporting Batch ID: PH231 **Laboratory: LL**

EDD Filename: PH231_v1 **eQAPP Name: CDM_SSFL_140617_Lan**

Method: 8082A
Matrix: AQ

QC Sample ID (Associated Samples)	Compound	LCS %R	LCSD %R	%R Limits	RPD (Limits)	Affected Compounds	Flag
P41686AQ241325A P41686AY240121A (EB1-061214 EB2 -061214)	AROCLOR 1016 AROCLOR 1260	41 44	- -	60.00-117.00 67.00-128.00	71 (30.00) 70 (30.00)	AROCLOR 1016, 1221, 1232 AROCLOR 1260, 1242, 1248, 1254, 1262, 1268	J(all detects) UJ(all non-detects)

Method: 8015M
Matrix: AQ

QC Sample ID (Associated Samples)	Compound	LCS %R	LCSD %R	%R Limits	RPD (Limits)	Affected Compounds	Flag
P41691AQ320246A P41691AY320308A (EB1-061214 EB2 -061214)	EFH (C12-C14) SG EFH (C21-C30) SG EFH (C8-C11) SG	65 70 42	- - 49	67.00-109.00 75.00-117.00 55.00-86.00	- - -	EFH (C12-C14) SG EFH (C21-C30) SG EFH (C8-C11) SG	J(all detects) UJ(all non-detects)

Method: 8270D SIM
Matrix: AQ

QC Sample ID (Associated Samples)	Compound	LCS %R	LCSD %R	%R Limits	RPD (Limits)	Affected Compounds	Flag
P9WDLCSQ260328 P9WDLCSY260356 (EB1-061214 EB2 -061214)	BIS(2-ETHYLHEXYL)PHTHALAT Di-n-octylphthalate N-NITROSODIMETHYLAMINE	60 49 55	- - 55	70.00-143.00 57.00-145.00 56.00-96.00	- - -	BIS(2-ETHYLHEXYL)PHTHALA Di-n-octylphthalate N-NITROSODIMETHYLAMINE	J(all detects) UJ(all non-detects)

Method: 8015M
Matrix: SO

QC Sample ID (Associated Samples)	Compound	LCS %R	LCSD %R	%R Limits	RPD (Limits)	Affected Compounds	Flag
P41675AQ321921A (FDG2-SL-562-NBZ-SB-0.0-0.5 FDG2-SL-563-NBZ-SB-0.0-0.5 FDG2-SL-569-NBZ-SB-0.0-0.5 FDG2-SL-570-NBZ-SB-0.0-0.5 FDG2-SL-583-NBZ-SB-0.0-0.5)	EFH (C12-C14) SG EFH (C15-C20) SG EFH (C21-C30) SG EFH (C8-C11) SG	68 71 70 52	- - - -	76.00-115.00 78.00-127.00 77.00-127.00 60.00-115.00	- - - -	EFH (C12-C14) SG EFH (C15-C20) SG EFH (C21-C30) SG EFH (C8-C11) SG	J (all detects) UJ (all non-detects)

Reporting Limit Outliers

Lab Reporting Batch ID: PH231 **Laboratory: LL**

EDD Filename: PH231_v1 **eQAPP Name: CDM_SSFL_140617_Lan**

Method: 1613B

Matrix: AQ

SampleID	Analyte	Lab Qual	Result	Reporting Limit	RL Type	Units	Flag
EB1-061214	1,2,3,4,6,7,8-HPCDD	JBQ	1.41	10.2	PQL	pg/L	J (all detects)
	1,2,3,4,6,7,8-HPCDF	JBQ	0.414	10.2	PQL	pg/L	
	1,2,3,4,7,8-HXCDF	JB	0.107	10.2	PQL	pg/L	
	1,2,3,6,7,8-HXCDF	JBQ	0.175	10.2	PQL	pg/L	
	1,2,3,7,8-PECDF	JBQ	0.0952	10.2	PQL	pg/L	
	2,3,4,7,8-PECDF	JQ	0.0938	10.2	PQL	pg/L	
	2,3,7,8-TCDF	JQ	0.0871	2.04	PQL	pg/L	
	OCDF	JQ	0.740	20.4	PQL	pg/L	
EB2-061214	1,2,3,4,6,7,8-HPCDD	JB	1.68	9.86	PQL	pg/L	J (all detects)
	1,2,3,4,6,7,8-HPCDF	JB	0.365	9.86	PQL	pg/L	
	1,2,3,4,7,8,9-HPCDF	JQ	0.367	9.86	PQL	pg/L	
	1,2,3,4,7,8-HXCDF	JBQ	0.207	9.86	PQL	pg/L	
	1,2,3,7,8,9-HXCDD	JBQ	0.244	9.86	PQL	pg/L	
	1,2,3,7,8,9-HXCDF	JBQ	0.190	9.86	PQL	pg/L	
	1,2,3,7,8-PECDD	JQ	0.251	9.86	PQL	pg/L	
	2,3,4,6,7,8-HXCDF	JBQ	0.257	9.86	PQL	pg/L	
	2,3,4,7,8-PECDF	JQ	0.234	9.86	PQL	pg/L	
	OCDD	JB	13.9	19.7	PQL	pg/L	
	OCDF	JQ	1.06	19.7	PQL	pg/L	

Method: 6010C

Matrix: AQ

SampleID	Analyte	Lab Qual	Result	Reporting Limit	RL Type	Units	Flag
EB1-061214	MANGANESE	J	0.0013	0.0100	PQL	mg/L	J (all detects)
	Zirconium	J	0.0099	0.100	PQL	mg/L	
EB2-061214	MANGANESE	J	0.0013	0.0100	PQL	mg/L	J (all detects)
	Zirconium	J	0.0097	0.100	PQL	mg/L	

Method: 8151A

Matrix: AQ

SampleID	Analyte	Lab Qual	Result	Reporting Limit	RL Type	Units	Flag
EB1-061214	2,4-DB	J	0.59	0.97	PQL	ug/L	J (all detects)

Method: 8270D SIM

Matrix: AQ

SampleID	Analyte	Lab Qual	Result	Reporting Limit	RL Type	Units	Flag
EB1-061214	1-METHYLNAPHTHALENE	J	0.020	0.056	PQL	ug/L	J (all detects)
	2-METHYLNAPHTHALENE	J	0.027	0.056	PQL	ug/L	
	BIS(2-ETHYLHEXYL)PHTHALATE	J	0.12	1.1	PQL	ug/L	
	Diethylphthalate	J	0.069	1.1	PQL	ug/L	
	Di-n-butylphthalate	J	0.11	1.1	PQL	ug/L	
EB2-061214	1-METHYLNAPHTHALENE	J	0.020	0.057	PQL	ug/L	J (all detects)
	2-METHYLNAPHTHALENE	J	0.028	0.057	PQL	ug/L	
	BIS(2-ETHYLHEXYL)PHTHALATE	J	0.15	1.1	PQL	ug/L	
	Diethylphthalate	J	0.080	1.1	PQL	ug/L	
	Di-n-butylphthalate	J	0.094	1.1	PQL	ug/L	

Project Name and Number: 1204-002-001-AL - SSFL Area IV Phase 3

Reporting Limit Outliers

Lab Reporting Batch ID: PH231 **Laboratory: LL**

EDD Filename: PH231_v1 **eQAPP Name: CDM_SSFL_140617_Lan**

Method: 1613B

Matrix: SO

SampleID	Analyte	Lab Qual	Result	Reporting Limit	RL Type	Units	Flag
FDG2-SL-562-NBZ-SB-0.0-0.5	1,2,3,4,6,7,8-HPCDF	JB	1.86	6.00	PQL	ng/Kg	J (all detects)
	1,2,3,4,7,8,9-HPCDF	JBQ	0.193	6.00	PQL	ng/Kg	
	1,2,3,4,7,8-HxCDD	J	0.129	6.00	PQL	ng/Kg	
	1,2,3,4,7,8-HXCDF	JQ	0.100	6.00	PQL	ng/Kg	
	1,2,3,6,7,8-HXCDD	J	0.399	6.00	PQL	ng/Kg	
	1,2,3,6,7,8-HXCDF	J	0.167	6.00	PQL	ng/Kg	
	1,2,3,7,8,9-HXCDD	JQ	0.149	6.00	PQL	ng/Kg	
	1,2,3,7,8,9-HXCDF	JQ	0.0682	6.00	PQL	ng/Kg	
	1,2,3,7,8-PECDF	JBQ	0.0931	6.00	PQL	ng/Kg	
	2,3,4,6,7,8-HXCDF	JBQ	0.146	6.00	PQL	ng/Kg	
	2,3,4,7,8-PECDF	JBQ	0.0559	6.00	PQL	ng/Kg	
	2,3,7,8-TCDF	JBQ	0.102	1.20	PQL	ng/Kg	
	OCDF	JB	4.50	12.0	PQL	ng/Kg	
FDG2-SL-563-NBZ-SB-0.0-0.5	1,2,3,4,6,7,8-HPCDF	JB	3.47	5.07	PQL	ng/Kg	J (all detects)
	1,2,3,4,7,8,9-HPCDF	JBQ	0.393	5.07	PQL	ng/Kg	
	1,2,3,4,7,8-HxCDD	JQ	0.147	5.07	PQL	ng/Kg	
	1,2,3,4,7,8-HXCDF	J	0.143	5.07	PQL	ng/Kg	
	1,2,3,6,7,8-HXCDD	J	0.747	5.07	PQL	ng/Kg	
	1,2,3,6,7,8-HXCDF	J	0.194	5.07	PQL	ng/Kg	
	1,2,3,7,8,9-HXCDD	J	0.305	5.07	PQL	ng/Kg	
	1,2,3,7,8,9-HXCDF	JQ	0.0742	5.07	PQL	ng/Kg	
	1,2,3,7,8-PECDD	JQ	0.128	5.07	PQL	ng/Kg	
	1,2,3,7,8-PECDF	JBQ	0.121	5.07	PQL	ng/Kg	
	2,3,4,6,7,8-HXCDF	JBQ	0.225	5.07	PQL	ng/Kg	
	2,3,4,7,8-PECDF	JB	0.0682	5.07	PQL	ng/Kg	
	2,3,7,8-TCDF	JBQ	0.111	1.01	PQL	ng/Kg	
	OCDF	JB	8.22	10.1	PQL	ng/Kg	

Method: 6010C

Matrix: SO

SampleID	Analyte	Lab Qual	Result	Reporting Limit	RL Type	Units	Flag
FDG2-SL-562-NBZ-SB-0.0-0.5	BERYLLIUM	J	0.453	1.23	PQL	mg/Kg	J (all detects)
	BORON	J	2.89	12.3	PQL	mg/Kg	
	SODIUM	J	119	123	PQL	mg/Kg	
	TIN	J	2.76	12.3	PQL	mg/Kg	
	Zirconium	J	1.84	6.13	PQL	mg/Kg	
FDG2-SL-563-NBZ-SB-0.0-0.5	ARSENIC	J	3.74	3.95	PQL	mg/Kg	J (all detects)
	BERYLLIUM	J	0.281	0.987	PQL	mg/Kg	
	BORON	J	4.70	9.87	PQL	mg/Kg	
	MOLYBDENUM	J	0.184	1.97	PQL	mg/Kg	
	TIN	J	2.02	9.87	PQL	mg/Kg	
	Zirconium	J	1.77	4.94	PQL	mg/Kg	
FDG2-SL-569-NBZ-SB-0.0-0.5	BERYLLIUM	J	0.505	0.980	PQL	mg/Kg	J (all detects)
	BORON	J	3.06	9.80	PQL	mg/Kg	
	MOLYBDENUM	J	0.180	1.96	PQL	mg/Kg	
	SODIUM	J	51.8	98.0	PQL	mg/Kg	
	TIN	J	2.50	9.80	PQL	mg/Kg	
	Zirconium	J	1.94	4.90	PQL	mg/Kg	
FDG2-SL-570-NBZ-SB-0.0-0.5	BERYLLIUM	J	0.795	0.989	PQL	mg/Kg	J (all detects)
	BORON	J	4.24	9.89	PQL	mg/Kg	
	MOLYBDENUM	J	0.387	1.98	PQL	mg/Kg	
	SODIUM	J	93.0	98.9	PQL	mg/Kg	
	TIN	J	2.70	9.89	PQL	mg/Kg	
	Zirconium	J	3.29	4.95	PQL	mg/Kg	

Project Name and Number: 1204-002-001-AL - SSFL Area IV Phase 3

Reporting Limit Outliers

Lab Reporting Batch ID: PH231 **Laboratory: LL**

EDD Filename: PH231_v1 **eQAPP Name: CDM_SSFL_140617_Lan**

Method: 6010C

Matrix: SO

SampleID	Analyte	Lab Qual	Result	Reporting Limit	RL Type	Units	Flag

Method: 6020A

Matrix: SO

SampleID	Analyte	Lab Qual	Result	Reporting Limit	RL Type	Units	Flag
FDG2-SL-562-NBZ-SB-0.0-0.5	THALLIUM	J	0.151	0.245	PQL	mg/Kg	J (all detects)
FDG2-SL-563-NBZ-SB-0.0-0.5	SELENIUM THALLIUM	J J	0.171 0.167	0.395 0.197	PQL PQL	mg/Kg mg/Kg	J (all detects)
FDG2-SL-569-NBZ-SB-0.0-0.5	SELENIUM SILVER	J J	0.337 0.0306	0.392 0.196	PQL PQL	mg/Kg mg/Kg	J (all detects)
FDG2-SL-570-NBZ-SB-0.0-0.5	SILVER	J	0.0382	0.198	PQL	mg/Kg	J (all detects)

Method: 7471B

Matrix: SO

SampleID	Analyte	Lab Qual	Result	Reporting Limit	RL Type	Units	Flag
FDG2-SL-562-NBZ-SB-0.0-0.5	MERCURY	J	0.0138	0.0202	PQL	mg/Kg	J (all detects)
FDG2-SL-563-NBZ-SB-0.0-0.5	MERCURY	J	0.0152	0.0161	PQL	mg/Kg	J (all detects)

Method: 8015M

Matrix: SO

SampleID	Analyte	Lab Qual	Result	Reporting Limit	RL Type	Units	Flag
FDG2-SL-562-NBZ-SB-0.0-0.5	EFH (C15-C20) SG EFH (C21-C30)	J J	3.3 2.6	6.2 6.2	PQL PQL	mg/Kg mg/Kg	J (all detects)

Method: 8081B

Matrix: SO

SampleID	Analyte	Lab Qual	Result	Reporting Limit	RL Type	Units	Flag
FDG2-SL-562-NBZ-SB-0.0-0.5	4,4'-DDE gamma-BHC (Lindane) HEPTACHLOR EPOXIDE	J J J	0.53 0.34 0.24	2.1 1.0 1.0	PQL PQL PQL	ug/Kg ug/Kg ug/Kg	J (all detects)
FDG2-SL-563-NBZ-SB-0.0-0.5	4,4'-DDE 4,4'-DDT BETA-BHC	J J J	0.44 0.39 1.3	1.7 1.7 2.0	PQL PQL PQL	ug/Kg ug/Kg ug/Kg	J (all detects)

Reporting Limit Outliers

Lab Reporting Batch ID: PH231 **Laboratory: LL**

EDD Filename: PH231_v1 **eQAPP Name: CDM_SSFL_140617_Lan**

Method: 8082A

Matrix: SO

SampleID	Analyte	Lab Qual	Result	Reporting Limit	RL Type	Units	Flag
FDG2-SL-569-NBZ-SB-0.0-0.5	AROCLOR 1254	J	9.5	17	PQL	ug/Kg	J (all detects)
FDG2-SL-583-NBZ-SB-0.0-0.5	AROCLOR 1254	J	15	17	PQL	ug/Kg	J (all detects)

Method: 8270D SIM

Matrix: SO

SampleID	Analyte	Lab Qual	Result	Reporting Limit	RL Type	Units	Flag
FDG2-SL-562-NBZ-SB-0.0-0.5	1-METHYLNAPHTHALENE	J	2.0	2.1	PQL	ug/Kg	
	ACENAPHTHYLENE	J	0.48	2.1	PQL	ug/Kg	
	ANTHRACENE	J	0.55	2.1	PQL	ug/Kg	
	BENZO(B)FLUORANTHENE	J	0.91	2.1	PQL	ug/Kg	J (all detects)
	CHRYSENE	J	1.4	2.1	PQL	ug/Kg	
	FLUORANTHENE	J	1.8	2.1	PQL	ug/Kg	
	PYRENE	J	1.5	2.1	PQL	ug/Kg	
FDG2-SL-563-NBZ-SB-0.0-0.5	BENZO(B)FLUORANTHENE	J	0.95	1.7	PQL	ug/Kg	
	CHRYSENE	J	0.94	1.7	PQL	ug/Kg	
	FLUORANTHENE	J	0.93	1.7	PQL	ug/Kg	
	FLUORENE	J	1.0	1.7	PQL	ug/Kg	J (all detects)
	NAPHTHALENE	J	0.75	1.7	PQL	ug/Kg	
	PHENANTHRENE	J	0.69	1.7	PQL	ug/Kg	
	PYRENE	J	0.86	1.7	PQL	ug/Kg	
FDG2-SL-569-NBZ-SB-0.0-0.5	1-METHYLNAPHTHALENE	J	0.89	1.7	PQL	ug/Kg	
	2-METHYLNAPHTHALENE	J	1.2	1.7	PQL	ug/Kg	
	BENZO(A)ANTHRACENE	J	1.3	1.7	PQL	ug/Kg	
	BENZO(A)PYRENE	J	1.4	1.7	PQL	ug/Kg	
	BENZO(G,H,I)PERYLENE	J	0.75	1.7	PQL	ug/Kg	J (all detects)
	Butylbenzylphthalate	J	17	18	PQL	ug/Kg	
	FLUORENE	J	1.1	1.7	PQL	ug/Kg	
	INDENO(1,2,3-CD)PYRENE	J	0.67	1.7	PQL	ug/Kg	
FDG2-SL-570-NBZ-SB-0.0-0.5	2-METHYLNAPHTHALENE	J	0.88	1.7	PQL	ug/Kg	
	BENZO(B)FLUORANTHENE	J	0.88	1.7	PQL	ug/Kg	
	BENZO(K)FLUORANTHENE	J	1.3	1.7	PQL	ug/Kg	
	BIS(2-ETHYLHEXYL)PHTHALATE	J	15	18	PQL	ug/Kg	J (all detects)
	CHRYSENE	J	0.80	1.7	PQL	ug/Kg	
	FLUORANTHENE	J	0.78	1.7	PQL	ug/Kg	
	PHENANTHRENE	J	0.68	1.7	PQL	ug/Kg	
	PYRENE	J	0.70	1.7	PQL	ug/Kg	

LDC #: 32270B4 **VALIDATION COMPLETENESS WORKSHEET** Date: 8/6/14

SDG #: PH231 ADR Page: 1 of 1

Laboratory: Eurofins Lancaster Laboratories 7471A Reviewer: KK

2nd Reviewer: CR

METHOD: Metals (EPA SW 846 Method 6010C/6020A/~~7000~~)

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

	Validation Area		Comments
I.	Technical holding times	—	Sampling dates: 6/12/14
II.	ICP/MS Tune	—	
III.	Calibration	—	
IV.	Blanks	SW	CCB hits, no quals for Soils
V.	ICP Interference Check Sample (ICS) Analysis	—	
VI.	Matrix Spike Analysis	N	MS/D from SDG # PH234
VII.	Duplicate Sample Analysis	N	DUP ↓
VIII.	Laboratory Control Samples (LCS)	~~A~~ N N	LCS
IX.	Internal Standard (ICP-MS)	N	
X.	Furnace Atomic Absorption QC	N	
XI.	ICP Serial Dilution	A	
XII.	Sample Result Verification	N	
XIII.	Overall Assessment of Data	N	
XIV.	Field Duplicates	N	
XV	Field Blanks	SW	EB = 1,2 FB- 052114 SDG# PH191

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

1	FDG2-SL-562-NBZ-SB-0.0-0.5	11		21		31	
2	FDG2-SL-563-NBZ-SB-0.0-0.5	12		22		32	
3	FDG2-SL-569-NBZ-SB-0.0-0.5	13		23		33	
4	FDG2-SL-570-NBZ-SB-0.0-0.5	14		24		34	
5	EB1-061214 Water	15		25		35	
6	EB2-061214 Water	16		26		36	
7		17		27		37	
8		18		28		38	
9		19		29		39	
10		20		30		40	

Notes: _____

LDC #: 32704B4

VALIDATION FINDINGS WORKSHEET
Sample Specific Element Reference

Reviewer: PM
2nd reviewer: AL

All circled elements are applicable to each sample.

Sample ID	Matrix	Target Analyte List (TAL)
1-4, 5-6		Al, Sb, As, Ba, Be, B, Cd, Ca, Cr, Co, Cu, Fe, Pb, Li, Mg, Mo, Mn, Hg, Ni, P, K, Se, Ag, Na, Sr, Tl, Sn, Ti, V, Zn, Zr
		Al, Sb, As, Ba, Be, B, Cd, Ca, Cr, Co, Cu, Fe, Pb, Li, Mg, Mo, Mn, Hg, Ni, P, K, Se, Ag, Na, Sr, Tl, Sn, Ti, V, Zn, Zr
		Al, Sb, As, Ba, Be, B, Cd, Ca, Cr, Co, Cu, Fe, Pb, Li, Mg, Mo, Mn, Hg, Ni, P, K, Se, Ag, Na, Sr, Tl, Sn, Ti, V, Zn, Zr
		Al, Sb, As, Ba, Be, B, Cd, Ca, Cr, Co, Cu, Fe, Pb, Li, Mg, Mo, Mn, Hg, Ni, P, K, Se, Ag, Na, Sr, Tl, Sn, Ti, V, Zn, Zr
		Al, Sb, As, Ba, Be, B, Cd, Ca, Cr, Co, Cu, Fe, Pb, Li, Mg, Mo, Mn, Hg, Ni, P, K, Se, Ag, Na, Sr, Tl, Sn, Ti, V, Zn, Zr
		Al, Sb, As, Ba, Be, B, Cd, Ca, Cr, Co, Cu, Fe, Pb, Li, Mg, Mo, Mn, Hg, Ni, P, K, Se, Ag, Na, Sr, Tl, Sn, Ti, V, Zn, Zr
		Al, Sb, As, Ba, Be, B, Cd, Ca, Cr, Co, Cu, Fe, Pb, Li, Mg, Mo, Mn, Hg, Ni, P, K, Se, Ag, Na, Sr, Tl, Sn, Ti, V, Zn, Zr
		Al, Sb, As, Ba, Be, B, Cd, Ca, Cr, Co, Cu, Fe, Pb, Li, Mg, Mo, Mn, Hg, Ni, P, K, Se, Ag, Na, Sr, Tl, Sn, Ti, V, Zn, Zr
		Al, Sb, As, Ba, Be, B, Cd, Ca, Cr, Co, Cu, Fe, Pb, Li, Mg, Mo, Mn, Hg, Ni, P, K, Se, Ag, Na, Sr, Tl, Sn, Ti, V, Zn, Zr
		Al, Sb, As, Ba, Be, B, Cd, Ca, Cr, Co, Cu, Fe, Pb, Li, Mg, Mo, Mn, Hg, Ni, P, K, Se, Ag, Na, Sr, Tl, Sn, Ti, V, Zn, Zr
		Al, Sb, As, Ba, Be, B, Cd, Ca, Cr, Co, Cu, Fe, Pb, Li, Mg, Mo, Mn, Hg, Ni, P, K, Se, Ag, Na, Sr, Tl, Sn, Ti, V, Zn, Zr
		Al, Sb, As, Ba, Be, B, Cd, Ca, Cr, Co, Cu, Fe, Pb, Li, Mg, Mo, Mn, Hg, Ni, P, K, Se, Ag, Na, Sr, Tl, Sn, Ti, V, Zn, Zr
		Al, Sb, As, Ba, Be, B, Cd, Ca, Cr, Co, Cu, Fe, Pb, Li, Mg, Mo, Mn, Hg, Ni, P, K, Se, Ag, Na, Sr, Tl, Sn, Ti, V, Zn, Zr
		Al, Sb, As, Ba, Be, B, Cd, Ca, Cr, Co, Cu, Fe, Pb, Li, Mg, Mo, Mn, Hg, Ni, P, K, Se, Ag, Na, Sr, Tl, Sn, Ti, V, Zn, Zr
		Al, Sb, As, Ba, Be, B, Cd, Ca, Cr, Co, Cu, Fe, Pb, Li, Mg, Mo, Mn, Hg, Ni, P, K, Se, Ag, Na, Sr, Tl, Sn, Ti, V, Zn, Zr
		Al, Sb, As, Ba, Be, B, Cd, Ca, Cr, Co, Cu, Fe, Pb, Li, Mg, Mo, Mn, Hg, Ni, P, K, Se, Ag, Na, Sr, Tl, Sn, Ti, V, Zn, Zr
		Al, Sb, As, Ba, Be, B, Cd, Ca, Cr, Co, Cu, Fe, Pb, Li, Mg, Mo, Mn, Hg, Ni, P, K, Se, Ag, Na, Sr, Tl, Sn, Ti, V, Zn, Zr
		Al, Sb, As, Ba, Be, B, Cd, Ca, Cr, Co, Cu, Fe, Pb, Li, Mg, Mo, Mn, Hg, Ni, P, K, Se, Ag, Na, Sr, Tl, Sn, Ti, V, Zn, Zr
		Al, Sb, As, Ba, Be, B, Cd, Ca, Cr, Co, Cu, Fe, Pb, Li, Mg, Mo, Mn, Hg, Ni, P, K, Se, Ag, Na, Sr, Tl, Sn, Ti, V, Zn, Zr
		Al, Sb, As, Ba, Be, B, Cd, Ca, Cr, Co, Cu, Fe, Pb, Li, Mg, Mo, Mn, Hg, Ni, P, K, Se, Ag, Na, Sr, Tl, Sn, Ti, V, Zn, Zr
		Al, Sb, As, Ba, Be, B, Cd, Ca, Cr, Co, Cu, Fe, Pb, Li, Mg, Mo, Mn, Hg, Ni, P, K, Se, Ag, Na, Sr, Tl, Sn, Ti, V, Zn, Zr
		Al, Sb, As, Ba, Be, B, Cd, Ca, Cr, Co, Cu, Fe, Pb, Li, Mg, Mo, Mn, Hg, Ni, P, K, Se, Ag, Na, Sr, Tl, Sn, Ti, V, Zn, Zr
Analysis Method		
ICP		Al, Sb, As, Ba, Be, B, Cd, Ca, Cr, Co, Cu, Fe, Pb, Li, Mg, Mo, Mn, Hg, Ni, P, K, Se, Ag, Na, Sr, Tl, Sn, Ti, V, Zn, Zr
ICP-MS		Al, Sb, As, Ba, Be, B, Cd, Ca, Cr, Co, Cu, Fe, Pb, Li, Mg, Mo, Mn, Hg, Ni, P, K, Se, Ag, Na, Sr, Tl, Sn, Ti, V, Zn, Zr

Comments: Mercury by CVAA if performed

LDC #: 32270B4

VALIDATION FINDINGS WORKSHEET
PB/ICB/CCB QUALIFIED SAMPLES

Reviewer: KK
2nd Reviewer: QR

METHOD: Trace metals (EPA SW 864 Method 6010C/6020A/7471A)
Soil preparation factor applied: NA
Sample Concentration units, unless otherwise noted: ug/L
Associated Samples: All Water

					Sample Identification										
Analyte	**Maximum PB[a] (mg/Kg)**	**Maximum PB[a] (mg/L)**	**Maximum ICB/CCB[a] (ug/L)**	**Action Level**	**5**	6									
Zr			9.0	45.0	9.9	9.7									

Samples with analyte concentrations within five times the associated ICB, CCB or PB concentration are listed above with the identifications from the Validation Completeness Worksheet. These sample results were qualified as not detected, "U".
Note : a - The listed analyte concentration is the highest ICB, CCB, or PB detected in the analysis of each element.

LDC #: 32270B4

VALIDATION FINDINGS WORKSHEET
Field Blanks

Reviewer: KA
2nd Reviewer: [illegible]

METHOD: Trace Metals (EPA SW846 6010C/6020A/7471A)

Blank units: ug/L **Associated sample units:** mg/kg
Sampling date: 5/21/14 and 6/12/14 Soil factor applied 100
Field blank type: (circle one) Field Blank / Rinsate / Other: EB Associated Samples: 1-2

Analyte	Blank ID	Blank ID	Sample Identification								
	6	FB-052114 SDG#PH191	Action Limit	1	2						
Mn	1.3		0.65								
Zr	9.7	11.0	5.50	1.84	1.77						

METHOD: Trace Metals (EPA SW846 6010C/6020A/7471A)

Blank units: ug/L **Associated sample units:** mg/kg
Sampling date: 5/21/14 and 6/12/14 Soil factor applied 100
Field blank type: (circle one) Field Blank / Rinsate / Other: EB Associated Samples: 3-4

Analyte	Blank ID	Blank ID	Sample Identification								
	5	FB-052114 SDG#PH191	Action Limit	3	4						
Mn	1.3		0.65								
Zr	9.9	11.0	5.50	1.94	3.29						

CIRCLED RESULTS WERE NOT QUALIFIED. ALL RESULTS NOT CIRCLED WERE QUALIFIED BY THE FOLLOWING STATEMENT:
Samples with analyte concentrations within five times the associated field blank concentration are listed above, these sample results were qualified as not detected, "U".

Data Validation Report
Santa Susana Field Laboratory

Go Backs, Subgroup FDG Block 2

SDG: PH233

Prepared for

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Denver, CO 80202

Prepared by

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August 23, 2014

INTRODUCTION

This Data Validation Report (DVR) presents Level III data validation results for samples collected on June 13, 2014. Data validation was performed in accordance with the Quality Assurance Project Plan (QAPP) for Santa Susana Field Laboratory (SSFL), RCRA Facility Investigation, Surficial Media Operable Unit (March 2009, Revision 4) and a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines (CLPNFGs) for Superfund Organic Methods Data Review (June 2008). Where specific guidance is not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following methods:

Polychlorinated Biphenyls (PCBs) by EPA SW 846 Method 8082A
Total Petroleum Hydrocarbons (TPH) as Gasoline by EPA SW 846 Method 8015M
TPH as Extractables with and without Silica Gel Clean Up by EPA SW 846 Method 8015M

The sample identification and methods of analyses performed on each sample is presented in Attachment 1. Please note that field sample IDs have been truncated due to database limitations. Overall data qualification summary is presented in Attachment 2. Level III Automated Data Review outliers are presented in Enclosure I.

All sample results were subjected to Level III data validation, which comprises an evaluation of quality control (QC) summary results for sample holding times, surrogates, laboratory control sample/laboratory control sample duplicates (LCS/LCSD), method blanks, trip blanks, equipment blanks, and field blanks. No samples in this SDG were subjected to Level IV evaluation.

Automated data review was performed on all QC summary results using the Automated Data Review (ADR) software program (LDC, 2013). Quality assurance (QA)/QC criteria specified in the QAPP and CLPNFGs were incorporated with the program's reference library to assess compliance with project requirements.

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.

NJ Presumptive evidence of presence of the compound at an estimated quantity.

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

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 QC criteria.

II. Initial Calibration

Initial Calibration data were not reviewed for level III.

III. Continuing Calibration

Continuing calibration data were not reviewed for level III.

IV. Blanks

Method blanks were performed at the required frequencies. No contaminant concentrations were detected in the method and preparation blanks.

V. Surrogate Spikes

Surrogates were added to all samples and blanks as required by the method. All surrogate recoveries (%R) were within QC limits with the exception of four samples for TPH as extractables with silica gel clean up. The associated sample results were qualified as detected estimated (J) or non-detected estimated (UJ) as applicable. The details regarding the qualification of data are provided in Enclosure I.

VI. ICP Interference Check Sample (ICS) Analysis

ICP interference check data were not reviewed for level III.

VII. 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.

VIII. Laboratory Duplicates Sample

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

IV. Laboratory Control Samples (LCS)

Laboratory control samples were reviewed for each matrix as applicable. Percent recoveries (%R) and relative percent differences (RPD) were within QC limits with the exception of one LCS samples for TPH as extractables with silica gel clean up. The associated sample results were qualified as detected estimated (J) or non-detected estimated (UJ) as applicable. The details regarding the qualification of data are provided in Enclosure I.

X. Internal Standards

Internal standards were not reviewed for Level III.

XI. ICP Serial Dilution

ICP serial dilution was not performed for this SDG.

XII. Compound Quantitation

The laboratory reporting limits were evaluated. All laboratory reporting limits met the specified requirements.

All compounds reported below the RL as detected were qualified as follows:

Sample	Finding	Flag	A or P
All samples in SDG PH233	All compounds reported as detected below the RL.	J (all detects)	A

XIII. Field Duplicate Samples

No field duplicates were identified in this SDG.

XIV. Field Blank Samples

One trip blank was collected and analyzed for TPH as gasoline. No contaminant concentrations were found in the trip blank.

One equipment blank (from SDG PH231) were collected and analyzed for PCBs, TPH as gasoline, and TPH as extractables with and without silica gel clean up. No contaminant concentrations were found in the equipment blank.

One field blank (from SDG PH191) was collected and analyzed for PCBs, TPH as gasoline, and TPH as extractables with and without silica gel clean up. No contaminant concentrations were found in the field blank.

XV. Overall Assessment of Data

The overall assessment of QA/QC data review by automated and manual validation of this sampling event met project requirements and analytical completeness levels with the exceptions noted in the above sections. The remainder of the data are deemed useable for the intended use.

Data flags are summarized and are presented as Attachment 2.

Attachment 1

Sample Cross Reference

Sample Cross Reference

Date Collected	Field Sample ID	Lab Sample ID	Sample Type	Prep Method	Analytical Method	Review Level
13-Jun-2014	FDG2-SL-582-NBZ-SB-0.0-0.	7499517	N	3546	8015M	III
13-Jun-2014	FDG2-SL-582-NBZ-SB-0.0-0.	7499517	N	3546	8082A	III
13-Jun-2014	TB-061314	7499516	TB	5030B	8015M	III
13-Jun-2014	FDG2-SL-582-NBZ-SB-3.0-3.	7499518	N	3546	8015M	III
13-Jun-2014	FDG2-SL-582-NBZ-SB-3.0-3.	7499518	N	3546	8082A	III
13-Jun-2014	FDG2-SL-582-NBZ-SB-3.0-3.	7499518	N	5035A	8015M	III
13-Jun-2014	FDG2-SL-586-NBZ-SB-0.0-0.	7499521	N	3546	8015M	III
13-Jun-2014	FDG2-SL-586-NBZ-SB-0.0-0.	7499521	N	3546	8082A	III
13-Jun-2014	FDG2-SL-585-NBZ-SB-0.0-0.	7499520	N	3546	8015M	III
13-Jun-2014	FDG2-SL-585-NBZ-SB-0.0-0.	7499520	N	3546	8082A	III
13-Jun-2014	FDG2-SL-584-NBZ-SB-0.0-0.	7499519	N	3546	8015M	III
13-Jun-2014	FDG2-SL-584-NBZ-SB-0.0-0.	7499519	N	3546	8082A	III

III = EPA Level 3 Data Review *N = Normal Sample* *TB = Trip Blank* *MS = Matrix Spike*
IV = EPA Level 4 Data Validation *FD = Field Duplicate* *FB = Field Blank* *MSD = Matrix Spike Duplicate*

Attachment 2
Overall Data Qualification Summary

Data Qualifier Summary

Lab Reporting Batch ID: PH233 **Laboratory: LL**

EDD Filename: PH233_v1 **eQAPP Name: CDM_SSFL_140617_Lan**

Method Category: SVOA

Method: 8015M **Matrix: SO**

Sample ID: **FDG2-SL-582-NBZ-SB-0.0-0.5** ***Collected:*** **6/13/2014 7:50:00** ***Analysis Type:*** **REA** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
EFH (C12-C14) SG	5.2	U	2.1	MDL	5.2	PQL	mg/Kg	UJ	L
EFH (C15-C20) SG	5.2	U	2.1	MDL	5.2	PQL	mg/Kg	UJ	L
EFH (C21-C30) SG	3.0	J	2.1	MDL	5.2	PQL	mg/Kg	J	Z, L
EFH (C30-C40) SG	6.2	J	4.2	MDL	10	PQL	mg/Kg	J	Z
EFH (C8-C11) SG	5.2	U	2.1	MDL	5.2	PQL	mg/Kg	UJ	L

Sample ID: **FDG2-SL-582-NBZ-SB-0.0-0.5** ***Collected:*** **6/13/2014 7:50:00** ***Analysis Type:*** **RES** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
EFH (C15-C20)	3.7	J	2.1	MDL	5.2	PQL	mg/Kg	J	Z

Sample ID: **FDG2-SL-582-NBZ-SB-3.0-3.5** ***Collected:*** **6/13/2014 8:05:00** ***Analysis Type:*** **REA2** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
EFH (C12-C14) SG	5.5	U	2.2	MDL	5.5	PQL	mg/Kg	UJ	L, S
EFH (C15-C20) SG	5.5	U	2.2	MDL	5.5	PQL	mg/Kg	UJ	L, S
EFH (C21-C30) SG	5.5	U	2.2	MDL	5.5	PQL	mg/Kg	UJ	L, S
EFH (C30-C40) SG	11	U	4.4	MDL	11	PQL	mg/Kg	UJ	S
EFH (C8-C11) SG	5.5	U	2.2	MDL	5.5	PQL	mg/Kg	UJ	L, S

Sample ID: **FDG2-SL-584-NBZ-SB-0.0-0.5** ***Collected:*** **6/13/2014 9:50:00** ***Analysis Type:*** **REA** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
EFH (C12-C14) SG	5.0	U	2.0	MDL	5.0	PQL	mg/Kg	UJ	L, S
EFH (C15-C20) SG	5.0	U	2.0	MDL	5.0	PQL	mg/Kg	UJ	L, S
EFH (C21-C30) SG	6.8		2.0	MDL	5.0	PQL	mg/Kg	J	L, S
EFH (C30-C40) SG	10	U	4.0	MDL	10	PQL	mg/Kg	UJ	S
EFH (C8-C11) SG	5.0	U	2.0	MDL	5.0	PQL	mg/Kg	UJ	L, S

Sample ID: **FDG2-SL-585-NBZ-SB-0.0-0.5** ***Collected:*** **6/13/2014 9:25:00** ***Analysis Type:*** **REA** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
EFH (C12-C14) SG	5.1	U	2.1	MDL	5.1	PQL	mg/Kg	UJ	L, S
EFH (C15-C20) SG	5.1	U	2.1	MDL	5.1	PQL	mg/Kg	UJ	L, S
EFH (C21-C30) SG	5.1	U	2.1	MDL	5.1	PQL	mg/Kg	UJ	L, S

* denotes a non-reportable result

Project Name and Number: 1204-002-001-AL - SSFL Area IV Phase 3

Data Qualifier Summary

Lab Reporting Batch ID: PH233 **Laboratory: LL**

EDD Filename: PH233_v1 **eQAPP Name: CDM_SSFL_140617_Lan**

Method Category: SVOA

Method: 8015M **Matrix: SO**

Sample ID: FDG2-SL-585-NBZ-SB-0.0-0.5 **Collected: 6/13/2014 9:25:00** **Analysis Type: REA** **Dilution: 1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
EFH (C30-C40) SG	10	U	4.1	MDL	10	PQL	mg/Kg	UJ	S
EFH (C8-C11) SG	5.1	U	2.1	MDL	5.1	PQL	mg/Kg	UJ	L, S

Sample ID: FDG2-SL-585-NBZ-SB-0.0-0.5 **Collected: 6/13/2014 9:25:00** **Analysis Type: RES** **Dilution: 1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
EFH (C15-C20)	3.5	J	2.1	MDL	5.1	PQL	mg/Kg	J	Z

Sample ID: FDG2-SL-586-NBZ-SB-0.0-0.5 **Collected: 6/13/2014 9:00:00** **Analysis Type: REA** **Dilution: 1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
EFH (C12-C14) SG	5.1	U	2.1	MDL	5.1	PQL	mg/Kg	UJ	L, S
EFH (C15-C20) SG	5.1	U	2.1	MDL	5.1	PQL	mg/Kg	UJ	L, S
EFH (C21-C30) SG	5.1	U	2.1	MDL	5.1	PQL	mg/Kg	UJ	L, S
EFH (C30-C40) SG	10	U	4.1	MDL	10	PQL	mg/Kg	UJ	S
EFH (C8-C11) SG	5.1	U	2.1	MDL	5.1	PQL	mg/Kg	UJ	L, S

* denotes a non-reportable result

Project Name and Number: 1204-002-001-AL - SSFL Area IV Phase 3

Data Qualifier Summary

Lab Reporting Batch ID: PH233 **Laboratory: LL**

EDD Filename: PH233_v1 **eQAPP Name: CDM_SSFL_140617_Lan**

Reason Code Legend

Reason Code	*Description*
L	Laboratory Control Spike Lower Estimation
S	Surrogate/Tracer Recovery Lower Estimation
Z	Reporting Limit Trace Value

* denotes a non-reportable result

Project Name and Number: 1204-002-001-AL - SSFL Area IV Phase 3

Enclosure I

Level III ADR Outliers

Quality Control
Outlier Reports

PH233

Surrogate Outlier Report

Lab Reporting Batch ID: PH233 **Laboratory: LL**

EDD Filename: PH233_v1. **eQAPP Name: CDM_SSFL_140617_Lan**

Method: **8015M**
Matrix: **SO**

Sample ID (Analysis Type)	*Surrogate*	*Sample % Recovery*	*% Recovery Limits*	*Affected Compounds*	*Flag*
FDG2-SL-582-NBZ-SB-3.0-3.5 (REA2)	O-TERPHENYL	65	66.00-123.00	All Target Analytes	J (all detects) UJ (all non-detects)
FDG2-SL-584-NBZ-SB-0.0-0.5 (REA)	O-TERPHENYL	62	66.00-123.00	All Target Analytes	J(all detects) UJ(all non-detects)
FDG2-SL-585-NBZ-SB-0.0-0.5 (REA)	O-TERPHENYL	60	66.00-123.00	All Target Analytes	J(all detects) UJ(all non-detects)
FDG2-SL-586-NBZ-SB-0.0-0.5 (REA)	O-TERPHENYL	61	66.00-123.00	All Target Analytes	J(all detects) UJ(all non-detects)

Lab Control Spike/Lab Control Spike Duplicate Outlier Report

Lab Reporting Batch ID: PH233 **Laboratory: LL**

EDD Filename: PH233_v1 **eQAPP Name: CDM_SSFL_140617_Lan**

Method: **8015M**
Matrix: **SO**

QC Sample ID (Associated Samples)	*Compound*	*LCS %R*	*LCSD %R*	*%R Limits*	*RPD (Limits)*	*Affected Compounds*	*Flag*
P41675AQ321921A	EFH (C12-C14) SG	68	-	76.00-115.00	-	EFH (C12-C14) SG	
(FDG2-SL-582-NBZ-SB-0.0-0.5	EFH (C15-C20) SG	71	-	78.00-127.00	-	EFH (C15-C20) SG	
FDG2-SL-582-NBZ-SB-3.0-3.5	EFH (C21-C30) SG	70	-	77.00-127.00	-	EFH (C21-C30) SG	J (all detects)
FDG2-SL-584-NBZ-SB-0.0-0.5	EFH (C8-C11) SG	52	-	60.00-115.00	-	EFH (C8-C11) SG	UJ (all non-detects)
FDG2-SL-585-NBZ-SB-0.0-0.5							
FDG2-SL-586-NBZ-SB-0.0-0.5)							

Project Name and Number: 1204-002-001-AL - SSFL Area IV Phase 3

Reporting Limit Outliers

Lab Reporting Batch ID: PH233 **Laboratory: LL**

EDD Filename: PH233_v1 **eQAPP Name: CDM_SSFL_140617_Lan**

Method: **8015M**

Matrix: **SO**

SampleID	*Analyte*	*Lab Qual*	*Result*	*Reporting Limit*	*RL Type*	*Units*	*Flag*
FDG2-SL-582-NBZ-SB-0.0-0.5	EFH (C15-C20)	J	3.7	5.2	PQL	mg/Kg	J (all detects)
	EFH (C21-C30) SG	J	3.0	5.2	PQL	mg/Kg	
	EFH (C30-C40) SG	J	6.2	10	PQL	mg/Kg	
FDG2-SL-585-NBZ-SB-0.0-0.5	EFH (C15-C20)	J	3.5	5.1	PQL	mg/Kg	J (all detects)

Data Validation Report
Santa Susana Field Laboratory

Go Backs, Subgroup FDG Block 2

SDG: PH234

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August 23, 2014

INTRODUCTION

This Data Validation Report (DVR) presents Level IV data validation results for samples collected on June 16, 2014. Data validation was performed in accordance with the Quality Assurance Project Plan (QAPP) for Santa Susana Field Laboratory (SSFL), RCRA Facility Investigation, Surficial Media Operable Unit (March 2009, Revision 4) and a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines (CLPNFGs) for Superfund Organic Methods Data Review (June 2008), Polychlorinated Dioxins/Dibenzofurans Data Review (September 2005) and for Inorganic Data Review (January 2010). Where specific guidance is not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following methods:

Volatiles (VOCs) by Environmental Protection Agency (EPA) SW 846 Method 8260B
1,4-Dioxane by EPA SW 846 Method 8260B utilizing Selective Ion Monitoring (SIM)
Semivolatiles (SVOCs) by EPA SW 846 Method 8270D utilizing SIM
Polychlorinated Biphenyls (PCBs) by EPA SW 846 Method 8082A
Metals by EPA SW 846 Method 6010C, 6020A, and 7471B
Total Petroleum Hydrocarbons (TPH) as Gasoline by EPA SW 846 Method 8015M
TPH as Extractables with and without Silica Gel Clean Up by EPA SW 846 Method 8015M
Dioxins and Dibenzofurans by EPA Method 1613B

The sample identification and methods of analyses performed on each sample is presented in Attachment 1. Note that field sample IDs have been truncated due to database limitations. Overall data qualification summary is presented in Attachment II. Level III Automated Data Review outliers are presented in Enclosure I. Level IV DVRs are presented in Enclosure II.

