LDC #: 3196488

VALIDATION FINDINGS CHECKLIST

Reviewer: BR
2nd Reviewer:

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 #: 31964B8

VALIDATION FINDINGS WORKSHEET
Initial Calibration Calculation Verification

Reviewer: BR
2nd Reviewer:

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 #: 31964B8

VALIDATION FINDINGS WORKSHEET
Continuing Calibration Calculation Verification

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

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_3PI	5/14/2014 17:25	C8-C40	288.01	319.44	319.44	11	11
2	TPH_3QF	5/19/2014 21:05	C8-C40	288.01	275.55	275.55	4	4
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 #: 31964B8

VALIDATION FINDINGS WORKSHEET
Surrogate Results Verification

Reviewer:
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	ZB-5	0.011742	0.00794	68	68	0
ortho-terphenyl	↓	↓	0.010069	86	86	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 #: 39648B

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|D 17133

Compound	Spike Added (mg/L)		Spike Sample Concentration (mg/L)		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)										
EFH (C8-C11)	0.151	0.151	0.1109	0.1607	73	73	47	67	10	9.6

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 #: 3196488

VALIDATION FINDINGS WORKSHEET
Sample Calculation Verification

Reviewer: BR
2nd Reviewer:

METHOD: ✓ GC ___ HPLC

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

Concentration= $\frac{(A)(Fv)(Df)}{(RF)(Vs \text{ or } Ws)(\%S/100)}$

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

Example:

Sample ID. AU Compound Name ND

LCS17133 : EFH C12-C14 = 0.13 mg/L

Concentration = $\frac{(3167941)}{(24315)(1000)}$

$= 0.130287518$ mg/L

#	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: May 8, 2014

LDC Report Date: June 26, 2014

Matrix: Soil/Water

Parameters: Dioxins/Dibenzofurans

Validation Level: Level IV

Laboratory: Eurofins Lancaster Laboratories

Sample Delivery Group (SDG): PH173

Sample Identification

EB-050814
FDG-SL-511-SA5C-SB-0.0-0.5
FDG-SL-511-SA5C-SB-2.0-3.0
FDG-SL-749-SA5C-SB-0.0-0.5
FDG-SL-1049-SA5C-SB-0.0-0.5
FDG-SL-749-SA5C-SB-0.0-0.5MS
FDG-SL-749-SA5C-SB-0.0-0.5MSD

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 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%.

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 10 for each unlabeled compound and labeled compound.

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
BLK133003	5/13/14	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 1,2,3,7,8,9-HxCDF 1,2,3,4,6,7,8-HpCDF 1,2,3,4,7,8,9-HpCDF OCDF	0.535 pg/L 1.07 pg/L 0.438 pg/L 0.173 pg/L 0.329 pg/L 0.278 pg/L 0.306 pg/L 0.256 pg/L 0.404 pg/L 1.22 pg/L	All water samples in SDG PH173
BLK134003	5/14/14	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 1,2,3,7,8,9-HxCDF 1,2,3,4,6,7,8-HpCDF 1,2,3,4,7,8,9-HpCDF OCDF	0.0966 ng/Kg 0.0398 ng/Kg 0.0254 ng/Kg 0.0340 ng/Kg 0.0539 ng/Kg 0.208 ng/Kg 0.0374 ng/Kg 0.0307 ng/Kg 0.0835 ng/Kg 0.0286 ng/Kg 0.0418 ng/Kg 0.129 ng/Kg	All soil samples in SDG PH173

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
EB-050814	1,2,3,4,6,7,8-HpCDD OCDD 1,2,3,7,8-PeCDF 1,2,3,4,7,8-HxCDF 1,2,3,6,7,8-HxCDF 1,2,3,4,6,7,8-HpCDF 1,2,3,4,7,8,9-HpCDF OCDF	0.216 pg/L 1.06 pg/L 0.312 pg/L 0.131 pg/L 0.146 pg/L 0.224 pg/L 0.205 pg/L 0.824 pg/L	0.216U pg/L 1.06U pg/L 0.312U pg/L 0.131U pg/L 0.146U pg/L 0.224U pg/L 0.205U pg/L 0.824U pg/L
FDG-SL-511-SA5C-SB-2.0-3.0	2,3,7,8-TCDD	0.353 ng/Kg	0.353U ng/Kg
FDG-SL-749-SA5C-SB-0.0-0.5	2,3,7,8-TCDD 1,2,3,7,8,9-HxCDF	0.176 ng/Kg 0.322 ng/Kg	0.176U ng/Kg 0.322U ng/Kg
FDG-SL-1049-SA5C-SB-0.0-0.5	1,2,3,7,8-PeCDD 1,2,3,7,8-PeCDF 1,2,3,7,8,9-HxCDF	0.131 ng/Kg 0.0849 ng/Kg 0.138 ng/Kg	0.131U ng/Kg 0.0849U ng/Kg 0.138U ng/Kg

Sample EB-050814 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
EB-050814	5/8/14	1,2,3,4,7,8-HxCDD 1,2,3,4,6,7,8-HpCDD OCDD 1,2,3,7,8-PeCDF 1,2,3,4,7,8-HxCDF 1,2,3,6,7,8-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	0.146 pg/L 0.216 pg/L 1.06 pg/L 0.312 pg/L 0.131 pg/L 0.146 pg/L 0.114 pg/L 0.224 pg/L 0.205 pg/L 0.824 pg/L	All soil samples in SDG PH173