All sample results were subjected to Level IV data validation, which comprises an evaluation of quality control (QC) summary results for sample holding times, initial and continuing calibrations, initial and continuing calibration blanks (ICB/CCBs), surrogates, internal standards, interference check (ICSA and ICSAB) samples, matrix spike/matrix spike duplicates (MS/MSD), laboratory duplicates (DUP), laboratory control sample/laboratory control sample duplicates (LCS/LCSD), ICP serial dilutions, method blanks, trip blanks, equipment blanks, field blanks, field duplicate samples, and the raw data to confirm sample quantitation and identification.

Automated data review was performed on all QC summary results using the Automated Data Review (ADR) software program (LDC, 2013) with exception of the initial and continuing calibrations, ICB/CCBs, interference check samples, internal standards (except dioxins), and ICP serial dilutions, which were validated manually. Quality assurance (QA)/QC criteria specified in the QAPP and CLPNFGs were incorporated with the program's reference library to assess compliance with project requirements.

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.

NJ Presumptive evidence of presence of the compound at an estimated quantity.

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

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 QC criteria.

II. Initial Calibration

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

III. Continuing Calibration

All criteria for the initial calibration verifications and continuing calibration of each method were met with the exception of several VOCs. The associated sample results were qualified as non-detected estimated (UJ). The details regarding the qualification of data are provided in Enclosure II.

IV. Blanks

Method blanks were performed at the required frequencies. No contaminant concentrations were detected in the method or preparation blanks with the exception of several blanks for metals, and dioxins and dibenzofurans. The associated sample results were qualified as non-detected (U) due to method blank contamination as applicable. The sample results that were not detected or were significantly greater than the concentrations found in the associated blanks were not qualified. The details regarding the qualification of data are provided in Enclosures I and II.

No contaminant concentrations were detected in the initial or continuing calibration blanks with the exception of several metals. The associated sample results were not detected or were significantly greater than the concentrations found in the associated blanks, therefore no data were qualified.

V. Surrogate Spikes

Surrogates were added to all samples and blanks as required by the method. All surrogate recoveries (%R) were within QC limits with the exception of one sample for PCBs, and two samples for 1,4-Dioxane. The associated sample results were qualified as detected estimated (J) or non-detected estimated (UJ) as applicable. The details regarding the qualification of data are provided in Enclosures I and II.

VI. ICP Interference Check Sample (ICS) Analysis

The frequency of analysis was met.

The criteria for analysis were met.

VII. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) samples were performed at the required frequency. Percent recoveries (%R) and relative percent differences (RPD) were within QC limits with the exception of one MS/MSD pair for VOCs, SVOCs, TPH as extractables, metals,

and dioxins and dibenzofurans. The associated sample results were qualified as detected estimated (J) or non-detected estimated (UJ) as applicable. The details regarding the qualification of data are provided in Enclosures I and II.

VIII. Laboratory Duplicates Sample

Laboratory duplicates (DUP) sample analyses were reviewed for each matrix as applicable. Results were within QC limits.

IX. Laboratory Control Samples (LCS)

Laboratory control samples were reviewed for each matrix as applicable. Percent recoveries (%R) and relative percent differences (RPD) were within QC limits with the exception of two LCS/LCSD pairs for SVOCs and TPH as extractables. The associated sample results were qualified as detected estimated (J) or non-detected estimated (UJ) as applicable. The details regarding the qualification of data are provided in Enclosures I and II.

X. Internal Standards

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

XI. ICP Serial Dilution

ICP serial dilution analysis was performed by the laboratory. The analysis criteria were met.

XII. Compound Quantitation

The laboratory reporting limits were evaluated. All laboratory reporting limits met the specified requirements.

All compounds reported below the RL as detected were qualified as follows:

Sample	Finding	Flag
All samples in SDG PH234	All compounds reported as detected below the RL.	J (all detects)

XIII. Field Duplicate Samples

One field duplicate pair was collected and analyzed for VOCs, 1,4-Dioxane, SVOCs, PCBs, metals, TPH as extractables with and without silica gel clean up, and dioxins and dibenzofurans. All RPDs were within QC limits with the exception of SVOCs, TPH as extractables with and without silica gel clean up, and dioxins and dibenzofurans. The associated sample results were qualified as detected estimated (J) or non-detected estimated (UJ) as applicable. The field duplicate result comparisons are provided in Enclosures I and II.

XIV. Field Blank Samples

One trip blank was collected and analyzed for TPH as gasoline. No contaminant concentrations were found in the trip blank.

One equipment blank (from SDG PH237) was collected and analyzed for VOCs, 1,4-Dioxane, SVOCs, PCBs, metals, TPH as gasoline, TPH as extractables with and without silica gel clean up, and dioxins and dibenzofurans. The equipment blank had detections for VOCs, SVOCs, metals, and dioxins and dibenzofurans. The associated sample results were qualified as non-detected (U) due to equipment blank contamination as applicable. The sample results that were not detected or were significantly greater than the concentrations found in the equipment blanks were not qualified. The equipment blank outlier reports are presented in Enclosures I and II.

One field blank (from SDG PH191) was collected and analyzed for VOCs, 1,4-Dioxane, SVOCs, PCBs, metals, TPH as gasoline, TPH as extractables with and without silica gel clean up, and dioxins and dibenzofurans. The field blank had detections for VOCs, SVOCs, metals, and dioxins and dibenzofurans. The associated sample results were qualified as non-detected (U) due to field blank contamination as applicable. The sample results that were not detected or were significantly greater than the concentrations found in the field blanks were not qualified. The field blank outlier reports are presented in Enclosures I and II.

XV. Overall Assessment of Data

No data associated with this sampling event were rejected. The overall assessment of QA/QC data review by automated and manual validation of this sampling event met project requirements and analytical completeness levels with the exceptions noted in the above sections. All data are deemed useable for the intended use.

Data flags are summarized and are presented as Attachment 2.

Attachment 1

Sample Cross Reference

Sample Cross Reference

Date Collected	Field Sample ID	Lab Sample ID	Sample Type	Prep Method	Analytical Method	Review Level
16-Jun-2014	TB-061614	7501186	TB	5030B	8015M	IV
16-Jun-2014	TB-061614	7501186	TB	5030B	8260B	IV
16-Jun-2014	TB-061614	7501186	TB	5030B	8260B SIM	IV
16-Jun-2014	SL-875-SA5A-SB-0.0-0.5	7501187	N	3050B	6010C	IV
16-Jun-2014	SL-875-SA5A-SB-0.0-0.5	7501187	N	3050B	6020A	IV
16-Jun-2014	SL-875-SA5A-SB-0.0-0.5	7501187	N	3546	8015M	IV
16-Jun-2014	SL-875-SA5A-SB-0.0-0.5	7501187	N	3546	8082A	IV
16-Jun-2014	SL-875-SA5A-SB-0.0-0.5	7501187	N	3546	8270D SIM	IV
16-Jun-2014	SL-875-SA5A-SB-0.0-0.5	7501187	N	METHOD	1613B	IV
16-Jun-2014	SL-875-SA5A-SB-0.0-0.5	7501187	N	METHOD	7471B	IV
16-Jun-2014	SL-875-SA5A-SB-0.0-0.5MSD	P501187M241621A	MSD	3546	8082A	IV
16-Jun-2014	SL-875-SA5A-SB-0.0-0.5MS	P501187R241602A	MS	3546	8082A	IV
16-Jun-2014	SL-875-SA5A-SB-2.0-3.0	7501188	N	3050B	6010C	IV
16-Jun-2014	SL-875-SA5A-SB-2.0-3.0	7501188	N	3050B	6020A	IV
16-Jun-2014	SL-875-SA5A-SB-2.0-3.0	7501188	N	3546	8015M	IV
16-Jun-2014	SL-875-SA5A-SB-2.0-3.0	7501188	N	3546	8082A	IV
16-Jun-2014	SL-875-SA5A-SB-2.0-3.0	7501188	N	3546	8270D SIM	IV
16-Jun-2014	SL-875-SA5A-SB-2.0-3.0	7501188	N	5035	8260B	IV
16-Jun-2014	SL-875-SA5A-SB-2.0-3.0	7501188	N	5035	8260B SIM	IV
16-Jun-2014	SL-875-SA5A-SB-2.0-3.0	7501188	N	5035A	8015M	IV
16-Jun-2014	SL-875-SA5A-SB-2.0-3.0	7501188	N	METHOD	1613B	IV
16-Jun-2014	SL-875-SA5A-SB-2.0-3.0	7501188	N	METHOD	7471B	IV
16-Jun-2014	SL-875-SA5A-SB-2.0-3.0MS	7501189	MS	3050B	6010C	IV
16-Jun-2014	SL-875-SA5A-SB-2.0-3.0MS	7501189	MS	3050B	6020A	IV
16-Jun-2014	SL-875-SA5A-SB-2.0-3.0MS	7501189	MS	3546	8015M	IV
16-Jun-2014	SL-875-SA5A-SB-2.0-3.0MS	7501189	MS	3546	8082A	IV

III = EPA Level 3 Data Review *N = Normal Sample* *TB = Trip Blank* *MS = Matrix Spike*
IV = EPA Level 4 Data Validation *FD = Field Duplicate* *FB = Field Blank* *MSD = Matrix Spike Duplicate*

Sample Cross Reference

Date Collected	Field Sample ID	Lab Sample ID	Sample Type	Prep Method	Analytical Method	Review Level
16-Jun-2014	SL-875-SA5A-SB-2.0-3.0MS	7501189	MS	3546	8270D SIM	IV
16-Jun-2014	SL-875-SA5A-SB-2.0-3.0MS	7501189	MS	5035	8260B	IV
16-Jun-2014	SL-875-SA5A-SB-2.0-3.0MS	7501189	MS	5035	8260B SIM	IV
16-Jun-2014	SL-875-SA5A-SB-2.0-3.0MS	7501189	MS	5035A	8015M	IV
16-Jun-2014	SL-875-SA5A-SB-2.0-3.0MS	7501189	MS	METHOD	1613B	IV
16-Jun-2014	SL-875-SA5A-SB-2.0-3.0MS	7501189	MS	METHOD	7471B	IV
16-Jun-2014	SL-875-SA5A-SB-2.0-3.0MSD	7501190	MSD	3050B	6010C	IV
16-Jun-2014	SL-875-SA5A-SB-2.0-3.0MSD	7501190	MSD	3050B	6020A	IV
16-Jun-2014	SL-875-SA5A-SB-2.0-3.0MSD	7501190	MSD	3546	8015M	IV
16-Jun-2014	SL-875-SA5A-SB-2.0-3.0MSD	7501190	MSD	3546	8082A	IV
16-Jun-2014	SL-875-SA5A-SB-2.0-3.0MSD	7501190	MSD	3546	8270D SIM	IV
16-Jun-2014	SL-875-SA5A-SB-2.0-3.0MSD	7501190	MSD	5035	8260B	IV
16-Jun-2014	SL-875-SA5A-SB-2.0-3.0MSD	7501190	MSD	5035	8260B SIM	IV
16-Jun-2014	SL-875-SA5A-SB-2.0-3.0MSD	7501190	MSD	5035A	8015M	IV
16-Jun-2014	SL-875-SA5A-SB-2.0-3.0MSD	7501190	MSD	METHOD	1613B	IV
16-Jun-2014	SL-875-SA5A-SB-2.0-3.0MSD	7501190	MSD	METHOD	7471B	IV
16-Jun-2014	SL-875-SA5A-SB-2.0-3.0DUP	7501191	DUP	3050B	6010C	IV
16-Jun-2014	SL-875-SA5A-SB-2.0-3.0DUP	7501191	DUP	3050B	6020A	IV
16-Jun-2014	SL-875-SA5A-SB-2.0-3.0DUP	7501191	DUP	METHOD	7471B	IV
16-Jun-2014	SL-1175-SA5A-SB-2.0-3.0	7501194	FD	3050B	6010C	IV
16-Jun-2014	SL-1175-SA5A-SB-2.0-3.0	7501194	FD	3050B	6020A	IV
16-Jun-2014	SL-1175-SA5A-SB-2.0-3.0	7501194	FD	3546	8015M	IV
16-Jun-2014	SL-1175-SA5A-SB-2.0-3.0	7501194	FD	3546	8082A	IV
16-Jun-2014	SL-1175-SA5A-SB-2.0-3.0	7501194	FD	3546	8270D SIM	IV
16-Jun-2014	SL-1175-SA5A-SB-2.0-3.0	7501194	FD	5035	8260B	IV
16-Jun-2014	SL-1175-SA5A-SB-2.0-3.0	7501194	FD	5035	8260B SIM	IV

III = EPA Level 3 Data Review *N = Normal Sample* *TB = Trip Blank* *MS = Matrix Spike*
IV = EPA Level 4 Data Validation *FD = Field Duplicate* *FB = Field Blank* *MSD = Matrix Spike Duplicate*

Sample Cross Reference

Date Collected	Field Sample ID	Lab Sample ID	Sample Type	Prep Method	Analytical Method	Review Level
16-Jun-2014	SL-1175-SA5A-SB-2.0-3.0	7501194	FD	5035A	8015M	IV
16-Jun-2014	SL-1175-SA5A-SB-2.0-3.0	7501194	FD	METHOD	1613B	IV
16-Jun-2014	SL-1175-SA5A-SB-2.0-3.0	7501194	FD	METHOD	7471B	IV
16-Jun-2014	SL-876-SA5A-SB-0.0-0.5	7501192	N	3546	8015M	IV
16-Jun-2014	SL-876-SA5A-SB-0.0-0.5	7501192	N	3546	8270D SIM	IV
16-Jun-2014	SL-876-SA5A-SB-4.0-5.0	7501193	N	3546	8015M	IV
16-Jun-2014	SL-876-SA5A-SB-4.0-5.0	7501193	N	3546	8270D SIM	IV
16-Jun-2014	SL-876-SA5A-SB-4.0-5.0	7501193	N	5035A	8015M	IV
16-Jun-2014	SL-876-SA5A-SB-4.0-5.0	7501193	N	METHOD	1613B	IV
16-Jun-2014	SL-877-SA5A-SB-0.0-0.5	7501195	N	3546	8015M	IV
16-Jun-2014	SL-877-SA5A-SB-0.0-0.5	7501195	N	3546	8270D SIM	IV
16-Jun-2014	SL-877-SA5A-SB-3.0-4.0	7501196	N	3546	8015M	IV
16-Jun-2014	SL-877-SA5A-SB-3.0-4.0	7501196	N	3546	8270D SIM	IV
16-Jun-2014	SL-877-SA5A-SB-3.0-4.0	7501196	N	5035A	8015M	IV
16-Jun-2014	SL-877-SA5A-SB-3.0-4.0	7501196	N	METHOD	1613B	IV

III = EPA Level 3 Data Review *N = Normal Sample* *TB = Trip Blank* *MS = Matrix Spike*
IV = EPA Level 4 Data Validation *FD = Field Duplicate* *FB = Field Blank* *MSD = Matrix Spike Duplicate*

Attachment 2
Overall Data Qualification Summary

Data Qualifier Summary

Lab Reporting Batch ID: PH234 **Laboratory: LL**

EDD Filename: PH234_v1 **eQAPP Name: CDM_SSFL_140617_Lan**

Method Category: METALS

Method: 6010C **Matrix: SO**

Sample ID: **FDG2-SL-1175-SA5A-SB-2.0-3.0** ***Collected:*** **6/16/2014 8:50:00** ***Analysis Type:*** **RES** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
ANTIMONY	3.98	U	0.736	MDL	3.98	PQL	mg/Kg	UJ	Q
BERYLLIUM	0.548	J	0.0666	MDL	0.995	PQL	mg/Kg	J	Z
BORON	4.08	J	0.836	MDL	9.95	PQL	mg/Kg	U	B
MOLYBDENUM	0.410	J	0.169	MDL	1.99	PQL	mg/Kg	U	F
SODIUM	76.3	J	16.6	MDL	99.5	PQL	mg/Kg	J	Z
TIN	2.42	J	0.219	MDL	9.95	PQL	mg/Kg	U	B
Zirconium	3.05	J	0.836	MDL	4.97	PQL	mg/Kg	U	F
LEAD	13.1		0.497	MDL	2.98	PQL	mg/Kg	J	Q, E

Sample ID: **FDG2-SL-875-SA5A-SB-0.0-0.5** ***Collected:*** **6/16/2014 8:20:00** ***Analysis Type:*** **RES** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
ANTIMONY	3.92	U	0.725	MDL	3.92	PQL	mg/Kg	UJ	Q
BERYLLIUM	0.455	J	0.0656	MDL	0.979	PQL	mg/Kg	J	Z
BORON	4.21	J	0.822	MDL	9.79	PQL	mg/Kg	U	B
LEAD	13.8		0.490	MDL	2.94	PQL	mg/Kg	J	Q, E
MOLYBDENUM	0.478	J	0.166	MDL	1.96	PQL	mg/Kg	U	F
SODIUM	65.1	J	16.4	MDL	97.9	PQL	mg/Kg	J	Z
TIN	2.23	J	0.215	MDL	9.79	PQL	mg/Kg	U	B
Zirconium	3.16	J	0.822	MDL	4.90	PQL	mg/Kg	U	F

Sample ID: **FDG2-SL-875-SA5A-SB-2.0-3.0** ***Collected:*** **6/16/2014 8:45:00** ***Analysis Type:*** **RES** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
ANTIMONY	4.03	U	0.746	MDL	4.03	PQL	mg/Kg	UJ	Q
BERYLLIUM	0.581	J	0.0675	MDL	1.01	PQL	mg/Kg	J	Z
BORON	4.43	J	0.846	MDL	10.1	PQL	mg/Kg	U	B
LEAD	10.7		0.504	MDL	3.02	PQL	mg/Kg	J	Q, E
MOLYBDENUM	0.415	J	0.171	MDL	2.02	PQL	mg/Kg	U	F
SODIUM	78.1	J	16.8	MDL	101	PQL	mg/Kg	J	Z
TIN	2.61	J	0.222	MDL	10.1	PQL	mg/Kg	U	B
Zirconium	3.03	J	0.846	MDL	5.04	PQL	mg/Kg	U	F

* denotes a non-reportable result

Project Name and Number: 1204-002-001-AL - SSFL Area IV Phase 3

Data Qualifier Summary

Lab Reporting Batch ID: PH234 **Laboratory: LL**

EDD Filename: PH234_v1 **eQAPP Name: CDM_SSFL_140617_Lan**

Method Category: METALS

Method: 6020A **Matrix: SO**

Sample ID: FDG2-SL-1175-SA5A-SB-2.0-3.0 **Collected: 6/16/2014 8:50:00** **Analysis Type: REA** **Dilution: 2**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
SELENIUM	0.268	J	0.0995	MDL	0.398	PQL	mg/Kg	J	Z

Sample ID: FDG2-SL-1175-SA5A-SB-2.0-3.0 **Collected: 6/16/2014 8:50:00** **Analysis Type: RES** **Dilution: 2**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
SILVER	0.0426	J	0.0259	MDL	0.199	PQL	mg/Kg	J	Z, Q
STRONTIUM	19.8		0.0676	MDL	0.398	PQL	mg/Kg	J	Q, Q, E

Sample ID: FDG2-SL-875-SA5A-SB-0.0-0.5 **Collected: 6/16/2014 8:20:00** **Analysis Type: REA** **Dilution: 2**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
SELENIUM	0.255	J	0.0979	MDL	0.392	PQL	mg/Kg	J	Z

Sample ID: FDG2-SL-875-SA5A-SB-0.0-0.5 **Collected: 6/16/2014 8:20:00** **Analysis Type: RES** **Dilution: 2**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
SILVER	0.0370	J	0.0255	MDL	0.196	PQL	mg/Kg	J	Z, Q
STRONTIUM	25.2		0.0666	MDL	0.392	PQL	mg/Kg	J	Q, Q, E

Sample ID: FDG2-SL-875-SA5A-SB-2.0-3.0 **Collected: 6/16/2014 8:45:00** **Analysis Type: REA** **Dilution: 2**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
SELENIUM	0.272	J	0.101	MDL	0.403	PQL	mg/Kg	J	Z

Sample ID: FDG2-SL-875-SA5A-SB-2.0-3.0 **Collected: 6/16/2014 8:45:00** **Analysis Type: RES** **Dilution: 2**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
SILVER	0.0425	J	0.0262	MDL	0.202	PQL	mg/Kg	J	Z, Q
STRONTIUM	22.6		0.0685	MDL	0.403	PQL	mg/Kg	J	Q, Q, E

* denotes a non-reportable result

Project Name and Number: 1204-002-001-AL - SSFL Area IV Phase 3

Data Qualifier Summary

Lab Reporting Batch ID: PH234 **Laboratory: LL**

EDD Filename: PH234_v1 **eQAPP Name: CDM_SSFL_140617_Lan**

Method Category: SVOA

Method: 1613B **Matrix: SO**

Sample ID: **FDG2-SL-1175-SA5A-SB-2.0-3.0** ***Collected:*** **6/16/2014 8:50:00** ***Analysis Type:*** **RES** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
1,2,3,4,6,7,8-HPCDD	104	B	0.140	MDL	4.88	PQL	ng/Kg	J	FD
1,2,3,4,6,7,8-HPCDF	8.99	B	0.0270	MDL	4.88	PQL	ng/Kg	J	FD
1,2,3,4,7,8,9-HPCDF	0.366	JB	0.0420	MDL	4.88	PQL	ng/Kg	J	Z, FD
1,2,3,4,7,8-HxCDD	0.590	J	0.0628	MDL	4.88	PQL	ng/Kg	J	Z, FD
1,2,3,4,7,8-HXCDF	0.529	JB	0.0454	MDL	4.88	PQL	ng/Kg	J	Z, FD
1,2,3,6,7,8-HXCDD	2.81	JB	0.0636	MDL	4.88	PQL	ng/Kg	J	Z, FD
1,2,3,6,7,8-HXCDF	0.290	JBQ	0.0449	MDL	4.88	PQL	ng/Kg	J	Z
1,2,3,7,8,9-HXCDD	1.80	JB	0.0584	MDL	4.88	PQL	ng/Kg	J	Z
1,2,3,7,8,9-HXCDF	0.505	J	0.0379	MDL	4.88	PQL	ng/Kg	J	Z
1,2,3,7,8-PECDD	0.257	JBQ	0.0592	MDL	4.88	PQL	ng/Kg	UJ	B, FD
1,2,3,7,8-PECDF	0.359	JBQ	0.0372	MDL	4.88	PQL	ng/Kg	J	Z
2,3,4,6,7,8-HXCDF	0.491	JB	0.0451	MDL	4.88	PQL	ng/Kg	J	Z
2,3,4,7,8-PECDF	0.310	JBQ	0.0381	MDL	4.88	PQL	ng/Kg	J	Z, FD
2,3,7,8-TCDF	0.172	JQ	0.0835	MDL	0.976	PQL	ng/Kg	J	Z, FD
OCDD	2800	B	0.111	MDL	9.76	PQL	ng/Kg	J	FD
OCDF	32.0	B	0.0424	MDL	9.76	PQL	ng/Kg	J	FD

Sample ID: **FDG2-SL-875-SA5A-SB-0.0-0.5** ***Collected:*** **6/16/2014 8:20:00** ***Analysis Type:*** **RES** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
1,2,3,4,6,7,8-HPCDF	4.51	JB	0.0267	MDL	4.99	PQL	ng/Kg	J	Z
1,2,3,4,7,8,9-HPCDF	0.386	JB	0.0369	MDL	4.99	PQL	ng/Kg	J	Z
1,2,3,4,7,8-HxCDD	0.464	JQ	0.0566	MDL	4.99	PQL	ng/Kg	J	Z
1,2,3,4,7,8-HXCDF	0.424	JB	0.0475	MDL	4.99	PQL	ng/Kg	J	Z
1,2,3,6,7,8-HXCDD	1.57	JB	0.0612	MDL	4.99	PQL	ng/Kg	J	Z
1,2,3,6,7,8-HXCDF	0.298	JBQ	0.0430	MDL	4.99	PQL	ng/Kg	J	Z
1,2,3,7,8,9-HXCDD	1.16	JB	0.0580	MDL	4.99	PQL	ng/Kg	J	Z
1,2,3,7,8,9-HXCDF	0.331	J	0.0481	MDL	4.99	PQL	ng/Kg	J	Z
1,2,3,7,8-PECDD	0.324	JB	0.0583	MDL	4.99	PQL	ng/Kg	J	Z
1,2,3,7,8-PECDF	0.398	JB	0.0364	MDL	4.99	PQL	ng/Kg	J	Z
2,3,4,6,7,8-HXCDF	0.373	JBQ	0.0443	MDL	4.99	PQL	ng/Kg	J	Z
2,3,4,7,8-PECDF	0.406	JB	0.0350	MDL	4.99	PQL	ng/Kg	J	Z
2,3,7,8-TCDD	0.0601	JB	0.0593	MDL	0.997	PQL	ng/Kg	U	B
2,3,7,8-TCDF	0.138	JQ	0.0669	MDL	0.997	PQL	ng/Kg	J	Z

* denotes a non-reportable result

Project Name and Number: 1204-002-001-AL - SSFL Area IV Phase 3

Data Qualifier Summary

Lab Reporting Batch ID: PH234 **Laboratory: LL**

EDD Filename: PH234_v1 **eQAPP Name: CDM_SSFL_140617_Lan**

Method Category: SVOA

Method: 1613B **Matrix: SO**

Sample ID: **FDG2-SL-875-SA5A-SB-2.0-3.0** ***Collected:*** **6/16/2014 8:45:00** ***Analysis Type:*** **RES** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
1,2,3,4,6,7,8-HPCDD	35.5	B	0.112	MDL	5.01	PQL	ng/Kg	J	FD
1,2,3,4,6,7,8-HPCDF	3.21	JB	0.0232	MDL	5.01	PQL	ng/Kg	J	Z, FD
1,2,3,4,7,8,9-HPCDF	0.114	JB	0.0339	MDL	5.01	PQL	ng/Kg	UJ	B, FD
1,2,3,4,7,8-HxCDD	0.225	JQ	0.0598	MDL	5.01	PQL	ng/Kg	J	Z, FD
1,2,3,4,7,8-HXCDF	0.252	JB	0.0456	MDL	5.01	PQL	ng/Kg	J	Z, FD
1,2,3,6,7,8-HXCDD	1.31	JB	0.0609	MDL	5.01	PQL	ng/Kg	J	Z, FD
1,2,3,6,7,8-HXCDF	0.219	JBQ	0.0413	MDL	5.01	PQL	ng/Kg	J	Z
1,2,3,7,8,9-HXCDD	1.19	JB	0.0570	MDL	5.01	PQL	ng/Kg	J	Z
1,2,3,7,8,9-HXCDF	0.406	JQ	0.0490	MDL	5.01	PQL	ng/Kg	J	Z
1,2,3,7,8-PECDD	0.140	JBQ	0.0590	MDL	5.01	PQL	ng/Kg	UJ	B, FD
1,2,3,7,8-PECDF	0.251	JB	0.0336	MDL	5.01	PQL	ng/Kg	U	B
2,3,4,6,7,8-HXCDF	0.304	JBQ	0.0425	MDL	5.01	PQL	ng/Kg	J	Z
2,3,4,7,8-PECDF	0.162	JBQ	0.0317	MDL	5.01	PQL	ng/Kg	J	Z, FD
2,3,7,8-TCDF	0.102	J	0.0812	MDL	1.00	PQL	ng/Kg	J	Z, FD
OCDD	980	B	0.0783	MDL	10.0	PQL	ng/Kg	J	Q, FD
OCDF	10.0	JB	0.0347	MDL	10.0	PQL	ng/Kg	J	Z,FD

Sample ID: **FDG2-SL-876-SA5A-SB-4.0-5.0** ***Collected:*** **6/16/2014 9:45:00** ***Analysis Type:*** **RES** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
1,2,3,4,6,7,8-HPCDF	0.592	JB	0.0154	MDL	5.09	PQL	ng/Kg	J	Z
1,2,3,4,7,8,9-HPCDF	0.123	JBQ	0.0269	MDL	5.09	PQL	ng/Kg	U	B
1,2,3,4,7,8-HxCDD	0.193	JQ	0.0391	MDL	5.09	PQL	ng/Kg	J	Z
1,2,3,4,7,8-HXCDF	0.134	JBQ	0.0299	MDL	5.09	PQL	ng/Kg	U	B
1,2,3,6,7,8-HXCDD	0.350	JBQ	0.0397	MDL	5.09	PQL	ng/Kg	J	Z
1,2,3,6,7,8-HXCDF	0.120	JBQ	0.0274	MDL	5.09	PQL	ng/Kg	U	B
1,2,3,7,8,9-HXCDD	0.350	JB	0.0364	MDL	5.09	PQL	ng/Kg	J	Z
1,2,3,7,8,9-HXCDF	0.211	J	0.0314	MDL	5.09	PQL	ng/Kg	J	Z
1,2,3,7,8-PECDD	0.157	JBQ	0.0413	MDL	5.09	PQL	ng/Kg	U	B
1,2,3,7,8-PECDF	0.149	JB	0.0218	MDL	5.09	PQL	ng/Kg	U	B
2,3,4,6,7,8-HXCDF	0.149	JBQ	0.0288	MDL	5.09	PQL	ng/Kg	U	B
2,3,4,7,8-PECDF	0.117	JBQ	0.0208	MDL	5.09	PQL	ng/Kg	U	B
2,3,7,8-TCDD	0.0631	JBQ	0.0619	MDL	1.02	PQL	ng/Kg	U	B
OCDF	1.84	JBQ	0.0411	MDL	10.2	PQL	ng/Kg	J	Z

* denotes a non-reportable result

Project Name and Number: 1204-002-001-AL - SSFL Area IV Phase 3

Data Qualifier Summary

Lab Reporting Batch ID: PH234 **Laboratory: LL**

EDD Filename: PH234_v1 **eQAPP Name: CDM_SSFL_140617_Lan**

Method Category: SVOA

Method: 1613B **Matrix: SO**

Sample ID: **FDG2-SL-877-SA5A-SB-3.0-4.0** *Collected:* **6/16/2014 11:10:00** *Analysis Type:* **RES** *Dilution:* **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
1,2,3,4,6,7,8-HPCDD	3.38	JB	0.0527	MDL	4.99	PQL	ng/Kg	J	Z
1,2,3,4,6,7,8-HPCDF	0.322	JB	0.0168	MDL	4.99	PQL	ng/Kg	J	Z
1,2,3,4,7,8,9-HPCDF	0.0376	JBQ	0.0268	MDL	4.99	PQL	ng/Kg	U	B
1,2,3,4,7,8-HxCDD	0.0520	J	0.0318	MDL	4.99	PQL	ng/Kg	J	Z
1,2,3,4,7,8-HXCDF	0.0813	JBQ	0.0221	MDL	4.99	PQL	ng/Kg	U	B
1,2,3,6,7,8-HXCDD	0.161	JBQ	0.0325	MDL	4.99	PQL	ng/Kg	U	B
1,2,3,6,7,8-HXCDF	0.0336	JBQ	0.0186	MDL	4.99	PQL	ng/Kg	U	B
1,2,3,7,8,9-HXCDD	0.144	JBQ	0.0291	MDL	4.99	PQL	ng/Kg	U	B
1,2,3,7,8,9-HXCDF	0.105	JQ	0.0240	MDL	4.99	PQL	ng/Kg	J	Z
1,2,3,7,8-PECDD	0.0588	JBQ	0.0423	MDL	4.99	PQL	ng/Kg	U	B
1,2,3,7,8-PECDF	0.0428	JBQ	0.0242	MDL	4.99	PQL	ng/Kg	U	B
2,3,4,6,7,8-HXCDF	0.0452	JBQ	0.0201	MDL	4.99	PQL	ng/Kg	U	B
2,3,4,7,8-PECDF	0.0261	JBQ	0.0241	MDL	4.99	PQL	ng/Kg	U	B
OCDF	1.08	JB	0.0393	MDL	9.99	PQL	ng/Kg	J	Z

Method Category: SVOA

Method: 8015M **Matrix: SO**

Sample ID: **FDG2-SL-1175-SA5A-SB-2.0-3.0** *Collected:* **6/16/2014 8:50:00** *Analysis Type:* **REA** *Dilution:* **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
EFH (C21-C30)	13		2.0	MDL	5.1	PQL	mg/Kg	J	FD
EFH (C30-C40)	36		4.0	MDL	10	PQL	mg/Kg	J	FD

Sample ID: **FDG2-SL-1175-SA5A-SB-2.0-3.0** *Collected:* **6/16/2014 8:50:00** *Analysis Type:* **REA2** *Dilution:* **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
EFH (C21-C30) SG	3.6	J	2.0	MDL	5.1	PQL	mg/Kg	J	Z, FD
EFH (C30-C40) SG	14		4.1	MDL	10	PQL	mg/Kg	J	FD

Sample ID: **FDG2-SL-875-SA5A-SB-2.0-3.0** *Collected:* **6/16/2014 8:45:00** *Analysis Type:* **DL** *Dilution:* **2**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
EFH (C21-C30)	33		4.1	MDL	10	PQL	mg/Kg	J	Q, FD
EFH (C30-C40)	85		8.2	MDL	20	PQL	mg/Kg	J	FD

* denotes a non-reportable result

Project Name and Number: 1204-002-001-AL - SSFL Area IV Phase 3

Data Qualifier Summary

Lab Reporting Batch ID: PH234 **Laboratory: LL**

EDD Filename: PH234_v1 **eQAPP Name: CDM_SSFL_140617_Lan**

Method Category: SVOA

Method: 8015M **Matrix: SO**

Sample ID: **FDG2-SL-875-SA5A-SB-2.0-3.0** *Collected:* **6/16/2014 8:45:00** *Analysis Type:* **REA** *Dilution:* **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
EFH (C21-C30) SG	26		2.1	MDL	5.1	PQL	mg/Kg	J	Q, FD
EFH (C30-C40) SG	67		4.1	MDL	10	PQL	mg/Kg	J	FD

Sample ID: **FDG2-SL-877-SA5A-SB-0.0-0.5** *Collected:* **6/16/2014 10:55:00** *Analysis Type:* **REA** *Dilution:* **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
EFH (C12-C14) SG	5.0	U	2.0	MDL	5.0	PQL	mg/Kg	UJ	L
EFH (C15-C20) SG	5.0	U	2.0	MDL	5.0	PQL	mg/Kg	UJ	L
EFH (C21-C30) SG	5.0	U	2.0	MDL	5.0	PQL	mg/Kg	UJ	L
EFH (C30-C40) SG	10	U	4.0	MDL	10	PQL	mg/Kg	UJ	L
EFH (C8-C11) SG	5.0	U	2.0	MDL	5.0	PQL	mg/Kg	UJ	L

Method Category: SVOA

Method: 8082A **Matrix: SO**

Sample ID: **FDG2-SL-875-SA5A-SB-0.0-0.5** *Collected:* **6/16/2014 8:20:00** *Analysis Type:* **RES** *Dilution:* **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
AROCLOR 1254	9.7	J	4.4	MDL	17	PQL	ug/Kg	J	Z

Method Category: SVOA

Method: 8270D SIM **Matrix: SO**

Sample ID: **FDG2-SL-1175-SA5A-SB-2.0-3.0** *Collected:* **6/16/2014 8:50:00** *Analysis Type:* **RES-BASE/NEUTRAL** *Dilution:* **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
BENZO(A)PYRENE	0.81	J	0.68	MDL	1.7	PQL	ug/Kg	J	Z
BENZO(G,H,I)PERYLENE	0.68	J	0.68	MDL	1.7	PQL	ug/Kg	J	Z, FD
BENZO(K)FLUORANTHENE	1.3	J	0.68	MDL	1.7	PQL	ug/Kg	J	Z
CHRYSENE	2.7		0.34	MDL	1.7	PQL	ug/Kg	J	L
FLUORANTHENE	1.3	J	0.68	MDL	1.7	PQL	ug/Kg	J	Z
PHENANTHRENE	1.7	U	0.68	MDL	1.7	PQL	ug/Kg	UJ	FD
PYRENE	1.0	J	0.68	MDL	1.7	PQL	ug/Kg	J	Z

* denotes a non-reportable result

Project Name and Number: 1204-002-001-AL - SSFL Area IV Phase 3

Data Qualifier Summary

Lab Reporting Batch ID: PH234 **Laboratory: LL**

EDD Filename: PH234_v1 **eQAPP Name: CDM_SSFL_140617_Lan**

Method Category: SVOA

Method: 8270D SIM **Matrix: SO**

Sample ID: **FDG2-SL-875-SA5A-SB-0.0-0.5** ***Collected:*** **6/16/2014 8:20:00** ***Analysis Type:*** **RES-BASE/NEUTRAL** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
ANTHRACENE	0.87	J	0.34	MDL	1.7	PQL	ug/Kg	J	Z
BENZO(E)PYRENE	4.0	J	3.4	MDL	17	PQL	ug/Kg	J	Z
BIS(2-ETHYLHEXYL)PHTHALATE	15	J	6.1	MDL	18	PQL	ug/Kg	J	Z
CHRYSENE	9.0		0.34	MDL	1.7	PQL	ug/Kg	J	L
INDENO(1,2,3-CD)PYRENE	1.3	J	0.67	MDL	1.7	PQL	ug/Kg	J	Z

Sample ID: **FDG2-SL-875-SA5A-SB-2.0-3.0** ***Collected:*** **6/16/2014 8:45:00** ***Analysis Type:*** **RES-BASE/NEUTRAL** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
BENZO(A)PYRENE	0.84	J	0.68	MDL	1.7	PQL	ug/Kg	J	Z
BENZO(G,H,I)PERYLENE	1.7	U	0.68	MDL	1.7	PQL	ug/Kg	UJ	FD
BENZO(K)FLUORANTHENE	1.5	J	0.68	MDL	1.7	PQL	ug/Kg	J	Z
CHRYSENE	2.4		0.34	MDL	1.7	PQL	ug/Kg	J	L
FLUORANTHENE	1.4	J	0.68	MDL	1.7	PQL	ug/Kg	J	Z
PHENANTHRENE	0.70	J	0.68	MDL	1.7	PQL	ug/Kg	J	Z, FD
PYRENE	1.2	J	0.68	MDL	1.7	PQL	ug/Kg	J	Z

Sample ID: **FDG2-SL-876-SA5A-SB-0.0-0.5** ***Collected:*** **6/16/2014 9:15:00** ***Analysis Type:*** **RES-BASE/NEUTRAL** ***Dilution:*** **10**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
BENZO(A)ANTHRACENE	6.9	J	6.7	MDL	17	PQL	ug/Kg	J	Z
BENZO(G,H,I)PERYLENE	7.0	J	6.7	MDL	17	PQL	ug/Kg	J	Z
CHRYSENE	29		3.4	MDL	17	PQL	ug/Kg	J	L

Sample ID: **FDG2-SL-876-SA5A-SB-4.0-5.0** ***Collected:*** **6/16/2014 9:45:00** ***Analysis Type:*** **RES-BASE/NEUTRAL** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
CHRYSENE	0.47	J	0.35	MDL	1.7	PQL	ug/Kg	J	Z, L

Sample ID: **FDG2-SL-877-SA5A-SB-0.0-0.5** ***Collected:*** **6/16/2014 10:55:00** ***Analysis Type:*** **RES-BASE/NEUTRAL** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
BENZO(A)PYRENE	0.73	J	0.67	MDL	1.7	PQL	ug/Kg	J	Z
BIS(2-ETHYLHEXYL)PHTHALATE	8.3	J	6.0	MDL	18	PQL	ug/Kg	J	Z
CHRYSENE	2.2		0.33	MDL	1.7	PQL	ug/Kg	J	L

* denotes a non-reportable result

Project Name and Number: 1204-002-001-AL - SSFL Area IV Phase 3

Data Qualifier Summary

Lab Reporting Batch ID: PH234 **Laboratory: LL**

EDD Filename: PH234_v1 **eQAPP Name: CDM_SSFL_140617_Lan**

Method Category: SVOA

Method: 8270D SIM **Matrix: SO**

Sample ID: **FDG2-SL-877-SA5A-SB-0.0-0.5** *Collected:* **6/16/2014 10:55:00** *Analysis Type:* **RES-BASE/NEUTRAL** *Dilution:* **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
PHENANTHRENE	1.3	J	0.67	MDL	1.7	PQL	ug/Kg	J	Z

Sample ID: **FDG2-SL-877-SA5A-SB-3.0-4.0** *Collected:* **6/16/2014 11:10:00** *Analysis Type:* **RES-BASE/NEUTRAL** *Dilution:* **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
Di-n-octylphthalate	8.1	J	6.2	MDL	18	PQL	ug/Kg	J	Z

Method Category: VOA

Method: 8260B **Matrix: AQ**

Sample ID: **TB-061614** *Collected:* **6/16/2014 8:00:00** *Analysis Type:* **RES** *Dilution:* **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
VINYL ACETATE	10	U	2	MDL	10	PQL	ug/L	UJ	C

Method Category: VOA

Method: 8260B **Matrix: SO**

Sample ID: **FDG2-SL-1175-SA5A-SB-2.0-3.0** *Collected:* **6/16/2014 8:50:00** *Analysis Type:* **RES** *Dilution:* **1.02**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
BROMOMETHANE	5	U	2	MDL	5	PQL	ug/Kg	UJ	C
CHLOROETHANE	5	U	2	MDL	5	PQL	ug/Kg	UJ	C
DICHLORODIFLUOROMETHANE	5	U	2	MDL	5	PQL	ug/Kg	UJ	C

Sample ID: **FDG2-SL-875-SA5A-SB-2.0-3.0** *Collected:* **6/16/2014 8:45:00** *Analysis Type:* **RES** *Dilution:* **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
BROMOMETHANE	5	U	2	MDL	5	PQL	ug/Kg	UJ	C
CHLOROETHANE	5	U	2	MDL	5	PQL	ug/Kg	UJ	C
DICHLORODIFLUOROMETHANE	5	U	2	MDL	5	PQL	ug/Kg	UJ	C
VINYL ACETATE	10	U	2	MDL	10	PQL	ug/Kg	UJ	Q

* denotes a non-reportable result

Project Name and Number: 1204-002-001-AL - SSFL Area IV Phase 3

Data Qualifier Summary

Lab Reporting Batch ID: PH234 **Laboratory: LL**

EDD Filename: PH234_v1 **eQAPP Name: CDM_SSFL_140617_Lan**

Method Category: **VOA**

Method: **8260B SIM** ***Matrix:*** **SO**

Sample ID: **FDG2-SL-1175-SA5A-SB-2.0-3.0** ***Collected:*** **6/16/2014 8:50:00** ***Analysis Type:*** **RES** ***Dilution:*** **24.08**

Analyte	*Lab Result*	*Lab Qual*	*DL*	*DL Type*	*RL*	*RL Type*	*Units*	*Data Review Qual*	*Reason Code*
1,4-DIOXANE	15	U	4.9	MDL	15	PQL	ug/Kg	UJ	S

Sample ID: **FDG2-SL-875-SA5A-SB-2.0-3.0** ***Collected:*** **6/16/2014 8:45:00** ***Analysis Type:*** **RES** ***Dilution:*** **26.71**

Analyte	*Lab Result*	*Lab Qual*	*DL*	*DL Type*	*RL*	*RL Type*	*Units*	*Data Review Qual*	*Reason Code*
1,4-DIOXANE	16	U	5.5	MDL	16	PQL	ug/Kg	UJ	S

* denotes a non-reportable result

Project Name and Number: 1204-002-001-AL - SSFL Area IV Phase 3

Data Qualifier Summary

Lab Reporting Batch ID: PH234 **Laboratory: LL**

EDD Filename: PH234_v1 **eQAPP Name: CDM_SSFL_140617_Lan**

Reason Code Legend

Reason Code	*Description*
B	Method Blank Contamination
C	Continuing Calibration Verification Percent Difference Lower Estimation
C	Initial Calibration Verification Percent Difference Lower Estimation
E	Laboratory Duplicate Precision
E	Matrix Spike Precision
F	Equipment Blank Contamination
F	Field Blank Contamination
FD	Field Duplicate Precision
L	Laboratory Control Spike Lower Estimation
L	Laboratory Control Spike Upper Estimation
Q	Laboratory Duplicate Precision
Q	Matrix Spike Lower Estimation
Q	Matrix Spike Lower Rejection
Q	Matrix Spike Precision
Q	Matrix Spike Upper Estimation
S	Surrogate/Tracer Recovery Lower Estimation
S	Surrogate/Tracer Recovery Upper Estimation
Z	Reporting Limit Trace Value

* denotes a non-reportable result

Enclosure I

Level III ADR Outliers

(Including Manual Review Outliers)

Quality Control
Outlier Reports

PH234

Method Blank Outlier Report

Lab Reporting Batch ID: PH234 **Laboratory: LL**

EDD Filename: PH234_v1 **eQAPP Name: CDM_SSFL_140617_Lan**

Method: **1613B**
Matrix: **SO**

Method Blank Sample ID	Analysis Date	Analyte	Result	Associated Samples
BLK1700B370205	6/21/2014 2:05:00 AM	1,2,3,4,6,7,8-HPCDD 1,2,3,4,6,7,8-HPCDF 1,2,3,4,7,8,9-HPCDF 1,2,3,4,7,8-HXCDF 1,2,3,6,7,8-HXCDD 1,2,3,6,7,8-HXCDF 1,2,3,7,8,9-HXCDD 1,2,3,7,8-PECDD 1,2,3,7,8-PECDF 2,3,4,6,7,8-HXCDF 2,3,4,7,8-PECDF 2,3,7,8-TCDD OCDD OCDF	0.0853 ng/Kg 0.0561 ng/Kg 0.0335 ng/Kg 0.0457 ng/Kg 0.0329 ng/Kg 0.0297 ng/Kg 0.0404 ng/Kg 0.0524 ng/Kg 0.0517 ng/Kg 0.0358 ng/Kg 0.0235 ng/Kg 0.0713 ng/Kg 0.231 ng/Kg 0.165 ng/Kg	FDG2-SL-1175-SA5A-SB-2.0-3.0 FDG2-SL-875-SA5A-SB-0.0-0.5 FDG2-SL-875-SA5A-SB-2.0-3.0 FDG2-SL-876-SA5A-SB-4.0-5.0 FDG2-SL-877-SA5A-SB-3.0-4.0

The following samples and their listed target analytes were qualified due to contamination reported in this blank

Sample ID	Analyte	Reported Result	Modified Final Result
FDG2-SL-1175-SA5A-SB-2.0-3.0(RES)	1,2,3,7,8-PECDD	0.257 ng/Kg	0.257U ng/Kg
FDG2-SL-875-SA5A-SB-0.0-0.5(RES)	2,3,7,8-TCDD	0.0601 ng/Kg	0.0601U ng/Kg
FDG2-SL-875-SA5A-SB-2.0-3.0(RES)	1,2,3,4,7,8,9-HPCDF	0.114 ng/Kg	0.114U ng/Kg
FDG2-SL-875-SA5A-SB-2.0-3.0(RES)	1,2,3,7,8-PECDD	0.140 ng/Kg	0.140U ng/Kg
FDG2-SL-875-SA5A-SB-2.0-3.0(RES)	1,2,3,7,8-PECDF	0.251 ng/Kg	0.251U ng/Kg
FDG2-SL-876-SA5A-SB-4.0-5.0(RES)	1,2,3,4,7,8,9-HPCDF	0.123 ng/Kg	0.123U ng/Kg
FDG2-SL-876-SA5A-SB-4.0-5.0(RES)	1,2,3,4,7,8-HXCDF	0.134 ng/Kg	0.134U ng/Kg
FDG2-SL-876-SA5A-SB-4.0-5.0(RES)	1,2,3,6,7,8-HXCDF	0.120 ng/Kg	0.120U ng/Kg
FDG2-SL-876-SA5A-SB-4.0-5.0(RES)	1,2,3,7,8-PECDD	0.157 ng/Kg	0.157U ng/Kg
FDG2-SL-876-SA5A-SB-4.0-5.0(RES)	1,2,3,7,8-PECDF	0.149 ng/Kg	0.149U ng/Kg
FDG2-SL-876-SA5A-SB-4.0-5.0(RES)	2,3,4,6,7,8-HXCDF	0.149 ng/Kg	0.149U ng/Kg
FDG2-SL-876-SA5A-SB-4.0-5.0(RES)	2,3,4,7,8-PECDF	0.117 ng/Kg	0.117U ng/Kg
FDG2-SL-876-SA5A-SB-4.0-5.0(RES)	2,3,7,8-TCDD	0.0631 ng/Kg	0.0631U ng/Kg
FDG2-SL-877-SA5A-SB-3.0-4.0(RES)	1,2,3,4,7,8,9-HPCDF	0.0376 ng/Kg	0.0376U ng/Kg
FDG2-SL-877-SA5A-SB-3.0-4.0(RES)	1,2,3,4,7,8-HXCDF	0.0813 ng/Kg	0.0813U ng/Kg
FDG2-SL-877-SA5A-SB-3.0-4.0(RES)	1,2,3,6,7,8-HXCDD	0.161 ng/Kg	0.161U ng/Kg
FDG2-SL-877-SA5A-SB-3.0-4.0(RES)	1,2,3,6,7,8-HXCDF	0.0336 ng/Kg	0.0336U ng/Kg
FDG2-SL-877-SA5A-SB-3.0-4.0(RES)	1,2,3,7,8,9-HXCDD	0.144 ng/Kg	0.144U ng/Kg
FDG2-SL-877-SA5A-SB-3.0-4.0(RES)	1,2,3,7,8-PECDD	0.0588 ng/Kg	0.0588U ng/Kg
FDG2-SL-877-SA5A-SB-3.0-4.0(RES)	1,2,3,7,8-PECDF	0.0428 ng/Kg	0.0428U ng/Kg
FDG2-SL-877-SA5A-SB-3.0-4.0(RES)	2,3,4,6,7,8-HXCDF	0.0452 ng/Kg	0.0452U ng/Kg
FDG2-SL-877-SA5A-SB-3.0-4.0(RES)	2,3,4,7,8-PECDF	0.0261 ng/Kg	0.0261U ng/Kg

Method Blank Outlier Report

Lab Reporting Batch ID: PH234 **Laboratory: LL**

EDD Filename: PH234_v1 **eQAPP Name: CDM_SSFL_140617_Lan**

Method: **6010C**
Matrix: **SO**

Method Blank Sample ID	Analysis Date	Analyte	Result	Associated Samples
P16837BB221618	6/19/2014 4:18:00 PM	ALUMINUM BORON CALCIUM TIN ZINC	10.0 mg/Kg 1.76 mg/Kg 24.6 mg/Kg 1.46 mg/Kg 0.386 mg/Kg	FDG2-SL-1175-SA5A-SB-2.0-3.0 FDG2-SL-875-SA5A-SB-0.0-0.5 FDG2-SL-875-SA5A-SB-2.0-3.0

The following samples and their listed target analytes were qualified due to contamination reported in this blank

Sample ID	Analyte	Reported Result	Modified Final Result
FDG2-SL-1175-SA5A-SB-2.0-3.0(RES)	BORON	4.08 mg/Kg	4.08U mg/Kg
FDG2-SL-1175-SA5A-SB-2.0-3.0(RES)	TIN	2.42 mg/Kg	2.42U mg/Kg
FDG2-SL-875-SA5A-SB-0.0-0.5(RES)	BORON	4.21 mg/Kg	4.21U mg/Kg
FDG2-SL-875-SA5A-SB-0.0-0.5(RES)	TIN	2.23 mg/Kg	2.23U mg/Kg
FDG2-SL-875-SA5A-SB-2.0-3.0(RES)	BORON	4.43 mg/Kg	4.43U mg/Kg
FDG2-SL-875-SA5A-SB-2.0-3.0(RES)	TIN	2.61 mg/Kg	2.61U mg/Kg

Method: **6020A**
Matrix: **SO**

Method Blank Sample ID	Analysis Date	Analyte	Result	Associated Samples
P16837BB220645A	6/19/2014 6:45:00 AM	STRONTIUM	0.134 mg/Kg	FDG2-SL-1175-SA5A-SB-2.0-3.0 FDG2-SL-875-SA5A-SB-0.0-0.5 FDG2-SL-875-SA5A-SB-2.0-3.0

Field Blank Outlier Report

Lab Reporting Batch ID: PH234 **Laboratory: LL**

EDD Filename: PH234_v1 **eQAPP Name: CDM_SSFL_140617_Lan**

Method: **6010C**
Matrix: **SO**

Field Blank Sample ID	Collected Date	Analyte	Result	Associated Samples
FB-052114(RES)	5/21/2014 2:00:00 PM	Zirconium	0.011 mg/L	FDG2-SL-1175-SA5A-SB-2.0-3.0 FDG2-SL-875-SA5A-SB-0.0-0.5 FDG2-SL-875-SA5A-SB-2.0-3.0 FDG2-SL-876-SA5A-SB-0.0-0.5 FDG2-SL-876-SA5A-SB-4.0-5.0 FDG2-SL-877-SA5A-SB-0.0-0.5 FDG2-SL-877-SA5A-SB-3.0-4.0

The following samples and their listed target analytes were qualified due to contamination reported in this blank

Sample ID	Analyte	Reported Result	Modified Final Result
FDG2-SL-1175-SA5A-SB-2.0-3.0(RES)	Zirconium	3.05 mg/Kg	3.05U mg/Kg
FDG2-SL-875-SA5A-SB-0.0-0.5(RES)	Zirconium	3.16 mg/Kg	3.16U mg/Kg
FDG2-SL-875-SA5A-SB-2.0-3.0(RES)	Zirconium	3.03 mg/Kg	3.03U mg/Kg

Equipment Rinsate Blank Outlier Report

Lab Reporting Batch ID: PH234 **Laboratory: LL**

EDD Filename: PH234_v1 **eQAPP Name: CDM_SSFL_140617_Lan**

Method: **6010C**
Matrix: **SO**

Equipment Blank Sample ID	Collected Date	Analyte	Result	Associated Samples
EB1-061814(REA2)	6/18/2014 3:00:00 PM	BORON CADMIUM MANGANESE MOLYBDENUM	0.0061 mg/L 0.00037 mg/L 0.00085 mg/L 0.01 mg/L	FDG2-SL-1175-SA5A-SB-2.0-3.0 FDG2-SL-875-SA5A-SB-0.0-0.5 FDG2-SL-875-SA5A-SB-2.0-3.0 FDG2-SL-876-SA5A-SB-0.0-0.5 FDG2-SL-876-SA5A-SB-4.0-5.0 FDG2-SL-877-SA5A-SB-0.0-0.5 FDG2-SL-877-SA5A-SB-3.0-4.0

The following samples and their listed target analytes were qualified due to contamination reported in this blank

Sample ID	Analyte	Reported Result	Modified Final Result
FDG2-SL-1175-SA5A-SB-2.0-3.0(RES)	MOLYBDENUM	0.410 mg/Kg	0.410U mg/Kg
FDG2-SL-875-SA5A-SB-0.0-0.5(RES)	MOLYBDENUM	0.478 mg/Kg	0.478U mg/Kg
FDG2-SL-875-SA5A-SB-2.0-3.0(RES)	MOLYBDENUM	0.415 mg/Kg	0.415U mg/Kg

Surrogate Outlier Report

Lab Reporting Batch ID: PH234 **Laboratory: LL**

EDD Filename: PH234_v1 **eQAPP Name: CDM_SSFL_140617_Lan**

Method: **8082A**
Matrix: **SO**

Sample ID (Analysis Type)	*Surrogate*	*Sample % Recovery*	*% Recovery Limits*	*Affected Compounds*	*Flag*
FDG2-SL-1175-SA5A-SB-2.0-3.0	TETRACHLORO-M-XYLENE	122	45.00-120.00	All Target Analytes	J (all detects)

Method: **8260B SIM**
Matrix: **SO**

Sample ID (Analysis Type)	*Surrogate*	*Sample % Recovery*	*% Recovery Limits*	*Affected Compounds*	*Flag*
FDG2-SL-1175-SA5A-SB-2.0-3.0	TOLUENE-D8	45	70.00-130.00	All Target Analytes	J(all detects) UJ(all non-detects)
FDG2-SL-875-SA5A-SB-2.0-3.0	TOLUENE-D8	47	70.00-130.00	All Target Analytes	J(all detects) UJ(all non-detects)

Matrix Spike/Matrix Spike Duplicate Outlier Report

Lab Reporting Batch ID: PH234 **Laboratory: LL**

EDD Filename: PH234_v1 **eQAPP Name: CDM_SSFL_140617_Lan**

Method: 1613B
Matrix: SO

QC Sample ID (Associated Samples)	Compound	MS %R	MSD %R	%R Limits	RPD (Limits)	Affected Compounds	Flag
FDG2-SL-875-SA5A-SB-2.0-3.0MS FDG2-SL-875-SA5A-SB-2.0-3.0MSD (FDG2-SL-875-SA5A-SB-2.0-3.0)	OCDD	232	210	40.00-135.00	-	OCDD	J (all detects)

Method: 8015M
Matrix: SO

QC Sample ID (Associated Samples)	Compound	MS %R	MSD %R	%R Limits	RPD (Limits)	Affected Compounds	Flag
FDG2-SL-875-SA5A-SB-2.0-3.0MS FDG2-SL-875-SA5A-SB-2.0-3.0MSD (FDG2-SL-875-SA5A-SB-2.0-3.0)	EFH (C12-C14) EFH (C15-C20)	- 127	126 137	49.00-123.00 49.00-123.00	- -	EFH (C12-C14) EFH (C15-C20)	J(all detects)
FDG2-SL-875-SA5A-SB-2.0-3.0MS FDG2-SL-875-SA5A-SB-2.0-3.0MSD (FDG2-SL-875-SA5A-SB-2.0-3.0)	EFH (C21-C30) EFH (C30-C40)	-71 -318	-43 -264	49.00-123.00 49.00-123.00	- 21 (20.00)	EFH (C21-C30) EFH (C30-C40)	J(all detects) R(all non-detects) EFH (C30-C40), No Qual, >4x
FDG2-SL-875-SA5A-SB-2.0-3.0MS FDG2-SL-875-SA5A-SB-2.0-3.0MSD (FDG2-SL-875-SA5A-SB-2.0-3.0)	EFH (C21-C30) SG EFH (C30-C40) SG	-82 -262	-58 -217	49.00-123.00 49.00-123.00	- 22 (20.00)	EFH (C21-C30) SG EFH (C30-C40) SG	J(all detects) R(all non-detects) EFH (C30-C40), No Qual, >4x

Method: 6010C
Matrix: SO

QC Sample ID (Associated Samples)	Compound	MS %R	MSD %R	%R Limits	RPD (Limits)	Affected Compounds	Flag
FDG2-SL-875-SA5A-SB-2.0-3.0MS (TOT) FDG2-SL-875-SA5A-SB-2.0-3.0MSD (TOT) (FDG2-SL-1175-SA5A-SB-2.0-3.0 FDG2-SL-875-SA5A-SB-0.0-0.5 FDG2-SL-875-SA5A-SB-2.0-3.0)	ALUMINUM CALCIUM PHOSPHORUS TITANIUM	1032 150 - 244	806 - 151 196	75.00-125.00 75.00-125.00 75.00-125.00 75.00-125.00	- - - -	ALUMINUM CALCIUM PHOSPHORUS TITANIUM	No Qual, >4x
FDG2-SL-875-SA5A-SB-2.0-3.0MS (TOT) FDG2-SL-875-SA5A-SB-2.0-3.0MSD (TOT) (FDG2-SL-1175-SA5A-SB-2.0-3.0 FDG2-SL-875-SA5A-SB-0.0-0.5 FDG2-SL-875-SA5A-SB-2.0-3.0)	IRON MAGNESIUM	-493 -	-449 21	75.00-125.00 75.00-125.00	- -	IRON MAGNESIUM	No Qual, >4x

Project Name and Number: 1204-002-001-AL - SSFL Area IV Phase 3

Matrix Spike/Matrix Spike Duplicate Outlier Report

Lab Reporting Batch ID: PH234 **Laboratory: LL**

EDD Filename: PH234_v1 **eQAPP Name: CDM_SSFL_140617_Lan**

Method: 6010C
Matrix: SO

QC Sample ID (Associated Samples)	Compound	MS %R	MSD %R	%R Limits	RPD (Limits)	Affected Compounds	Flag
FDG2-SL-875-SA5A-SB-2.0-3.0MS (TOT) FDG2-SL-875-SA5A-SB-2.0-3.0MSD (TOT) (FDG2-SL-1175-SA5A-SB-2.0-3.0 FDG2-SL-875-SA5A-SB-0.0-0.5 FDG2-SL-875-SA5A-SB-2.0-3.0)	ANTIMONY LEAD MANGANESE	47 132 73	49 - 41	75.00-125.00 75.00-125.00 75.00-125.00	- 28 (20.00) -	ANTIMONY LEAD MANGANESE	J(all detects) UJ(all non-detects) Mn, No Qual, >4x

Method: 6020A
Matrix: SO

QC Sample ID (Associated Samples)	Compound	MS %R	MSD %R	%R Limits	RPD (Limits)	Affected Compounds	Flag
FDG2-SL-875-SA5A-SB-2.0-3.0MS (TOT) FDG2-SL-875-SA5A-SB-2.0-3.0MSD (TOT) (FDG2-SL-1175-SA5A-SB-2.0-3.0 FDG2-SL-875-SA5A-SB-0.0-0.5 FDG2-SL-875-SA5A-SB-2.0-3.0)	SILVER	128	128	75.00-125.00	-	SILVER	J(all detects)
FDG2-SL-875-SA5A-SB-2.0-3.0MS (TOT) FDG2-SL-875-SA5A-SB-2.0-3.0MSD (TOT) (FDG2-SL-1175-SA5A-SB-2.0-3.0 FDG2-SL-875-SA5A-SB-0.0-0.5 FDG2-SL-875-SA5A-SB-2.0-3.0)	STRONTIUM	148	71	75.00-125.00	21 (20.00)	STRONTIUM	J(all detects) UJ(all non-detects)

Method: 8270D SIM
Matrix: SO

QC Sample ID (Associated Samples)	Compound	MS %R	MSD %R	%R Limits	RPD (Limits)	Affected Compounds	Flag
FDG2-SL-875-SA5A-SB-2.0-3.0MSD (FDG2-SL-875-SA5A-SB-2.0-3.0)	BIS(2-ETHYLHEXYL)PHTHALAT	-	408	48.00-164.00	125 (30.00)	BIS(2-ETHYLHEXYL)PHTHALA	J(all detects)

Matrix Spike/Matrix Spike Duplicate Outlier Report

Lab Reporting Batch ID: PH234 **Laboratory: LL**

EDD Filename: PH234_v1 **eQAPP Name: CDM_SSFL_140617_Lan**

Method: **8260B**
Matrix: **SO**

QC Sample ID (Associated Samples)	*Compound*	*MS %R*	*MSD %R*	*%R Limits*	*RPD (Limits)*	*Affected Compounds*	*Flag*
FDG2-SL-875-SA5A-SB-2.0-3.0MSD (FDG2-SL-875-SA5A-SB-2.0-3.0)	1,2,3-TRICHLOROBENZENE	-	-	10.00-140.00	40 (30.00)	1,2,3-TRICHLOROBENZENE	J(all detects)
	1,2,4-TRICHLOROBENZENE	-	-	10.00-136.00	44 (30.00)	1,2,4-TRICHLOROBENZENE	
	1,2,4-TRIMETHYLBENZENE	-	-	37.00-149.00	41 (30.00)	1,2,4-TRIMETHYLBENZENE	
	1,2-DICHLOROBENZENE	-	-	36.00-133.00	37 (30.00)	1,2-DICHLOROBENZENE	
	1,3,5-TRIMETHYLBENZENE	-	-	38.00-150.00	41 (30.00)	1,3,5-TRIMETHYLBENZENE	
	1,3-DICHLOROBENZENE	-	-	34.00-134.00	40 (30.00)	1,3-DICHLOROBENZENE	
	1,4-DICHLOROBENZENE	-	-	45.00-165.00	41 (30.00)	1,4-DICHLOROBENZENE	
	1-CHLOROHEXANE	-	-	60.00-130.00	33 (30.00)	1-CHLOROHEXANE	
	2-CHLOROTOLUENE	-	-	42.00-146.00	37 (30.00)	2-CHLOROTOLUENE	
	4-CHLOROTOLUENE	-	-	50.00-150.00	38 (30.00)	4-CHLOROTOLUENE	
	BROMOBENZENE	-	-	43.00-139.00	32 (30.00)	BROMOBENZENE	
	HEXACHLOROBUTADIENE	-	-	10.00-155.00	59 (30.00)	HEXACHLOROBUTADIENE	
	ISOPROPYLBENZENE	-	-	38.00-144.00	34 (30.00)	ISOPROPYLBENZENE	
	N-BUTYLBENZENE	-	-	40.00-140.00	54 (30.00)	N-BUTYLBENZENE	
	N-PROPYLBENZENE	-	-	50.00-150.00	41 (30.00)	N-PROPYLBENZENE	
	P-ISOPROPYLTOLUENE	-	-	29.00-152.00	48 (30.00)	P-ISOPROPYLTOLUENE	
	SEC-BUTYLBENZENE	-	-	33.00-157.00	46 (30.00)	SEC-BUTYLBENZENE	
	TERT-BUTYLBENZENE	-	-	41.00-152.00	39 (30.00)	TERT-BUTYLBENZENE	
FDG2-SL-875-SA5A-SB-2.0-3.0MS **FDG2-SL-875-SA5A-SB-2.0-3.0MSD** (FDG2-SL-875-SA5A-SB-2.0-3.0)	VINYL ACETATE	11	13	21.00-139.00	-	VINYL ACETATE	J(all detects) UJ(all non-detects)

Lab Duplicate Outlier Report

Lab Reporting Batch ID: PH234 **Laboratory: LL**

EDD Filename: PH234_v1 **eQAPP Name: CDM_SSFL_140617_Lan**

Method: 6010C
Matrix: SO

QC Sample ID (Associated Sample ID)	Analyte	Sample RPD	eQAPP RPD	Flag
FDG2-SL-875-SA5A-SB-2.0-3.0DUP (TOT) (FDG2-SL-1175-SA5A-SB-2.0-3.0 FDG2 -SL-875-SA5A-SB-0.0-0.5 FDG2 -SL-875-SA5A-SB-2.0-3.0)	LEAD	26	20.00	No Qual, OK by Difference

Method: 6020A
Matrix: SO

QC Sample ID (Associated Sample ID)	Analyte	Sample RPD	eQAPP RPD	Flag
FDG2-SL-875-SA5A-SB-2.0-3.0DUP (TOT) (FDG2-SL-1175-SA5A-SB-2.0-3.0 FDG2 -SL-875-SA5A-SB-0.0-0.5 FDG2 -SL-875-SA5A-SB-2.0-3.0)	SILVER	25	20.00	No Qual OK by Difference

Lab Control Spike/Lab Control Spike Duplicate Outlier Report

Lab Reporting Batch ID: PH234 **Laboratory: LL**

EDD Filename: PH234_v1 **eQAPP Name: CDM_SSFL_140617_Lan**

Method: **8015M**
Matrix: **SO**

QC Sample ID (Associated Samples)	*Compound*	*LCS %R*	*LCSD %R*	*%R Limits*	*RPD (Limits)*	*Affected Compounds*	*Flag*
P41706AQ322335A (FDG2-SL-877-SA5A-SB-0.0-0.5)	EFH (C12-C14)	22	-	76.00-115.00	-	EFH (C12-C14)	J (all detects) UJ (all non-detects)
	EFH (C15-C20)	21	-	78.00-127.00	-	EFH (C15-C20)	
	EFH (C21-C30)	21	-	77.00-127.00	-	EFH (C21-C30)	
	EFH (C30-C40)	15	-	44.00-134.00	-	EFH (C30-C40)	
	EFH (C8-C11)	21	-	60.00-115.00	-	EFH (C8-C11)	

Method: **8270D SIM**
Matrix: **SO**

QC Sample ID (Associated Samples)	*Compound*	*LCS %R*	*LCSD %R*	*%R Limits*	*RPD (Limits)*	*Affected Compounds*	*Flag*
P9LALCSQ260036 (FDG2-SL-1175-SA5A-SB-2.0-3.0 FDG2-SL-875-SA5A-SB-0.0-0.5 FDG2-SL-875-SA5A-SB-2.0-3.0 FDG2-SL-876-SA5A-SB-0.0-0.5 FDG2-SL-876-SA5A-SB-4.0-5.0 FDG2-SL-877-SA5A-SB-0.0-0.5 FDG2-SL-877-SA5A-SB-3.0-4.0)	CHRYSENE	114	-	84.00-113.00	-	CHRYSENE	J(all detects)

Project Name and Number: 1204-002-001-AL - SSFL Area IV Phase 3

Field Duplicate RPD Report

Lab Reporting Batch ID: PH234 **Laboratory: LL**

EDD Filename: PH234_v1 **eQAPP Name: CDM_SSFL_140617_Lan**

Method: 160.3M
Matrix: SO

Analyte	Concentration (%)		Sample RPD	eQAPP RPD	Flag
	FDG2-SL-875-SA5A-SB-2.0-3.0	FDG2-SL-1175-SA5A-SB-2.0-3.0			
MOISTURE	2.7	2.4	12		No Qualifiers Applied

Method: 1613B
Matrix: SO

Analyte	Concentration (ng/Kg)		Sample RPD	eQAPP RPD	Flag
	FDG2-SL-875-SA5A-SB-2.0-3.0	FDG2-SL-1175-SA5A-SB-2.0-3.0			
1,2,3,6,7,8-HXCDF	0.219	0.290	28	50.00	No Qualifiers Applied
1,2,3,7,8,9-HXCDD	1.19	1.80	41	50.00	
1,2,3,7,8,9-HXCDF	0.406	0.505	22	50.00	
1,2,3,7,8-PECDF	0.251	0.359	35	50.00	
2,3,4,6,7,8-HXCDF	0.304	0.491	47	50.00	
1,2,3,4,6,7,8-HPCDD	35.5	104	98	50.00	J(all detects)
1,2,3,4,6,7,8-HPCDF	3.21	8.99	95	50.00	
1,2,3,4,7,8,9-HPCDF	0.114	0.366	105	50.00	
1,2,3,4,7,8-HxCDD	0.225	0.590	90	50.00	
1,2,3,4,7,8-HXCDF	0.252	0.529	71	50.00	
1,2,3,6,7,8-HXCDD	1.31	2.81	73	50.00	
1,2,3,7,8-PECDD	0.140	0.257	59	50.00	
2,3,4,7,8-PECDF	0.162	0.310	63	50.00	
2,3,7,8-TCDF	0.102	0.172	51	50.00	
OCDD	980	2800	96	50.00	
OCDF	10.0	32.0	105	50.00	

Method: 6010C
Matrix: SO

Analyte	Concentration (mg/Kg)		Sample RPD	eQAPP RPD	Flag
	FDG2-SL-875-SA5A-SB-2.0-3.0 (TOT)	FDG2-SL-1175-SA5A-SB-2.0-3.0 (TOT)			
ALUMINUM	15500	14600	6	50.00	No Qualifiers Applied
ARSENIC	5.84	5.50	6	50.00	
BARIUM	107	96.4	10	50.00	
BERYLLIUM	0.581	0.548	6	50.00	
BORON	4.43	4.08	8	50.00	
CALCIUM	2270	2090	8	50.00	
CHROMIUM	19.5	18.4	6	50.00	
COBALT	4.91	4.77	3	50.00	
COPPER	11.9	11.5	3	50.00	
IRON	19400	18600	4	50.00	
LEAD	10.7	13.1	20	50.00	
LITHIUM	20.7	19.9	4	50.00	
MAGNESIUM	4140	4010	3	50.00	
MANGANESE	321	306	5	50.00	
MOLYBDENUM	0.415	0.410	1	50.00	
NICKEL	13.1	11.7	11	50.00	
PHOSPHORUS	436	467	7	50.00	
POTASSIUM	3650	3440	6	50.00	
SODIUM	78.1	76.3	2	50.00	
TIN	2.61	2.42	8	50.00	
TITANIUM	1070	1000	7	50.00	
VANADIUM	36.0	32.5	10	50.00	
ZINC	58.7	57.5	2	50.00	
Zirconium	3.03	3.05	1	50.00	

Project Name and Number: 1204-002-001-AL - SSFL Area IV Phase 3

Field Duplicate RPD Report

Lab Reporting Batch ID: PH234 **Laboratory: LL**

EDD Filename: PH234_v1 **eQAPP Name: CDM_SSFL_140617_Lan**

Method: 6020A
Matrix: SO

Analyte	Concentration (mg/Kg) FDG2-SL-875-SA5A-SB-2.0-3.0 (TOT)	Concentration (mg/Kg) FDG2-SL-1175-SA5A-SB-2.0-3.0 (TOT)	Sample RPD	eQAPP RPD	Flag
SELENIUM	0.272	0.268	1	50.00	No Qualifiers Applied
SILVER	0.0425	0.0426	0	50.00	
STRONTIUM	22.6	19.8	13	50.00	
THALLIUM	0.274	0.284	4	50.00	

Method: 7471B
Matrix: SO

Analyte	Concentration (mg/Kg) FDG2-SL-875-SA5A-SB-2.0-3.0 (TOT)	Concentration (mg/Kg) FDG2-SL-1175-SA5A-SB-2.0-3.0 (TOT)	Sample RPD	eQAPP RPD	Flag
MERCURY	0.0206	0.0197	4	50.00	No Qualifiers Applied

Method: 8015M
Matrix: SO

Analyte	Concentration (mg/Kg) FDG2-SL-875-SA5A-SB-2.0-3.0	Concentration (mg/Kg) FDG2-SL-1175-SA5A-SB-2.0-3.0	Sample RPD	eQAPP RPD	Flag
EFH (C21-C30)	33	13	87	50.00	J(all detects)
EFH (C21-C30) SG	26	3.6	151	50.00	
EFH (C30-C40)	85	36	81	50.00	
EFH (C30-C40) SG	67	14	131	50.00	

Method: 8270D SIM
Matrix: SO

Analyte	Concentration (ug/Kg) FDG2-SL-875-SA5A-SB-2.0-3.0	Concentration (ug/Kg) FDG2-SL-1175-SA5A-SB-2.0-3.0	Sample RPD	eQAPP RPD	Flag
BENZO(A)PYRENE	0.84	0.81	4	50.00	No Qualifiers Applied
BENZO(B)FLUORANTHENE	2.0	2.4	18	50.00	
BENZO(K)FLUORANTHENE	1.5	1.3	14	50.00	
CHRYSENE	2.4	2.7	12	50.00	
FLUORANTHENE	1.4	1.3	7	50.00	
PYRENE	1.2	1.0	18	50.00	
BENZO(G,H,I)PERYLENE	1.7 U	0.68	200	50.00	J(all detects)
PHENANTHRENE	0.70	1.7 U	200	50.00	UJ(all non-detects)

Method: 9045M
Matrix: SO

Analyte	Concentration (pH unit) FDG2-SL-875-SA5A-SB-2.0-3.0	Concentration (pH unit) FDG2-SL-1175-SA5A-SB-2.0-3.0	Sample RPD	eQAPP RPD	Flag
PH	6.11	5.86	4	50.00	No Qualifiers Applied