Sample FB-051314 (from SDG PH176) 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-051314	5/13/14	1,2,3,7,8-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-HpCDD 1,2,3,4,6,7,8-HpCDF 1,2,3,4,7,8,9-HpCDF OCDD OCDF	0.272 pg/L 0.195 pg/L 0.163 pg/L 0.0816 pg/L 0.611 pg/L 0.265 pg/L 0.160 pg/L 4.37 pg/L 0.794 pg/L	All soil samples in SDG PH173

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 QC limits with the following exceptions:

Spike ID (Associated Samples)	Compound	MS (%R) (Limits)	MSD (%R) (Limits)	RPD (Limits)	Flag	A or P
FDG-SL-749-SA5C-SB-0.0-0.5MS/MSD (FDG-SL-749-SA5C-SB-0.0-0.5)	1,2,3,4,6,7,8-HpCDF OCDF	- -	142 (40-135) 153 (40-135)	30 (≤20) 31 (≤20)	J (all detects) 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 and recovery 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 with the following exceptions:

Sample	Compound	Compound	Flag	A or P
FDG-SL-511-SA5C-SB-0.0-0.5	1,2,3,4,6,7,8-HpCDD OCDD	Results were flagged "E" by the laboratory to indicate that the results exceeded the calibration range.	J (all detects) J (all detects)	P
FDG-SL-511-SA5C-SB-2.0-3.0	OCDD	Results were flagged "E" by the laboratory to indicate that the results exceeded the calibration range.	J (all detects)	P

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 FDG-SL-749-SA5C-SB-0.0-0.5 and FDG-SL-1049-SA5C-SB-0.0-0.5 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
	FDG-SL-749-SA5C-SB-0.0-0.5	FDG-SL-1049-SA5C-SB-0.0-0.5			
2,3,7,8-TCDD	0.176	1.04U	200 (≤50)	J (all detects) UJ (all non-detects)	A
1,2,3,7,8-PeCDD	1.87	0.131	174 (≤50)	J (all detects)	A

Compound	Concentration (ng/Kg)		RPD (Limits)	Flag	A or P
	FDG-SL-749-SA5C-SB-0.0-0.5	FDG-SL-1049-SA5C-SB-0.0-0.5			
1,2,3,4,7,8-HxCDD	3.04	0.202	175 (≤50)	J (all detects)	A
1,2,3,6,7,8-HxCDD	22.1	0.758	187 (≤50)	J (all detects)	A
1,2,3,7,8,9-HxCDD	8.42	0.567	175 (≤50)	J (all detects)	A
1,2,3,4,6,7,8-HpCDD	572	24.2	184 (≤50)	J (all detects)	A
OCDD	3460	161	182 (≤50)	J (all detects)	A
2,3,7,8-TCDF	0.150	1.04U	200 (≤50)	J (all detects) UJ (all non-detects)	A
1,2,3,7,8-PeCDF	0.388	0.0849	128 (≤50)	J (all detects)	A
2,3,4,7,8-PeCDF	0.460	0.241	62 (≤50)	J (all detects)	A
1,2,3,4,7,8-HxCDF	0.945	0.133	151 (≤50)	J (all detects)	A
1,2,3,6,7,8-HxCDF	1.11	0.272	121 (≤50)	J (all detects)	A
2,3,4,6,7,8-HxCDF	1.84	0.363	134 (≤50)	J (all detects)	A
1,2,3,7,8,9-HxCDF	0.322	0.138	80 (≤50)	J (all detects)	A
1,2,3,4,6,7,8-HpCDF	29.6	2.75	166 (≤50)	J (all detects)	A
1,2,3,4,7,8,9-HpCDF	2.47	0.483	135 (≤50)	J (all detects)	A
OCDF	66.6	6.53	164 (≤50)	J (all detects)	A

Santa Susana Field Laboratory
Dioxins/Dibenzofurans - Data Qualification Summary - SDG PH173

SDG	Sample	Compound	Flag	A or P	Reason (Code)
PH173	FDG-SL-749-SA5C-SB-0.0-0.5	1,2,3,4,6,7,8-HpCDF OCDF	J (all detects) J (all detects)	A	Matrix spike/Matrix spike duplicate (%R)(RPD) (Q)
PH173	FDG-SL-511-SA5C-SB-0.0-0.5	1,2,3,4,6,7,8-HpCDD OCDD	J (all detects) J (all detects)	P	Compound quantitation (exceeded range) (*XI)
PH173	FDG-SL-511-SA5C-SB-2.0-3.0	OCDD	J (all detects)	P	Compound quantitation (exceeded range) (*XI)
PH173	FDG-SL-749-SA5C-SB-0.0-0.5 FDG-SL-1049-SA5C-SB-0.0-0.5	2,3,7,8-TCDD 2,3,7,8-TCDF	J (all detects) UJ (all non-detects) J (all detects) UJ (all non-detects)		Field duplicates (RPD) (FD)
PH173	FDG-SL-749-SA5C-SB-0.0-0.5 FDG-SL-1049-SA5C-SB-0.0-0.5	1,2,3,7,8-PeCDD 1,2,3,4,7,8-HxCDD 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 1,2,3,7,8,9-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) J (all detects) J (all detects) J (all detects) J (all detects)		Field duplicates (RPD) (FD)

Santa Susana Field Laboratory
Dioxins/Dibenzofurans - Laboratory Blank Data Qualification Summary - SDG PH173