Reporting Limit Outliers

Lab Reporting Batch ID: PH234 **Laboratory: LL**

EDD Filename: PH234_v1 **eQAPP Name: CDM_SSFL_140617_Lan**

Method: **1613B**

Matrix: **SO**

SampleID	Analyte	Lab Qual	Result	Reporting Limit	RL Type	Units	Flag
FDG2-SL-1175-SA5A-SB-2.0-3.0	1,2,3,4,7,8,9-HPCDF	JB	0.366	4.88	PQL	ng/Kg	
	1,2,3,4,7,8-HxCDD	J	0.590	4.88	PQL	ng/Kg	
	1,2,3,4,7,8-HXCDF	JB	0.529	4.88	PQL	ng/Kg	
	1,2,3,6,7,8-HXCDD	JB	2.81	4.88	PQL	ng/Kg	
	1,2,3,6,7,8-HXCDF	JBQ	0.290	4.88	PQL	ng/Kg	
	1,2,3,7,8,9-HXCDD	JB	1.80	4.88	PQL	ng/Kg	J (all detects)
	1,2,3,7,8,9-HXCDF	J	0.505	4.88	PQL	ng/Kg	
	1,2,3,7,8-PECDD	JBQ	0.257	4.88	PQL	ng/Kg	
	1,2,3,7,8-PECDF	JBQ	0.359	4.88	PQL	ng/Kg	
	2,3,4,6,7,8-HXCDF	JB	0.491	4.88	PQL	ng/Kg	
	2,3,4,7,8-PECDF	JBQ	0.310	4.88	PQL	ng/Kg	
	2,3,7,8-TCDF	JQ	0.172	0.976	PQL	ng/Kg	
FDG2-SL-875-SA5A-SB-0.0-0.5	1,2,3,4,6,7,8-HPCDF	JB	4.51	4.99	PQL	ng/Kg	
	1,2,3,4,7,8,9-HPCDF	JB	0.386	4.99	PQL	ng/Kg	
	1,2,3,4,7,8-HxCDD	JQ	0.464	4.99	PQL	ng/Kg	
	1,2,3,4,7,8-HXCDF	JB	0.424	4.99	PQL	ng/Kg	
	1,2,3,6,7,8-HXCDD	JB	1.57	4.99	PQL	ng/Kg	
	1,2,3,6,7,8-HXCDF	JBQ	0.298	4.99	PQL	ng/Kg	
	1,2,3,7,8,9-HXCDD	JB	1.16	4.99	PQL	ng/Kg	J (all detects)
	1,2,3,7,8,9-HXCDF	J	0.331	4.99	PQL	ng/Kg	
	1,2,3,7,8-PECDD	JB	0.324	4.99	PQL	ng/Kg	
	1,2,3,7,8-PECDF	JB	0.398	4.99	PQL	ng/Kg	
	2,3,4,6,7,8-HXCDF	JBQ	0.373	4.99	PQL	ng/Kg	
	2,3,4,7,8-PECDF	JB	0.406	4.99	PQL	ng/Kg	
	2,3,7,8-TCDD	JB	0.0601	0.997	PQL	ng/Kg	
	2,3,7,8-TCDF	JQ	0.138	0.997	PQL	ng/Kg	
FDG2-SL-875-SA5A-SB-2.0-3.0	1,2,3,4,6,7,8-HPCDF	JB	3.21	5.01	PQL	ng/Kg	
	1,2,3,4,7,8,9-HPCDF	JB	0.114	5.01	PQL	ng/Kg	
	1,2,3,4,7,8-HxCDD	JQ	0.225	5.01	PQL	ng/Kg	
	1,2,3,4,7,8-HXCDF	JB	0.252	5.01	PQL	ng/Kg	
	1,2,3,6,7,8-HXCDD	JB	1.31	5.01	PQL	ng/Kg	
	1,2,3,6,7,8-HXCDF	JBQ	0.219	5.01	PQL	ng/Kg	
	1,2,3,7,8,9-HXCDD	JB	1.19	5.01	PQL	ng/Kg	J (all detects)
	1,2,3,7,8,9-HXCDF	JQ	0.406	5.01	PQL	ng/Kg	
	1,2,3,7,8-PECDD	JBQ	0.140	5.01	PQL	ng/Kg	
	1,2,3,7,8-PECDF	JB	0.251	5.01	PQL	ng/Kg	
	2,3,4,6,7,8-HXCDF	JBQ	0.304	5.01	PQL	ng/Kg	
	2,3,4,7,8-PECDF	JBQ	0.162	5.01	PQL	ng/Kg	
	2,3,7,8-TCDF	J	0.102	1.00	PQL	ng/Kg	
	OCDF	JB	10.0	10.0	PQL	ng/Kg	
FDG2-SL-876-SA5A-SB-4.0-5.0	1,2,3,4,6,7,8-HPCDF	JB	0.592	5.09	PQL	ng/Kg	
	1,2,3,4,7,8,9-HPCDF	JBQ	0.123	5.09	PQL	ng/Kg	
	1,2,3,4,7,8-HxCDD	JQ	0.193	5.09	PQL	ng/Kg	
	1,2,3,4,7,8-HXCDF	JBQ	0.134	5.09	PQL	ng/Kg	
	1,2,3,6,7,8-HXCDD	JBQ	0.350	5.09	PQL	ng/Kg	
	1,2,3,6,7,8-HXCDF	JBQ	0.120	5.09	PQL	ng/Kg	
	1,2,3,7,8,9-HXCDD	JB	0.350	5.09	PQL	ng/Kg	J (all detects)
	1,2,3,7,8,9-HXCDF	J	0.211	5.09	PQL	ng/Kg	
	1,2,3,7,8-PECDD	JBQ	0.157	5.09	PQL	ng/Kg	
	1,2,3,7,8-PECDF	JB	0.149	5.09	PQL	ng/Kg	
	2,3,4,6,7,8-HXCDF	JBQ	0.149	5.09	PQL	ng/Kg	
	2,3,4,7,8-PECDF	JBQ	0.117	5.09	PQL	ng/Kg	
	2,3,7,8-TCDD	JBQ	0.0631	1.02	PQL	ng/Kg	
	OCDF	JBQ	1.84	10.2	PQL	ng/Kg	

Reporting Limit Outliers

Lab Reporting Batch ID: PH234 **Laboratory: LL**

EDD Filename: PH234_v1 **eQAPP Name: CDM_SSFL_140617_Lan**

Method: 1613B

Matrix: SO

SampleID	Analyte	Lab Qual	Result	Reporting Limit	RL Type	Units	Flag
FDG2-SL-877-SA5A-SB-3.0-4.0	1,2,3,4,6,7,8-HPCDD	JB	3.38	4.99	PQL	ng/Kg	J (all detects)
	1,2,3,4,6,7,8-HPCDF	JB	0.322	4.99	PQL	ng/Kg	
	1,2,3,4,7,8,9-HPCDF	JBQ	0.0376	4.99	PQL	ng/Kg	
	1,2,3,4,7,8-HxCDD	J	0.0520	4.99	PQL	ng/Kg	
	1,2,3,4,7,8-HXCDF	JBQ	0.0813	4.99	PQL	ng/Kg	
	1,2,3,6,7,8-HXCDD	JBQ	0.161	4.99	PQL	ng/Kg	
	1,2,3,6,7,8-HXCDF	JBQ	0.0336	4.99	PQL	ng/Kg	
	1,2,3,7,8,9-HXCDD	JBQ	0.144	4.99	PQL	ng/Kg	
	1,2,3,7,8,9-HXCDF	JQ	0.105	4.99	PQL	ng/Kg	
	1,2,3,7,8-PECDD	JBQ	0.0588	4.99	PQL	ng/Kg	
	1,2,3,7,8-PECDF	JBQ	0.0428	4.99	PQL	ng/Kg	
	2,3,4,6,7,8-HXCDF	JBQ	0.0452	4.99	PQL	ng/Kg	
	2,3,4,7,8-PECDF	JBQ	0.0261	4.99	PQL	ng/Kg	
	OCDF	JB	1.08	9.99	PQL	ng/Kg	

Method: 6010C

Matrix: SO

SampleID	Analyte	Lab Qual	Result	Reporting Limit	RL Type	Units	Flag
FDG2-SL-1175-SA5A-SB-2.0-3.0	BERYLLIUM	J	0.548	0.995	PQL	mg/Kg	J (all detects)
	BORON	J	4.08	9.95	PQL	mg/Kg	
	MOLYBDENUM	J	0.410	1.99	PQL	mg/Kg	
	SODIUM	J	76.3	99.5	PQL	mg/Kg	
	TIN	J	2.42	9.95	PQL	mg/Kg	
	Zirconium	J	3.05	4.97	PQL	mg/Kg	
FDG2-SL-875-SA5A-SB-0.0-0.5	BERYLLIUM	J	0.455	0.979	PQL	mg/Kg	J (all detects)
	BORON	J	4.21	9.79	PQL	mg/Kg	
	MOLYBDENUM	J	0.478	1.96	PQL	mg/Kg	
	SODIUM	J	65.1	97.9	PQL	mg/Kg	
	TIN	J	2.23	9.79	PQL	mg/Kg	
	Zirconium	J	3.16	4.90	PQL	mg/Kg	
FDG2-SL-875-SA5A-SB-2.0-3.0	BERYLLIUM	J	0.581	1.01	PQL	mg/Kg	J (all detects)
	BORON	J	4.43	10.1	PQL	mg/Kg	
	MOLYBDENUM	J	0.415	2.02	PQL	mg/Kg	
	SODIUM	J	78.1	101	PQL	mg/Kg	
	TIN	J	2.61	10.1	PQL	mg/Kg	
	Zirconium	J	3.03	5.04	PQL	mg/Kg	

Method: 6020A

Matrix: SO

SampleID	Analyte	Lab Qual	Result	Reporting Limit	RL Type	Units	Flag
FDG2-SL-1175-SA5A-SB-2.0-3.0	SELENIUM	J	0.268	0.398	PQL	mg/Kg	J (all detects)
	SILVER	J	0.0426	0.199	PQL	mg/Kg	
FDG2-SL-875-SA5A-SB-0.0-0.5	SELENIUM	J	0.255	0.392	PQL	mg/Kg	J (all detects)
	SILVER	J	0.0370	0.196	PQL	mg/Kg	
FDG2-SL-875-SA5A-SB-2.0-3.0	SELENIUM	J	0.272	0.403	PQL	mg/Kg	J (all detects)
	SILVER	J	0.0425	0.202	PQL	mg/Kg	

Reporting Limit Outliers

Lab Reporting Batch ID: PH234 **Laboratory: LL**

EDD Filename: PH234_v1 **eQAPP Name: CDM_SSFL_140617_Lan**

Method: 8015M

Matrix: SO

SampleID	Analyte	Lab Qual	Result	Reporting Limit	RL Type	Units	Flag
FDG2-SL-1175-SA5A-SB-2.0-3.0	EFH (C21-C30) SG	J	3.6	5.1	PQL	mg/Kg	J (all detects)

Method: 8082A

Matrix: SO

SampleID	Analyte	Lab Qual	Result	Reporting Limit	RL Type	Units	Flag
FDG2-SL-875-SA5A-SB-0.0-0.5	AROCLOR 1254	J	9.7	17	PQL	ug/Kg	J (all detects)

Method: 8270D SIM

Matrix: SO

SampleID	Analyte	Lab Qual	Result	Reporting Limit	RL Type	Units	Flag
FDG2-SL-1175-SA5A-SB-2.0-3.0	BENZO(A)PYRENE	J	0.81	1.7	PQL	ug/Kg	J (all detects)
	BENZO(G,H,I)PERYLENE	J	0.68	1.7	PQL	ug/Kg	
	BENZO(K)FLUORANTHENE	J	1.3	1.7	PQL	ug/Kg	
	FLUORANTHENE	J	1.3	1.7	PQL	ug/Kg	
	PYRENE	J	1.0	1.7	PQL	ug/Kg	
FDG2-SL-875-SA5A-SB-0.0-0.5	ANTHRACENE	J	0.87	1.7	PQL	ug/Kg	J (all detects)
	BENZO(E)PYRENE	J	4.0	17	PQL	ug/Kg	
	BIS(2-ETHYLHEXYL)PHTHALATE	J	15	18	PQL	ug/Kg	
	INDENO(1,2,3-CD)PYRENE	J	1.3	1.7	PQL	ug/Kg	
FDG2-SL-875-SA5A-SB-2.0-3.0	BENZO(A)PYRENE	J	0.84	1.7	PQL	ug/Kg	J (all detects)
	BENZO(K)FLUORANTHENE	J	1.5	1.7	PQL	ug/Kg	
	FLUORANTHENE	J	1.4	1.7	PQL	ug/Kg	
	PHENANTHRENE	J	0.70	1.7	PQL	ug/Kg	
	PYRENE	J	1.2	1.7	PQL	ug/Kg	
FDG2-SL-876-SA5A-SB-0.0-0.5	BENZO(A)ANTHRACENE	J	6.9	17	PQL	ug/Kg	J (all detects)
	BENZO(G,H,I)PERYLENE	J	7.0	17	PQL	ug/Kg	
FDG2-SL-876-SA5A-SB-4.0-5.0	CHRYSENE	J	0.47	1.7	PQL	ug/Kg	J (all detects)
FDG2-SL-877-SA5A-SB-0.0-0.5	BENZO(A)PYRENE	J	0.73	1.7	PQL	ug/Kg	J (all detects)
	BIS(2-ETHYLHEXYL)PHTHALATE	J	8.3	18	PQL	ug/Kg	
	PHENANTHRENE	J	1.3	1.7	PQL	ug/Kg	
FDG2-SL-877-SA5A-SB-3.0-4.0	Di-n-octylphthalate	J	8.1	18	PQL	ug/Kg	J (all detects)

Enclosure II

Level IV Data Validation Reports

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: Santa Susana Field Laboratory

Collection Date: June 16, 2014

LDC Report Date: August 14, 2014

Matrix: Soil/Water

Parameters: Volatiles

Validation Level: Level IV

Laboratory: Eurofins

Sample Delivery Group (SDG): PH234

Sample Identification

TB-061614
FDG2-SL-875-SA5A-SB-2.0-3.0
FDG2-SL-1175-SA5A-SB-2.0-3.0
FDG2-SL-875-SA5A-SB-2.0-3.0MS
FDG2-SL-875-SA5A-SB-2.0-3.0MSD

Introduction

This data review covers 4 soil samples and one water sample listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA SW 846 Method 8260B for Volatiles.

This review follows the Quality Assurance Project Plan for Santa Susana Field Laboratory (SSFL), RCRA Facility Investigation, Surficial Media Operable Unit (March 2009, Revision 4) and a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Superfund Organic Methods Data Review (June 2008).

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.

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.

NJ Presumptive evidence of presence of the compound at an estimated quantity.

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. GC/MS Instrument Performance Check

Instrument performance was checked at 12 hour intervals.

All ion abundance requirements were met.

III. Initial Calibration

Initial calibration was performed using required standard concentrations.

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

In the case where the laboratory used a calibration curve to evaluate the compounds, all coefficients of determination (r^2) were greater than or equal to 0.990 .

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

IV. Continuing Calibration

Continuing calibration was performed at the required frequencies.

Percent differences (%D) between the initial calibration RRF and the continuing calibration RRF were within the method criteria of less than or equal to 20.0% for calibration check compounds (CCCs) and 25.0% for all other compounds with the following exceptions:

Date	Compound	%D	Associated Samples	Flag	A or P
6/19/14	Vinyl acetate	35	All water samples in SDG PH234	J (all detects) UJ (all non-detects)	A

The percent differences (%D) of the second source calibration standard were less than or equal to 25.0% for all compounds with the following exceptions:

Date	Compound	%D	Associated Samples	Flag	A or P
6/24/14	Dichlorodifluoromethane Bromomethane Chloroethane	27 43 47	All soil samples in SDG PH234	J (all detects) UJ (all non-detects)	A

All of the continuing calibration relative response factors (RRF) were within method and validation criteria.

V. Blanks

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

Sample TB-061614 was identified as a trip blank. No volatile contaminants were found.

Sample EB1-061814 (from SDG PH237) was identified as an equipment blank. No volatile contaminants were found with the following exceptions:

Blank ID	Sampling Date	Compound	Concentration	Associated Samples
EB1-061814	6/18/14	2-Butanone	3 ug/L	All soil samples in SDG PH234

Sample FB-052114 (from SDG PH191) was identified as a field blank. No volatile contaminants were found with the following exceptions:

Blank ID	Sampling Date	Compound	Concentration	Associated Samples
FB-052114	5/21/14	Chloroform Methylene chloride	0.7 ug/L 7 ug/L	All soil samples in SDG PH234

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

VI. Surrogate Spikes

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

VII. Matrix Spike/Matrix Spike Duplicates

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

Spike ID (Associated Samples)	Compound	MS (%R) (Limits)	MSD (%R) (Limits)	RPD (Limits)	Flag	A or P
FDG2-SL-875-SA5A-SB-2.0-3.0MS/MSD (FDG2-SL-875-SA5A-SB-2.0-3.0)	Vinyl acetate	11 (21-139)	13 (21-139)	-	J (all detects) UJ (all non-detects)	A
FDG2-SL-875-SA5A-SB-2.0-3.0MS/MSD (FDG2-SL-875-SA5A-SB-2.0-3.0)	1-Chlorohexane	-	-	33 (≤30)	J (all detects)	A
	Bromobenzene	-	-	32 (≤30)	J (all detects)	
	Isopropylbenzene	-	-	34 (≤30)	J (all detects)	
	n-Propylbenzene	-	-	41 (≤30)	J (all detects)	
	2-Chlorotoluene	-	-	37 (≤30)	J (all detects)	
	1,3,5-Trimethylbenzene	-	-	41 (≤30)	J (all detects)	
	4-Chlorotoluene	-	-	38 (≤30)	J (all detects)	
	1,2,4-Trimethylbenzene	-	-	41 (≤30)	J (all detects)	
	sec-Butylbenzene	-	-	46 (≤30)	J (all detects)	
	tert-Butylbenzene	-	-	39 (≤30)	J (all detects)	
	1,2-Dichlorobenzene	-	-	37 (≤30)	J (all detects)	
	1,3-Dichlorobenzene	-	-	40 (≤30)	J (all detects)	
	1,4-Dichlorobenzene	-	-	41 (≤30)	J (all detects)	
	n-Butylbenzene	-	-	54 (≤30)	J (all detects)	
	p-Isopropyltoluene	-	-	48 (≤30)	J (all detects)	
	1,2,3-Trichlorobenzene	-	-	40 (≤30)	J (all detects)	
	1,2,4-Trichlorobenzene	-	-	44 (≤30)	J (all detects)	
	Hexachlorobutadiene	-	-	59 (≤30)	J (all detects)	

VIII. Laboratory Control Samples (LCS)

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

IX. Regional Quality Assurance and Quality Control

Not applicable.

X. Internal Standards

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

XI. Target Compound Identifications

All target compound identifications were within validation criteria.

XII. Compound Quantitation and RLs

All compound quantitation and RLs were within validation criteria.

All compounds reported below the RL were qualified as follows:

Sample	Finding	Flag	A or P
All samples in SDG PH234	All compounds reported below the RL.	J (all detects)	A

XIII. Tentatively Identified Compounds (TICs)

Tentatively identified compounds were not reported by the laboratory.

XIV. System Performance

The system performance was acceptable.

XV. Overall Assessment of Data

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

XVI. Field Duplicates

Samples FDG2-SL-875-SA5A-SB-2.0-3.0 and FDG2-SL-1175-SA5A-SB-2.0-3.0 were identified as field duplicates. No volatiles were detected in any of the samples.

Santa Susana Field Laboratory
Volatiles - Data Qualification Summary - SDG PH234

SDG	Sample	Compound	Flag	A or P	Reason (Code)
PH234	TB-061614	Vinyl acetate	J (all detects) UJ (all non-detects)	A	Continuing calibration (%D) (C)
PH234	FDG2-SL-875-SA5A-SB-2.0-3.0 FDG2-SL-1175-SA5A-SB-2.0-3.0	Dichlorodifluoromethane Bromomethane Chloroethane	J (all detects) UJ (all non-detects)	A	Continuing calibration (%D) (C)
PH234	FDG2-SL-875-SA5A-SB-2.0-3.0	Vinyl acetate	J (all detects) UJ (all non-detects)	A	Matrix spike/Matrix spike duplicate (%R) (Q)
PH234	FDG2-SL-875-SA5A-SB-2.0-3.0	1-Chlorohexane Bromobenzene Isopropylbenzene n-Propylbenzene 2-Chlorotoluene 1,3,5-Trimethylbenzene 4-Chlorotoluene 1,2,4-Trimethylbenzene sec-Butylbenzene tert-Butylbenzene 1,2-Dichlorobenzene 1,3-Dichlorobenzene 1,4-Dichlorobenzene n-Butylbenzene p-Isopropyltoluene 1,2,3-Trichlorobenzene 1,2,4-Trichlorobenzene Hexachlorobutadiene	J (all detects) J (all detects) J (all detects) J (all detects) J (all detects) J (all detects) J (all detects) J (all detects) J (all detects) J (all detects) J (all detects) J (all detects) J (all detects) J (all detects) J (all detects) J (all detects) J (all detects) J (all detects)	A	Matrix spike/Matrix spike duplicate (RPD) (Q)
PH234	TB-061614 FDG2-SL-875-SA5A-SB-2.0-3.0 FDG2-SL-1175-SA5A-SB-2.0-3.0	All compounds reported below the RL.	J (all detects)	A	Compound quantitation and RLs (Z)

Santa Susana Field Laboratory
Volatiles - Laboratory Blank Data Qualification Summary - SDG PH234

No Sample Data Qualified in this SDG

Santa Susana Field Laboratory
Volatiles - Field Blank Data Qualification Summary - SDG PH234

LDC #: 32270D1a **VALIDATION COMPLETENESS WORKSHEET** Date: 8/4/14
SDG #: PH234 Level IV Page: 1 of 1
Laboratory: Eurofins Reviewer: BR
2nd Reviewer: SM

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

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

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 6/16/14
II.	GC/MS Instrument performance check	A	
III.	Initial calibration	A	RSD ≤ 30% r2
IV.	Continuing calibration/ICV	SW	CCV/ICV ≤ 25%
V.	Blanks	A	
VI.	Surrogate spikes	A	
VII.	Matrix spike/Matrix spike duplicates	SW	
VIII.	Laboratory control samples	A	LCS/D
IX.	Regional Quality Assurance and Quality Control	N	
X.	Internal standards	A	
XI.	Target compound identification	A	
XII.	Compound quantitation/RL/LOQ/LODs	A	
XIII.	Tentatively identified compounds (TICs)	N	
XIV.	System performance	A	
XV.	Overall assessment of data	A	
XVI.	Field duplicates	ND	FD = 2 + 3
XVII.	Field blanks	SW	TB = 1 EB = EB1-061814 (SDG # PH237) FB = FB-052114 (SDG # 191 PH)

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

Validated Samples: Water + Soil

1	TB-061614	11		21		31	VB2KB01
2	FDG2-SL-875-SA5A-SB-2.0-3.0	12		22		32	VB2KY71
3	FDG2-SL-1175-SA5A-SB-2.0-3.0	13		23		33	
4	FDG2-SL-875-SA5A-SB-2.0-3.0MS	14		24		34	
5	FDG2-SL-875-SA5A-SB-2.0-3.0MSD	15		25		35	
6		16		26		36	
7		17		27		37	
8		18		28		38	
9		19		29		39	
10		20		30		40	

LDC #: 32270D1a

VALIDATION FINDINGS CHECKLIST

Reviewer: BR
2nd Reviewer: SM

Method: Volatiles (EPA SW 846 Method 8260B)

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

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

TARGET COMPOUND WORKSHEET

METHOD: VOA

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

LDC #: 32270D1a

VALIDATION FINDINGS WORKSHEET
Continuing Calibration

Page: 1 of 1
Reviewer: BR
2nd Reviewer: SM

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

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

Y N N/A Was a continuing calibration standard analyzed at least once every 12 hours for each instrument?
Y N N/A Were percent differences (%D) and relative response factors (RRF) within method criteria for all CCC's and SPCC's ?
Y N N/A Were all %D and RRFs within the validation criteria of ≤~~20~~ 25 %D and ≥0.05 RRF ?

#	Date	Standard ID	Compound	Finding %D (Limit: ≤~~20.0%~~ 25)	Finding RRF (Limit: ≥0.05)	Associated Samples	Code: C Qualifications
	6/24/14	ICV - hu24v01 (HP09953)	JJ	27		All soil	J/UJ/A
			B	43			
			D	47			
	6/19/14	CCV - hu19c02 (HP09355)	HH	35		All water	J/UJ/A

CONCAL.1SB

LDC #: 32270D1a

VALIDATION FINDINGS WORKSHEET
Field Blanks

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

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

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

EB = EB1-061814 (SDG# PH237)

Lab: F

Blank units: ug/L **Associated sample units:** ug/kg
Sampling date: 6/18/14
Field blank type: (circle one) Field Blank / Rinsate / Trip Blank / Other: EB Associated Samples: All soil (ND)

Compound	Blank ID	Sample Identification								
	EB									
M	3									

Blank units: ug/L **Associated sample units:** ug/kg
Sampling date: 5/21/14
Field blank type: (circle one) Field Blank / Rinsate / Trip Blank / Other: Associated Samples: All soil (ND)

PB = PB-052114 (SDG# PH191)

Compound	Blank ID	Sample Identification								
	FB									
K	0.7									
E	7									

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

LDC #: 32270O1a

VALIDATION FINDINGS WORKSHEET
Matrix Spike/Matrix Spike Duplicates

Reviewer: BR
2nd Reviewer: SM

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

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

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

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

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

#	Date	MS/MSD ID	Compound	MS %R (Limits)	MSD %R (Limits)	RPD (Limits)	Associated Samples	Qualifications
		4/5	HH	11 (21-139)	13 (21-139)	( )	2	J/UJ/A
			CCCC	( )	( )	33 (30)		J det/A3
			WW	( )	( )	32 (30)		
			VV	( )	( )	34 ( )		
			YY	( )	( )	41 ( )		
			ZZ	( )	( )	37 ( )		
			AAA	( )	( )	41 ( )		
			BBB	( )	( )	38 ( )		
			DDD	( )	( )	41 ( )		
			EEE	( )	( )	46 ( )		
			CCC	( )	( )	39 ( )		
			JJJ	( )	( )	37 ( )		
			FFF	( )	( )	40 ( )		
			HHH	( )	( )	41 ( )		
			III	( )	( )	54 ( )		
			GGG	( )	( )	48 ( )		
			NNN	( )	( )	40 ( )		
			KKK	( )	( )	44 ( )		
			LLL	( )	( )	59 ( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		

LDC # 32270D1a

VALIDATION FINDINGS WORKSHEET

Initial Calibration Results Verification

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

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

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

$RRF = (A_x)(C_{is})/(A_{is})(C_x)$ — A_x = Area of Compound — A_{is} = Area of associated internal standard

average RRF = sum of the RRFs/number of standards — C_x = Concentration of compound, — C_{is} = Concentration of internal standard

$\%RSD = 100 * (S/X)$ — S= Standard deviation of the RRFs, — X = Mean of the RRFs

#	Standard ID	Calibration Date	Compound (IS)	Reported RRF (50 std)	Recalculated RRF (50 std)	Reported Average RRF (Initial)	Recalculated Average RRF (Initial)	Reported %RSD	Recalculated %RSD
1	ICAL	6/24/2014	tert-Butyl alcohol (IS1)	1.2130	1.2130	1.1556	1.1556	12	12
	HP09953		Trichloroethene (IS2)	0.2457	0.2457	0.2504	0.2504	5	5
			Tetrachloroethene (IS3)	0.3769	0.3769	0.3760	0.3760	6	6
			1,1,2,2-Tetrachloroethane (IS4)	0.6541	0.6541	0.6408	0.6408	6	6

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

LDC # 32270D1a

VALIDATION FINDINGS WORKSHEET

Initial Calibration Results Verification

Reviewer: BR
2nd Reviewer: SM

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

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

$RRF = (A_x)(C_{is})/(A_{is})(C_x)$ A_x = Area of Compound A_{is} = Area of associated internal standard

average RRF = sum of the RRFs/number of standards C_x = Concentration of compound, C_{is} = Concentration of internal standard

%RSD = 100 * (S/X) S= Standard deviation of the RRFs, X = Mean of the RRFs

#	Standard ID	Calibration Date	Compound (IS)	Reported RRF (300 std)	Recalculated RRF (300 std)	Reported Average RRF (Initial)	Recalculated Average RRF (Initial)	Reported %RSD	Recalculated %RSD
1	ICAL HP09953	6/24/2014	Vinyl acetate (IS1)	0.1851	0.1851	0.1905	0.1905	6	6

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

LDC # 32270D1a

VALIDATION FINDINGS WORKSHEET

Initial Calibration Results Verification

Reviewer: BR

2nd Reviewer: [signature]

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

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

$RRF = (A_x)(C_{is})/(A_{is})(C_x)$

average RRF = sum of the RRFs/number of standards

%RSD = 100 * (S/X)

A_x = Area of Compound

C_x = Concentration of compound,

S= Standard deviation of the RRFs,

A_{is} = Area of associated internal standard

C_{is} = Concentration of internal standard

X = Mean of the RRFs

#	Standard ID	Calibration Date	Compound (IS)	Reported RRF (100 std)	Recalculated RRF (100 std)	Reported Average RRF (Initial)	Recalculated Average RRF (Initial)	Reported %RSD	Recalculated %RSD
1	ICAL	6/18/2014	tert-Butyl alcohol (IS1)	1.2413	1.2413	1.2052	1.2052	7	7
	HP09355		Trichloroethene (IS2)	0.3365	0.03366	0.3093	0.3093	9	9
			Tetrachloroethene (IS3)	0.5414	0.5414	0.4899	0.4899	10	10
			1,1,2,2-Tetrachloroethane (IS4)	1.3163	1.3163	1.2307	1.2307	6	6

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

LDC # 32270D1a

VALIDATION FINDINGS WORKSHEET

Initial Calibration Results Verification

Page: 1 of 1
Reviewer: BR
2nd Reviewer: SM

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

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

$RRF = (A_x)(C_{is})/(A_{is})(C_x)$ — A_x = Area of Compound — A_{is} = Area of associated internal standard

average RRF = sum of the RRFs/number of standards — C_x = Concentration of compound, — C_{is} = Concentration of internal standard

%RSD = 100 * (S/X) — S= Standard deviation of the RRFs, — X = Mean of the RRFs

#	Standard ID	Calibration Date	Compound (IS)	Reported RRF (50 std)	Recalculated RRF (50 std)	Reported Average RRF (Initial)	Recalculated Average RRF (Initial)	Reported %RSD	Recalculated %RSD
1	ICAL HP09355	3/27/2014	Vinyl acetate (IS1)	0.7194	0.7194	0.6990	0.6990	5	5

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

LDC#: 32270D1a

VALIDATION FINDINGS WORKSHEET
Continuing Calibration Calculation Verification

Reviewer: BR
2nd Reviewer: SM

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

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

% Difference = 100 * (ave. RRF - RRF)/ave. RRF
RRF = (Ax)(Cis)/(Ais)(Cx)

Where:
ave. RRF = initial calibration average RRF
RRF = continuing calibration RRF
Ax = Area of compound,
Cx = Concentration of compound,
Ais = Area of associated internal standard
Cis = Concentration of internal standard

#	Standard ID	Calibration Date	Compound (IS)	Average RRF (Initial)	Reported RRF (CC)	Recalculated RRF (CC)	Reported % D	Recalculated %D
1	bu25c01	6/25/2014	tert-Butyl alcohol (IS1)	1.1556	1.0034	1.0034	13	13
			Trichloroethene (IS2)	0.2504	0.2440	0.2440	3	3
			Tetrachloroethene (IS3)	0.3760	0.3787	0.3787	1	1
			1,1,2,2-Tetrachloroethane (IS4	0.6408	0.6459	0.6459	1	1
2	bu25c02	6/25/2014	Vinyl acetate (IS1)	0.1905	0.2061	0.2061	8	8

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

LDC#: 32270D1a

VALIDATION FINDINGS WORKSHEET
Continuing Calibration Calculation Verification

Reviewer: BR
2nd Reviewer: SM

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

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

% Difference = 100 * (ave. RRF - RRF)/ave. RRF
RRF = (Ax)(Cis)/(Ais)(Cx)

Where:
ave. RRF = initial calibration average RRF
RRF = continuing calibration RRF
Ax = Area of compound,
Cx = Concentration of compound,
Ais = Area of associated internal standard
Cis = Concentration of internal standard

#	Standard ID	Calibration Date	Compound (IS)	Average RRF (Initial)	Reported RRF (CC)	Recalculated RRF (CC)	Reported % D	Recalculated %D
1	yu19c01	6/19/2014	tert-Butyl alcohol (IS1)	1.2052	1.3342	1.3342	11	11
			Trichloroethene (IS2)	0.3093	0.3125	0.3125	1	1
			Tetrachloroethene (IS3)	0.4899	0.4915	0.4915	0	0
			1,1,2,2-Tetrachloroethane (IS4)	1.2307	1.2675	1.2675	3	3
2	yu19c02	6/19/2014	Vinyl acetate (IS1)	0.6990	0.4549	0.4549	35	35

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

LDC #: 32270D1

VALIDATION FINDINGS WORKSHEET
Surrogate Results Verification

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

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

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

% Recovery: SF/SS * 100

Where: SF = Surrogate Found
SS = Surrogate Spiked

Sample ID: 1

	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
Dibromofluoromethane	50	50.433	101	101	0
1,2-Dichloroethane-d4	↓	51.373	103	103	0
Toluene-d8		49.311	99	99	0
Bromofluorobenzene	↓	48.508	97	97	0

Sample ID: 2

	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
Dibromofluoromethane	50	49.813	100	100	0
1,2-Dichloroethane-d4	↓	50.631	101	101	0
Toluene-d8		51.210	102	102	0
Bromofluorobenzene	↓	46.250	93	93	0

Sample ID:

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

Sample ID:

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

Sample ID:

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

LDC #: 32270D1a

VALIDATION FINDINGS WORKSHEET
Matrix Spike/Matrix Spike Duplicates Results Verification

Reviewer: BR
2nd Reviewer: SM

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

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

% Recovery = 100 * (SSC - SC)/SA

Where: SSC = Spiked sample concentration; SA = Spike added; SC = Sample concentration

RPD = | MSC - MSC | * 2/(MSC + MSDC)

MSC = Matrix spike concentration; MSDC = Matrix spike duplicate concentration

MS/MSD sample: 4|5

Compound	Spike Added (ug/kg)		Sample Concentration (ug/kg)	Spiked Sample Concentration (ug/kg)		Matrix Spike Percent Recovery		Matrix Spike Duplicate Percent Recovery		MS/MSD RPD	
	MS	MSD	------	MS	MSD	Reported	Recalc	Reported	Recalc	Reported	Recalc
1,1-Dichloroethene	19.88	19.88	0	23.14	24.66	116	116	124	124	6	6
Trichloroethene	↓	↓	↓	20.49	23.5	103	103	118	118	14	14
Benzene	↓	↓	↓	20.8	23.51	105	105	118	118	12	12
Toluene	↓	↓	↓	20.04	24.38	101	101	122	122	20	20
Chlorobenzene	↓	↓	↓	17.53	22.38	88	88	112	112	24	24

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

LDC #: 32270B4

VALIDATION FINDINGS WORKSHEET
Laboratory Control Sample Results Verification

Page: 1 of 1
Reviewer: BR
2nd Reviewer: SM

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

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

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

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

LCS ID: LCS/10771

Compound	Spike Added (ug/L)		Spiked Sample Concentration ug/L		LCS Percent Recovery		LCSD Percent Recovery		LCS/LCSD RPD	
	LCS	LCSD	LCS	LCSD	Reported	Recalc	Reported	Recalc	Reported	Recalc
1,1-Dichloroethene	20	20	18.87	19.65	94	94	98	98	4	4
Trichloroethene	↓	↓	21.01	21.19	105	105	106	106	1	1
Benzene			20.64	20.92	103	103	105	105	1	1
Toluene			20.79	21.11	104	104	106	106	2	2
Chlorobenzene			20.44	20.9	102	102	105	105	2	2

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

LDC #: 32270D1a

VALIDATION FINDINGS WORKSHEET
Sample Calculation Verification

Page: 1 of 1
Reviewer: BR
2nd reviewer: [signature]

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

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

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

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

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

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

RRF = Relative response factor of the calibration standard.

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

Df = Dilution factor.

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

Example:

Sample I.D. All, ND:

LCSB01 %S=20.15 mg/kg

Conc. = $\frac{(111229)(50)(\quad)}{(110214)(0.2504)(\quad)}$

= 20.150957 mg/kg

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

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: Santa Susana Field Laboratory

Collection Date: June 16, 2014

LDC Report Date: August 15, 2014

Matrix: Soil/Water

Parameters: 1,4-Dioxane

Validation Level: Level IV

Laboratory: Eurofins

Sample Delivery Group (SDG): PH234

Sample Identification

TB-061614
FDG2-SL-875-SA5A-SB-2.0-3.0
FDG2-SL-1175-SA5A-SB-2.0-3.0
FDG2-SL-875-SA5A-SB-2.0-3.0MS
FDG2-SL-875-SA5A-SB-2.0-3.0MSD

Introduction

This data review covers 4 soil samples and one water sample listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA SW 846 Method 8260B using Selected Ion Monitoring (SIM) for 1,4-Dioxane.

This review follows the Quality Assurance Project Plan for Santa Susana Field Laboratory (SSFL), RCRA Facility Investigation, Surficial Media Operable Unit (March 2009, Revision 4) and a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Superfund Organic Methods Data Review (June 2008).

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.

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.

NJ Presumptive evidence of presence of the compound at an estimated quantity.

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. GC/MS Instrument Performance Check

Instrument performance was checked at 12 hour intervals.

All ion abundance requirements were met.

III. Initial Calibration

Initial calibration was performed using required standard concentrations.

Percent relative standard deviations (%RSD) were less than or equal to 30.0% for 1,4-dioxane.

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

IV. Continuing Calibration

Continuing calibration was performed at the required frequencies.

Percent differences (%D) between the initial calibration RRF and the continuing calibration RRF were within the method criteria of less than or equal to 25.0% for 1,4-dioxane.

The percent differences (%D) of the second source calibration standard were less than or equal to 25.0% for 1,4-dioxane.

All of the continuing calibration relative response factors (RRF) were within method and validation criteria.

V. Blanks

Method blanks were reviewed for each matrix as applicable. No 1,4-dioxane was found in the method blanks.

Sample TB-061614 was identified as a trip blank. No 1,4-dioxane was found.

Sample EB1-061814 (from SDG PH237) was identified as an equipment blank. No 1,4-dioxane was found.

Sample FB-052114 (from SDG PH191) was identified as a field blank. No 1,4-dioxane was found.

VI. Surrogate Spikes

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

Sample	Surrogate	%R (Limits)	Compound	Flag	A or P
FDG2-SL-875-SA5A-SB-2.0-3.0	Toluene-d8	47 (70-130)	1,4-Dioxane	J (all detects) UJ (all non-detects)	P
FDG2-SL-1175-SA5A-SB-2.0-3.0	Toluene-d8	45 (70-130)	1,4-Dioxane	J (all detects) UJ (all non-detects)	P

VII. Matrix Spike/Matrix Spike Duplicates

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

VIII. Laboratory Control Samples (LCS)

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

IX. Regional Quality Assurance and Quality Control

Not applicable.

X. Internal Standards

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

XI. Target Compound Identifications

All target compound identifications were within validation criteria.

XII. Compound Quantitation and RLs

All compound quantitation and RLs were within validation criteria.

All compounds reported below the RL were qualified as follows:

Sample	Finding	Flag	A or P
All samples in SDG PH234	All compounds reported below the RL.	J (all detects)	A

XIII. Tentatively Identified Compounds (TICs)

Tentatively identified compounds were not reported by the laboratory.

XIV. System Performance

The system performance was acceptable.

XV. Overall Assessment of Data

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

XVI. Field Duplicates

Samples FDG2-SL-875-SA5A-SB-2.0-3.0 and FDG2-SL-1175-SA5A-SB-2.0-3.0 were identified as field duplicates. No 1,4-dioxane was detected in any of the samples.

Santa Susana Field Laboratory
1,4-Dioxane - Data Qualification Summary - SDG PH234

SDG	Sample	Compound	Flag	A or P	Reason (Code)
PH234	FDG2-SL-875-SA5A-SB-2.0-3.0 FDG2-SL-1175-SA5A-SB-2.0-3.0	1,4-Dioxane	J (all detects) UJ (all non-detects)	P	Surrogate spikes (%R)(S)
PH234	TB-061614 FDG2-SL-875-SA5A-SB-2.0-3.0 FDG2-SL-1175-SA5A-SB-2.0-3.0	All compounds reported below the RL.	J (all detects)	A	Compound quantitation and RLs (Z)

Santa Susana Field Laboratory
1,4-Dioxane - Laboratory Blank Data Qualification Summary - SDG PH234

No Sample Data Qualified in this SDG

Santa Susana Field Laboratory
1,4-Dioxane - Field Blank Data Qualification Summary - SDG PH234

No Sample Data Qualified in this SDG

LDC #: 32270D1b **VALIDATION COMPLETENESS WORKSHEET** Date: 8/4/14
SDG #: PH234 Level IV Page: 1 of 1
Laboratory: Eurofins Reviewer: KA
2nd Reviewer: SM

METHOD: GC/MS 1,4-Dioxane (EPA SW 846 Method 8260B-SIM)

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

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 6/16/14
II.	GC/MS Instrument performance check	A	
III.	Initial calibration	A	RSD ≤ 30?
IV.	Continuing calibration/ICV	A	ICV/CCV ≤ 25?
V.	Blanks	A	
VI.	Surrogate spikes	SW	
VII.	Matrix spike/Matrix spike duplicates	A	
VIII.	Laboratory control samples	A	LCS/D
IX.	Regional Quality Assurance and Quality Control	N	
X.	Internal standards	A	
XI.	Target compound identification	A	
XII.	Compound quantitation/RL/LOQ/LODs	A	
XIII.	Tentatively identified compounds (TICs)	N	
XIV.	System performance	A	
XV.	Overall assessment of data	A	
XVI.	Field duplicates	ND	FD = 2+3
XVII.	Field blanks	ND	TB= 1 EB= EB1-061814 (SDG# PH237) FB= FB-052114 (SDG# PH191)

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 + Water

1	TB-061614	11		21		31	VBLKE02
2	FDG2-SL-875-SA5A-SB-2.0-3.0	12		22		32	VBLKE91
3	FDG2-SL-1175-SA5A-SB-2.0-3.0	13		23		33	
4	FDG2-SL-875-SA5A-SB-2.0-3.0MS	14		24		34	
5	FDG2-SL-875-SA5A-SB-2.0-3.0MSD	15		25		35	
6		16		26		36	
7		17		27		37	
8		18		28		38	
9		19		29		39	
10		20		30		40	

LDC #: 32270D16

VALIDATION FINDINGS CHECKLIST

Reviewer: BR
2nd Reviewer: SM

Method: Volatiles (EPA SW 846 Method 8260B)

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

LDC #: 32270D1b

VALIDATION FINDINGS CHECKLIST

Reviewer: BR
2nd Reviewer: SM

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

TARGET COMPOUND WORKSHEET

METHOD: VOA

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

LDC #: 32270016

VALIDATION FINDINGS WORKSHEET
Surrogate Spikes

Reviewer: BR
2nd Reviewer: SM

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

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

Y (N) N/A Were all surrogate %R within QC limits?

Y (N) N/A If the percent recovery (%R) for one or more surrogates was out of QC limits, was a reanalysis performed to confirm samples with %R out of outside of criteria?

#	Date	Sample ID	Surrogate	%Recovery (Limits)	Qualifications (Code: J)
		2	TOL	47 (70-130)	J UJ P
				( )	↓
		3	TOL	45 (70-130)	
				( )	
				( )	
				( )	
				( )	
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				( )	
				( )	

(TOL) = Toluene-d8
(BFB) = Bromofluorobenzene
(DCE) = 1,2-Dichloroethane-d4
(DFM) = Dibromofluoromethane

LDC # 32270D1b

VALIDATION FINDINGS WORKSHEET

Initial Calibration Results Verification

Reviewer: BR
2nd Reviewer: [signature]

METHOD: GC/MS 1,4-Dioxane (EPA SW 846 Method 8260B-SIM)

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

$RRF = (A_x)(C_{is})/(A_{is})(C_x)$ — A_x = Area of Compound — A_{is} = Area of associated internal standard

average RRF = sum of the RRFs/number of standards — C_x = Concentration of compound, — C_{is} = Concentration of internal standard

%RSD = 100 * (S/X) — S= Standard deviation of the RRFs, — X = Mean of the RRFs

#	Standard ID	Calibration Date	Compound (IS)	Reported RRF (10 std)	Recalculated RRF (10 std)	Reported Average RRF (Initial)	Recalculated Average RRF (Initial)	Reported %RSD	Recalculated %RSD
1	ICAL HP15648	3/28/2014	1,4-Dioxane (IS1)	1.3211	1.3211	1.2948	1.2947	2	2

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

LDC # 32270D1b

VALIDATION FINDINGS WORKSHEET

Initial Calibration Results Verification

Reviewer: BR
2nd Reviewer:

METHOD: GC/MS 1,4-Dioxane (EPA SW 846 Method 8260B-SIM)

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

$RRF = (A_x)(C_{is})/(A_{is})(C_x)$

average RRF = sum of the RRFs/number of standards

%RSD = 100 * (S/X)

A_x = Area of Compound

C_x = Concentration of compound,

S= Standard deviation of the RRFs,

A_{is} = Area of associated internal standard

C_{is} = Concentration of internal standard

X = Mean of the RRFs

#	Standard ID	Calibration Date	Compound (IS)	Reported RRF (10 std)	Recalculated RRF (10 std)	Reported Average RRF (Initial)	Recalculated Average RRF (Initial)	Reported %RSD	Recalculated %RSD
1	ICAL HP15648	6/2/2014	1,4-Dioxane (IS1)	1.2677	1.2677	1.3456	1.3456	6	6

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

LDC#: 32270D1b

VALIDATION FINDINGS WORKSHEET
Continuing Calibration Calculation Verification

Reviewer: BR
2nd Reviewer: SM

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

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

% Difference = 100 * (ave. RRF - RRF)/ave. RRF
RRF = (Ax)(Cis)/(Ais)(Cx)

Where:
ave. RRF = initial calibration average RRF
RRF = continuing calibration RRF
Ax = Area of compound,
Cx = Concentration of compound,
Ais = Area of associated internal standard
Cis = Concentration of internal standard

#	Standard ID	Calibration Date	Compound (IS)	Average RRF (Initial)	Reported RRF (CC)	Recalculated RRF (CC)	Reported % D	Recalculated %D
1	eu25c01	6/25/2014	1,4-Dioxane (IS1)	1.3465	1.3265	1.3265	1	1
2	eu17c31	6/17/2014	1,4-Dioxane (IS1)	1.2948	1.2466	1.2466	4	4

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

LDC #: 32270 D16

VALIDATION FINDINGS WORKSHEET
Surrogate Results Verification

Page: 1 of 1
Reviewer: BR
2nd reviewer: SM

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

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

% Recovery: SF/SS * 100

Where: SF = Surrogate Found
SS = Surrogate Spiked

Sample ID: 1

	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
Dibromofluoromethane					
1,2-Dichloroethane-d4					
Toluene-d8	10	9.883	99	99	J
Bromofluorobenzene					

Sample ID: 2

	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
Dibromofluoromethane					
1,2-Dichloroethane-d4					
Toluene-d8	110	51.322	47	47	J
Bromofluorobenzene					

Sample ID: _____

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

Sample ID: _____

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

Sample ID: _____

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

LDC #: 32270D1b

VALIDATION FINDINGS WORKSHEET
Matrix Spike/Matrix Spike Duplicates Results Verification

Reviewer: BR
2nd Reviewer: SM

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

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

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

RPD = I MSC - MSC I * 2/(MSC + MSDC) MSC = Matrix spike concentration MSDC = Matrix spike duplicate concentration

MS/MSD sample: 415

Compound	Spike Added (ug/kg)		Sample Concentration (ug/kg)	Spiked Sample Concentration (ug/kg)		Matrix Spike Percent Recovery		Matrix Spike Duplicate Percent Recovery		MS/MSD RPD	
~~1,4-Dioxane~~	MS	MSD	------	MS	MSD	Reported	Recalc	Reported	Recalc	Reported	Recalc
1,1-~~Dichloroethene~~	119.73	~~119.75~~	~ 0	104.59	119.5	87	87	96	~~99.8~~ 96	13	13
Trichloroethene		124.25									
Benzene											
Toluene											
~~Chlorobenzene~~											

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

LDC #: 32270D16

VALIDATION FINDINGS WORKSHEET
Laboratory Control Sample Results Verification

Page: 1 of 1
Reviewer: BR
2nd Reviewer: SM

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

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

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

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

LCS ID: LCSE91/LCDE91

Compound	Spike Added (ug/L)		Spiked Sample Concentration (ug/L)		LCS Percent Recovery		LCSD Percent Recovery		LCS/LCSD RPD	
	LCS	LCSD	LCS	LCSD	Reported	Recalc	Reported	Recalc	Reported	Recalc
1,1-Dichloroethene										
Trichloroethene										
Benzene										
Toluene										
Chlorobenzene										
1,4-Dioxane	5.00	5.00	5.15	5.23	103	103	105	105	2	1.5

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

LDC #: 32270D1b

VALIDATION FINDINGS WORKSHEET
Sample Calculation Verification

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

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

Y N N/A Were all reported results recalculated and verified for all level IV samples?

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

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

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

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

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

RRF = Relative response factor of the calibration standard.

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

Df = Dilution factor.

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

Example:

Sample I.D. ATI, NB:

LCSE02: HPAH = 119.64 ug/kg

Conc. = $\frac{(12250)(10)(5)(5)}{(19023)(1.345)(5)(0.2)}$

= 119.64/296 ug/kg

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

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: Santa Susana Field Laboratory

Collection Date: June 16, 2014

LDC Report Date: August 25, 2014

Matrix: Soil

Parameters: Semivolatiles

Validation Level: Level IV

Laboratory: Eurofins

Sample Delivery Group (SDG): PH234

Sample Identification

FDG2-SL-875-SA5A-SB-0.0-0.5
FDG2-SL-875-SA5A-SB-2.0-3.0
FDG2-SL-876-SA5A-SB-0.0-0.5
FDG2-SL-876-SA5A-SB-4.0-5.0
FDG2-SL-1175-SA5A-SB-2.0-3.0
FDG2-SL-877-SA5A-SB-0.0-0.5
FDG2-SL-877-SA5A-SB-3.0-4.0
FDG2-SL-875-SA5A-SB-2.0-3.0MS
FDG2-SL-875-SA5A-SB-2.0-3.0MSD

Introduction

This data review covers 9 soil samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA SW 846 Method 8270D using Selected Ion Monitoring (SIM) for Semivolatiles.

This review follows the Quality Assurance Project Plan for Santa Susana Field Laboratory (SSFL), RCRA Facility Investigation, Surficial Media Operable Unit (March 2009, Revision 4) and a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Superfund Organic Methods Data Review (June 2008).

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.

The following are definitions of the data qualifiers:

U Indicates the compound or analyte was analyzed for but not detected.

J Indicates an estimated value.

R Quality control indicates the data is not usable.

NJ Presumptive evidence of presence of the compound at an estimated quantity.

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. GC/MS Instrument Performance Check

Instrument performance was checked at 12 hour intervals. All ion abundance requirements were met.

III. Initial Calibration

Initial calibration was performed using required standard.

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

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

IV. Continuing Calibration

Continuing calibration was performed at the required frequencies.

Percent differences (%D) between the initial calibration RRF and the continuing calibration RRF were within the method criteria of less than or equal to 20.0% for calibration check compounds (CCCs) and 25.0% for all other compounds.

The percent differences (%D) of the second source calibration standard were less than or equal to 25.0% for all compounds.

All of the continuing calibration relative response factors (RRF) were within method and validation criteria.

V. Blanks

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

Sample EB1-061814 (from SDG PH237) was identified as an equipment blank. No semivolatile contaminants were found with the following exceptions:

Blank ID	Sampling Date	Compound	Concentration	Associated Samples
EB1-061814	6/18/14	Di-n-butylphthalate Diethylphthalate Bis(2-ethylhexyl)phthalate 1-Methylnaphthalene 2-Methylnaphthalene Naphthalene	0.13 ug/L 0.11 ug/L 0.094 ug/L 0.011 ug/L 0.015 ug/L 0.036 ug/L	All samples in SDG PH234

Sample FB-052114 (from SDG PH191) was identified as a field blank. No semivolatile contaminants were found with the following exceptions:

Blank ID	Sampling Date	Compound	Concentration	Associated Samples
FB-052114	5/21/14	Di-n-butylphthalate Bis(2-ethylhexyl)phthalate 1-Methylnaphthalene 2-Methylnaphthalene Naphthalene	0.089 ug/L 0.058 ug/L 0.022 ug/L 0.032 ug/L 0.11 ug/L	All samples in SDG PH234

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

VI. Surrogate Spikes

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

VII. Matrix Spike/Matrix Spike Duplicates

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

Spike ID (Associated Samples)	Compound	MS (%R) (Limits)	MSD (%R) (Limits)	RPD (Limits)	Flag	A or P
FDG2-SL-875-SA5A-SB-2.0-3.0MS/MSD (FDG2-SL-875-SA5A-SB-2.0-3.0)	Bis(2-ethylhexyl)phthalate	-	408 (48-164)	125 (≤30)	J (all detects)	A

VIII. Laboratory Control Samples (LCS)

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

LCS ID	Compound	%R (Limits)	Associated Samples	Flag	A or P
169LALCS	Chrysene	114 (84-113)	All samples in SDG PH234	J (all detects)	P

IX. Regional Quality Assurance and Quality Control

Not applicable.

X. Internal Standards

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

XI. Target Compound Identifications

All target compound identifications were within validation criteria.

XII. Compound Quantitation

All compound quantitation were within validation criteria.

All compounds reported below the RL were qualified as follows:

Sample	Finding	Flag	A or P
All samples in SDG PH234	All compounds reported below the RL.	J (all detects)	A

XIII. Tentatively Identified Compounds (TICs)

Tentatively identified compounds were not reported by the laboratory.

XIV. System Performance

The system performance was acceptable.

XV. Overall Assessment of Data

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

XVI. Field Duplicates

Samples FDG2-SL-875-SA5A-SB-2.0-3.0 and FDG2-SL-1175-SA5A-SB-2.0-3.0 were identified as field duplicates. No volatiles were detected in any of the samples with the following exceptions:

Compound	Concentration (ug/Kg)		RPD (Limits)	Flag	A or P
	FDG2-SL-875-SA5A-SB-2.0-3.0	FDG2-SL-1175-SA5A-SB-2.0-3.0			
Benzo(a)pyrene	0.84	0.81	4 (≤50)	-	-
Benzo(b)fluoranthene	2.0	2.4	18 (≤50)	-	-
Benzo(k)fluoranthene	1.5	1.3	14 (≤50)	-	-
Chrysene	2.4	2.7	12 (≤50)	-	-
Fluoranthene	1.4	1.3	7 (≤50)	-	-
Phenanthrene	0.70	1.7U	200 (≤50)	J (all detects) UJ (all non-detects)	A
Pyrene	1.2	1.0	18 (≤50)	-	-
Benzo(g,h,i)perylene	1.7U	0.68	200 (≤50)	J (all detects) UJ (all non-detects)	A

Santa Susana Field Laboratory
Semivolatiles - Data Qualification Summary - SDG PH234

SDG	Sample	Compound	Flag	A or P	Reason (Code)
PH234	FDG2-SL-875-SA5A-SB-2.0-3.0	Di-n-octylphthalate	J (all detects)	A	Matrix spike/Matrix spike duplicate (%R)(RPD) (Q)
PH234	FDG2-SL-875-SA5A-SB-0.0-0.5 FDG2-SL-875-SA5A-SB-2.0-3.0 FDG2-SL-876-SA5A-SB-0.0-0.5 FDG2-SL-876-SA5A-SB-4.0-5.0 FDG2-SL-1175-SA5A-SB-2.0-3.0 FDG2-SL-877-SA5A-SB-0.0-0.5 FDG2-SL-877-SA5A-SB-3.0-4.0	Chrysene	J (all detects)	P	Laboratory control samples (%R) (L)
PH234	FDG2-SL-875-SA5A-SB-0.0-0.5 FDG2-SL-875-SA5A-SB-2.0-3.0 FDG2-SL-876-SA5A-SB-0.0-0.5 FDG2-SL-876-SA5A-SB-4.0-5.0 FDG2-SL-1175-SA5A-SB-2.0-3.0 FDG2-SL-877-SA5A-SB-0.0-0.5 FDG2-SL-877-SA5A-SB-3.0-4.0	All compounds reported below the RL.	J (all detects)	A	Compound quantitation (Z)
PH234	FDG2-SL-875-SA5A-SB-2.0-3.0 FDG2-SL-1175-SA5A-SB-2.0-3.0	Phenanthrene Benzo(g,h,i)perylene	J (all detects) UJ (all non-detects) J (all detects) UJ (all non-detects)	A	Field duplicates (RPD) (FD)

Santa Susana Field Laboratory
Semivolatiles - Laboratory Blank Data Qualification Summary - SDG PH234

No Sample Data Qualified in this SDG

Santa Susana Field Laboratory
Semivolatiles - Field Blank Data Qualification Summary - SDG PH234

No Sample Data Qualified in this SDG

LDC #: 32270D2b **VALIDATION COMPLETENESS WORKSHEET** Date: 8/4/14

SDG #: PH234 Level IV Page: 1 of 1

Laboratory: Eurofins Lancaster Laboratories Reviewer: BK

2nd Reviewer: SM

METHOD: GC/MS ~~Polynuclear Aromatic Hydrocarbons~~ (EPA SW 846 Method 8270C-SIM) D

SVOCs

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

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 6/16/14
II.	GC/MS Instrument performance check	A	
III.	Initial calibration	A	RSD ≤ 30%
IV.	Continuing calibration/ICV	A	ICV/CCV (25)
V.	Blanks	A	
VI.	Surrogate spikes	~~A~~ A	
VII.	Matrix spike/Matrix spike duplicates	SW	
VIII.	Laboratory control samples	SW	LCS
IX.	Regional Quality Assurance and Quality Control	N	
X.	Internal standards	A	
XI.	Target compound identification	A	
XII.	Compound quantitation/RL/LOQ/LODs	A	
XIII.	Tentatively identified compounds (TICs)	N	
XIV.	System performance	A	
XV.	Overall assessment of data	A	
XVI.	Field duplicates	SW	FD = 2+5
XVII.	Field blanks	SW	EB = EB1-061814 (SDG # PH237) FB = FB-052114 (SDG # PH191)

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

1	FDG2-SL-875-SA5A-SB-0.0-0.5	11		21		31	SBLKLA169
2	FDG2-SL-875-SA5A-SB-2.0-3.0	12		22		32	
3	FDG2-SL-876-SA5A-SB-0.0-0.5	13		23		33	
4	FDG2-SL-876-SA5A-SB-4.0-5.0	14		24		34	
5	FDG2-SL-1175-SA5A-SB-2.0-3.0	15		25		35	
6	FDG2-SL-877-SA5A-SB-0.0-0.5	16		26		36	
7	FDG2-SL-877-SA5A-SB-3.0-4.0	17		27		37	
8	FDG2-SL-875-SA5A-SB-2.0-3.0MS	18		28		38	
9	FDG2-SL-875-SA5A-SB-2.0-3.0MSD	19		29		39	
10		20		30		40	

DC #: 32270026

VALIDATION FINDINGS CHECKLIST

Reviewer: BR
2nd Reviewer: SM

Method: Semivolatiles (EPA SW 846 Method 8270C)

Validation Area	Yes	No	NA	Findings/Comments
I. Technical holding times				
All technical holding times were met.	✓			
Cooler temperature criteria was met.	✓			
II. GC/MS Instrument performance check				
Were the DFTPP performance results reviewed and found to be within the specified criteria?	✓			
Were all samples analyzed within the 12 hour clock criteria?	✓			
III. Initial calibration				
Did the laboratory perform a 5 point calibration prior to sample analysis?	✓			
Were all percent relative standard deviations (%RSD) and relative response factors (RRF) within method criteria for all CCCs and SPCCs?	✓			
Was a curve fit used for evaluation?		✓		
Did the initial calibration meet the curve fit acceptance criteria of ≥ 0.990?			✓	
Were all percent relative standard deviations (%RSD) ≤ 30%/~~15%~~ and relative response factors (RRF) ≥ 0.05?	✓			
IV. Continuing calibration				
Was a continuing calibration standard analyzed at least once every 12 hours for each instrument?	✓			
Were all percent differences (%D) and relative response factors (RRF) within method criteria for all CCCs and SPCCs?	✓			
Were all percent differences (%D) ≤ ~~20~~ 25% and relative response factors (RRF) ≥ 0.05?	✓			
V. Blanks				
Was a method blank associated with every sample in this SDG?	✓			
Was a method blank analyzed for each matrix and concentration?	✓			
Was there contamination in the method blanks? If yes, please see the Blanks validation completeness worksheet.		✓		
VI. Surrogate spikes				
Were all surrogate %R within QC limits?	✓			
If 2 or more base neutral or acid surrogates were outside QC limits, was a reanalysis performed to confirm %R?			✓	
If any %R was less than 10 percent, was a reanalysis performed to confirm %R?			✓	
VII. Matrix spike/Matrix spike duplicates				
Were a matrix spike (MS) and matrix spike duplicate (MSD) analyzed for each matrix in this SDG? If no, indicate which matrix does not have an associated MS/MSD. Soil / Water.	✓			
Was a MS/MSD analyzed every 20 samples of each matrix?	✓			
Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?		✓		
VIII. Laboratory control samples				
Was an LCS analyzed for this SDG?	✓			

LDC #: 32270D26

VALIDATION FINDINGS CHECKLIST

Reviewer: BR
2nd Reviewer: SM

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

VALIDATION FINDINGS WORKSHEET

METHOD: GC/MS SVOA

A. Phenol	T. 4-Chloroaniline	MM. 4-Chlorophenyl-phenyl ether	FFF. Di-n-octylphthalate	YYY. 2,3,5-Trimethylnaphthalene
B. Bis (2-chloroethyl) ether	U. Hexachlorobutadiene	NN. Fluorene	GGG. Benzo(b)fluoranthene	ZZZ. Perylene
C. 2-Chlorophenol	V. 4-Chloro-3-methylphenol	OO. 4-Nitroaniline	HHH. Benzo(k)fluoranthene	AAAA. Dibenzothiophene
D. 1,3-Dichlorobenzene	W. 2-Methylnaphthalene	PP. 4,6-Dinitro-2-methylphenol	III. Benzo(a)pyrene	BBBB. Benzo(a)fluoranthene
E. 1,4-Dichlorobenzene	X. Hexachlorocyclopentadiene	QQ. N-Nitrosodiphenylamine	JJJ. Indeno(1,2,3-cd)pyrene	CCCC. Benzo(b)fluorene
F. 1,2-Dichlorobenzene	Y. 2,4,6-Trichlorophenol	RR. 4-Bromophenyl-phenylether	KKK. Dibenz(a,h)anthracene	DDDD. cis/trans-Decalin
G. 2-Methylphenol	Z. 2,4,5-Trichlorophenol	SS. Hexachlorobenzene	LLL. Benzo(g,h,i)perylene	EEEE. Biphenyl
H. 2,2'-Oxybis(1-chloropropane)	AA. 2-Chloronaphthalene	TT. Pentachlorophenol	MMM. Bis(2-Chloroisopropyl)ether	FFFF. Retene
I. 4-Methylphenol	BB. 2-Nitroaniline	UU. Phenanthrene	NNN. Aniline	GGGG. C30-Hopane
J. N-Nitroso-di-n-propylamine	CC. Dimethylphthalate	VV. Anthracene	OOO. N-Nitrosodimethylamine	HHHH. 1-Methylphenanthrene
K. Hexachloroethane	DD. Acenaphthylene	WW. Carbazole	PPP. Benzoic Acid	IIII. 1,4-Dioxane
L. Nitrobenzene	EE. 2,6-Dinitrotoluene	XX. Di-n-butylphthalate	QQQ. Benzyl alcohol	JJJJ. Acetophenone
M. Isophorone	FF. 3-Nitroaniline	YY. Fluoranthene	RRR. Pyridine	KKKK. Atrazine
N. 2-Nitrophenol	GG. Acenaphthene	ZZ. Pyrene	SSS. Benzidine	LLLL. Benzaldehyde
O. 2,4-Dimethylphenol	HH. 2,4-Dinitrophenol	AAA. Butylbenzylphthalate	TTT. 1-Methylnaphthalene	MMMM. Caprolactam
P. Bis(2-chloroethoxy)methane	II. 4-Nitrophenol	BBB. 3,3'-Dichlorobenzidine	UUU.Benzo(b)thiophene	NNNN.
Q. 2,4-Dichlorophenol	JJ. Dibenzofuran	CCC. Benzo(a)anthracene	VVV.Benzonaphthothiophene	OOOO.
R. 1,2,4-Trichlorobenzene	KK. 2,4-Dinitrotoluene	DDD. Chrysene	WWW.Benzo(e)pyrene	PPPP.
S. Naphthalene	LL. Diethylphthalate	EEE. Bis(2-ethylhexyl)phthalate	XXX. 2,6-Dimethylnaphthalene	QQQQ.

LDC #: 32270D2L

VALIDATION FINDINGS WORKSHEET
Field Blanks

Reviewer: BR
2nd Reviewer: SM

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

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

EB = EB1-061814
SDG # PH237

Code: F

Blank units: ug/L **Associated sample units:** ug/kg
Sampling date: 6/18/14
Field blank type: (circle one) Field Blank / Rinsate / (Other: EB) Associated Samples: All (ND + 75%)

Compound	Blank ID	Sample Identification								
	EB									
XX	0.13									
LL	0.11									
EEE	0.094									
TTT	0.011									
W	0.015									
S	0.036									

FB = FB-052114 (SDG # PH191)

Code: F

Blank units: ug/L **Associated sample units:** ug/kg
Sampling date: 5/21/14
Field blank type: (circle one) (Field Blank) / Rinsate / Other: Associated Samples: All (ND + 75%)

Compound	Blank ID	Sample Identification								
	FB									
XX	0.089									
EEE	0.058									
TTT	0.022									
W	0.032									
S	0.11									

CIRCLED RESULTS WERE NOT QUALIFIED. ALL RESULTS NOT CIRCLED WERE QUALIFIED BY THE FOLLOWING STATEMENT:
Common contaminants such as the phthalates and TICs noted above that were detected in samples within ten times the associated field blank concentration were qualified as not detected, "U". Other contaminants within five times the field blank concentration were also qualified as not detected, "U".

LDC #: 32270D2b

VALIDATION FINDINGS WORKSHEET
Matrix Spike/Matrix Spike Duplicates

Reviewer: RK
2nd Reviewer: SM

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

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

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

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

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

#	Date	MS/MSD ID	Compound	MS %R (Limits)	MSD %R (Limits)	RPD (Limits)	Associated Samples	Code: Q Qualifications
		8/9	EEE	( )	408 (48-169	125 (30)	2	J det/A
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
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LDC #: 32270026

VALIDATION FINDINGS WORKSHEET
Laboratory Control Samples (LCS)

Reviewer: BR
2nd Reviewer: SM

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

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

(Y) N N/A Was a LCS required?

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

#	Date	LCS/LCSD ID	Compound	LCS %R (Limits)	LCSD %R (Limits)	RPD (Limits)	Associated Samples	Code: L Qualifications
		169LALCS	DDD	114 (84-113)	( )	( )	All	J- det IP
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
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				( )	( )	( )		

LDC #: 32270D26

VALIDATION FINDINGS WORKSHEET
Field Duplicates

Reviewer: RA
2nd reviewer: SM

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

(Y) N N/A Were field duplicate pairs identified in this SDG?
(Y) N N/A Were target compounds identified in the field duplicate pairs?

Compound	Concentration (µg/kg)		RPD	Lab: FD Qualification
	2	5	50%	
III	0.84	0.81	4	
GGG	2.0	2.4	18	
HHH	1.5	1.3	14	
DDD	2.4	2.7	12	
YY	1.4	1.3 sm	~~19~~ 7 sm	
UU	0.70	1.7U	200	J/UJ/A
ZZ	~~RND~~ 1.2	1.0	18	
LLL	1.7U	0.68	200	J/UJ/A

Compound	Concentration ( )		RPD	Qualification

LDC #: 32270D2b

VALIDATION FINDINGS WORKSHEET
Initial Calibration Calculation Verification

Reviewer BR
2nd Reviewer

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

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

$RRF = (A_x)(C_{is})/(A_{is})(C_x)$

average RRF = sum of the RRFs/number of standards

%RSD = 100 * (S/X)

A_x = Area of Compound

C_x = Concentration of compound,

S= Standard deviation of the RRFs,

A_{is} = Area of associated internal standard

C_{is} = Concentration of internal standard

X = Mean of the RRFs

#	Standard ID	Calibration Date	Compound (IS)	Reported RRF (1 std)	Recalculated RRF (1 std)	Reported Average RRF (Initial)	Recalculated Average RRF (Initial)	Reported %RSD	Recalculated %RSD
1	HP10976	5/26/2014	N-Nitrosodimethylamine (IS1)	0.955	0.955	0.934	0.934	2	2
			Naphthalene (IS2)	1.038	1.038	1.040	1.040	2	2
			Fluorene (IS3)	1.251	1.251	1.228	1.228	2	2
			Anthracene (IS4)	1.104	1.104	1.087	1.087	3	3
			Chrysene (IS5)	1.092	1.092	1.089	1.089	2	2
			Benzo(a)pyrene (IS6)	1.131	1.131	1.086	1.086	3	3

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

LDC# 32270D2b

VALIDATION FINDINGS WORSHEET
Continuing Calibration Results Verification

Reviewer: BR
2nd Reviewer: SM

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

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

% Difference = 100 * (ave. RRF - RRF)/ave. RRF
RRF = (Ax)(Cis)/(Ais)(Cx)

Where:
ave. RRF = initial calibration average RRF
RRF = continuing calibration RRF
Ax = Area of compound
Cx = Concentration of compound
Ais = Area of associated internal standard
Cis = Concentration of internal standard

#	Standard ID	Calibration Date	Compound (IS)	Average RRF (Initial RRF)	Reported (CC RRF)	Recalculated (CC RRF)	Reported %D	Recalculated %D
1	if0501	06/23/14	N-Nitrosodimethylamine (IS1)	0.934	1.124	1.124	20	20
			Naphthalene (IS2)	1.040	1.066	1.066	3	2.5
			Fluorene (IS3)	1.228	1.275	1.275	4	4
			Anthracene (IS4)	1.087	1.111	1.111	2	2
			Chrysene (IS5)	1.089	1.133	1.133	4	4
			Benzo(a)pyrene (IS6)	1.086	1.119	1.119	3	3

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

LDC# 32270D2b

VALIDATION FINDINGS WORSHEET
Continuing Calibration Results Verification

Reviewer: BR
2nd Reviewer: SM

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

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

% Difference = 100 * (ave. RRF - RRF)/ave. RRF

RRF = (Ax)(Cis)/(Ais)(Cx)

Where:

ave. RRF = initial calibration average RRF

RRF = continuing calibration RRF

Ax = Area of compound

Cx = Concentration of compound

Ais = Area of associated internal standard

Cis = Concentration of internal standard

#	Standard ID	Calibration Date	Compound (IS)	Average RRF (Initial RRF)	Reported (CC RRF)	Recalculated (CC RRF)	Reported %D	Recalculated %D
2	if0541	06/25/14	N-Nitrosodimethylamine (IS1)	0.934	1.081	1.081	16	16
			Naphthalene (IS2)	1.040	1.050	1.050	1	1
			Fluorene (IS3)	1.228	1.283	1.283	4	4
			Anthracene (IS4)	1.087	1.121	1.121	3	3
			Chrysene (IS5)	1.089	1.116	1.116	2	2
			Benzo(a)pyrene (IS6)	1.086	1.113	1.113	2	2

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

LDC# 32270D2b

VALIDATION FINDINGS WORSHEET
Continuing Calibration Results Verification

Reviewer: BR
2nd Reviewer: SM

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

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

% Difference = 100 * (ave. RRF - RRF)/ave. RRF
RRF = (Ax)(Cis)/(Ais)(Cx)

Where:
ave. RRF = initial calibration average RRF
RRF = continuing calibration RRF
Ax = Area of compound
Cx = Concentration of compound
Ais = Area of associated internal standard
Cis = Concentration of internal standard

#	Standard ID	Calibration Date	Compound (IS)	Average RRF (Initial RRF)	Reported (CC RRF)	Recalculated (CC RRF)	Reported %D	Recalculated %D
3	if2581	06/26/14	N-Nitrosodimethylamine (IS1)	0.934	1.110	1.110	19	19
			Naphthalene (IS2)	1.040	1.068	1.068	3	3
			Fluorene (IS3)	1.228	1.302	1.302	6	6
			Anthracene (IS4)	1.087	1.115	1.115	3	3
			Chrysene (IS5)	1.089	1.105	1.105	2	2
			Benzo(a)pyrene (IS6)	1.086	1.110	1.110	2	2

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

LDC #: 32270021

VALIDATION FINDINGS WORKSHEET
Surrogate Results Verification

Page 1 of 1
Reviewer: BR
2nd Reviewer

METHOD: GC/MS Semivolatiles (EPA Method 8270D)

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

%Recovery: SF/SS * 100

Where: SF = Surrogate Found
SS = Surrogate Spiked

Sample ID: 1

	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
Fluoranthene-d10	1.000	1.027	103	103	0
Benzo(a)pyrene-d12	↓	1.078	108	108	0
1-Methylnaphthalene-d10		0.916	92	92	0

Sample ID:

	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
Fluoranthene-d10					
Benzo(a)pyrene-d12					
1-Methylnaphthalene-d10					

Sample ID: _____

	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
Fluoranthene-d10					
Benzo(a)pyrene-d12					
1-Methylnaphthalene-d10					

LDC #: 32270V26

VALIDATION FINDINGS WORKSHEET
Matrix Spike/Matrix Spike Duplicates Results Verification

Reviewer: BR
2nd Reviewer: SM

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

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

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

RPD = I MSC - MSC I * 2/(MSC + MSDC) MSC = Matrix spike concentration MSDC = Matrix spike duplicate concentration

MS/MSD samples: 8|9

Compound	Spike Added (ug/kg)		Sample Concentration (ug/kg)	Spiked Sample Concentration (ug/kg)		Matrix Spike Percent Recovery		Matrix Spike Duplicate Percent Recovery		MS/MSD RPD	
	MS	MSD	-----	MS	MSD	Reported	Recalc	Reported	Recalc	Reported	Recalculated
Phenol											
N-Nitroso-di-n-propylamine											
4-Chloro-3-methylphenol											
Acenaphthene	32.89	33.33	0	29.51	30.45	90	90	91	91	3	3.1
Pentachlorophenol											
Pyrene	32.89	33.33	1.16	29.98	37.62	88	88	109	109	23	22.2

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

LDC #: 32270026

VALIDATION FINDINGS WORKSHEET

Laboratory Control Sample/Laboratory Control Sample Duplicates Results Verification

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

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

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

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

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

LCS/LCSD samples: 169LALCS

Compound	Spike Added (ug/kg)		Spike Concentration (ug/kg)		LCS Percent Recovery		LCSD Percent Recovery		LCS/LCSD RPD	
	LCS	LCSD	LCS	LCSD	Reported	Recalc.	Reported	Recalc.	Reported	Recalculated
Phenol										
N-Nitroso-di-n-propylamine										
4-Chloro-3-methylphenol										
Acenaphthene	33.33	—	37.14	—	111	111				
Pentachlorophenol										
Pyrene	33.33	—	34.3	—	103	103				

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

LDC #: 32270D2b

VALIDATION FINDINGS WORKSHEET
Sample Calculation Verification

Page: 1 of 1
Reviewer: BR
2nd reviewer: SM

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

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

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

A_x	=	Area of the characteristic ion (EICP) for the compound to be measured
A_{is}	=	Area of the characteristic ion (EICP) for the specific internal standard
I_s	=	Amount of internal standard added in nanograms (ng)
V_o	=	Volume or weight of sample extract in milliliters (ml) or grams (g).
V_i	=	Volume of extract injected in microliters (ul)
V_t	=	Volume of the concentrated extract in microliters (ul)
Df	=	Dilution Factor.
%S	=	Percent solids, applicable to soil and solid matrices only.
2.0	=	Factor of 2 to account for GPC cleanup

Example: DDD = 9.0

Sample I.D. 1, DDD:

Conc. = $\frac{(63555)(1.00)(1)(1.00)(\quad)}{(218.559)(1.089)(30)(0.99)}$

= 8.990766093 ug/kg

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

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: Santa Susana Field Laboratory

Collection Date: June 16, 2014

LDC Report Date: August 14, 2014

Matrix: Soil

Parameters: Polychlorinated Biphenyls

Validation Level: Level IV

Laboratory: Eurofins

Sample Delivery Group (SDG): PH234

Sample Identification

FDG2-SL-875-SA5A-SB-0.0-0.5
FDG2-SL-875-SA5A-SB-2.0-3.0
FDG2-SL-1175-SA5A-SB-2.0-3.0
FDG2-SL-875-SA5A-SB-2.0-3.0MS
FDG2-SL-875-SA5A-SB-2.0-3.0MSD
FDG2-SL-875-SA5A-SB-0.0-0.5MS
FDG2-SL-875-SA5A-SB-0.0-0.5MSD

Introduction

This data review covers 7 soil samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA SW 846 Method 8082A for Polychlorinated Biphenyls.

This review follows the Quality Assurance Project Plan for Santa Susana Field Laboratory (SSFL), RCRA Facility Investigation, Surficial Media Operable Unit (March 2009, Revision 4) and a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Superfund Organic Methods Data Review (June 2008).

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.

The following are definitions of the data qualifiers:

U Indicates the compound or analyte was analyzed for but not detected.

J Indicates an estimated value.

R Quality control indicates the data is not usable.

NJ Presumptive evidence of presence of the compound at an estimated quantity.

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. GC/ECD Instrument Performance Check

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

III. Initial Calibration

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

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

Retention time windows were evaluated and considered technically acceptable.

IV. Continuing Calibration

Continuing calibration was performed at required frequencies.

The percent differences (%D) of calibration factors in continuing standard mixtures were within the 20.0% QC limits.

The percent difference (%D) of the second source calibration standard were less than or equal to 20.0% for all compounds.

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

V. Blanks

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

Sample EB1-061814 (from SDG PH237) was identified as an equipment blank. No polychlorinated biphenyl contaminants were found.

Sample FB-052114 (from SDG PH191) was identified as a field blank. No polychlorinated biphenyl contaminants were found.

VI. Surrogate Spikes

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

Sample	Column	Surrogate	%R (Limits)	Compound	Flag	A or P
FDG2-SL-1175-SA5A-SB-2.0-3.0	ZB MR2	Tetrachloro-m-xylene	122 (45-120)	All TCL compounds	J (all detects)	P
PBLK17175	ZB MR2	Tetrachloro-m-xylene	125 (45-120)	All TCL compounds	J (all detects)	P

VII. Matrix Spike/Matrix Spike Duplicates

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

VIII. Laboratory Control Samples (LCS)

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

IX. Regional Quality Assurance and Quality Control

Not applicable.

X. Florisil Cartridge Check

Florisil cleanup was not required and therefore not performed in this SDG.

XI. GPC Calibration

GPC cleanup was not required and therefore not performed in this SDG.

XII. Target Compound Identification

All target compound identifications were within validation criteria.

XIII. Compound Quantitation

All compound quantitations were within validation criteria.

All compounds reported below the RL were qualified as follows:

Sample	Finding	Flag	A or P
All samples in SDG PH234	All compounds reported below the RL.	J (all detects)	A

XIV. Overall Assessment of Data

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

XV. Field Duplicates

Samples FDG2-SL-875-SA5A-SB-2.0-3.0 and FDG2-SL-1175-SA5A-SB-2.0-3.0 were identified as field duplicates. No polychlorinated biphenyls were detected in any of the samples.

Santa Susana Field Laboratory
Polychlorinated Biphenyls - Data Qualification Summary - SDG PH234

SDG	Sample	Compound	Flag	A or P	Reason (Code)
PH234	FDG2-SL-1175-SA5A-SB-2.0-3.0	All TCL compounds	J (all detects)	P	Surrogate spikes (%R) (S)
PH234	FDG2-SL-875-SA5A-SB-0.0-0.5 FDG2-SL-875-SA5A-SB-2.0-3.0 FDG2-SL-1175-SA5A-SB-2.0-3.0	All compounds reported below the RL.	J (all detects)	A	Compound quantitation (Z)

Santa Susana Field Laboratory
Polychlorinated Biphenyls - Laboratory Blank Data Qualification Summary - SDG PH234

No Sample Data Qualified in this SDG

Santa Susana Field Laboratory
Polychlorinated Biphenyls - Field Blank Data Qualification Summary - SDG PH234

No Sample Data Qualified in this SDG

LDC #: 32270D3b **VALIDATION COMPLETENESS WORKSHEET** Date: 8-7-14
SDG #: PH234 Level IV Page: 1 of 1
Laboratory: Eurofins Lancaster Laboratories Reviewer: 9h
2nd Reviewer: SM

METHOD: GC Polychlorinated Biphenyls (EPA SW 846 Method 8082A)

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

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 6/16/14
II.	GC Instrument Performance Check	N	
III.	Initial calibration	A	≤ 20
IV.	Continuing calibration/ICV	A	CCV/ICV ≤ 20
V.	Blanks	A	
VI.	Surrogate spikes	SW	
VII.	Matrix spike/Matrix spike duplicates	A	
VIII.	Laboratory control samples	A	LCS/LCSD
IX.	Regional quality assurance and quality control	N	
X.	Florisil cartridge check	N	
XI.	GPC Calibration	N	
XII.	Target compound identification	A	
XIII.	Compound quantitation/RL/LOQ/LODs	A	
XIV.	Overall assessment of data	A	
XV.	Field duplicates	ND	D = 2+3
XVI.	Field blanks	ND	EB = EB1 - 061814 (PH237)

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 FB = FB-052114 (PH191)

Validated Samples: Soil

1 2	FDG2-SL-875-SA5A-SB-0.0-0.5	11		21		31	
2 1	FDG2-SL-875-SA5A-SB-2.0-3.0	12		22		32	
3 1	FDG2-SL-1175-SA5A-SB-2.0-3.0	13		23		33	
4 1	FDG2-SL-875-SA5A-SB-2.0-3.0MS	14		24		34	
5 1	FDG2-SL-875-SA5A-SB-2.0-3.0MSD	15		25		35	
6 2	#1 MS	16		26		36	
7 2	#1 MSD	17		27		37	
8		18		28		38	
9		19 1	PBLK09172	29		39	
10		20 2	PBLK17175	30		40	

Notes: _____

LDC #: 32270D36

VALIDATION FINDINGS CHECKLIST

Reviewer: Om
2nd Reviewer: PM

Method: Pesticides/PCBs (EPA SW 846 Method 8081/8082)

Validation Area	Yes	No	NA	Findings/Comments
I. Technical holding times				
All technical holding times were met.	✓			
Cooler temperature criteria was met.	✓			
II. GC/ECD Instrument performance check				
Was the instrument performance found to be acceptable?			✓	
III. Initial calibration				
Did the laboratory perform a 5 point calibration prior to sample analysis?	✓			
Was a linear fit used for evaluation? If yes, were all percent relative standard deviations (%RSD) ≤ 20%?	✓			
Was a curve fit used for evaluation? If Yes, what was the acceptance criteria used?		✓		
Did the initial calibration meet the curve fit acceptance criteria?			✓	
Were the RT windows properly established?	✓			
Were the required standard concentrations analyzed in the initial calibration?	✓			
IV. Continuing calibration				
Were Evaluation mix standards analyzed prior to the initial calibration and sample analysis?			✓	
Were endrin and 4,4'-DDT breakdowns ≤ 15%.0 for individual breakdown in the Evaluation mix standards?			✓	
Was a continuing calibration analyzed daily?	✓			
Were all percent differences (%D) ≤ 20%.0?	✓			
Were all the retention times within the acceptance windows?	✓			
V. Blanks				
Was a method blank associated with every sample in this SDG?	✓			
Was a method blank analyzed for each matrix and concentration?	✓			
Were extract cleanup blanks analyzed with every batch requiring clean-up?			✓	
Was there contamination in the method blanks or clean-up blanks? If yes, please see the Blanks validation completeness worksheet.		✓		
VI. Surrogate spikes				
Were all surrogate %R within the QC limits?		✓		
If the percent recovery (%R) of one or more surrogates was outside QC limits, was a reanalysis performed to confirm %R?		✓		
If any %R was less than 10 percent, was a reanalysis performed to confirm %R?			✓	
VII. Matrix spike/Matrix spike duplicates				
Were a matrix spike (MS) and matrix spike duplicate (MSD) analyzed for each matrix in this SDG? If no, indicate which matrix does not have an associated MS/MSD. Soil / Water.	✓			

Validation Area	Yes	No	NA	Findings/Comments
Was a MS/MSD analyzed every 20 samples of each matrix?	✓			
Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?	✓			
VIII. Laboratory control samples				
Was an LCS analyzed for this SDG?	✓			
Was an LCS analyzed per extraction batch?	✓			
Were the LCS percent recoveries (%R) and relative percent difference (RPD) within the QC limits?	✓			
IX. Regional Quality Assurance and Quality Control				
Were performance evaluation (PE) samples performed?		✓		
Were the performance evaluation (PE) samples within the acceptance limits?			✓	
X. Target compound identification				
Were the retention times of reported detects within the RT windows?	✓			
XI. Compound quantitation/CRQLs				
Were compound quantitation and CRQLs adjusted to reflect all sample dilutions, dry weight factors, and clean-up activities applicable to level IV validation?	✓			
XII. System performance				
System performance was found to be acceptable.	✓			
XIII. Overall assessment of data				
Overall assessment of data was found to be acceptable.	✓			
XIV. Field duplicates				
Field duplicate pairs were identified in this SDG.	✓			
Target compounds were detected in the field duplicates.		✓		
XV. Field blanks				
Field blanks were identified in this SDG.	✓			
Target compounds were detected in the field blanks.		✓		

VALIDATION FINDINGS WORKSHEET

METHOD: Pesticide/PCBs (EPA SW 846 Method 8081/8082)

A. alpha-BHC	I. Dieldrin	Q. Endrin ketone	Y. Aroclor-1242	GG. Chlordane
B. beta-BHC	J. 4,4'-DDE	R. Endrin aldehyde	Z. Aroclor-1248	HH. Chlordane (Technical)
C. delta-BHC	K. Endrin	S. alpha-Chlordane	AA. Aroclor-1254	II. oxy-Chlordane
D. gamma-BHC	L. Endosulfan II	T. gamma-Chlordane	BB. Aroclor-1260	JJ. Mirex
E. Heptachlor	M. 4,4'-DDD	U. Toxaphene	CC. 2,4'-DDD	KK.
F. Aldrin	N. Endosulfan sulfate	V. Aroclor-1016	DD. 2,4'-DDE	LL.
G. Heptachlor epoxide	O. 4,4'-DDT	W. Aroclor-1221	EE. 2,4'-DDT	MM.
H. Endosulfan I	P. Methoxychlor	X. Aroclor-1232	FF. Hexachlorobenzene	NN.