SDG	Sample	Compound	Modified Final Concentration	A or P	Code
PH173	EB-050814	1,2,3,4,6,7,8-HpCDD OCDD 1,2,3,7,8-PeCDF 1,2,3,4,7,8-HxCDF 1,2,3,6,7,8-HxCDF 1,2,3,4,6,7,8-HpCDF 1,2,3,4,7,8,9-HpCDF OCDF	0.216U pg/L 1.06U pg/L 0.312U pg/L 0.131U pg/L 0.146U pg/L 0.224U pg/L 0.205U pg/L 0.824U pg/L	A	B
PH173	FDG-SL-511-SA5C-SB-2.0-3.0	2,3,7,8-TCDD	0.353U ng/Kg	A	B
PH173	FDG-SL-749-SA5C-SB-0.0-0.5	2,3,7,8-TCDD 1,2,3,7,8,9-HxCDF	0.176U ng/Kg 0.322U ng/Kg	A	B

SDG	Sample	Compound	Modified Final Concentration	A or P	Code
PH173	FDG-SL-1049-SA5C-SB-0.0-0.5	1,2,3,7,8-PeCDD 1,2,3,7,8-PeCDF 1,2,3,7,8,9-HxCDF	0.131U ng/Kg 0.0849U ng/Kg 0.138U ng/Kg	A	B

Santa Susana Field Laboratory
Dioxins/Dibenzofurans - Field Blank Data Qualification Summary - SDG PH173

No Sample Data Qualified in this SDG

LDC #: 31964B21 **VALIDATION COMPLETENESS WORKSHEET** Date: 6-18-14
SDG #: PH173 Level IV Page: 1 of 1
Laboratory: Eurofins Lancaster Laboratories Reviewer: 9m
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: 5/8/14
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~~	SW	
XII.	System performance	A	
XIII.	Overall assessment of data	A	
XIV.	Field duplicates	SW	D = 4+5
XV.	Field blanks	SW	EB=1, FB= FB-051314 (PH176)

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	EB-050814 W	11		21		31	
2 2	FDG-SL-511-SA5C-SB-0.0-0.5 S	12		22		32	
3 2	FDG-SL-511-SA5C-SB-2.0-3.0 S	13		23		33	
4 2	FDG-SL-749-SA5C-SB-0.0-0.5 S	14		24		34	
5 2	FDG-SL-1049-SA5C-SB-0.0-0.5 S	15		25		35	
6 2	FDG-SL-749-SA5C-SB-0.0-0.5MS S	16		26		36	
7 2	FDG-SL-749-SA5C-SB-0.0-0.5MSD S	17		27		37	
8		18		28		38	
9		19	BLK 133003	29		39	
10		20 2	BLK 134003	30		40	

Notes: _____

LDC #: 31964B21

VALIDATION FINDINGS CHECKLIST

Reviewer: 9m
2nd Reviewer: 9m

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 #: 31964B21

VALIDATION FINDINGS WORKSHEET
Blanks

Reviewer: MK
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: 05/13/14 **Blank analysis date:** 05/15/14 **Associated samples:** All waters Qual U (B)

Conc. units: pg/L

Compound	Blank ID	Sample Identification								
	BLK133003	5x	1							
F	0.535*	2.68	0.216*							
G	1.07	5.35	1.06*							
I	0.438*	2.19	0.312*							
J	0.173*	0.865								
K	0.329*	1.65	0.131*							
L	0.278*	1.39	0.146*							
N	0.306*	1.53								
O	0.256*	1.28	0.224							
P	0.404*	2.02	0.205							
Q	1.22	6.10	0.824							

*EMPC

VALIDATION FINDINGS WORKSHEET
Blanks

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: 05/14/14 **Blank analysis date:** 05/15/14 **Associated samples:** All soils Qual U (B)

Conc. units: ng/kg

Compound	Blank ID	Sample Identification								
	BLK134003	5x	3	4	5					
A	0.0966*	0.483	0.353*	0.176						
B	0.0398	0.199			0.131					
D	0.0254*	0.127								
E	0.0340*	0.170								
F	0.0539*	0.270								
G	0.208	1.04								
I	0.0374*	0.187			0.0849*					
J	0.0307	0.154								
N	0.0835*	0.418		0.322*	0.138*					
O	0.0286	0.143								
P	0.0418	0.209								
Q	0.129*	0.645								

*EMPC

LDC #: 31964B21

VALIDATION FINDINGS WORKSHEET
Field Blanks

Reviewer:
2nd Reviewer:

METHOD: HRGC/HRMS Dioxins/Furans (EPA Method 1613B)

Blank units: pg/L **Associated sample units:** ng/kg
Sampling date: 05/08/14
Field blank type: (circle one) Field Blank / Rinsate / Other: EB Associated Samples: All soils >5x

Compound	Blank ID	Sample Identification								
	1	5X								
C	0.146*	0.00073								
F	0.216*	0.00108								
G	1.06*	0.00530								
I	0.312*	0.00156								
K	0.131*	0.00066								
L	0.146*	0.00073								
M	0.114*	0.00057								
O	0.224	0.00112								
P	0.205	0.00103								
Q	0.824	0.00412								

*EMPC

EB-050814 (PH173)

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\31964B21_EB-050814.wpd

LDC #: 31964B21

VALIDATION FINDINGS WORKSHEET
Field Blanks

Reviewer:
2nd Reviewer:

METHOD: HRGC/HRMS Dioxins/Furans (EPA Method 1613B)

Blank units: pg/L **Associated sample units:** ng/kg
Sampling date: 05/13/14
Field blank type: (circle one) Field Blank / Rinsate / Other: FB Associated Samples: All soils >5x

Compound	Blank ID	Sample Identification								
	FB-051314	5X								
I	0.272	0.00136								
K	0.195	0.00098								
L	0.163	0.00082								
M	0.0816	0.00041								
F	0.611	0.00306								
O	0.265	0.00133								
P	0.160	0.00080								
G	4.37	0.02185								
Q	0.794	0.00397								