Notes:_____

LDC #: 32270D36

VALIDATION FINDINGS WORKSHEET
Surrogate Spikes

Reviewer:
2nd Reviewer:

METHOD: GC Pesticides/PCBs (EPA SW 846 Method 8081A/8082A)

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

(Y) N N/A Were surrogates spiked into all samples, standards and blanks?

Y (N) N/A Were all DCB surrogate recoveries within advisory QC limits on each column.

Level IV/D ONLY

(Y) N N/A Were surrogate retention times (RTs) on each column within the established RT windows for all samples, standards and blanks?

#	Date	Lab ID/Reference	Column	Surrogate %R (Limits:) TCMX	Surrogate %R (Limits:) DCB	Associated Samples	Qualifications	Code
			ZB MR2	122(45-120)		3	Idet, P	(S)
			↓	125(45-120)		PBLK17175	↓	

TCX = Tetrachloro-m-xylene
DCB = Decachlorobiphenyl

Comments:

LDC #: 32270D3b

VALIDATION FINDINGS WORKSHEET
Initial Calibration Calculation Verification

Reviewer: ON
2nd Reviewer: SM

METHOD: GC Pesticides/PCBs (EPA SW 846 Method 8081/8082)

The calibration factors (CF) and relative standard deviation (%RSD) were recalculated using the following calculations:

CF = A/C
Average CF = sum of the CF/number of standards
%RSD = 100 * (S/X)

Where: A = Area of compound
C = Concentration of compound
S = Standard deviation of calibration factors
X = Mean of calibration factors

#	Standard ID	Calibration Date	Compound	Reported CF (3 std)	Recalculated CF (3 std)	Reported CF (initial)	Recalculated CF (intial)	Reported %RSD	Recalculated %RSD
1	07PCTS	6-22-14	AR1260(1) (ZB MR1)	2304	2304	2364	2363.4	8	8
	1417301		(ZB MR2)	2691	2691	2732	2731.6	9	9
	(19843A/B)								
2									
3									
4									

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

LDC #: 32270D3b

VALIDATION FINDINGS WORKSHEET
Continuing Calibration Results Verification

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

METHOD: GC Pesticides/PCBs (EPA SW 846 Method 8081/8082)

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

% Difference (%D) = 100 * (ave. CF - CF)/ave. CF
CF=A/C

Where: ave. CF = initial calibration average CF
CF = continuing calibration CF
A = Area of compound
C = Concentration of compound

Standard ID	Calibration Date/Time	Compound	Average CF/ CCV Conc	Reported CF/Conc CCV	Recalculated CF/Conc CCV	Reported %D	Recalculated %D
07PCTS	6-23-14	AR1260 (ZBMR1)	200.00	207.72	207.71	4	4
14173001.0066	16:51	(ZBMR2)	200.00	210.35	210.35	5	5
07PCTS	6-25-14	AR1260 (ZBMR1)	200.00	201.96	201.94	1	1
14173003.0005	12:58	(ZBMR2)	200.00	204.49	204.49	2	2

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

LDC #: 32270D36

VALIDATION FINDINGS WORKSHEET
Surrogate Results Verification

Reviewer: 9m
2nd reviewer: SM

METHOD: GC Pesticides/PCBs (EPA SW 846 Method 8081/8082)

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

% Recovery: SF/SS * 100

Where: SF = Surrogate Found
SS = Surrogate Spiked

Sample ID: 1

Surrogate	Column	Surrogate Spiked	Surrogate Found	Percent Recovery	Percent Recovery	Percent Difference
				Reported	Recalculated	
Tetrachloro-m-xylene	ZBMR1	10.000	11.4203	114	114	Ø
Decachlorobiphenyl	↓	↓	10.1158	100	101	1
Tetrachloro-m-xylene	ZBMR2	↓	11.9963	120	120	Ø
Decachlorobiphenyl	↓	↓	9.9565	99	99.6	0.6

Sample ID:

Surrogate	Column	Surrogate Spiked	Surrogate Found	Percent Recovery	Percent Recovery	Percent Difference
				Reported	Recalculated	
Tetrachloro-m-xylene						
Decachlorobiphenyl						
Tetrachloro-m-xylene						
Decachlorobiphenyl						

Sample ID:

Surrogate	Column	Surrogate Spiked	Surrogate Found	Percent Recovery	Percent Recovery	Percent Difference
				Reported	Recalculated	
Tetrachloro-m-xylene						
Decachlorobiphenyl						
Tetrachloro-m-xylene						
Decachlorobiphenyl						

Sample ID:

Surrogate	Column	Surrogate Spiked	Surrogate Found	Percent Recovery	Percent Recovery	Percent Difference
				Reported	Recalculated	
Tetrachloro-m-xylene						
Decachlorobiphenyl						
Tetrachloro-m-xylene						
Decachlorobiphenyl						

Notes:

LDC #: 32270D3b

VALIDATION FINDINGS WORKSHEET
Matrix Spike/Matrix Spike Duplicates Results Verification

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

METHOD: GC Pesticides/PCBs (EPA SW 846 Method 8081/8082)

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

% Recovery = 100* (SSC-SC)/SA

Where: SSC = Spiked sample concentration
SA = Spike added
SC = Concentration

RPD = I SSCMS - SSCMSD I * 2/(SSCMS + SSCMSD)

MS = Matrix spike percent recovery

MSD = Matrix spike duplicate percent recovery

MS/MSD samples: 4/5

Compound	Spike Added (ug/Kg)		Sample Concentration (ug/Kg)	Spiked Sample Concentration (ug/Kg)		Matrix Spike Percent Recovery		Matrix Spike Duplicate Percent Recovery		MS/MSD RPD	
	MS	MSD	--	MS	MSD	Reported	Recalc.	Reported	Recalc.	Reported	Recalculated
gamma-BHC											
4,4'-DDT											
Aroclor 1260	165	165	ND	167.66	185	102	102	112	112	10	10

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

LDC #32270D3b

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

Page: 1 of 1
Reviewer: JN
2nd Reviewer: SM

METHOD: GC Pesticides/PCBs (EPA SW 846 Method 8081/8082)

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

% Recovery = 100* (SSC-SC)/SA

Where: SSC = Spiked sample concentration
SA = Spike added
SC = Concentration

RPD = I LCS - LCSD I * 2/(LCS + LCSD)

LCS = Laboratory control sample percent recovery

LCSD = Laboratory control sample duplicate percent recovery

LCS/LCSD samples: LCS09172

Compound	Spike Added (ug/Kg)		Spiked Sample Concentration (ug/Kg)		LCS Percent Recovery		LCSD Percent Recovery		LCS/LCSD RPD	
	LCS	LCSD	LCS	LCSD	Reported	Recalc.	Reported	Recalc.	Reported	Recalc.
gamma-BHC										
4,4'-DDT										
Aroclor 1260	167	NA	176.37	NA	106	106				

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

LDC #: 32270D36

VALIDATION FINDINGS WORKSHEET
Sample Calculation Verification

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

METHOD: GC Pesticides/PCBs (EPA SW 846 Method 8081/8082)

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

Concentration = $\frac{(A)(V_t)(DF)}{(CF)(V_o)(V_i)(\%S)}$

A = Area of the compound to be measured
V_o = Volume or weight of sample extract in milliliters (ml) or grams (g).
V_i = Volume of extract injected in microliters (ul)
V_t = Volume of the concentrated extract in microliters (ul)
CF = Calibration Factor of compound from initial calibration.
DF = Dilution Factor.
%S = Percent solids, applicable to soil and solid matrices only.

Example:

Sample I.D. 1 AA(1):

Conc. = $\frac{(39491.4)(10)(1)}{(1459)(1)(30.2)}$

= 8.96273 mg/kg

#	Sample ID	Compound	Reported Concentration (mg/kg)	Calculated Concentration (mg/kg)	Qualification
		1	8.96	—	
		2	11.84	—	
		3	12.37	—	
		4	8.31	—	
		5	5.02	—	
		6	11.43	—	
		Avg	9.66	9.7	

Note: _____

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: Santa Susana Field Laboratory

Collection Date: June 16, 2014

LDC Report Date: August 19, 2014

Matrix: Soil

Parameters: Metals

Validation Level: Level IV

Laboratory: Eurofins

Sample Delivery Group (SDG): PH234

Sample Identification

FDG2-SL-875-SA5A-SB-0.0-0.5
FDG2-SL-875-SA5A-SB-2.0-3.0
FDG2-SL-1175-SA5A-SB-2.0-3.0
FDG2-SL-875-SA5A-SB-2.0-3.0MS
FDG2-SL-875-SA5A-SB-2.0-3.0MSD
FDG2-SL-875-SA5A-SB-2.0-3.0DUP

Introduction

This data review covers 6 soil samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA SW 846 Methods 6010C, 6020A, and 7471A for Metals. The metals analyzed were Aluminum, Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Calcium, Chromium, Cobalt, Copper, Iron, Lead, Lithium, Magnesium, Manganese, Mercury, Molybdenum, Nickel, Phosphorus, Potassium, Selenium, Silver, Sodium, Strontium, Thallium, Tin, Titanium, Vanadium, Zinc, and Zirconium.

This review follows the Quality Assurance Project Plan for Santa Susana Field Laboratory (SSFL), RCRA Facility Investigation, Surficial Media Operable Unit (March 2009, Revision 4) and a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Superfund Data Review (January 2010).

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.

The following are definitions of the data qualifiers:

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J Indicates an estimated value.

R Quality control indicates the data is not usable.

NJ Presumptive evidence of presence of the compound at an estimated quantity.

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. ICPMS Tune

The mass calibration was within 0.1 AMU and the percent relative standard deviation (%RSD) was less than or equal to 5%.

III. Calibration

The initial and continuing calibrations were performed at the required frequency.

The calibration standards criteria were met.

IV. Blanks

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

Method Blank ID	Analyte	Maximum Concentration	Associated Samples
PB (prep blank)	Aluminum Boron Calcium Tin Zinc Strontium	10.0 mg/Kg 1.76 mg/Kg 24.6 mg/Kg 1.46 mg/Kg 0.386 mg/Kg 0.134 mg/Kg	All samples in SDG PH234
ICB/CCB	Copper	2.1 ug/L	All samples in SDG PH234
ICB/CCB	Aluminum Phosphorus	4.1 ug/L 2.6 ug/L	FDG2-SL-875-SA5A-SB-0.0-0.5 FDG2-SL-1175-SA5A-SB-2.0-3.0

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

Sample	Analyte	Reported Concentration	Modified Final Concentration
FDG2-SL-875-SA5A-SB-0.0-0.5	Boron Tin	4.21 mg/Kg 2.23 mg/Kg	4.21U mg/Kg 2.23U mg/Kg

Sample	Analyte	Reported Concentration	Modified Final Concentration
FDG2-SL-875-SA5A-SB-2.0-3.0	Boron Tin	4.43 mg/Kg 2.61 mg/Kg	4.43U mg/Kg 2.61U mg/Kg
FDG2-SL-1175-SA5A-SB-2.0-3.0	Boron Tin	4.08 mg/Kg 2.42 mg/Kg	4.08U mg/Kg 2.42U mg/Kg

Sample EB1-061814 (from PH237) was identified as an equipment blank. No metal contaminants were found with the following exceptions:

Blank ID	Sampling Date	Analyte	Concentration	Associated Samples
EB1061814	6/18/14	Boron Cadmium Manganese Molybdenum	6.10 ug/L 0.37 ug/L 0.85 ug/L 10.0 ug/L	All samples in SDG PH234

Sample FB-052114 (from SDG PH191) was identified as an equipment blank. No metal contaminants were found with the following exceptions:

Blank ID	Sampling Date	Analyte	Concentration	Associated Samples
FB-052114	5/21/14	Zirconium	11.0 ug/L	All samples in SDG PH234

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

Sample	Analyte	Reported Concentration	Modified Final Concentration
FDG2-SL-875-SA5A-SB-0.0-0.5	Molybdenum Zirconium	0.478 mg/Kg 3.16 mg/Kg	0.478U mg/Kg 3.16U mg/Kg
FDG2-SL-875-SA5A-SB-2.0-3.0	Molybdenum Zirconium	0.415 mg/Kg 3.03 mg/Kg	0.415U mg/Kg 3.03U mg/Kg
FDG2-SL-1175-SA5A-SB-2.0-3.0	Molybdenum Zirconium	0.410 mg/Kg 3.05 mg/Kg	0.410U mg/Kg 3.05U mg/Kg

V. ICP Interference Check Sample (ICS) Analysis

The frequency of analysis was met.

The criteria for analysis were met.

VI. Matrix Spike Analysis

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

Spike ID (Associated Samples)	Analyte	MS (%R) (Limits)	MSD (%R) (Limits)	RPD (Limits)	Flag	A or P
FDG2-SL-875-SA5A-SB-2.0-3.0MS/MSD (All samples in SDG PH234)	Antimony Lead Strontium	47 (75-125) 132 (75-125) 148 (75-125)	49 (75-125) - 71 (75-125)	- 28 (≤20) 21 (≤20)	J (all detects) UJ (all non-detects)	A
FDG2-SL-875-SA5A-SB-2.0-3.0MS/MSD (All samples in SDG PH234)	Silver	128 (75-125)	128 (75-125)	-	J (all detects)	A

For FDG2-SL-875-SA5A-SB-2.0-3.0MS/MSD, no data were qualified for Aluminum, Calcium, Iron, Magnesium, Manganese, Phosphorus, and Titanium percent recoveries outside the QC limits since the parent sample results were greater than 4X the spike concentration.

VII. Duplicate Sample Analysis

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

VIII. Laboratory Control Samples (LCS)

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

IX. Internal Standards

All internal standard percent recoveries (%R) were within QC limits.

X. ICP Serial Dilution

ICP serial dilution analysis was performed by the laboratory. The analysis criteria were met.

XI. Sample Result Verification

All sample result verifications were acceptable.

All metals reported below the RL and above the MDL were qualified as follows:

Sample	Analyte	Flag	A or P
All samples in SDG PH234	All analytes reported below the RL and above the MDL.	J (all detects)	A

XII. Overall Assessment of Data

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

XIII. Field Duplicates

Samples FDG2-SL-875-SA5A-SB-2.0-3.0 and FDG2-SL-1175-SA5A-SB-2.0-3.0 were identified as field duplicates. No metals were detected in any of the samples with the following exceptions:

Analyte	Concentration (mg/Kg)		RPD (Limits)	Flag	A or P
	FDG2-SL-875-SA5A-SB-2.0-3.0	FDG2-SL-1175-SA5A-SB-2.0-3.0			
Aluminum	15500	14600	6 (≤50)	-	-
Arsenic	5.84	5.50	6 (≤50)	-	-
Barium	107	96.4	10 (≤50)	-	-
Beryllium	0.581	0.548	6 (≤50)	-	-
Boron	4.43	4.08	8 (≤50)	-	-
Calcium	2270	2090	8 (≤50)	-	-
Chromium	19.5	18.4	6 (≤50)	-	-
Cobalt	4.91	4.77	3 (≤50)	-	-
Copper	11.9	11.5	3 (≤50)	-	-
Iron	19400	18600	4 (≤50)	-	-
Lead	0.7	13.1	20 (≤50)	-	-
Lithium	20.7	19.9	4 (≤50)	-	-
Magnesium	4140	4010	3 (≤50)	-	-
Manganese	321	306	5 (≤50)	-	-

Analyte	Concentration (mg/Kg)		RPD (Limits)	Flag	A or P
	FDG2-SL-875-SA5A-SB-2.0-3.0	FDG2-SL-1175-SA5A-SB-2.0-3.0			
Molybdenum	0.415	0.410	1 (≤50)	-	-
Nickel	13.1	11.7	11 (≤50)	-	-
Phosphorus	436	467	7 (≤50)	-	-
Potassium	3650	3440	6 (≤50)	-	-
Sodium	78.1	76.3	2 (≤50)	-	-
Tin	2.61	2.42	8 (≤50)	-	-
Titanium	1070	1000	7 (≤50)	-	-
Vanadium	36.0	32.5	10 (≤50)	-	-
Zinc	58.7	57.5	2 (≤50)	-	-
Zirconium	3.03	3.05	1 (≤50)	-	-
Selenium	0.272	0.268	1 (≤50)	-	-
Silver	0.0425	0.0426	0 (≤50)	-	-
Strontium	22.6	19.8	13 (≤50)	-	-
Thallium	0.274	0.284	4 (≤50)	-	-
Mercury	0.0206	0.0197	4 (≤50)	-	-

Santa Susana Field Laboratory
Metals - Data Qualification Summary - SDG PH234

SDG	Sample	Analyte	Flag	A or P	Reason (Code)
PH234	FDG2-SL-875-SA5A-SB-0.0-0.5 FDG2-SL-875-SA5A-SB-2.0-3.0 FDG2-SL-1175-SA5A-SB-2.0-3.0	Antimony	J (all detects) UJ (all non-detects)	A	Matrix spike/Matrix spike duplicate (%R) (Q)
PH234	FDG2-SL-875-SA5A-SB-0.0-0.5 FDG2-SL-875-SA5A-SB-2.0-3.0 FDG2-SL-1175-SA5A-SB-2.0-3.0	Lead Strontium	J (all detects) UJ (all non-detects) J (all detects) UJ (all non-detects)	A	Matrix spike/Matrix spike duplicate (%R)(RPD) (Q, E)
PH234	FDG2-SL-875-SA5A-SB-0.0-0.5 FDG2-SL-875-SA5A-SB-2.0-3.0 FDG2-SL-1175-SA5A-SB-2.0-3.0	Silver	J (all detects)	A	Matrix spike/Matrix spike duplicate (%R) (Q)
PH234	FDG2-SL-875-SA5A-SB-0.0-0.5 FDG2-SL-875-SA5A-SB-2.0-3.0 FDG2-SL-1175-SA5A-SB-2.0-3.0	All analytes reported below the RL and above the MDL.	J (all detects)	A	Sample result verification (Z)

Santa Susana Field Laboratory
Metals - Laboratory Blank Data Qualification Summary - SDG PH234

SDG	Sample	Analyte	Modified Final Concentration	A or P	Code
PH234	FDG2-SL-875-SA5A-SB-0.0-0.5	Boron Tin	4.21U mg/Kg 2.23U mg/Kg	A	B
PH234	FDG2-SL-875-SA5A-SB-2.0-3.0	Boron Tin	4.43U mg/Kg 2.61U mg/Kg	A	B
PH234	FDG2-SL-1175-SA5A-SB-2.0-3.0	Boron Tin	4.08U mg/Kg 2.42U mg/Kg	A	B

Santa Susana Field Laboratory
Metals - Field Blank Data Qualification Summary - SDG PH234

SDG	Sample	Analyte	Modified Final Concentration	A or P	Code
PH234	FDG2-SL-875-SA5A-SB-0.0-0.5	Molybdenum Zirconium	0.478U mg/Kg 3.16U mg/Kg	A	F
PH234	FDG2-SL-875-SA5A-SB-2.0-3.0	Molybdenum Zirconium	0.415U mg/Kg 3.03U mg/Kg	A	F
PH234	FDG2-SL-1175-SA5A-SB-2.0-3.0	Molybdenum Zirconium	0.410U mg/Kg 3.05U mg/Kg	A	F

LDC #: 32270D4

SDG #: PH234

Laboratory: Eurofins Lancaster Laboratories

VALIDATION COMPLETENESS WORKSHEET

Level IV

Date: 8/7/14

Page: 1 of 1

Reviewer: KK

2nd Reviewer: CA

METHOD: Metals (EPA SW 846 Method 6010C/6020A~~7000~~ 7471A)

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

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 6/16/14
II.	ICP/MS Tune	A	
III.	Calibration	A	
IV.	Blanks	SW	
V.	ICP Interference Check Sample (ICS) Analysis	A	
VI.	Matrix Spike Analysis	SW	MS/D 4/5 (Al, Ca, Fe, Mg, Mn, P, Ti, > 4x)
VII.	Duplicate Sample Analysis	A	DUP (Pb, Ag OK by Diff)
VIII.	Laboratory Control Samples (LCS)	A	LCS
IX.	Internal Standard (ICP-MS)	A	
X.	ICP Serial Dilution	A	
XI.	Sample Result Verification	A	
XII.	Overall Assessment of Data	A	
XIII.	Field Duplicates	N	2+3
XIV.	Field Blanks	SW	EB = EB1061814 SDG# PH237 FB = FB-052114SDG#PH191

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: 80,1

1	FDG2-SL-875-SA5A-SB-0.0-0.5	11		21		31	
2	FDG2-SL-875-SA5A-SB-2.0-3.0	12		22		32	
3	FDG2-SL-1175-SA5A-SB-2.0-3.0	13		23		33	
4	FDG2-SL-875-SA5A-SB-2.0-3.0MS	14		24		34	
5	FDG2-SL-875-SA5A-SB-2.0-3.0MSD	15		25		35	
6	FDG2-SL-875-SA5A-SB-2.0-3.0DUP	16		26		36	
7		17		27		37	
8		18		28		38	
9		19		29		39	
10		20		30		40	

Notes: _____

LDC #: 32270D4

VALIDATION FINDINGS CHECKLIST

Reviewer: VK
2nd Reviewer: [illegible]

Method: Metals (EPA SW 846 Method 6010/7000/6020)

Validation Area	Yes	No	NA	Findings/Comments
I. Technical holding times				
All technical holding times were met.	✓			
Cooler temperature criteria was met.	✓			
II. ICP/MS Tune				
Were all isotopes in the tuning solution mass resolution within 0.1 amu?	✓			
Were %RSD of isotopes in the tuning solution ≤5%?	✓			
III. Calibration				
Were all instruments calibrated daily, each set-up time?	✓			
Were the proper number of standards used?	✓			
Were all initial and continuing calibration verification %Rs within the 90-110% (80-120% for mercury) QC limits?	✓			
Were all initial calibration correlation coefficients ≥ 0.995?	✓			
IV. Blanks				
Was a method blank associated with every sample in this SDG?	✓			
Was there contamination in the method blanks? If yes, please see the Blanks validation completeness worksheet.	✓			
V. ICP Interference Check Sample				
Were ICP interference check samples performed daily?	✓			
Were the AB solution percent recoveries (%R) with the 80-120% QC limits?	✓			
VI. Matrix spike/Matrix spike duplicates				
Were a matrix spike (MS) and duplicate (DUP) analyzed for each matrix in this SDG? If no, indicate which matrix does not have an associated MS/MSD or MS/DUP. Soil / Water.	✓			
Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the 75-125 QC limits? If the sample concentration exceeded the spike concentration by a factor of 4 or more, no action was taken.		✓		
Were the MS/MSD or duplicate relative percent differences (RPD) ≤ 20% for waters and ≤ 35% for soil samples? A control limit of +/- RL(+/-2X RL for soil) was used for samples that were ≤ 5X the RL, including when only one of the duplicate sample values were ≤ 5X the RL.		✓		
VII. Laboratory control samples				
Was an LCS anaylzed for this SDG?	✓			
Was an LCS analyzed per extraction batch?	✓			
Were the LCS percent recoveries (%R) and relative percent difference (RPD) within the 80-120% QC limits for water samples and laboratory established QC limits for soils?	✓			

LDC #: 32270D4

VALIDATION FINDINGS CHECKLIST

Reviewer: KR
2nd Reviewer: AL

Validation Area	Yes	No	NA	Findings/Comments
VIII. Internal Standards (EPA SW 846 Method 6020/EPA 200.8)				
Were all the percent recoveries (%R) within the 30-120% (6020)/60-125% (200.8) of the intensity of the internal standard in the associated initial calibration?	✓			
If the %Rs were outside the criteria, was a reanalysis performed?			✓	
IX. ICP Serial Dilution				
Was an ICP serial dilution analyzed if analyte concentrations were > 50X the MDL (ICP)/>100X the MDL(ICP/MS)?	✓			
Were all percent differences (%Ds) < 10%?	✓			
Was there evidence of negative interference? If yes, professional judgement will be used to qualify the data.		✓		
X. Sample Result Verification				
Were RLs adjusted to reflect all sample dilutions and dry weight factors applicable to level IV validation?	✓			
XI. Overall assessment of data				
Overall assessment of data was found to be acceptable.	✓			
XII. Field duplicates				
Field duplicate pairs were identified in this SDG.	✓	✓ SW		
Target analytes were detected in the field duplicates.			✓	
XIII. Field blanks				
Field blanks were identified in this SDG.	✓			
Target analytes were detected in the field blanks.	✓			

LDC #: 32270D4

VALIDATION FINDINGS WORKSHEET
Sample Specific Element Reference

Reviewer: KM
2nd reviewer: CA

All circled elements are applicable to each sample.

Sample ID	Matrix	Target Analyte List (TAL)
1-3	S	Al, Sb, As, Ba, Be, B, Cd, Ca, Cr, Co, Cu, Fe, Pb, Li, Mg, Mo, Mn, Hg, Ni, P, K, Se, Ag, Na, Sr, Tl, Sn, Ti, V, Zn, Zr
	↓	Al, Sb, As, Ba, Be, B, Cd, Ca, Cr, Co, Cu, Fe, Pb, Li, Mg, Mo, Mn, Hg, Ni, P, K, Se, Ag, Na, Sr, Tl, Sn, Ti, V, Zn, Zr
QC4-6	↓	Al, Sb, As, Ba, Be, B, Cd, Ca, Cr, Co, Cu, Fe, Pb, Li, Mg, Mo, Mn, Hg, Ni, P, K, Se, Ag, Na, Sr, Tl, Sn, Ti, V, Zn, Zr
		Al, Sb, As, Ba, Be, B, Cd, Ca, Cr, Co, Cu, Fe, Pb, Li, Mg, Mo, Mn, Hg, Ni, P, K, Se, Ag, Na, Sr, Tl, Sn, Ti, V, Zn, Zr
		Al, Sb, As, Ba, Be, B, Cd, Ca, Cr, Co, Cu, Fe, Pb, Li, Mg, Mo, Mn, Hg, Ni, P, K, Se, Ag, Na, Sr, Tl, Sn, Ti, V, Zn, Zr
		Al, Sb, As, Ba, Be, B, Cd, Ca, Cr, Co, Cu, Fe, Pb, Li, Mg, Mo, Mn, Hg, Ni, P, K, Se, Ag, Na, Sr, Tl, Sn, Ti, V, Zn, Zr
		Al, Sb, As, Ba, Be, B, Cd, Ca, Cr, Co, Cu, Fe, Pb, Li, Mg, Mo, Mn, Hg, Ni, P, K, Se, Ag, Na, Sr, Tl, Sn, Ti, V, Zn, Zr
		Al, Sb, As, Ba, Be, B, Cd, Ca, Cr, Co, Cu, Fe, Pb, Li, Mg, Mo, Mn, Hg, Ni, P, K, Se, Ag, Na, Sr, Tl, Sn, Ti, V, Zn, Zr
		Al, Sb, As, Ba, Be, B, Cd, Ca, Cr, Co, Cu, Fe, Pb, Li, Mg, Mo, Mn, Hg, Ni, P, K, Se, Ag, Na, Sr, Tl, Sn, Ti, V, Zn, Zr
		Al, Sb, As, Ba, Be, B, Cd, Ca, Cr, Co, Cu, Fe, Pb, Li, Mg, Mo, Mn, Hg, Ni, P, K, Se, Ag, Na, Sr, Tl, Sn, Ti, V, Zn, Zr
		Al, Sb, As, Ba, Be, B, Cd, Ca, Cr, Co, Cu, Fe, Pb, Li, Mg, Mo, Mn, Hg, Ni, P, K, Se, Ag, Na, Sr, Tl, Sn, Ti, V, Zn, Zr
		Al, Sb, As, Ba, Be, B, Cd, Ca, Cr, Co, Cu, Fe, Pb, Li, Mg, Mo, Mn, Hg, Ni, P, K, Se, Ag, Na, Sr, Tl, Sn, Ti, V, Zn, Zr
		Al, Sb, As, Ba, Be, B, Cd, Ca, Cr, Co, Cu, Fe, Pb, Li, Mg, Mo, Mn, Hg, Ni, P, K, Se, Ag, Na, Sr, Tl, Sn, Ti, V, Zn, Zr
		Al, Sb, As, Ba, Be, B, Cd, Ca, Cr, Co, Cu, Fe, Pb, Li, Mg, Mo, Mn, Hg, Ni, P, K, Se, Ag, Na, Sr, Tl, Sn, Ti, V, Zn, Zr
		Al, Sb, As, Ba, Be, B, Cd, Ca, Cr, Co, Cu, Fe, Pb, Li, Mg, Mo, Mn, Hg, Ni, P, K, Se, Ag, Na, Sr, Tl, Sn, Ti, V, Zn, Zr
		Al, Sb, As, Ba, Be, B, Cd, Ca, Cr, Co, Cu, Fe, Pb, Li, Mg, Mo, Mn, Hg, Ni, P, K, Se, Ag, Na, Sr, Tl, Sn, Ti, V, Zn, Zr
		Al, Sb, As, Ba, Be, B, Cd, Ca, Cr, Co, Cu, Fe, Pb, Li, Mg, Mo, Mn, Hg, Ni, P, K, Se, Ag, Na, Sr, Tl, Sn, Ti, V, Zn, Zr
		Al, Sb, As, Ba, Be, B, Cd, Ca, Cr, Co, Cu, Fe, Pb, Li, Mg, Mo, Mn, Hg, Ni, P, K, Se, Ag, Na, Sr, Tl, Sn, Ti, V, Zn, Zr
		Al, Sb, As, Ba, Be, B, Cd, Ca, Cr, Co, Cu, Fe, Pb, Li, Mg, Mo, Mn, Hg, Ni, P, K, Se, Ag, Na, Sr, Tl, Sn, Ti, V, Zn, Zr
		Al, Sb, As, Ba, Be, B, Cd, Ca, Cr, Co, Cu, Fe, Pb, Li, Mg, Mo, Mn, Hg, Ni, P, K, Se, Ag, Na, Sr, Tl, Sn, Ti, V, Zn, Zr
		Al, Sb, As, Ba, Be, B, Cd, Ca, Cr, Co, Cu, Fe, Pb, Li, Mg, Mo, Mn, Hg, Ni, P, K, Se, Ag, Na, Sr, Tl, Sn, Ti, V, Zn, Zr
		Al, Sb, As, Ba, Be, B, Cd, Ca, Cr, Co, Cu, Fe, Pb, Li, Mg, Mo, Mn, Hg, Ni, P, K, Se, Ag, Na, Sr, Tl, Sn, Ti, V, Zn, Zr
		Al, Sb, As, Ba, Be, B, Cd, Ca, Cr, Co, Cu, Fe, Pb, Li, Mg, Mo, Mn, Hg, Ni, P, K, Se, Ag, Na, Sr, Tl, Sn, Ti, V, Zn, Zr
Analysis Method		
ICP		Al, Sb, As, Ba, Be, B, Cd, Ca, Cr, Co, Cu, Fe, Pb, Li, Mg, Mo, Mn, Hg, Ni, P, K, Se, Ag, Na, Sr, Tl, Sn, Ti, V, Zn, Zr
ICP-MS		Al, Sb, As, Ba, Be, B, Cd, Ca, Cr, Co, Cu, Fe, Pb, Li, Mg, Mo, Mn, Hg, Ni, P, K, Se, Ag, Na, Sr, Tl, Sn, Ti, V, Zn, Zr

Comments: ~~Mercury by CVAA if performed~~

LDC #: 32270D4

VALIDATION FINDINGS WORKSHEET
PB/ICB/CCB QUALIFIED SAMPLES

(B)

Reviewer: KK
2nd Reviewer: [illegible]

METHOD: Trace metals (EPA SW 864 Method 6010C/6020A/7471A) Soil preparation factor applied: 100
Sample Concentration units, unless otherwise noted: mg/kg Associated Samples: All

					Sample Identification										
Analyte	Maximum PB[a] (mg/Kg)	Maximum PB[a] (mg/L)	Maximum ICB/CCB[a] (ug/L)	Action Level	1	2	3								
Cu			2.1	1.05											
Al	10.021			50.11											
B	1.764			8.82	4.21	4.43	4.08								
Ca	24.640			123											
Sn	1.460			7.30	2.23	2.61	2.42								
Zn	0.386			1.93											
Sr	0.134			0.67											

METHOD: Trace metals (EPA SW 864 Method 6010C/6020A/7471A) Soil preparation factor applied: 100
Sample Concentration units, unless otherwise noted: mg/kg Associated Samples: 1, 3

					Sample Identification										
Analyte	Maximum PB[a] (mg/Kg)	Maximum PB[a] (mg/L)	Maximum ICB/CCB[a] (ug/L)	Action Level	no quals										
Al			54.1	27.1											
P			2.6	1.3											

Samples with analyte concentrations within five times the associated ICB, CCB or PB concentration are listed above with the identifications from the Validation Completeness Worksheet. These sample results were qualified as not detected, "U".
Note : a - The listed analyte concentration is the highest ICB, CCB, or PB detected in the analysis of each element.

LDC #: 32270D4

VALIDATION FINDINGS WORKSHEET
Field Blanks

Reviewer: KM
2nd Reviewer: CQ

METHOD: Trace Metals (EPA SW846 6010C/6020A/7471A)

Blank units: ug/L **Associated sample units:** mg/kg
Sampling date: 5/21/14 and 6/18/14 Soil factor applied 100
Field blank type: (circle one) Field Blank / Rinsate / Other: (EB) Associated Samples: All (F)

Analyte	Blank ID	Blank ID	Sample Identification									
	EB1-061814 SDG#PH237	FB-052114 SDG#PH191	Action Limit	1	2	3						
B	6.10		3.05									
Cd	0.37		0.185									
Mn	0.85		0.425									
Mo	10.0		5.0	0.478	0.415	0.410						
Zr		11.0	5.5	3.16	3.03	3.05						

CIRCLED RESULTS WERE NOT QUALIFIED. ALL RESULTS NOT CIRCLED WERE QUALIFIED BY THE FOLLOWING STATEMENT:
Samples with analyte concentrations within five times the associated field blank concentration are listed above, these sample results were qualified as not detected, "U".

LDC #: 32270D1

VALIDATION FINDINGS WORKSHEET
Matrix Spike/Matrix Spike Duplicates

6010C/0026A/7471A

(Q, E)

Page: 1 of 1
Reviewer: KK
2nd Reviewer: CR

METHOD: Trace metals (EPA SW 846 Method ~~6010B/6020A/7000~~)

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

Y N N/A Was a matrix spike analyzed for each matrix in this SDG? ✓

Y N N/A Were matrix spike percent recoveries (%R) within the control limits of 75-125? If the sample concentration exceeded the spike concentration by a factor of 4 or more, no action was taken. ✓

Y N N/A Were all duplicate sample relative percent differences (RPD) ≤ 20% for water samples and ≤35% for soil samples?

LEVEL IV ONLY:

Y N N/A Were recalculated results acceptable? See Level IV Recalculation Worksheet for recalculations.

#	MS/MSD ID	Matrix	Analyte	MS %Recovery	MSD %Recovery	RPD (Limits)	Associated Samples	Qualifications
	4/5	S	Sb	47	49		All	J/UJ/A
			Pb	132		28 (20)		↓
			Ag	128	128			J det/A
	↓	↓	Sr	148	71	21 (20)	↓	J/UJ/A

Comments: 4/5: (Al, Ca, Fe, Mg, Mn, P, Ti >4x)

LDC#: 32270D4

VALIDATION FINDINGS WORKSHEET
Field Duplicates

Reviewer: KK
2nd Reviewer: CM

METHOD: Metals (EPA Method 6010C/6020A/7471A)

Analyte	Concentration (mg/kg)		RPD (≤50)
	2	3	
Aluminum	15500	14600	6
Arsenic	5.84	5.50	6
Barium	107	96.4	10
Beryllium	0.581	0.548	6
Boron	4.43	4.08	8
Calcium	2270	2090	8
Chromium	19.5	18.4	6
Cobalt	4.91	4.77	3
Copper	11.9	11.5	3
Iron	19400	18600	4
Lead	10.7	13.1	20
Lithium	20.7	19.9	4
Magnesium	4140	4010	3
Manganese	321	306	5
Molybdenum	0.415	0.410	1
Nickel	13.1	11.7	11
Phosphorus	436	467	7
Potassium	3650	3440	6
Sodium	78.1	76.3	2
Tin	2.61	2.42	8

LDC#: 32270D4

VALIDATION FINDINGS WORKSHEET
Field Duplicates

Reviewer: KK
2nd Reviewer:

METHOD: Metals (EPA Method 6010C/6020A/7471A)

Analyte	Concentration (mg/kg)		RPD (≤50)
	2	3	
Titanium	1070	1000	7
Vanadium	36.0	32.5	10
Zinc	58.7	57.5	2
Zirconium	3.03	3.05	1
Selenium	0.272	0.268	1
Silver	0.0425	0.0426	0
Strontium	22.6	19.8	13
Thallium	0.274	0.284	4
Mercury	0.0206	0.0197	4

LDC #: 32270D4

VALIDATION FINDINGS WORKSHEET
Initial and Continuing Calibration Calculation Verification

Reviewer: KK
2nd Reviewer: CL

METHOD: Trace Metals (EPA SW 846 Method ~~6010/6020/7000~~) 6010C/6020A/7471A

An initial and continuing calibration verification percent recovery (%R) was recalculated for each type of analysis using the following formula:

%R = Found x 100 / True

Where, Found = concentration (in ug/L) of each analyte measured in the analysis of the ICV or CCV solution
True = concentration (in ug/L) of each analyte in the ICV or CCV source

Standard ID	Type of Analysis	Element	Found (ug/L)	True (ug/L)	Recalculated %R	Reported %R	Acceptable (Y/N)
ICV (15:47)	ICP (Initial calibration)	Al	30,506	30,000	101.7	101.7	Y
ICV (6:24)	ICP/MS (Initial calibration)	Se	50.59	50.0	101.2	101.2	
ICV (10:17)	CVAA (Initial calibration)	Hg	2.5508	2.5	102.0	102.0	
CCV (16:11)	ICP (Continuing calibration)	Zr	508.94	500	101.8	~~99.0~~ 101.8	
CCV (6:41)	ICP/MS (Continuing calibration)	Tl	24.513	25.0 ~~25~~	98.0	98.0	
CCV (10:24)	CVAA (Continuing calibration)	Hg	0.9482	1.00	95.0	95.0	
	GFAA (Initial calibration)						
	GFAA (Continuing calibation)						

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

LDC #: 32270D4

VALIDATION FINDINGS WORKSHEET
Level IV Recalculation Worksheet

Reviewer: KG
2nd Reviewer: CC

METHOD: Trace Metals (EPA SW 846 Method ~~6010/6020/7000~~ 6010C/6020A/7471A

Percent recoveries (%R) for an ICP interference check sample, a laboratory control sample and a matrix spike sample were recalculated using the following formula:

$\%R = \frac{Found}{True} \times 100$ Where, Found = Concentration of each analyte measured in the analysis of the sample. For the matrix spike calculation, Found = SSR (spiked sample result) - SR (sample result).
True = Concentration of each analyte in the source.