*EMPC

FB-051314 (PH17)

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\31964B21_FB-051314.wpd

LDC #: 31964B21

VALIDATION FINDINGS WORKSHEET
Matrix Spike/Matrix Spike Duplicates

Reviewer: ON
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 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	O	( )	142 (40-135)	30 (20)	4	Jdets/A (Q)
		↓	Q	( )	153 ( )	31 ( )	↓	↓
			F	429 (40-135)	656 ( )	21 ( )		NOqual-54x
		↓	G	255 (↓)	1840 (↓)	58 (↓)	↓	↓
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
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				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		

LDC #: 31964B21

VALIDATION FINDINGS WORKSHEET
Compound Quantitation and Reported CRQLs

Reviewer: 9m
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 the correct internal standard (IS), quantitation ions and relative response factors (RRF) used to quantitate the compound?
Y N N/A Compound quantitation and CRQLs were adjusted to reflect all sample dilutions and dry weight factors (if necessary).

#	Date	Compound	Finding	Associated Samples	Qualifications
		F, G	Results flagged "E" exceed upper calibration limit	2	Jdets/P (*XI)
		G	Results flagged "E" exceed upper calibration limit	3	Jdets/P (*XI)

Comments: See sample calculation verification worksheet for recalculations

LDC#: 31964B21

VALIDATION FINDINGS WORKSHEET
Field Duplicates

Reviewer:
2nd Reviewer:

Dioxins/Furans (EPA Method 1613B)

	Concentration (ng/kg)		RPD (≤ 50%)	Qualifiers (Parents Only)
	4	5		
A	0.176	1.04U	200	J/UJ/A (FD)
B	1.87	0.131	174	Jdets/A (FD)
C	3.04	0.202	175	Jdets/A (FD)
D	22.1	0.758	187	Jdets/A (FD)
E	8.42	0.567	175	Jdets/A (FD)
F	572	24.2	184	Jdets/A (FD)
G	3460	161	182	Jdets/A (FD)
H	0.150	1.04U	200	J/UJ/A (FD)
I	0.388	0.0849	128	Jdets/A (FD)
J	0.460	0.241	62	Jdets/A (FD)
K	0.945	0.133	151	Jdets/A (FD)
L	1.11	0.272	121	Jdets/A (FD)
M	1.84	0.363	134	Jdets/A (FD)
N	0.322	0.138	80	Jdets/A (FD)
O	29.6	2.75	166	Jdets/A (FD)
P	2.47	0.483	135	Jdets/A (FD)
Q	66.6	6.53	164	Jdets/A (FD)

LDC #: 31964B21

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	DF17280	5-6-14	2,3,7,8-TCDF (^{13}C-2,3,7,8-TCDF)	1.125	1.125	1.090	1.090	9.97	9.97
	ICAL		2,3,7,8-TCDD (^{13}C-2,3,7,8-TCDD)	1.212	1.212	1.200	1.200	6.84	6.85
			1,2,3,6,7,8-HxCDD (^{13}C-1,2,3,6,7,8-HxCDD)	1.056	1.0565	1.028	1.028	9.26	9.24
			1,2,3,4,6,7,8-HpCDD (^{13}C-1,2,4,6,7,8,-HpCDD)	1.122	1.122	1.101	1.101	6.60	6.58
			OCDF (^{13}C-OCDF)	0.984	0.9835	0.954	0.954	7.35	7.36
2	DF18471	2-20-14	2,3,7,8-TCDF (^{13}C-2,3,7,8-TCDF)	1.065	1.065	1.019	1.019	7.84	7.85
	ICAL		2,3,7,8-TCDD (^{13}C-2,3,7,8-TCDD)	1.228	1.2275	1.118	1.118	15.69	15.68
			1,2,3,6,7,8-HxCDD (^{13}C-1,2,3,6,7,8-HxCDD)	1.031	1.031	1.005	1.004	8.99	8.98
			1,2,3,4,6,7,8-HpCDD (^{13}C-1,2,4,6,7,8,-HpCDD)	1.136	1.136	1.086	1.086	8.81	8.78
			OCDF (^{13}C-OCDF)	0.986	0.986	0.960	0.960	5.85	5.86
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 #: 31964B21

VALIDATION FINDINGS WORKSHEET
Routine Calibration Results Verification

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

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	CS3CC03 (14MAY14-14)	5-15-14	2,3,7,8-TCDF (^{13}C-2,3,7,8-TCDF)	10	9.655	9.654	97	97
			2,3,7,8-TCDD (^{13}C-2,3,7,8-TCDD)	10	10.229	10.229	102	102
			1,2,3,6,7,8-HxCDD (^{13}C-1,2,3,6,7,8-HxCDD)	50	48.747	48.764	97	97.5
			1,2,3,4,6,7,8-HpCDD (^{13}C-1,2,4,6,7,8,-HpCDD)	50	49.463	49.457	99	99
			OCDF (^{13}C-OCDF)	100	97.701	97.653	98	98
2	CS3CC02 (14MAY15-08)	5-15-14	2,3,7,8-TCDF (^{13}C-2,3,7,8-TCDF)	10	9.441	9.439	94	94
			2,3,7,8-TCDD (^{13}C-2,3,7,8-TCDD)	10	9.120	9.116	91	91
			1,2,3,6,7,8-HxCDD (^{13}C-1,2,3,6,7,8-HxCDD)	50	45.543	45.556	91	91
			1,2,3,4,6,7,8-HpCDD (^{13}C-1,2,4,6,7,8,-HpCDD)	50	46.357	46.341	93	93
			OCDF (^{13}C-OCDF)	100	94.709	94.733	95	95
3	CS3CC03 (14MAY15-22)	5-16-14	2,3,7,8-TCDF (^{13}C-2,3,7,8-TCDF)	10	9.741	9.739	97	97
			2,3,7,8-TCDD (^{13}C-2,3,7,8-TCDD)	10	9.040	9.037	90	90
			1,2,3,6,7,8-HxCDD (^{13}C-1,2,3,6,7,8-HxCDD)	50	47.482	47.496	95	95
			1,2,3,4,6,7,8-HpCDD (^{13}C-1,2,4,6,7,8,-HpCDD)	50	46.756	46.740	94	93.5
			OCDF (^{13}C-OCDF)	100	94.863	94.887	95	95

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 #: 31964B21

VALIDATION FINDINGS WORKSHEET
Matrix Spike/Matrix Spike Duplicates Results Verification

Reviewer: SR
2nd Reviewer: SR

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 = | MSR - MSDR | * 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	20.6	20.8	0.176	18.6	18.4	89	89	88	88	1	1
1,2,3,7,8-PeCDD	103	104	1.87	95.4	99.7	91	91	94	94	4	4
1,2,3,4,7,8-HxCDD	103	104	3.04	102	105	96	96	98	98	3	3
1,2,3,4,7,8,9-HpCDF	103	104	2.47	98.3	99.5	93	93	93	93	1	1
OCDF	206	208	66.6	280	384	104	104	153	153	31	31

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 #: 31964B21

VALIDATION FINDINGS WORKSHEET
Laboratory Control Sample Results Verification

Reviewer: 9m
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 = I LCS - LCSD I * 2/(LCS + LCSD) LCS = Laboraotry control sample percent recovery LCSD = Laboratory control sample duplicate percent recovery

LCS ID: OPR133003

Compound	Spike Added (pg/L)		Spiked Sample Concentration (pg/L)		LCS Percent Recovery		LCSD Percent Recovery		LCS/LCSD RPD	
	LCS	LCSD	LCS	LCSD	Reported	Recalc	Reported	Recalc	Reported	Recalculated
2,3,7,8-TCDD	200	NA	208	NA	104	104				
1,2,3,7,8-PeCDD	1000		990		99	99				
1,2,3,4,7,8-HxCDD	1000		974		97	97				
1,2,3,4,7,8,9-HpCDF	1000		975		98	98				
OCDF	2000		1990		99	99				

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 #: 31964B21

VALIDATION FINDINGS WORKSHEET
Sample Calculation Verification

Page: 1 of 1
Reviewer: JM
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. 2, A:

Conc. = $\frac{(2717+2335)(2000)(1)}{(322075+252709)(1.228)(10.17)(0.937)}$

= 1.51841195 ng/kg ≈ 1.52 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: May 8, 2014

LDC Report Date: June 25, 2014

Matrix: Soil/Water

Parameters: Perchlorate

Validation Level: Level IV

Laboratory: Eurofins Lancaster Laboratories

Sample Delivery Group (SDG): PH173

Sample Identification

EB-050814
FDG-SL-511-SA5C-SB-0.0-0.5
FDG-SL-511-SA5C-SB-2.0-3.0
FDG-SL-749-SA5C-SB-0.0-0.5
FDG-SL-1049-SA5C-SB-0.0-0.5
FDG-SL-749-SA5C-SB-0.0-0.5MS
FDG-SL-749-SA5C-SB-0.0-0.5MSD
EB-050814MS
EB-050814MSD

Introduction

This data review covers 9 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 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. LC/MS Instrument Performance Check

Instrument performance was checked as applicable. 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 EB-050814 was identified as an equipment blank. No perchlorate was found in the equipment blank.

Sample FB-051314 (from SDG PH176) was identified as a field blank. No perchlorate was found in the field blank.

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 (LCS)

Laboratory control 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 areas and retention times 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 PH173	All compounds reported below the RL.	J (all detects)	A

XII. System Performance

The system performance was acceptable.

XIII. Overall Assessment

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
Perchlorate - Data Qualification Summary - SDG PH173

SDG	Sample	Compound	Flag	A or P	Reason (Code)
PH173	EB-050814 FDG-SL-511-SA5C-SB-0.0-0.5 FDG-SL-511-SA5C-SB-2.0-3.0 FDG-SL-749-SA5C-SB-0.0-0.5 FDG-SL-1049-SA5C-SB-0.0-0.5	All compounds reported below the RL.	J (all detects)	A	Compound quantitation (Z)

Santa Susana Field Laboratory
Perchlorate - Laboratory Blank Data Qualification Summary - SDG PH173

No Sample Data Qualified in this SDG

Santa Susana Field Laboratory
Perchlorate - Field Blank Data Qualification Summary - SDG PH173

No Sample Data Qualified in this SDG

LDC #: 31964B87 **VALIDATION COMPLETENESS WORKSHEET** Date: 6/24/14
SDG #: PH173~~8~~ Level IV Page: 1 of 1
Laboratory: Eurofins Reviewer: BK
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: 5/8/14
II.	GC/MS Instrument performance check	A	
III.	Initial calibration	A	~~RSD ≤ 20%~~ 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	A	
VIII.	Laboratory control samples	A	LCS/~~D~~m
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	NP	FD: 4+5
XVII.	Field blanks	NP	EB = 1 FB = FB-051314 (SDG# PH176)