A sample and duplicate relative percent difference (RPD) was recalculated using the following formula:

$RPD = \frac{|S-D|}{(S+D)/2} \times 100$ Where, S = Original sample concentration
D = Duplicate sample concentration

An ICP serial dilution percent difference (%D) was recalculated using the following formula:

$\%D = \frac{|I-SDR|}{I} \times 100$ Where, I = Initial Sample Result (mg/L)
SDR = Serial Dilution Result (mg/L) (Instrument Reading x 5)

Sample ID	Type of Analysis	Element	Found / S / I (mg/kg) (units)	True / D / SDR (mg/kg) (units)	Recalculated %R / RPD / %D	Reported %R / RPD / %D	Acceptable (Y/N)
ICSAB (18:01)	ICP interference check	Sb	579.08 µg/L	600 µg/L	97.0	97.0	Y
LCS (6:48)	Laboratory control sample	Se	1025 µg/L	1000 µg/L	103	103	
4	Matrix spike	P	(SSR-SR) 92.44	100.0	92	92	
6	Duplicate	Zn	58.67	57.6	2	2	
2	ICP serial dilution	Fe	192202 µg/L	189460 µg/L	1	1	

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

LDC #: 32270D4

VALIDATION FINDINGS WORKSHEET
Sample Calculation Verification

Reviewer: KK
2nd reviewer: [signature]

METHOD: Trace Metals (EPA SW 846 Method ~~6010/6020/7000~~ 6010C/6020A/7471A)

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

Y N N/A Have results been reported and calculated correctly?
Y N N/A Are results within the calibrated range of the instruments and within the linear range of the ICP?
Y N N/A Are all detection limits below the CRDL?

Detected analyte results for Mercury were recalculated and verified using the following equation:

Concentration = $\frac{(RD)(FV)(Dil)}{(In.\ Vol.)}$

RD = Raw data concentration
FV = Final volume (ml)
In. Vol. = Initial volume (ml) or weight (G)
Dil = Dilution factor

Recalculation:

3: $\frac{(0.1233\ \mu g/L)(100\ mL)(1.00)}{(0.6406g)(1000)(0.9776)} = 0.01972\ mg/kg$

#	Sample ID	Analyte	Reported Concentration (mg/kg)	Calculated Concentration (mg/kg)	Acceptable (Y/N)
	1	Pb	13.7	13.7	Y
	2	Tl	0.27	0.27	↓
	3	Hg	0.020	0.020	↓

Note: _____

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name:	Santa Susana Field Laboratory
Collection Date:	June 16, 2014
LDC Report Date:	August 14, 2014
Matrix:	Soil/Water
Parameters:	Total Petroleum Hydrocarbons as Gasoline
Validation Level:	Level IV
Laboratory:	Eurofins
Sample Delivery Group (SDG):	PH234

Sample Identification

TB-061614
FDG2-SL-875-SA5A-SB-2.0-3.0
FDG2-SL-876-SA5A-SB-4.0-5.0
FDG2-SL-1175-SA5A-SB-2.0-3.0
FDG2-SL-877-SA5A-SB-3.0-4.0
FDG2-SL-875-SA5A-SB-2.0-3.0MS
FDG2-SL-875-SA5A-SB-2.0-3.0MSD

Introduction

This data review covers 6 soil samples and one water sample listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA SW 846 Method 8015B for Total Petroleum Hydrocarbons (TPH) as Gasoline.

This review follows the Quality Assurance Project Plan for Santa Susana Field Laboratory (SSFL), RCRA Facility Investigation, Surficial Media Operable Unit (March 2009, Revision 4) and a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Superfund Organic Methods Data Review (June 2008).

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.

The following are definitions of the data qualifiers:

U Indicates the compound or analyte was analyzed for but not detected.

J Indicates an estimated value.

R Quality control indicates the data is not usable.

NJ Presumptive evidence of presence of the compound at an estimated quantity.

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. Initial Calibration

Initial calibration of compounds was performed as required by the method.

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

III. Continuing Calibration

Continuing calibration was performed at required frequencies.

The percent differences (%D) were less than or equal to 20.0% for all compounds.

The percent differences (%D) of the second source calibration standard were less than or equal to 20.0% for all compounds.

IV. Blanks

Method blanks were reviewed for each matrix as applicable. No total petroleum hydrocarbons as gasoline contaminants were found in the method blanks.

Sample TB-061614 was identified as a trip blank. No total petroleum hydrocarbons as gasoline contaminants were found.

Sample EB1-061814 (from SDG PH237) was identified as an equipment blank. No total petroleum hydrocarbons as gasoline contaminants were found.

Sample FB-052114 (from SDG PH191) was identified as a field blank. No total petroleum hydrocarbons as gasoline contaminants were found.

V. Surrogate Recovery

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

VI. 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.

VII. Laboratory Control Samples

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

VIII. Target Compound Identification

All target compound identifications were within validation criteria.

IX. Compound Quantitation

All compound quantitations were within validation criteria.

All compounds reported below the RL were qualified as follows:

Sample	Finding	Flag	A or P
All samples in SDG PH234	All compounds reported below the RL.	J (all detects)	A

X. System Performance

The system performance was acceptable.

XI. Overall Assessment of Data

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

XII. Field Duplicates

Samples FDG2-SL-875-SA5A-SB-2.0-3.0 and FDG2-SL-1175-SA5A-SB-2.0-3.0 were identified as field duplicates. No total petroleum hydrocarbons as gasoline were detected in any of the samples.

Santa Susana Field Laboratory
Total Petroleum Hydrocarbons as Gasoline - Data Qualification Summary - SDG PH234

SDG	Sample	Compound	Flag	A or P	Reason (Code)
PH234	TB-061614 FDG2-SL-875-SA5A-SB-2.0-3.0 FDG2-SL-876-SA5A-SB-4.0-5.0 FDG2-SL-1175-SA5A-SB-2.0-3.0 FDG2-SL-877-SA5A-SB-3.0-4.0	All compounds reported below the RL.	J (all detects)	A	Compound quantitation (Z)

Santa Susana Field Laboratory
Total Petroleum Hydrocarbons as Gasoline - Laboratory Blank Data Qualification Summary - SDG PH234

No Sample Data Qualified in this SDG

Santa Susana Field Laboratory
Total Petroleum Hydrocarbons as Gasoline - Field Blank Data Qualification Summary - SDG PH234

No Sample Data Qualified in this SDG

LDC #: 32270D7 **VALIDATION COMPLETENESS WORKSHEET** Date: 8-4-14
SDG #: PH234 Level IV Page: 1 of 1
Laboratory: Eurofins Lancaster Laboratories Reviewer: [illegible]
2nd Reviewer: SM

METHOD: GC TPH as Gasoline (EPA SW 846 Method 8015B)

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

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 6/11&6/14
II	Initial calibration	A	≤20
III.	Calibration verification/ICV	A	CCV/ICV ≤20
IV.	Blanks	A	
V	Surrogate recovery	A	
VI.	Matrix spike/Matrix spike duplicates	A	
VII.	Laboratory control samples	A	LCS/LCSD
VIII.	Target compound identification	A	
IX.	Compound quantitation/RL/LOQ/LODs	A	
X.	System Performance	A	
XI.	Overall assessment of data	A	
XII.	Field duplicates	ND	D=2+4
XIII.	Field blanks	ND	TB=1, EB=EB1-061814(PH237) FB=FB-052114(PH191)

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

Validated Samples: water/soil

1 1	TB-061614 W	11		21		31	
2 2	FDG2-SL-875-SA5A-SB-2.0-3.0	12		22		32	
3 2	FDG2-SL-876-SA5A-SB-4.0-5.0	13		23		33	
4 2	FDG2-SL-1175-SA5A-SB-2.0-3.0	14		24		34	
5 2	FDG2-SL-877-SA5A-SB-3.0-4.0	15		25		35	
6 2	FDG2-SL-875-SA5A-SB-2.0-3.0MS	16		26		36	
7 2	FDG2-SL-875-SA5A-SB-2.0-3.0MSD	17		27		37	
8		18		28		38	
9		19 1	BLK05	29		39	
10		20 2	BLK0F	30		40	

Notes: _____

LDC #: 32270D7

VALIDATION FINDINGS CHECKLIST

Reviewer: 9m
2nd Reviewer: SM

Method: GC

Validation Area	Yes	No	NA	Findings/Comments
I. Technical holding times				
All technical holding times were met.	✓			
Cooler temperature criteria was met.	✓			
II. Initial calibration				
Did the laboratory perform a 5 point calibration prior to sample analysis?	✓			
Were all percent relative standard deviations (%RSD) ≤ 20%?	✓			
Was a curve fit used for evaluation?			✓	
Did the initial calibration meet the curve fit acceptance criteria of ≥ 0.990?			✓	
Were the RT windows properly established?	✓			
IV. Continuing calibration				
Was a continuing calibration analyzed daily?	✓			
Were all percent differences (%D) ≤ 20%?	✓			
Were all the retention times within the acceptance windows?	✓			
V. Blanks				
Was a method blank associated with every sample in this SDG?	✓			
Was a method blank analyzed for each matrix and concentration?	✓			
Was there contamination in the method blanks? If yes, please see the Blanks validation completeness worksheet.		✓		
VI. Surrogate spikes				
Were all surrogate %R within the QC limits?	✓			
If the percent recovery (%R) for one or more surrogates was out of QC limits, was a reanalysis performed to confirm samples with %R outside of criteria?			✓	
If any %R was less than 10 percent, was a reanalysis performed to confirm %R?			✓	
VII. Matrix spike/Matrix spike duplicates				
Were a matrix spike (MS) and matrix spike duplicate (MSD) analyzed for each matrix in this SDG? If no, indicate which matrix does not have an associated MS/MSD. Soil / Water.	✓			
Was a MS/MSD analyzed every 20 samples of each matrix?			✓	
Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?	✓			
VIII. Laboratory control samples				
Was an LCS analyzed for this SDG?	✓			
Was an LCS analyzed per extraction batch?	✓		✓	
Were the LCS percent recoveries (%R) and relative percent difference (RPD) within the QC limits?	✓			
IX. Regional Quality Assurance and Quality Control				
Were performance evaluation (PE) samples performed?		✓		
Were the performance evaluation (PE) samples within the acceptance limits?			✓	

Validation Area	Yes	No	NA	Findings/Comments
X. Target compound identification				
Were the retention times of reported detects within the RT windows?	✓			
XI. Compound quantitation/CRQLs				
Were compound quantitation and CRQLs adjusted to reflect all sample dilutions and dry weight factors applicable to level IV validation?	✓			
XII. System performance				
System performance was found to be acceptable.	✓			
XIII. Overall assessment of data				
Overall assessment of data was found to be acceptable.	✓			
XIV. Field duplicates				
Field duplicate pairs were identified in this SDG.	✓			
Target compounds were detected in the field duplicates.		✓		
XV. Field blanks				
Field blanks were identified in this SDG.	✓			
Target compounds were detected in the field blanks.		✓		

LDC #: 3227057

VALIDATION FINDINGS WORKSHEET
Initial Calibration Calculation Verification

Page: 1 of 1
Reviewer: fm
2nd Reviewer: sm

METHOD: GC X HPLC _____

The calibration factors (CF) and relative standard deviation (%RSD) were recalculated using the following calculations:

CF = A/C
Average CF = sum of the CF/number of standards
%RSD = 100 * (S/X)

Where: A = Area of compound
C = Concentration of compound
S = Standard deviation of calibration factors
X = Mean of calibration factors

#	Standard ID	Calibration Date	Compound	Reported CF (3 std)	Recalculated CF (3 std)	Reported Ave CF (initial)	Recalculated Ave CF (intial)	Reported %RSD	Recalculated %RSD
1	LUFT16270	9-27-13	GRO	55255	552445	55635	55635	4	4
2	LUFT94380	10-8-13	GRO	29610	29610	28046	28046	6	6
3									
4									

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

LDC #: 32270D7

VALIDATION FINDINGS WORKSHEET
Continuing Calibration Results Verification

Reviewer: 9m
2nd Reviewer: SM

METHOD: GC X HPLC _____

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

% Difference = 100 * (ave. CF -CF)/ave.CF

Where: ave. CF = initial calibration average CF
CF = continuing calibration CF
A = Area of compound
C = Concentration of compound

#	Standard ID	Calibration Date	Compound	Average CF(Ical)/ CCV Conc	Reported CF/ Conc. CCV	Recalculated CF/ Conc. CCV	Reported %D	Recalculated %D
1	SGCXYDO (LUFT16270)	6-19-14 17:21	GRO	220.04	219.73	219.73	0	0.1
2	WGCCXDP (LUFT94280)	6-20-14 12:11	GRO	550.10	502.87	502.87	9	9
3								
4								

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

LDC #: 22701D7

VALIDATION FINDINGS WORKSHEET
Surrogate Results Verification

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

METHOD: X **GC** __ **HPLC**

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

% Recovery: SF/SS * 100

Where: SF = Surrogate Found
SS = Surrogate Spiked

Sample ID: 1

Surrogate	Column/Detector	Surrogate Spiked	Surrogate Found	Percent Recovery	Percent Recovery	Percent Difference
				Reported	Recalculated	
TFT-F	—	30.0	23.6909	79	79	Ø

Sample ID: _____

Surrogate	Column/Detector	Surrogate Spiked	Surrogate Found	Percent Recovery	Percent Recovery	Percent Difference
				Reported	Recalculated	

Sample ID: _____

Surrogate	Column/Detector	Surrogate Spiked	Surrogate Found	Percent Recovery	Percent Recovery	Percent Difference
				Reported	Recalculated	

LDC #: 32270D7

VALIDATION FINDINGS WORKSHEET
Matrix Spike/Matrix Spike Duplicates Results Verification

Reviewer: 9m
2nd Reviewer: SM

METHOD: X **GC** __**HPLC**

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

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

RPD =(({SSCMS - SSCMSD} * 2) / (SSCMS + SSCMSD))*100 MS = Matrix spike MSD = Matrix spike duplicate

MS/MSD samples: 6/7

Compound	Spike Added (mg/Kg)		Sample Conc. (mg/Kg)	Spike Sample Concentration (mg/Kg)		Matrix spike Percent Recovery		Matrix Spike Duplicate Percent Recovery		MS/MSD RPD	
	MS	MSD	---	MS	MSD	Reported	Recalc.	Reported	Recalc.	Reported	Recalc.
Gasoline (8015)	11.1	11.1	ND	8.34	8.46	75	75	77	76	1	1
Diesel (8015)											

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

LDC #: 822707D7

VALIDATION FINDINGS WORKSHEET

Laboratory Control Sample/Laboratory Control Sample Duplicates Results Verification

Reviewer: 9L

2nd Reviewer: SM

METHOD: X GC __HPLC

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

%Recovery = 100 * (SSC - SC)/SA

Where SSC = Spiked sample concentration; SA = Spike added; SC = Sample concentration

RPD =(({SSCLCS - SSCLCSD} * 2) / (SSCLCS + SSCLCSD))*100

LCS = Laboratory Control Sample; LCSD = Laboratory Control Sample duplicate

LCS/LCSD samples: LCSG7

Compound	Spike Added (mg/Kg)		Sample Conc. ( )	Spike Sample Concentration (mg/Kg)		LCS Percent Recovery		LCSD Percent Recovery		LCS/LCSD RPD	
	LCS	LCSD	---	LCS	LCSD	Reported	Recalc.	Reported	Recalc.	Reported	Recalc.
Gasoline (8015)	11	NA	NA	9.00	NA	82	82				
Diesel (8015)											

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

LDC #: 32270D7

VALIDATION FINDINGS WORKSHEET
Sample Calculation Verification

Reviewer: [signature]
2nd reviewer: [signature]

METHOD: GC

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

(Samples ND)

Concentration =

A_x	=	Area of the characteristic ion (EICP) for the compound to be measured
Vi		Injection Volume in microliters (µl)
V_f	=	Final Volume or weight of sample in milliliters (ml) or grams (g).
CF	=	Calibration factor of the calibration standard.
V_o	=	Volume or weight of sample purged in milliliters (ml) or grams (g).
Df	=	Dilution factor.
%S	=	Percent solids, applicable to soils and solid matrices only.

Example:

Sample I.D. 6(MS), GRO:

$$\text{Conc.} = \frac{(18371020)(25)(1.01)}{(55635)(1)(1)(0.973)}$$

$$= 8.569 \text{ mg/kg} \approx 8.6 \text{ mg/kg}$$

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

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: Santa Susana Field Laboratory

Collection Date: June 16, 2014

LDC Report Date: August 22, 2014

Matrix: Soil

Parameters: Total Petroleum Hydrocarbons as Extractables

Validation Level: Level IV

Laboratory: Eurofins

Sample Delivery Group (SDG): PH234

Sample Identification

FDG2-SL-875-SA5A-SB-0.0-0.5
FDG2-SL-875-SA5A-SB-2.0-3.0
FDG2-SL-876-SA5A-SB-0.0-0.5
FDG2-SL-876-SA5A-SB-4.0-5.0
FDG2-SL-1175-SA5A-SB-2.0-3.0
FDG2-SL-877-SA5A-SB-0.0-0.5
FDG2-SL-877-SA5A-SB-3.0-4.0
FDG2-SL-875-SA5A-SB-0.0-0.5(SGCU)
FDG2-SL-875-SA5A-SB-2.0-3.0(SGCU)
FDG2-SL-876-SA5A-SB-0.0-0.5(SGCU)
FDG2-SL-876-SA5A-SB-4.0-5.0(SGCU)
FDG2-SL-1175-SA5A-SB-2.0-3.0(SGCU)
FDG2-SL-877-SA5A-SB-0.0-0.5(SGCU)
FDG2-SL-877-SA5A-SB-3.0-4.0(SGCU)
FDG2-SL-875-SA5A-SB-2.0-3.0MS
FDG2-SL-875-SA5A-SB-2.0-3.0MSD
FDG2-SL-875-SA5A-SB-2.0-3.0(SGCU)MS
FDG2-SL-875-SA5A-SB-2.0-3.0(SGCU)MSD

Samples appended with SGCU underwent Silica Gel Clean Up

Introduction

This data review covers 18 soil samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA SW 846 Method 8015B for Total Petroleum Hydrocarbons (TPH) as Extractables.

This review follows the Quality Assurance Project Plan for Santa Susana Field Laboratory (SSFL), RCRA Facility Investigation, Surficial Media Operable Unit (March 2009, Revision 4) and a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Superfund Organic Methods Data Review (June 2008).

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.

The following are definitions of the data qualifiers:

U Indicates the compound or analyte was analyzed for but not detected.

J Indicates an estimated value.

R Quality control indicates the data is not usable.

NJ Presumptive evidence of presence of the compound at an estimated quantity.

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. Initial Calibration

Initial calibration was performed as required by the method.

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

III. Continuing Calibration

Continuing calibration was performed at required frequencies.

The percent differences (%D) were less than or equal to 20.0% for all compounds.

The percent differences (%D) of the second source calibration standard were less than or equal to 20.0% for all compounds.

IV. Blanks

Method blanks were reviewed for each matrix as applicable. No total petroleum hydrocarbons as extractable contaminants were found in the method blanks.

Sample EB1-061814 (from SDG PH237) was identified as an equipment blank. No total petroleum hydrocarbons as extractable contaminants were found.

Sample FB-052114 (from SDG PH191) was identified as a field blank. No total petroleum hydrocarbons as extractable contaminants were found.

V. Surrogate Recovery

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

Sample	Surrogate	%R (Limits)	Compound	Flag	A or P
PBLK26170	Ortho-Terphenyl	56 (66-123)	All TCL Compounds	J (all detects) UJ (all non-detects)	A

VI. Matrix Spike/Matrix Spike Duplicates/Duplicates

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

Spike ID (Associated Samples)	Compound	MS (%R) (Limits)	MSD (%R) (Limits)	RPD (Limits)	Flag	A or P
FDG2-SL-875-SA5A-SB-2.0-3.0MS/MSD (FDG2-SL-875-SA5A-SB-2.0-3.0)	EFH (C12-C14) EFH (C15-C20)	- 127 (49-123)	126 (49-123) 137 (49-123)	- -	J (all detects) J (all detects)	A
FDG2-SL-875-SA5A-SB-2.0-3.0MS/MSD (FDG2-SL-875-SA5A-SB-2.0-3.0)	EFH (C21-C30)	-71 (49-123)	-43 (49-123)	-	J (all detects) R (all non-detects)	A
FDG2-SL-875-SA5A-SB-2.0-3.0(SGCU)MS/MSD (FDG2-SL-875-SA5A-SB-2.0-3.0(SGCU))	EFH (C21-C30)	-82 (49-123)	-58 (49-123)	-	J (all detects) R (all non-detects)	A

VII. Laboratory Control Samples (LCS)

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

LCS ID	Compound	%R (Limits)	Associated Samples	Flag	A or P
LCS26170	EFH (C8-C11) EFH (C12-C14) EFH (C15-C20) EFH (C21-C30) EFH (C30-C40)	21 (60-115) 22 (76-115) 21 (78-127) 21 (77-127) 15 (44-134)	FDG2-SL-877-SA5A-SB-0.0-0.5(SGCU)	J (all detects) UJ (all non-detects)	P

VIII. Target Compound Identification

All target compound identifications were within validation criteria.

IX. Compound Quantitation

All compound quantitations were within validation criteria.

All compounds reported below the RL were qualified as follows:

Sample	Finding	Flag	A or P
All samples in SDG PH234	All compounds reported below the RL.	J (all detects)	A

X. System Performance

The system performance was acceptable.

XI. Overall Assessment of Data

The overall assessment of data was acceptable.

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

XII. Field Duplicates

Samples FDG2-SL-875-SA5A-SB-2.0-3.0 and FDG2-SL-1175-SA5A-SB-2.0-3.0, samples FDG2-SL-875-SA5A-SB-2.0-3.0(SGCU) and FDG2-SL-1175-SA5A-SB-2.0-3.0(SGCU), and samples FDG2-SL-875-SA5A-SB-2.0-3.0(SGCU)RE and FDG2-SL-1175-SA5A-SB-2.0-3.0(SGCU) were identified as field duplicates. No total petroleum hydrocarbons as extractables were detected in any of the samples with the following exceptions:

Compound	Concentration (mg/Kg)		RPD (Limits)	Flag	A or P
	FDG2-SL-875-SA5A-SB-2.0-3.0	FDG2-SL-1175-SA5A-SB-2.0-3.0			
EFH (C30-C40)	85	36	81 (≤50)	J (all detects)	A
EFH (C21-C30)	33	13	87 (≤50)	J (all detects)	A

Compound	Concentration (mg/Kg)		RPD (Limits)	Flag	A or P
	FDG2-SL-875-SA5A-SB-2.0-3.0(SGCU)	FDG2-SL-1175-SA5A-SB-2.0-3.0(SGCU)			
EFH (C30-C40)	67	14	131 (≤50)	J (all detects)	A
EFH (C21-C30)	26	3.6	151 (≤50)	J (all detects)	A

Santa Susana Field Laboratory
Total Petroleum Hydrocarbons as Extractables - Data Qualification Summary - SDG PH234

SDG	Sample	Compound	Flag	A or P	Reason (Code)
PH234	FDG2-SL-875-SA5A-SB-2.0-3.0	EFH (C12-C14) EFH (C15-C20)	J (all detects) J (all detects)	A	Matrix spike/Matrix spike duplicate (%R) (Q)
PH234	FDG2-SL-875-SA5A-SB-2.0-3.0 FDG2-SL-875-SA5A-SB-2.0-3.0(SGCU)	EFH (C21-C30)	J (all detects) R (all non-detects)	A	Matrix spike/Matrix spike duplicate (%R) (Q)
PH234	FDG2-SL-877-SA5A-SB-0.0-0.5(SGCU)	EFH (C8-C11) EFH (C12-C14) EFH (C15-C20) EFH (C21-C30) EFH (C30-C40)	J (all detects) UJ (all non-detects)	P	Laboratory control samples (%R) (L)
PH234	FDG2-SL-875-SA5A-SB-0.0-0.5 FDG2-SL-875-SA5A-SB-2.0-3.0 FDG2-SL-876-SA5A-SB-0.0-0.5 FDG2-SL-876-SA5A-SB-4.0-5.0 FDG2-SL-1175-SA5A-SB-2.0-3.0 FDG2-SL-877-SA5A-SB-0.0-0.5 FDG2-SL-877-SA5A-SB-3.0-4.0 FDG2-SL-875-SA5A-SB-0.0-0.5(SGCU) FDG2-SL-875-SA5A-SB-2.0-3.0(SGCU) FDG2-SL-876-SA5A-SB-0.0-0.5(SGCU) FDG2-SL-876-SA5A-SB-4.0-5.0(SGCU) FDG2-SL-1175-SA5A-SB-2.0-3.0(SGCU) FDG2-SL-877-SA5A-SB-0.0-0.5(SGCU) FDG2-SL-877-SA5A-SB-3.0-4.0(SGCU)	All compounds reported below the RL.	J (all detects)	A	Compound quantitation (Z)
PH234	FDG2-SL-875-SA5A-SB-2.0-3.0 FDG2-SL-1175-SA5A-SB-2.0-3.0 FDG2-SL-875-SA5A-SB-2.0-3.0(SGCU) FDG2-SL-1175-SA5A-SB-2.0-3.0(SGCU)	EFH (C30-C40) EFH (C21-C30)	J (all detects) J (all detects)	A	Field duplicates (RPD) (FD)

Santa Susana Field Laboratory
Total Petroleum Hydrocarbons as Extractables - Laboratory Blank Data Qualification Summary - SDG PH234

No Sample Data Qualified in this SDG

Santa Susana Field Laboratory
Total Petroleum Hydrocarbons as Extractables - Field Blank Data Qualification Summary - SDG PH234

No Sample Data Qualified in this SDG

LDC #: 32270D8 **VALIDATION COMPLETENESS WORKSHEET** Date: 8-5-14
SDG #: PH234 Level IV Page: 1 of 1
Laboratory: Eurofins Lancaster Laboratories Reviewer: [illegible]
2nd Reviewer: [illegible]

METHOD: GC TPH as Extractables (EPA SW 846 Method 8015B)

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

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 6/16/14
II	Initial calibration	A	≤20
III.	Calibration verification/ICV	A	CCV/ICV ≤20
IV.	Blanks	A	
V	Surrogate recovery	SW	
VI.	Matrix spike/Matrix spike duplicates	SW	
VII.	Laboratory control samples	SW	LCS
VIII.	Target compound identification	A	
IX.	Compound quantitation/RL/~~LOQ/LODs~~	A	
X.	System Performance	A	
XI.	Overall assessment of data	~~A~~ SW	
XII.	Field duplicates	SW	D = 2+5, 9+12, ~~19+10~~
XIII.	Field blanks	ND	EB = EB1-061814(PH237); FB = FB-052114 (PH191)

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: 50; 1

1	FDG2-SL-875-SA5A-SB-0.0-0.5	11	FDG2-SL-876-SA5A-SB-4.0-5.0(SGCU)	21	~~#18 RE~~	31	
2	FDG2-SL-875-SA5A-SB-2.0-3.0	12	FDG2-SL-1175-SA5A-SB-2.0-3.0(SGCU)	22	~~#13 RE~~	32	
3	FDG2-SL-876-SA5A-SB-0.0-0.5	13	FDG2-SL-877-SA5A-SB-0.0-0.5(SGCU)	23		33	
4	FDG2-SL-876-SA5A-SB-4.0-5.0	14	FDG2-SL-877-SA5A-SB-3.0-4.0(SGCU)	24		34	
5	FDG2-SL-1175-SA5A-SB-2.0-3.0	15	FDG2-SL-875-SA5A-SB-2.0-3.0MS	25		35	
6	FDG2-SL-877-SA5A-SB-0.0-0.5	16	FDG2-SL-875-SA5A-SB-2.0-3.0MSD	26		36	
7	FDG2-SL-877-SA5A-SB-3.0-4.0	17	FDG2-SL-875-SA5A-SB-2.0-3.0(SGCU) MS	27	PBLK 25170	37	
8	FDG2-SL-875-SA5A-SB-0.0-0.5(SGCU)	18	FDG2-SL-875-SA5A-SB-2.0-3.0(SGCU) MSD	28	PBLK 27177	38	
9	FDG2-SL-875-SA5A-SB-2.0-3.0(SGCU)	19	~~#9 RE~~	29	PBLK 26170	39	
10	FDG2-SL-876-SA5A-SB-0.0-0.5(SGCU)	20	~~#17 RE~~	30	PBLK 26177	40	

Notes: _____

LDC #: 32270D8

VALIDATION FINDINGS CHECKLIST

Page: 1 of 2
Reviewer: Qm
2nd Reviewer: SM

Method: GC

Validation Area	Yes	No	NA	Findings/Comments
I. Technical holding times				
All technical holding times were met.	✓			
Cooler temperature criteria was met.	✓			
II. Initial calibration				
Did the laboratory perform a 5 point calibration prior to sample analysis?	✓			
Were all percent relative standard deviations (%RSD) ≤ 20%?	✓			
Was a curve fit used for evaluation?			✓	
Did the initial calibration meet the curve fit acceptance criteria of ≥ 0.990?			✓	
Were the RT windows properly established?	✓			
IV. Continuing calibration				
Was a continuing calibration analyzed daily?	✓			
Were all percent differences (%D) ≤ 20%?	✓			
Were all the retention times within the acceptance windows?	✓			
V. Blanks				
Was a method blank associated with every sample in this SDG?	✓			
Was a method blank analyzed for each matrix and concentration?	✓			
Was there contamination in the method blanks? If yes, please see the Blanks validation completeness worksheet.		✓		
VI. Surrogate spikes				
Were all surrogate %R within the QC limits?		✓		
If the percent recovery (%R) for one or more surrogates was out of QC limits, was a reanalysis performed to confirm samples with %R outside of criteria?	✓			
If any %R was less than 10 percent, was a reanalysis performed to confirm %R?			✓	
VII. Matrix spike/Matrix spike duplicates				
Were a matrix spike (MS) and matrix spike duplicate (MSD) analyzed for each matrix in this SDG? If no, indicate which matrix does not have an associated MS/MSD. Soil / Water.	✓			
Was a MS/MSD analyzed every 20 samples of each matrix?	✓			
Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?		✓		
VIII. Laboratory control samples				
Was an LCS analyzed for this SDG?	✓			
Was an LCS analyzed per extraction batch?	✓			
Were the LCS percent recoveries (%R) and relative percent difference (RPD) within the QC limits?		✓		
IX. Regional Quality Assurance and Quality Control				
Were performance evaluation (PE) samples performed?		✓		
Were the performance evaluation (PE) samples within the acceptance limits?			✓	

Validation Area	Yes	No	NA	Findings/Comments
X. Target compound identification				
Were the retention times of reported detects within the RT windows?	✓			
XI. Compound quantitation/CRQLs				
Were compound quantitation and CRQLs adjusted to reflect all sample dilutions and dry weight factors applicable to level IV validation?	✓			
XII. System performance				
System performance was found to be acceptable.	✓			
XIII. Overall assessment of data				
Overall assessment of data was found to be acceptable.	✓			
XIV. Field duplicates				
Field duplicate pairs were identified in this SDG.	✓			
Target compounds were detected in the field duplicates.	✓			
XV. Field blanks				
Field blanks were identified in this SDG.	✓			
Target compounds were detected in the field blanks.		✓		

LDC #: 32270D8

VALIDATION FINDINGS WORKSHEET
Surrogate Recovery

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

METHOD: X **GC** __ **HPLC**

Are surrogates required by the method? Yes X or No____.

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

(Y) N N/A Were surrogates spiked into all samples and blanks?

Y (N) N/A Did all surrogate recoveries (%R) meet the QC limits?

#	Sample ID	Detector/ Column	Surrogate Compound	%R (Limits)	Qualifications Code: S
	PBLK26170	—	H	56 (66-123)	J/UJ/A
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
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				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	

	Surrogate Compound		Surrogate Compound		Surrogate Compound		Surrogate Compound		Surrogate Compound
A	Chlorobenzene (CBZ)	G	Octacosane	M	Benzo(e)Pyrene	S	1-Chloro-3-Nitrobenzene	Y	Tetrachloro-m- xylene
B	4-Bromofluorobenzene (BFB)	(H)	Ortho-Terphenyl	N	Terphenyl-D14	T	3,4-Dinitrotoluene		
C	a,a,a-Trifluorotoluene	I	Fluorobenzene (FBZ)	O	Decachlorobiphenyl (DCB)	U	Tripentyltin		
D	Bromochlorobenene	J	n-Triacontane	P	1-methylnaphthalene	V	Tri-n-propyltin		
E	1,4-Dichlorobutane	K	Hexacosane	Q	Dichlorophenyl Acetic Acid (DCAA)	W	Tributyl Phosphate		
F	1,4-Difluorobenzene (DFB)	L	Bromobenzene	R	4-Nitrophenol	X	Triphenyl Phosphate		

lab noted samples & BLK were Rej.

LDC #: 32270D8

VALIDATION FINDINGS WORKSHEET
Matrix Spike/Matrix Spike Duplicates

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

METHOD: X GC __ HPLC

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

Y N N/A Were a matrix spike (MS) and matrix spike duplicate (MSD) analyzed for each matrix in this SDG?

Y N N/A Was an MS/MSD analyzed every 20 samples for each matrix or whenever a sample extraction was performed?

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

Code: Q

#	MS/MSD ID	Compound	MS %R (Limits)	MSD %R (Limits)	RPD (Limits)	Associated Samples	Qualifications
	15/16	EFH (C_{12}-C_{14})	( )	126 (49-123)	( )	2	Jdets/A
	↓	(C_{15}-C_{20})	127 (49-123)	137 (↓)	( )	↓	Jdets/A
		(C_{21}-C_{30})	-71 (↓)	-43 (↓)	( )		J/R/A
	↓	(C_{30}-C_{40})	-318 (↓)	-264 (↓)	21 (20)	↓	No qual - >4xSA.
			( )	( )	( )		
			( )	( )	( )		
	~~Not Reported~~ 17/18	EFH (C_{21}-C_{30})	~~3~~ (49-123)	~~4~~ (49-123)	( )	~~9~~	~~J/UJ/A~~
	↓	↓ (C_{30}-C_{40})	-67 (↓)	-85 (↓)	( )	↓	J/R/A
			( )	( )	( )		
	~~20/21~~ 17/18	EFH (C_{21}-C_{30})	-82 (49-123)	-58 (49-123)	( )	~~19~~ 9	J/R/A
	↓	↓ (C_{30}-C_{40})	-262 (↓)	-217 (↓)	22 (20)	↓	No qual - >4xSA.
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
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			( )	( )	( )		
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			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		

LDC #: 3227D8

VALIDATION FINDINGS WORKSHEET
Laboratory Control Samples (LCS)

Reviewer: 9n
2nd Reviewer: SM

METHOD: X **GC** __ **HPLC**

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

Y N N/A Were a laboratory control samples (LCS) and laboratory control sample duplicate (LCSD) analyzed for each matrix in this SDG?

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

Level IV/D Only

(Y) N N/A Was an LCS analyzed every 20 samples for each matrix or whenever a sample extraction was performed?

#	LCS/LCSD ID	Compound	LCS %R (Limits)	LCSD %R (Limits)	RPD (Limits)	Associated Samples	Qualifications Code
	LCS26170	EFH (C_8-C_{11})	21 (60-115)	( )	( )	~~9, 13~~ 13 sm	J/UJ/P (L)
		(C_{12}-C_{14})	22 (76-115)	( )	( )	↓	↓ ↓
		(C_{15}-C_{20})	21 (78-127)	( )	( )		
		(C_{21}-C_{30})	21 (77-127)	( )	( )		
		(C_{30}-C_{40})	15 (44-134)	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
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LDC #: 32270D8

VALIDATION FINDINGS WORKSHEET
Field Duplicates

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

METHOD: GC

(Y) N N/A Were field duplicate pairs identified in this SDG?
(Y) N N/A Were target compounds detected in the field duplicate pairs?

Code: FD

Compound	Concentration (mg/kg) 2	Concentration (mg/kg) 5	(≤50) RPD	Qualification (Parent Only)
C_{30}-C_{40}	85	36	81	Jdets/A
C_{21}-C_{30}	33	13	87	↓

Compound	Concentration (mg/kg) 9	Concentration (mg/kg) 12	(≤50) RPD	Qualification (Parent Only)
C_{30}-C_{40}	67	14	131	Jdets/A
C_{21}-C_{30}	26	3.6	151	↓

Compound	Concentration (mg/kg) 19	Concentration (mg/kg) 12	(≤50) RPD	Qualification (Parent Only)
C_{30}-C_{40}	32	14	78	Jdets/A NR
C_{21}-C_{30}	14	3.6	118	↓

Compound	Concentration ( )	Concentration ( )	RPD	Qualification (Parent Only)

LDC #: 32270D8

VALIDATION FINDINGS WORKSHEET
Initial Calibration Calculation Verification

Page: 1 of 1
Reviewer: JM
2nd Reviewer: SM

METHOD: GC X HPLC _____

The calibration factors (CF) and relative standard deviation (%RSD) were recalculated using the following calculations:

CF = A/C
Average CF = sum of the CF/number of standards
%RSD = 100 * (S/X)

Where: A = Area of compound
C = Concentration of compound
S = Standard deviation of calibration factors
X = Mean of calibration factors

#	Standard ID	Calibration Date	Compound	Reported CF (LVL3 std)	Recalculated CF (LVL3 std)	Reported Ave CF (initial)	Recalculated Ave CF (intial)	Reported %RSD	Recalculated %RSD
1	TPHJ125A	5-5-14 → 6/25/14	C8-C40 (A)	21678	21678	23612	23612.6	7	7
			(B)	28643	28643	24315	24315.2	11	11
2									
3									
4									

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

LDC #: 3227008

VALIDATION FINDINGS WORKSHEET
Continuing Calibration Results Verification

Reviewer: JN
2nd Reviewer: SM

METHOD: GC X HPLC _____

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

% Difference = 100 * (ave. CF -CF)/ave.CF

Where: ave. CF = initial calibration average CF
CF = continuing calibration CF
A = Area of compound
C = Concentration of compound

#	Standard ID	Calibration Date	Compound	Average CF(Ical)/ CCV Conc.	Reported CF/ Conc. CCV	Recalculated CF/ Conc. CCV	Reported %D	Recalculated %D
1	J170.0041	6/20/14	C8-C40 (A)	288.01	274.02	274.02	5	5
2	J174.0009	6/23/14	C8-C40 (A)	288.01	281.30	281.30	2	2
3	J175B.0015	6/24/14	C8-C40 (B)	288.01	251.88	251.88	13	13
4	J178.0003	6/27/14	C8-C40 (A)	288.01	264.36	264.36	8	8

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

LDC #: 3227018

VALIDATION FINDINGS WORKSHEET
Continuing Calibration Results Verification

Reviewer: TM
2nd Reviewer: SM

METHOD: GC X HPLC _____

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

% Difference = 100 * (ave. CF -CF)/ave.CF

Where: ave. CF = initial calibration average CF
CF = continuing calibration CF
A = Area of compound
C = Concentration of compound

#	Standard ID	Calibration Date	Compound	Average CF(Ical)/ CCV Conc.	Reported CF/ Conc. CCV	Recalculated CF/ Conc. CCV	Reported %D	Recalculated %D
1	J178.0018	6-28-14	C8-C40 (A)	288.01	318.48	318.47	11	11
2	J178.0023	6-30-14	C8-C40 (A)	288.01	270.88	270.88	6	6
3	J178.0037	6-30-14	C8-C40 (A)	288.01	290.00	290.00	1	0.7
4								

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

LDC #: 3227D28

VALIDATION FINDINGS WORKSHEET
Surrogate Results Verification

Reviewer: Q
2nd reviewer: SM

METHOD: X **GC** __ **HPLC**

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

% Recovery: SF/SS * 100

Where: SF = Surrogate Found
SS = Surrogate Spiked

Sample ID: 1

Surrogate	Column/Detector	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
Chlorobenzene	ZB-5	1.980198	1.7471	88	88	Ø
ortho-terphenyl	"	1.980198	1.7408	88	88	Ø

Sample ID: _____

Surrogate	Column/Detector	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference

Sample ID: _____

Surrogate	Column/Detector	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference

LDC #: 32270D8

VALIDATION FINDINGS WORKSHEET
Matrix Spike/Matrix Spike Duplicates Results Verification

Reviewer: On
2nd Reviewer: SM

METHOD: X **GC** __**HPLC**

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

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

RPD =(({SSCMS - SSCMSD} * 2) / (SSCMS + SSCMSD))*100 MS = Matrix spike MSD = Matrix spike duplicate

MS/MSD samples: 15/16

Compound	Spike Added (mg/Kg)		Sample Conc. (mg/Kg)	Spike Sample Concentration (mg/Kg)		Matrix spike Percent Recovery		Matrix Spike Duplicate Percent Recovery		MS/MSD RPD	
	MS	MSD	---	MS	MSD	Reported	Recalc.	Reported	Recalc.	Reported	Recalc.
Gasoline (8015)											
Diesel (C_{12}-C_{24}) (8015)	4.97	4.97	ND	5.30	6.21	107	107	126	125	16	16

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

LDC #: 32270D8

VALIDATION FINDINGS WORKSHEET

Laboratory Control Sample/Laboratory Control Sample Duplicates Results Verification

Reviewer: QR

2nd Reviewer: SM

METHOD: X GC __HPLC

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

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

RPD =(({SSCLCS - SSCLCSD} * 2) / (SSCLCS + SSCLCSD))*100 LCS = Laboratory Control Sample; LCSD = Laboratory Control Sample duplicate

LCS/LCSD samples: LCS25170

Compound	Spike Added (mg/Kg)		Sample Conc. ( )	Spike Sample Concentration (mg/Kg)		LCS Percent Recovery		LCSD Percent Recovery		LCS/LCSD RPD	
	LCS	LCSD	---	LCS	LCSD	Reported	Recalc.	Reported	Recalc.	Reported	Recalc.
Gasoline (8015)											
Diesel (C_{30}-C_{40}) (8015)	15	NA	NA	9.27	NA	62	62				
LCS26177 (SGCU)											
(C_{30}-C_{40})	15	NA	NA	14.22	NA	95	95				

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

LDC #: 32770DS

VALIDATION FINDINGS WORKSHEET
Sample Calculation Verification

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

METHOD: GC

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

Concentration = $\frac{(A_x)(V_f)(Df)}{(CF)(V_o)(\%S)(V_i)}$

A_x	=	Area of the characteristic ion (EICP) for the compound to be measured
Vi		Injection Volume in microliters (µl)
V_f	=	Final Volume or weight of sample in milliliters (ml) or grams (g).
CF	=	Calibration factor of the calibration standard.
V_o	=	Volume or weight of sample purged in milliliters (ml) or grams (g).
Df	=	Dilution factor.
%S	=	Percent solids, applicable to soils and solid matrices only.