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: water + soil

1	EB-050814 W	11		21		31	PBLK20132
2	FDG-SL-511-SA5C-SB-0.0-0.5 S	12		22		32	~~PBLK~~ PBLK01136
3	FDG-SL-511-SA5C-SB-2.0-3.0	13		23		33	
4	FDG-SL-749-SA5C-SB-0.0-0.5	14		24		34	
5	FDG-SL-1049-SA5C-SB-0.0-0.5	15		25		35	
6	FDG-SL-749-SA5C-SB-0.0-0.5MS	16		26		36	
7	FDG-SL-749-SA5C-SB-0.0-0.5MSD	17		27		37	
8	#1 MS	18		28		38	
9	#1 MSD	19		29		39	
10		20		30		40	

LDC #: 31964B7

VALIDATION FINDINGS CHECKLIST

Reviewer: BR
2nd Reviewer: SM

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) ≤ ~~30~~ 15%? 15?/50?	✓			
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 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.	✓			
Target compounds were detected in the field blanks.		✓		

LDC#:31964B87

VALIDATION FINDINGS WORKSHEET

Initial Calibration Calculation Verification

Reviewer: BR
2nd Reviewer:

METHOD: LC/MS Perchlorate (EPA SW 846 Method 6850)

Calibration Date	Instrument	Compound	Standard	(Y) Response Ratio	(X) Concentration Ratio	CF
5/14/2014	Instrument1 MS1	Perchlorate	1	0.00159954	0.400	0.0040
			2	0.003624854	1.000	0.0036
			3	0.007064935	2.000	0.0035
			4	0.014414133	4.000	0.0036
			5	0.038865303	10.000	0.0039
			6	0.092121083	25.000	0.0037
					Ave	0.0037

Regression Output		*Calculated*	*Reported*
Constant	c =	*1.157267E-04*	*0.0000045683*
Std Err of Y Est			
R Squared	r2 =	*0.99938108*	*0.9990012*
Degrees of Freedom			
X Coefficient(s)	m =	*0.00370*	*0.00370*
Std Err of Coef.			
Correlation Coefficient		*1.000*	
Coefficient of Determination (r^2)		*0.999*	*0.999*

LDC#:31964B87

VALIDATION FINDINGS WORKSHEET
Continuing Calibration Calculation Verification

Reviewer: BR
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	lcperc51424a	5/16/2014 14:30	Perchlorate	4	4.043	4.033	1	1
2	lcperc21424b	5/16/2014 16:50	Perchlorate	4	4.050	4.040	1	1

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 #: 31964887

VALIDATION FINDINGS WORKSHEET
Matrix Spike/Matrix Spike Duplicates Results Verification

Reviewer: BR
2nd Reviewer: SM

METHOD: LC/MS Perchlorate (EPA SW 846 Method 6850/6860)

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

MS/MSD samples: 8|9

Compound	Spike Added (µg/L)		Sample Concentration (µg/L)	Spiked Sample Concentration (µg/L)		Matrix Spike Percent Recovery		Matrix Spike Duplicate Percent Recovery		MS/MSD RPD	
	MS	MSD	------	MS	MSD	Reported	Recalc	Reported	Recalc	Reported	Recalculated
Perchlorate	5.00	5.00	0	5.18	4.96	104	104	99	99	4	4.3

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

LDC #: 31964B7

VALIDATION FINDINGS WORKSHEET

Laboratory Control Sample/Laboratory Control Sample Duplicates Results Verification

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

METHOD: LC/MS Perchlorate (EPA SW 846 Method 6850/6860)

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

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

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

LCS/LCSD samples: LCS#1136

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	Recalc
Perchlorate	100	—	105	—	105	105	—	—	—	—

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 #: 31964B87

VALIDATION FINDINGS WORKSHEET
Sample Calculation Verification

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

METHOD: LCMS Perchlorate (EPA SW 846 Method 6850/6860)

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

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

A_x	=	Area of the characteristic ion (EICP) for the compound to be measured
A_{is}	=	Area of the characteristic ion (EICP) for the specific internal standard
I_s	=	Amount of internal standard added in nanograms (ng)
V_o	=	Volume or weight of sample extract in milliliters (ml) or grams (g).
V_i	=	Volume of extract injected in microliters (ul)
V_t	=	Volume of the concentrated extract in microliters (ul)
Df	=	Dilution Factor.
%S	=	Percent solids, applicable to soil and solid matrices only.
2.0	=	Factor of 2 to account for GPC cleanup

Example:

Sample I.D. All, WD:
LCS01136

Conc. = ([1152144] / [2949425]) − (0.00018727) (10) / 0.0037

= 105.245454

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

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

July 8, 2014

SUBJECT: Santa Susana Field Laboratory, SVL, Data Validation

Dear Mrs. Zakowski,

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

LDC Project #31965:

SDG #	Fraction
PH174, PH178, PH182	Volatiles

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, CLPNFG, June 2008
- 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

790 pages-CD

Attachment 1

90/10 ADR/IV

LDC #31965 (CDM Federal Programs-Chantilly VA / Santa Susana Field Laboratory, SVL)

LDC	SDG#	DATE REC'D	(4) DATE DUE	VOA (8260B)																																	
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	PH174	06/11/14	07/09/14	1	1																																
B	PH178	06/11/14	07/09/14	2	3																																
C	PH182	06/11/14	07/09/14	1	2																																
Total	T/SM			4	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	10

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 SVL

SDG: PH174

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

July 8, 2014

INTRODUCTION

This Data Validation Report (DVR) presents Level III data validation results for samples collected on May 12, 2014. Data validation was performed in accordance with 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). 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

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.

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, equipment blanks, field blanks and trip 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.

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

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.

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.

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 chlorotrifluoroethylene. The associated sample results were qualified as non-detected estimated (UJ). 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 PH174	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 VOCs. No contaminants were found in the trip blank.

One equipment blank (from SDG PH178) was collected and analyzed for VOCs. No contaminants were found in the equipment blank.

One field blank (from SDG PH176) was collected and analyzed for VOCs. No contaminants were found in the field blank.

XIII. 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
12-May-2014	TB-051214	7461252	TB	5030B	8260B	III
12-May-2014	SVL-501-SA5B-SB-0.75-1.25	7461253	N	5035	8260B	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: PH174 **Laboratory: LL**

EDD Filename: PH174_v1 **eQAPP Name: CDM_SSFL_140617_Lan**

Method Category: **VOA**

Method: **8260B** ***Matrix:*** **AQ**

Sample ID: **TB-051214** ***Collected:*** **5/12/2014 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*
Chlorotrifluoroethylene	5	U	2	MDL	5	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: PH174 **Laboratory: LL**

EDD Filename: PH174_v1 **eQAPP Name: CDM_SSFL_140617_Lan**

Reason Code Legend

Reason Code	*Description*
L	Laboratory Control Spike Lower Estimation

* 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

PH174

Lab Control Spike/Lab Control Spike Duplicate Outlier Report

Lab Reporting Batch ID: PH174 **Laboratory: LL**

EDD Filename: PH174_v1 **eQAPP Name: CDM_SSFL_140617_Lan**

Method: **8260B**
Matrix: **AQ**

QC Sample ID (Associated Samples)	*Compound*	*LCS %R*	*LCSD %R*	*%R Limits*	*RPD (Limits)*	*Affected Compounds*	*Flag*
LCSY99Q212135A **LCSY99Y212156A** (TB-051214)	Chlorotrifluoroethylene	42	42	47.00-120.00	-	Chlorotrifluoroethylene	J (all detects) UJ (all non-detects)

Data Validation Report
Santa Susana Field Laboratory

Go Backs, Subgroup SVL

SDG: PH178

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

July 8, 2014

INTRODUCTION

This Data Validation Report (DVR) presents Level IV data validation results for samples collected on May 15, 2014. Data validation was performed in accordance with 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). 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

The sample identification and methods of analyses performed on each sample is presented in Attachment 1. Automated Data Review outliers are presented in Enclosure I. Method specific 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, surrogates, internal standards, 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 the exception of the calibrations and internal standards, 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.

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) 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.

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. 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.

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 chlorotrifluoroethylene. The associated sample results were qualified as non-detected estimated (UJ). The details regarding the qualification of data are provided in Enclosures I and II.

IX. Internal Standards

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

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 PH178	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 VOCs. No contaminants were found in the trip blank.

One equipment blank was collected and analyzed for VOCs. No contaminants were found in the equipment blank.

One field blank (from SDG PH176) was collected and analyzed for VOCs. No contaminants were found in the field blank.

XIII. 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
15-May-2014	TB-051514	7466271	TB	5030B	8260B	IV
15-May-2014	SVL-534-SA5B-SB-3.0-3.5	7466272	N	5035A	8260B	IV
15-May-2014	SVL-538-SA5B-SB-1.5-2.0	7466273	N	5035A	8260B	IV
15-May-2014	EB2-051514	7466275	EB	5030B	8260B	IV
15-May-2014	SVL-566-SA5B-SB-2.0-2.5	7466274	N	5035A	8260B	IV

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: PH178 **Laboratory: LL**

EDD Filename: PH178_v1 **eQAPP Name: CDM_SSFL_140617_Lan**

Method Category: VOA

Method: 8260B **Matrix: AQ**

Sample ID: **EB2-051514** *Collected:* **5/15/2014 9:05:00** *Analysis Type:* **RES** *Dilution:* **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
Chlorotrifluoroethylene	5	U	2	MDL	5	PQL	ug/L	UJ	L

Sample ID: **TB-051514** *Collected:* **5/15/2014 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
Chlorotrifluoroethylene	5	U	2	MDL	5	PQL	ug/L	UJ	L

Method Category: VOA

Method: 8260B **Matrix: SO**

Sample ID: **SVL-534-SA5B-SB-3.0-3.5** *Collected:* **5/15/2014 8:10:00** *Analysis Type:* **RES** *Dilution:* **0.89**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
1,1,2-TRICHLORO-1,2;2-TRIFLUOROETHANE	5	U	2	MDL	5	PQL	ug/Kg	UJ	C
DICHLORODIFLUOROMETHANE	5	U	2	MDL	5	PQL	ug/Kg	UJ	C

Sample ID: **SVL-538-SA5B-SB-1.5-2.0** *Collected:* **5/15/2014 8:45:00** *Analysis Type:* **RES** *Dilution:* **0.82**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE	4	U	2	MDL	4	PQL	ug/Kg	UJ	C
DICHLORODIFLUOROMETHANE	4	U	2	MDL	4	PQL	ug/Kg	UJ	C

Sample ID: **SVL-566-SA5B-SB-2.0-2.5** *Collected:* **5/15/2014 2:58:00** *Analysis Type:* **RES** *Dilution:* **0.93**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE	5	U	2	MDL	5	PQL	ug/Kg	UJ	C
DICHLORODIFLUOROMETHANE	5	U	2	MDL	5	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: PH178 **Laboratory: LL**