Example:

Sample I.D. 1, C30-C40:

Conc. = $\frac{(41126430)(1)(1)}{(23649)(30.3)(0.992)(1)}$

= 57.857 mg/Kg ≈ 58mg/Kg

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

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: Santa Susana Field Laboratory

Collection Date: June 16, 2014

LDC Report Date: August 15, 2014

Matrix: Soil

Parameters: Dioxins/Dibenzofurans

Validation Level: Level IV

Laboratory: Eurofins

Sample Delivery Group (SDG): PH234

Sample Identification

FDG2-SL-875-SA5A-SB-0.0-0.5
FDG2-SL-875-SA5A-SB-2.0-3.0
FDG2-SL-876-SA5A-SB-4.0-5.0
FDG2-SL-1175-SA5A-SB-2.0-3.0
FDG2-SL-877-SA5A-SB-3.0-4.0
FDG2-SL-875-SA5A-SB-2.0-3.0MS
FDG2-SL-875-SA5A-SB-2.0-3.0MSD

Introduction

This data review covers 7 soil 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 the Quality Assurance Project Plan for Santa Susana Field Laboratory (SSFL), RCRA Facility Investigation, Surficial Media Operable Unit (March 2009, Revision 4) and the USEPA Contract Laboratory Program National Functional Guidelines for Polychlorinated Dioxins/Dibenzofurans Data Review (September 2005).

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.

The following are definitions of the data qualifiers:

U Indicates the compound or analyte was analyzed for but not detected.

J Indicates an estimated value.

R Quality control indicates the data is not usable.

NJ Presumptive evidence of presence of the compound at an estimated quantity.

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. HRGC/HRMS Instrument Performance Check

Instrument performance was checked at the required daily frequency.

The chromatographic resolution between 2,3,7,8-TCDD and the peaks representing any other unlabeled TCDD isomers was resolved with a valley of less than or equal to 25%.

PFK and static resolving power were within validation criteria.

III. Initial Calibration

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

Percent relative standard deviations (%RSD) were less than or equal to 20.0% for 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.

The minimum S/N ratio was greater than or equal to 2.5 for target compounds and 10 for recovery and internal standard compounds.

IV. Continuing Calibration

Continuing calibration was performed at the required frequencies.

All of the continuing calibration percent differences (%D) between the initial calibration RRF and the continuing calibration RRF were within 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
BLK170002	6/19/14	2,3,7,8-TCDD 1,2,3,7,8-PeCDD 1,2,3,6,7,8-HxCDD 1,2,3,7,8,9-HxCDD 1,2,3,4,6,7,8-HpCDD OCDD 1,2,3,7,8-PeCDF 2,3,4,7,8-PeCDF 1,2,3,4,7,8-HxCDF 1,2,3,6,7,8-HxCDF 2,3,4,6,7,8-HxCDF 1,2,3,4,6,7,8-HpCDF 1,2,3,4,7,8,9-HpCDF OCDF	0.0713 ng/Kg 0.0524 ng/Kg 0.0329 ng/Kg 0.0404 ng/Kg 0.0853 ng/Kg 0.231 ng/Kg 0.0517 ng/Kg 0.0235 ng/Kg 0.0457 ng/Kg 0.0297 ng/Kg 0.0358 ng/Kg 0.0561 ng/Kg 0.0335 ng/Kg 0.165 ng/Kg	All samples in SDG PH234

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

Sample	Compound	Reported Concentration	Modified Final Concentration
FDG2-SL-875-SA5A-SB-0.0-0.5	2,3,7,8-TCDD	0.0601 ng/Kg	0.0601U ng/Kg
FDG2-SL-875-SA5A-SB-2.0-3.0	1,2,3,7,8-PeCDD 1,2,3,7,8-PeCDF 1,2,3,4,7,8,9-HpCDF	0.140 ng/Kg 0.251 ng/Kg 0.114 ng/Kg	0.140U ng/Kg 0.251U ng/Kg 0.114U ng/Kg
FDG2-SL-876-SA5A-SB-4.0-5.0	2,3,7,8-TCDD 1,2,3,7,8-PeCDD 1,2,3,7,8-PeCDF 2,3,4,7,8-PeCDF 1,2,3,4,7,8-HxCDF 1,2,3,6,7,8-HxCDF 2,3,4,6,7,8-HxCDF 1,2,3,4,7,8,9-HpCDF	0.0631 ng/Kg 0.157 ng/Kg 0.149 ng/Kg 0.117 ng/Kg 0.134 ng/Kg 0.120 ng/Kg 0.149 ng/Kg 0.123 ng/Kg	0.0631 ng/Kg 0.157U ng/Kg 0.149U ng/Kg 0.117U ng/Kg 0.134U ng/Kg 0.120U ng/Kg 0.149U ng/Kg 0.123U ng/Kg
FDG2-SL-1175-SA5A-SB-2.0-3.0	1,2,3,7,8-PeCDD	0.257 ng/Kg	0.257U ng/Kg
FDG2-SL-877-SA5A-SB-3.0-4.0	1,2,3,7,8-PeCDD 1,2,3,6,7,8-HxCDD 1,2,3,7,8,9-HxCDD 1,2,3,7,8-PeCDF 2,3,4,7,8-PeCDF 1,2,3,4,7,8-HxCDF 1,2,3,6,7,8-HxCDF 2,3,4,6,7,8-HxCDF 1,2,3,4,7,8,9-HpCDF	0.0588 ng/Kg 0.161 ng/Kg 0.144 ng/Kg 0.0428 ng/Kg 0.0261 ng/Kg 0.0813 ng/Kg 0.0336 ng/Kg 0.0452 ng/Kg 0.0376 ng/Kg	0.0588U ng/Kg 0.161U ng/Kg 0.144U ng/Kg 0.0428U ng/Kg 0.0261U ng/Kg 0.0813U ng/Kg 0.0336U ng/Kg 0.0452U ng/Kg 0.0376U ng/Kg

Sample EB1-061814 (from PH237) was identified as an equipment blank. No polychlorinated dioxin/dibenzofuran contaminants were found with the following exceptions:

Blank ID	Sampling Date	Compound	Concentration	Associated Samples
EB1-061814	6/18/14	2,3,7,8-TCDD 1,2,3,6,7,8-HxCDD 1,2,3,7,8,9-HxCDD 1,2,3,4,6,7,8-HpCDD OCDD 2,3,4,7,8-PeCDF 1,2,3,6,7,8-HxCDF 1,2,3,7,8,9-HxCDF 1,2,3,4,6,7,8-HpCDF 1,2,3,4,7,8,9-HpCDF OCDF	0.812 pg/L 2.08 pg/L 1.57 pg/L 29.4 pg/L 157 pg/L 0.761 pg/L 0.613 pg/L 2.78 pg/L 2.52 pg/L 1.08 pg/L 6.09 pg/L	All samples in SDG PH234

Sample FB-052114 (from SDG PH191) was identified as a field blank. No polychlorinated dioxin/dibenzofuran contaminants were found with the following exceptions:

Blank ID	Sampling Date	Compound	Concentration	Associated Samples
FB-052114	5/21/14	1,2,3,4,6,7,8-HpCDD OCDD 1,2,3,7,8-PeCDF 1,2,3,4,7,8-HxCDF 2,3,4,6,7,8-HxCDF 1,2,3,7,8,9-HxCDF 1,2,3,4,6,7,8-HpCDF 1,2,3,4,7,8,9-HpCDF OCDF	1.23 pg/L 6.37 pg/L 0.333 pg/L 0.108 pg/L 0.188 pg/L 0.182 pg/L 0.176 pg/L 0.328 pg/L 0.531 pg/L	All samples in SDG PH234

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

VI. 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 the QC limits with the following exceptions:

Spike ID (Associated Samples)	Compound	MS (%R) (Limits)	MSD (%R) (Limits)	RPD (Limits)	Flag	A or P
FDG2-SL-875-SA5A-SB-2.0-3.0MS/MSD (FDG2-SL-875-SA5A-SB-2.0-3.0)	OCDD	232 (40-135)	210 (40-135)	-	J (all detects)	A

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

All target compound identifications were within validation criteria.

XI. Compound Quantitation

All compound quantitations were within validation criteria.

All compounds reported below the RL were qualified as follows:

Sample	Finding	Flag	A or P
All samples in SDG PH234	All compounds reported below the RL.	J (all detects)	A

XII. System Performance

The system performance was acceptable.

XIII. Overall Assessment of Data

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

XIV. Field Duplicates

Samples FDG2-SL-875-SA5A-SB-2.0-3.0 and FDG2-SL-1175-SA5A-SB-2.0-3.0 were identified as field duplicates. No polychlorinated dioxins/dibenzofurans were detected in any of the samples with the following exceptions:

Compound	Concentration (ng/Kg)		RPD (Limits)	Flag	A or P
	FDG2-SL-875-SA5A-SB-2.0-3.0	FDG2-SL-1175-SA5A-SB-2.0-3.0			
1,2,3,7,8-PeCDD	0.140	0.257	59 (≤50)	J (all detects)	A
1,2,3,4,7,8-HxCDD	0.225	0.590	90 (≤50)	J (all detects)	A
1,2,3,6,7,8-HxCDD	1.31	2.81	73 (≤50)	J (all detects)	A

Compound	Concentration (ng/Kg)		RPD (Limits)	Flag	A or P
	FDG2-SL-875-SA5A-SB-2.0-3.0	FDG2-SL-1175-SA5A-SB-2.0-3.0			
1,2,3,7,8,9-HxCDD	1.19	1.90	41 (≤50)	-	-
1,2,3,4,6,7,8-HpCDD	35.5	104	98 (≤50)	J (all detects)	A
OCDD	980	2800	96 (≤50)	J (all detects)	A
2,3,7,8-TCDF	0.102	0.172	51 (≤50)	J (all detects)	A
1,2,3,7,8-PeCDF	0.251	0.359	35 (≤50)	-	-
2,3,4,7,8-PeCDF	0.162	0.310	63 (≤50)	J (all detects)	A
1,2,3,4,7,8-HxCDF	0.252	0.529	71 (≤50)	J (all detects)	A
1,2,3,6,7,8-HxCDF	0.219	0.290	28 (≤50)	-	-
1,2,3,7,8,9-HxCDF	0.406	0.505	22 (≤50)	-	-
2,3,4,6,7,8-HxCDF	0.304	0.491	47 (≤50)	-	-
1,2,3,4,6,7,8-HpCDF	3.21	8.99	95 (≤50)	J (all detects)	A
1,2,3,4,7,8,9-HpCDF	0.114	0.366	105 (≤50)	J (all detects)	A
OCDF	10.0	32.0	105 (≤50)	J (all detects)	A

Santa Susana Field Laboratory
Dioxins/Dibenzofurans - Data Qualification Summary - SDG PH234

SDG	Sample	Compound	Flag	A or P	Reason (Code)
PH234	FDG2-SL-875-SA5A-SB-2.0-3.0	OCDD	J (all detects)	A	Matrix spike/Matrix spike duplicate (%R) (Q)
PH234	FDG2-SL-875-SA5A-SB-0.0-0.5 FDG2-SL-875-SA5A-SB-2.0-3.0 FDG2-SL-876-SA5A-SB-4.0-5.0 FDG2-SL-1175-SA5A-SB-2.0-3.0 FDG2-SL-877-SA5A-SB-3.0-4.0	All compounds reported below the RL.	J (all detects)	A	Compound quantitation (Z)
PH234	FDG2-SL-875-SA5A-SB-2.0-3.0 FDG2-SL-1175-SA5A-SB-2.0-3.0	1,2,3,7,8-PeCDD 1,2,3,4,7,8-HxCDD 1,2,3,6,7,8-HxCDD 1,2,3,4,6,7,8-HpCDD OCDD 2,3,7,8-TCDF 2,3,4,7,8-PeCDF 1,2,3,4,7,8-HxCDF 1,2,3,4,6,7,8-HpCDF 1,2,3,4,7,8,9-HpCDF OCDF	J (all detects) J (all detects) J (all detects) J (all detects) J (all detects) J (all detects) J (all detects) J (all detects) J (all detects) J (all detects) J (all detects)	A	Field duplicates (RPD) (FD)

Santa Susana Field Laboratory
Dioxins/Dibenzofurans - Laboratory Blank Data Qualification Summary - SDG PH234

SDG	Sample	Compound	Modified Final Concentration	A or P	Code
PH234	FDG2-SL-875-SA5A-SB-0.0-0.5	2,3,7,8-TCDD	0.0601U ng/Kg	A	B
PH234	FDG2-SL-875-SA5A-SB-2.0-3.0	1,2,3,7,8-PeCDD 1,2,3,7,8-PeCDF 1,2,3,4,7,8,9-HpCDF	0.140U ng/Kg 0.251U ng/Kg 0.114U ng/Kg	A	B
PH234	FDG2-SL-876-SA5A-SB-4.0-5.0	2,3,7,8-TCDD 1,2,3,7,8-PeCDD 1,2,3,7,8-PeCDF 2,3,4,7,8-PeCDF 1,2,3,4,7,8-HxCDF 1,2,3,6,7,8-HxCDF 2,3,4,6,7,8-HxCDF 1,2,3,4,7,8,9-HpCDF	0.0631 ng/Kg 0.157U ng/Kg 0.149U ng/Kg 0.117U ng/Kg 0.134U ng/Kg 0.120U ng/Kg 0.149U ng/Kg 0.123U ng/Kg	A	B
PH234	FDG2-SL-1175-SA5A-SB-2.0-3.0	1,2,3,7,8-PeCDD	0.257U ng/Kg	A	B

SDG	Sample	Compound	Modified Final Concentration	A or P	Code
PH234	FDG2-SL-877-SA5A-SB-3.0-4.0	1,2,3,7,8-PeCDD 1,2,3,6,7,8-HxCDD 1,2,3,7,8,9-HxCDD 1,2,3,7,8-PeCDF 2,3,4,7,8-PeCDF 1,2,3,4,7,8-HxCDF 1,2,3,6,7,8-HxCDF 2,3,4,6,7,8-HxCDF 1,2,3,4,7,8,9-HpCDF	0.0588U ng/Kg 0.161U ng/Kg 0.144U ng/Kg 0.0428U ng/Kg 0.0261U ng/Kg 0.0813U ng/Kg 0.0336U ng/Kg 0.0452U ng/Kg 0.0376U ng/Kg	A	B

Santa Susana Field Laboratory
Dioxins/Dibenzofurans - Field Blank Data Qualification Summary - SDG PH234

No Sample Data Qualified in this SDG

LDC #: 32270D21 **VALIDATION COMPLETENESS WORKSHEET** Date: 8-4-14
SDG #: PH234 Level IV Page: 1 of 1
Laboratory: Eurofins Lancaster Laboratories Reviewer: CM
2nd Reviewer: SM

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: 6/16/14
II.	HRGC/HRMS Instrument performance check	A	
III.	Initial calibration	A	≤ 20/35
IV.	Continuing Calibration	A	QC limits
V.	Blanks	SW	
VI.	Matrix spike/Matrix spike duplicates	SW	
VII.	Laboratory control samples	A	OPR
VIII.	Regional quality assurance and quality control	N	
IX.	Internal standards	A	
X.	Target compound identifications	A	
XI.	Compound quantitation/RL/~~LOQ/LODs~~	A	
XII.	System performance	A	
XIII.	Overall assessment of data	A	
XIV.	Field duplicates	SW	D=2+4
XV.	Field blanks	SW	EB=EB1-061814(PH237); FB=FB-052114(PH191)

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

1	FDG2-SL-875-SA5A-SB-0.0-0.5	11		21		31	
2	FDG2-SL-875-SA5A-SB-2.0-3.0	12		22		32	
3	FDG2-SL-876-SA5A-SB-4.0-5.0	13		23		33	
4	FDG2-SL-1175-SA5A-SB-2.0-3.0	14		24		34	
5	FDG2-SL-877-SA5A-SB-3.0-4.0	15		25		35	
6	FDG2-SL-875-SA5A-SB-2.0-3.0MS	16		26		36	
7	FDG2-SL-875-SA5A-SB-2.0-3.0MSD	17		27		37	
8		18		28		38	
9		19		29		39	
10		20	BLK170002	30		40	

Notes: _____

LDC #: 32270D21

VALIDATION FINDINGS CHECKLIST

Page: 1 of 2
Reviewer: QM
2nd Reviewer: SM

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

Validation Area	Yes	No	NA	Findings/Comments
I. Technical holding times				
All technical holding times were met.	✓			
Cooler temperature criteria was met.	✓			
II. GC/MS Instrument performance check				
Was PFK exact mass 380.9760 verified?	✓			
Were the retention time windows established for all homologues?	✓			
Was the chromatographic resolution between 2,3,7,8-TCDD and peaks representing any other unlabeled TCDD isomers ≤ 25% ?	✓			
Is the static resolving power at least 10,000 (10% valley definition)?	✓			
Was the mass resolution adequately check with PFK?	✓			
Was the presence of 1,2,8,9-TCDD and 1,3,4,6,8-PeCDF verified?	✓			
III. Initial calibration				
Was the initial calibration performed at 5 concentration levels?	✓			
Were all percent relative standard deviations (%RSD) ≤ 20% for unlabeled compounds and ≤ 35% for labeled compounds ?	✓			
Did all calibration standards meet the Ion Abundance Ratio criteria?	✓			
Was the signal to noise ratio for each target compound ≥ 2.5 and for each recovery and internal standard ≥ 10?	✓			
IV. Continuing calibration				
Was a routine calibration performed at the beginning and end of each 12 hour period?	✓			
Were all the concentrations for the unlabeled compounds and labeled compounds within the QC limits (Method 1613B, Table 6)?	✓			
Did all routine calibration standards meet the Ion Abundance Ratio criteria?	✓			
V. Blanks				
Was a method blank associated with every sample in this SDG?	✓			
Was a method blank performed for each matrix and concentration?			✓	
Was there contamination in the method blanks? If yes, please see the Blanks validation completeness worksheet?	✓			
VI. Matrix spike/Matrix spike duplicates				
Were a matrix spike (MS) and matrix spike duplicate (MSD) analyzed for each matrix in this SDG? If no, indicate which matrix does not have an associated MS/MSD. Soil / Water.	✓			
Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?		✓		
VII. Laboratory control samples				
Was an LCS analyzed for this SDG?	✓			
Was an LCS analyzed per extraction batch?			✓	
Were the LCS percent recoveries (%R) and relative percent difference (RPD) within the QC limits?	✓			

Validation Area	Yes	No	NA	Findings/Comments
VIII. Regional Quality Assurance and Quality Control				
Were performance evaluation (PE) samples performed?		✓		
Were the performance evaluation (PE) samples within the acceptance limits?			✓	
IX. Internal standards				
Were internal standard recoveries within the 25-150% criteria?	✓			
Was the minimum S/N ratio of all internal standard peaks ≥ 10?	✓			
X. Target compound identification				
For 2,3,7,8 substituted congeners with associated labeled standards, were the retention times of the two quantitation peaks within -1 to 3 sec. of the RT of the labeled standard?	✓			
For 2,3,7,8 substituted congeners without associated labeled standards, were the relative retention times of the two quantitation peaks within 0.005 time units of the RRT measured in the routine calibration?	✓			
For non-2,3,7,8 substituted congeners, were the retention times of the two quantitation peaks within RT established in the performance check solution?	✓			
Did compound spectra contain all characteristic ions listed in the table attached?	✓			
Was the Ion Abundance Ratio for the two quantitation ions within criteria?		✓		
Was the signal to noise ratio for each target compound and labeled standard ≥ 2.5?	✓			
Does the maximum intensity of each specified characteristic ion coincide within ± 2 seconds (includes labeled standards)?	✓			
For PCDF identification, was any signal (S/N ≥ 2.5, at ± seconds RT) detected in the corresponding PCDPE channel?		✓		
Was an acceptable lock mass recorded and monitored?	✓			
XI. Compound quantitation/CRQLs				
Were the correct internal standard (IS), quantitation ion and relative response factor (RRF) used to quantitate the compound?	✓			
Were compound quantitation and CRQLs adjusted to reflect all sample dilutions and dry weight factors applicable to level IV validation?	✓			
XII. System performance				
System performance was found to be acceptable.	✓			
XIII. Overall assessment of data				
Overall assessment of data was found to be acceptable.	✓			
XIV. Field duplicates				
Field duplicate pairs were identified in this SDG.	✓			
Target compounds were detected in the field duplicates.	✓			
XV. Field blanks				
Field blanks were identified in this SDG.	✓			
Target compounds were detected in the field blanks.	✓			

VALIDATION FINDINGS WORKSHEET

METHOD: HRGC/HRMS Dioxins/Dibenzofurans (EPA 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 #: 32270D21

VALIDATION FINDINGS WORKSHEET
Blanks

Reviewer:
2nd Reviewer:

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

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: 06/19/14 **Blank analysis date:** 06/21/14 **Associated samples:** All Qual U

Conc. units: ng/kg

Compound	Blank ID	Sample Identification								
	BLK170002	5x	1	2	3	4	5			
A	0.0713	0.357	0.0601		0.0631*					
B	0.0524	0.262		0.140*	0.157*	0.257*	0.0588*			
D	0.0329	0.165					0.161*			
E	0.0404	0.202					0.144*			
F	0.0853	0.427								
G	0.231	1.16								
I	0.0517	0.259		0.251	0.149		0.0428*			
J	0.0235	0.118			0.117*		0.0261*			
K	0.0457	0.229			0.134*		0.0813*			
L	0.0297	0.149			0.120*		0.0336*			
M	0.0358	0.179			0.149*		0.0452*			
O	0.0561	0.281								
P	0.0335	0.168		0.114	0.123*		0.0376*			
Q	0.165	0.825								

*EMPC

All contaminants within five times the method blank concentration were qualified.

LDC #: 32270D2

VALIDATION FINDINGS WORKSHEET
Field Blanks

Reviewer: 9n
2nd Reviewer: 9m

METHOD: HRGC/HRMS Dioxins/Furans (EPA Method 1613B)

Blank units: pg/L **Associated sample units:** ng/kg
Sampling date: 06/18/14
Field blank type: (circle one) Field Blank / Rinsate / Other: EB Associated Samples: all >5x

Compound	Blank ID	Sample Identification								
	EB1-061814	5X								
A	0.812*	0.00406								
D	2.08	0.01040								
E	1.57	0.00785								
F	29.4	0.14700								
G	157	0.78500								
J	0.761*	0.00381								
L	0.613*	0.00307								
N	2.78*	0.01390								
O	2.52*	0.01260								
P	1.08	0.00540								
Q	6.09	0.03045								

*EMPC

EB1-061814 (PH237)

CIRCLED RESULTS WERE NOT QUALIFIED. ALL RESULTS NOT CIRCLED WERE QUALIFIED BY THE FOLLOWING STATEMENT:
All contaminants within five times the blank concentration were qualified as not detected, "U".

V:\Field Blanks\Dx-EB1-061814.wpd

LDC #: 32070D21

VALIDATION FINDINGS WORKSHEET
Field Blanks

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

METHOD: HRGC/HRMS Dioxins/Furans (EPA Method 1613B)

Blank units: pg/L **Associated sample units:** ng/kg
Sampling date: 05/21/14
Field blank type: (circle one) Field Blank / Rinsate / Other: FB Associated Samples: all >5x

Compound	Blank ID	Sample Identification								
	FB-052114	5X								
F	1.23*	0.00615								
G	6.37*	0.03185								
I	0.333*	0.00167								
K	0.108*	0.00054								
M	0.188*	0.00094								
N	0.182*	0.00091								
O	0.176*	0.00088								
P	0.328*	0.00164								
Q	0.531*	0.00266								

*EMPC

FB-052114 (PH191)

CIRCLED RESULTS WERE NOT QUALIFIED. ALL RESULTS NOT CIRCLED WERE QUALIFIED BY THE FOLLOWING STATEMENT:
All contaminants within five times the blank concentration were qualified as not detected, "U".

V:\Field Blanks\32030A21_FB3-052114.wpd

LDC #: 32270D2|

VALIDATION FINDINGS WORKSHEET
Matrix Spike/Matrix Spike Duplicates

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

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

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

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

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

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

#	Date	MS/MSD ID	Compound	MS %R (Limits)	MSD %R (Limits)	RPD (Limits)	Associated Samples	Qualifications
		6|7	G	232 (40-135)	210 (40-135)	( )	2	Idets/A
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
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				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		

LDC#: 32270D21

VALIDATION FINDINGS WORKSHEET
Field Duplicates

Reviewer:
2nd Reviewer:

Dioxins/Furans (EPA Method 1613B)

Compound	Concentration (ng/kg)		RPD (≤ 50%)	Qualifiers (Parents Only)
	2	4		
B	0.140	0.257	59	J/dets/A (FD)
C	0.225	0.590	90	J/dets/A (FD)
D	1.31	2.81	73	J/dets/A (FD)
E	1.19	1.80	41	--
F	35.5	104	98	J/dets/A (FD)
G	980	2800	96	J/dets/A (FD)
H	0.102	0.172	51	J/dets/A (FD)
I	0.251	0.359	35	--
J	0.162	0.310	63	J/dets/A (FD)
K	0.252	0.529	71	J/dets/A (FD)
L	0.219	0.290	28	--
N	0.406	0.505	22	--
M	0.304	0.491	47	--
O	3.21	8.99	95	J/dets/A (FD)
P	0.114	0.366	105	J/dets/A (FD)
Q	10.0	32.0	105	J/dets/A (FD)

LDC #: 32270D2I

VALIDATION FINDINGS WORKSHEET
Initial Calibration Calculation Verification

Reviewer: [redacted]
2nd Reviewer: _____

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

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

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

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

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

#	Standard ID	Calibration Date	Compound (Reference Internal Standard)	Reported Average RRF (initial)	Recalculated Average RRF (initial)	Reported RRF (CS3 std)	Recalculated RRF (CS3 std)	Reported %RSD	Recalculated %RSD
1	DF19780	3/28/14	2,3,7,8-TCDF (^{13}C-2,3,7,8-TCDF)	1.005	1.005	0.964	0.964	10.23	10.22
			2,3,7,8-TCDD (^{13}C-2,3,7,8-TCDD)	1.151	1.151	1.038	1.037	15.75	15.73
			1,2,3,6,7,8-HxCDD (^{13}C-1,2,3,6,7,8-HxCDD)	0.977	0.977	0.939	0.939	7.84	7.85
			1,2,3,4,6,7,8-HpCDD (^{13}C-1,2,4,6,7,8,-HpCDD)	1.080	1.0805	1.010	1.010	11.00	11.00
			OCDF (^{13}C-OCDF)	0.997	0.997	0.945	0.945	8.27	8.28
2			2,3,7,8-TCDF (^{13}C-2,3,7,8-TCDF)						
			2,3,7,8-TCDD (^{13}C-2,3,7,8-TCDD)						
			1,2,3,6,7,8-HxCDD (^{13}C-1,2,3,6,7,8-HxCDD)						
			1,2,3,4,6,7,8-HpCDD (^{13}C-1,2,4,6,7,8,-HpCDD)						
			OCDF (^{13}C-OCDF)						
3			2,3,7,8-TCDF (^{13}C-2,3,7,8-TCDF)						
			2,3,7,8-TCDD (^{13}C-2,3,7,8-TCDD)						
			1,2,3,6,7,8-HxCDD (^{13}C-1,2,3,6,7,8-HxCDD)						
			1,2,3,4,6,7,8-HpCDD (^{13}C-1,2,4,6,7,8,-HpCDD)						
			OCDF (^{13}C-OCDF)						

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

LDC #: 32270D21

VALIDATION FINDINGS WORKSHEET
Routine Calibration Results Verification

Reviewer: 2nd
2nd Reviewer:

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

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

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

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

#	Standard ID	Calibration Date	Compound (Reference Internal Standard)	Spiked Conc (ng/mL)	Reported Conc (ng/mL)	Recalculated Conc (ng/mL)	Reported %R	Recalculated %R
1	14JUN20-09	6-20-14	2,3,7,8-TCDF (^{13}C-2,3,7,8-TCDF)	10	10.648	10.643	106	106
			2,3,7,8-TCDD (^{13}C-2,3,7,8-TCDD)	10	10.173	10.172	102	102
			1,2,3,6,7,8-HxCDD (^{13}C-1,2,3,6,7,8-HxCDD)	50	52.19	52.20	104	104
			1,2,3,4,6,7,8-HpCDD (^{13}C-1,2,4,6,7,8,-HpCDD)	50	51.61	51.62	103	103
			OCDF (^{13}C-OCDF)	100	100.3	100.3	100	100
2			2,3,7,8-TCDF (^{13}C-2,3,7,8-TCDF)	10				
			2,3,7,8-TCDD (^{13}C-2,3,7,8-TCDD)	10				
			1,2,3,6,7,8-HxCDD (^{13}C-1,2,3,6,7,8-HxCDD)	50				
			1,2,3,4,6,7,8-HpCDD (^{13}C-1,2,4,6,7,8,-HpCDD)	50				
			OCDF (^{13}C-OCDF)	100				
3			2,3,7,8-TCDF (^{13}C-2,3,7,8-TCDF)	10				
			2,3,7,8-TCDD (^{13}C-2,3,7,8-TCDD)	10				
			1,2,3,6,7,8-HxCDD (^{13}C-1,2,3,6,7,8-HxCDD)	50				
			1,2,3,4,6,7,8-HpCDD (^{13}C-1,2,4,6,7,8,-HpCDD)	50				
			OCDF (^{13}C-OCDF)	100				

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

LDC #: 32270D2

VALIDATION FINDINGS WORKSHEET
Matrix Spike/Matrix Spike Duplicates Results Verification

Reviewer: VR
2nd Reviewer: _____

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

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

% Recovery = 100 * (SSR - SR)/SA Where: SSR = Spiked sample result, SR = Sample result
SA = Spike added

RPD = I MSR - MSDR I * 2/(MSR + MSDR) MSR = Matrix spike percent recovery MSDR = Matrix spike duplicate percent recovery

MS/MSD samples: 6|7

Compound	Spike Added (ng/kg)		Sample Concentration (ng/kg)	Spiked Sample Concentration (ng/kg)		Matrix Spike Percent Recovery		Matrix Spike Duplicate Percent Recovery		Reported RPD	Recalculated RPD
	MS	MSD	------	MS	MSD	Reported	Recalc	Reported	Recalc	----	----
2,3,7,8-TCDD	19.8	20.0	ND	19.6	19.2	99	99	96	96	2	2
1,2,3,7,8-PeCDD	99.4	100	0.140	102	104	103	103	104	104	2	2
1,2,3,4,7,8-HxCDD	99.4	100	0.225	101	102	102	102	101	101.5	0	0.9
1,2,3,4,7,8,9-HpCDF	99.4	100	0.114	97.4	99.7	98	98	99	99.6	2	2
OCDF	198	200	10.0	209	214	100	100	102	102	2	2

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

LDC #: 32270D21

VALIDATION FINDINGS WORKSHEET
Laboratory Control Sample Results Verification

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

METHOD: GC/MS Dioxins/Dibenzofurans (EPA Method 1613B)

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

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

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

LCS ID: OPR170002

Compound	Spike Added (ng/Kg)		Spiked Sample Concentration (ng/Kg)		LCS Percent Recovery		LCSD Percent Recovery		LCS/LCSD RPD	
	LCS	LCSD	LCS	LCSD	Reported	Recalc	Reported	Recalc	Reported	Recalculated
2,3,7,8-TCDD	20.0	NA	19.1	NA	96	96				
1,2,3,7,8-PeCDD	100		99.3		99	99				
1,2,3,4,7,8-HxCDD	100		100.8		101	101				
1,2,3,4,7,8,9-HpCDF	100		98.6		99	99				
OCDF	200		197		98	98				

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

LDC #: 32270D21

VALIDATION FINDINGS WORKSHEET
Sample Calculation Verification

Page: 1 of 1
Reviewer: QM
2nd reviewer: _____

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

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

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

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

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

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

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

RRF = Relative Response Factor (average) from the initial calibration

Df = Dilution Factor.

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

Example:

Sample I.D. 1 , G :

$$\text{Conc.} = \frac{(1531135)(4000)(1)}{(824826 + 740080)(1.1166)(10.11)(.992)} = 737 \text{ ng/Kg}$$

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

Data Validation Report
Santa Susana Field Laboratory

Go Backs, Subgroup FDG Block 2

SDG: PH235

Prepared for

CDM Smith
555 17th Street, Suite 1100
Denver, CO 80202

Prepared by

Laboratory Data Consultants, Inc.
2701 Loker Ave West, Suite 220
Carlsbad, California 92010

August 23, 2014

INTRODUCTION

This Data Validation Report (DVR) presents Level III data validation results for samples collected on June 17, 2014. Data validation was performed in accordance with the Quality Assurance Project Plan (QAPP) for Santa Susana Field Laboratory (SSFL), RCRA Facility Investigation, Surficial Media Operable Unit (March 2009, Revision 4) and a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines (CLPNFGs) for Superfund Organic Methods Data Review (June 2008) and for Inorganic Data Review (January 2010). Where specific guidance is not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following methods:

Semivolatiles (SVOCs) by Environmental Protection Agency (EPA) SW 846 Method 8270D utilizing Selective Ion Monitoring (SIM)
Polychlorinated Biphenyls (PCBs) by EPA SW 846 Method 8082A
Metals by EPA SW 846 Method 6010C, 6020A, and 7471B.
Total Petroleum Hydrocarbons (TPH) as Gasoline by EPA SW 846 Method 8015M
TPH as Extractables with and without Silica Gel Clean Up by EPA SW 846 Method 8015M

The sample identification and methods of analyses performed on each sample is presented in Attachment 1. Please note that field sample IDs have been truncated due to database limitations. Overall data qualification summary is presented in Attachment 2. Level III Automated Data Review outliers are presented in Enclosure I.

All sample results were subjected to Level III data validation, which comprises an evaluation of quality control (QC) summary results for sample holding times, initial and continuing calibration blanks (ICB/CCBs), surrogates, matrix spike/matrix spike duplicates (MS/MSD), laboratory duplicates (DUP), laboratory control sample/laboratory control sample duplicates (LCS/LCSD), ICP serial dilutions, method blanks, trip blanks, equipment blanks, and field blanks. No samples in this SDG were subjected to Level IV evaluation.

Automated data review was performed on all QC summary results using the Automated Data Review (ADR) software program (LDC, 2013) with the exception of ICB/CCBs and ICP serial dilutions which were validated manually. Quality assurance (QA)/QC criteria specified in the QAPP and CLPNFGs were incorporated with the program's reference library to assess compliance with project requirements.

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.

NJ Presumptive evidence of presence of the compound at an estimated quantity.

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

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 QC criteria.

II. Initial Calibration

Initial Calibration data were not reviewed for level III.

III. Continuing Calibration

Continuing calibration data were not reviewed for level III.

IV. Blanks

Method blanks were performed at the required frequencies. No contaminant concentrations were detected in the method or preparation blanks with the exception of one blanks for several metals. The associated sample results were qualified as non-detected (U) due to method blank contamination as applicable. The sample results that were not detected or were significantly greater than the concentrations found in the associated blanks were not qualified. The details regarding the qualification of data are provided in Enclosure I.

No contaminant concentrations were detected in the initial or continuing calibration blanks

V. Surrogate Spikes

Surrogate percent recoveries (%R) were within QC limits.

VI. ICP Interference Check Sample (ICS) Analysis

ICP interference check data were not reviewed for level III.

VII. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) samples were performed at the required frequency. Percent recoveries (%R) and relative percent differences (RPD) were within QC limits with the exception of one MS/MSD pair for SVOCs, TPH as extractables with and without silica gel clean up, and metals. The associated sample results were qualified as detected estimated (J) or non-detected estimated (UJ) as applicable. The details regarding the qualification of data are provided in Enclosure I.

VIII. Laboratory Duplicates Sample

Laboratory duplicates (DUP) sample analyses were reviewed for each matrix as applicable. Results were within QC limits with the exception of one DUP for metals. The associated sample results were qualified as detected estimated (J) or non-detected estimated (UJ) as applicable. The details regarding the qualification of data are provided in Enclosure I.

IV. Laboratory Control Samples (LCS)

Laboratory control samples were reviewed for each matrix as applicable. Percent recoveries (%R) and relative percent differences (RPD) were within QC limits with the exception of one LCS samples for TPH as extractables with silica gel clean up. The associated sample results were qualified as detected estimated (J) or non-detected estimated (UJ) as applicable. The details regarding the qualification of data are provided in Enclosure I.

X. Internal Standards

Internal standards were not reviewed for Level III.

XI. ICP Serial Dilution

ICP serial dilution analysis was performed by the laboratory. The analysis criteria were met.

XII. Compound Quantitation

The laboratory reporting limits were evaluated. All laboratory reporting limits met the specified requirements.

All compounds reported below the RL as detected were qualified as follows:

Sample	Finding	Flag	A or P
All samples in SDG PH235	All compounds reported as detected below the RL.	J (all detects)	A

XIII. Field Duplicate Samples

No field duplicates were identified in this SDG.

XIV. Field Blank Samples

One trip blank was collected and analyzed for TPH as gasoline. No contaminant concentrations were found in the trip blank.

One equipment blank (from SDG PH237) was collected and analyzed for SVOCs, PCBs, metals, TPH as gasoline, and TPH as extractables with and without silica gel clean up. The equipment blanks had detections for SVOCs and metals. The associated sample results were qualified as non-detected (U) due to equipment blank contamination as applicable. The sample results that were not detected or were significantly greater than the concentrations found in the equipment blanks were not qualified. The equipment blank outlier reports are presented in Enclosure I.

One field blank (from SDG PH191) was collected and analyzed for SVOCs, PCBs, metals, TPH as gasoline and TPH as extractables with and without silica gel clean up. The field blank had detections for SVOCs and metals. The associated sample results were qualified as non-detected (U) due to field blank contamination as applicable. The sample results that were not detected or were significantly greater than the concentrations found in the field blank were not qualified. The field blank outlier reports are presented in Enclosure I.

XV. Overall Assessment of Data

The overall assessment of QA/QC data review by automated and manual validation of this sampling event met project requirements and analytical completeness levels with the exceptions noted in the above sections. The remainder of the data are deemed useable for the intended use.

Data flags are summarized and are presented as Attachment 2.

Attachment 1

Sample Cross Reference