EDD Filename: PH178_v1 **eQAPP Name: CDM_SSFL_140617_Lan**

Reason Code Legend

Reason Code	*Description*
C	Continuing Calibration Verification Percent Difference Lower Estimation
C	Initial Calibration Verification Percent Difference Lower Estimation
L	Laboratory Control Spike Lower Estimation

* 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

PH178

Lab Control Spike/Lab Control Spike Duplicate Outlier Report

Lab Reporting Batch ID: PH178 **Laboratory: LL**

EDD Filename: PH178_v1 **eQAPP Name: CDM_SSFL_140617_Lan**

Method: 8260B
Matrix: AQ

QC Sample ID (Associated Samples)	Compound	LCS %R	LCSD %R	%R Limits	RPD (Limits)	Affected Compounds	Flag
LCSY99Q212135A **LCSY99Y212156A** (EB2-051514 TB-051514)	Chlorotrifluoroethylene	42	42	47.00-120.00	-	Chlorotrifluoroethylene	J (all detects) UJ (all non-detects)

Data Validation Report
Santa Susana Field Laboratory

Go Backs, Subgroup SVL

SDG: PH182

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

July 8, 2014

INTRODUCTION

This Data Validation Report (DVR) presents Level III data validation results for samples collected on May 14, 2014. Data validation was performed in accordance with 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). 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

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.

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, equipment blanks, field blanks and trip 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.

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

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.

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.

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 chlorotrifluoroethylene. The associated sample results were qualified as non-detected estimated (UJ). 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 PH182	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 VOCs. No contaminants were found in the trip blank.

One equipment blank (from SDG PH178) was collected and analyzed for VOCs. No contaminants were found in the equipment blank.

One field blank (from SDG PH176) was collected and analyzed for VOCs. No contaminants were found in the field blank.

XIII. 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
14-May-2014	TB2-051414	7468636	TB	5030B	8260B	III
14-May-2014	SVL-521-SA5B-SB-3.0-3.5	7468635	N	5035A	8260B	III
14-May-2014	SVL-543-SA5B-SB-2.0-2.5	7468637	N	5035A	8260B	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: PH182 **Laboratory: LL**

EDD Filename: PH182_v1 **eQAPP Name: CDM_SSFL_140617_Lan**

Method Category: **VOA**

Method: **8260B** ***Matrix:*** **AQ**

Sample ID: **TB2-051414** ***Collected:*** **5/14/2014 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*
Chlorotrifluoroethylene	5	U	2	MDL	5	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: PH182 **Laboratory: LL**

EDD Filename: PH182_v1 **eQAPP Name: CDM_SSFL_140617_Lan**

Reason Code Legend

Reason Code	*Description*
L	Laboratory Control Spike Lower Estimation

* 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

PH182

Lab Control Spike/Lab Control Spike Duplicate Outlier Report

Lab Reporting Batch ID: PH182 **Laboratory: LL**

EDD Filename: PH182_v1 **eQAPP Name: CDM_SSFL_140617_Lan**

Method: **8260B**
Matrix: **AQ**

QC Sample ID (Associated Samples)	*Compound*	*LCS %R*	*LCSD %R*	*%R Limits*	*RPD (Limits)*	*Affected Compounds*	*Flag*
LCSY18Q211044A (TB2-051414)	Chlorotrifluoroethylene	46	-	47.00-120.00	-	Chlorotrifluoroethylene	J (all detects) UJ (all non-detects)

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

Enclosure II

Level IV Data Validation Reports

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name:	Santa Susana Field Laboratory
Collection Date:	May 15, 2014
LDC Report Date:	June 26, 2014
Matrix:	Soil/Water
Parameters:	Volatiles
Validation Level:	Level IV
Laboratory:	Eurofins
Sample Delivery Group (SDG):	PH178

Sample Identification

TB-051514
SVL-534-SA5B-SB-3.0-3.5
SVL-538-SA5B-SB-1.5-2.0
SVL-566-SA5B-SB-2.0-2.5
EB2-051514

Introduction

This data review covers 3 soil samples and 2 water samples 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.

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
5/29/14	Freon 113a	28	All soil samples in SDG PH178	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
3/5/14	Dichlorodifluoromethane	28	All soil samples in SDG PH178	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-051514 was identified as a trip blank. No volatile contaminants were found.

Sample EB2-051514 was identified as an equipment blank. No volatile contaminants were found.

Sample FB-051314 (from SDG PH175) was identified as a field blank. No volatile 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
LCS/D Y99 (All water samples in SDG PH178)	Chlorotrifluoroethene	42 (47-120)	42 (47-120)	-	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 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 PH178	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
Volatiles - Data Qualification Summary - SDG PH178

SDG	Sample	Compound	Flag	A or P	Reason (Code)
PH178	SVL-534-SA5B-SB-3.0-3.5 SVL-538-SA5B-SB-1.5-2.0 SVL-566-SA5B-SB-2.0-2.5	Freon 113a	J (all detects) UJ (all non-detects)	A	Continuing calibration (%D) (C)
PH178	SVL-534-SA5B-SB-3.0-3.5 SVL-538-SA5B-SB-1.5-2.0 SVL-566-SA5B-SB-2.0-2.5	Dichlorodifluoromethane	J (all detects) UJ (all non-detects)	A	Continuing calibration (ICV %D) (C)
PH178	TB-051514 EB2-051514	Chlorotrifluoroethene	J (all detects) UJ (all non-detects)	P	Laboratory control samples (%R) (L)
PH178	TB-051514 SVL-534-SA5B-SB-3.0-3.5 SVL-538-SA5B-SB-1.5-2.0 SVL-566-SA5B-SB-2.0-2.5 EB2-051514	All compounds reported below the RL.	J (all detects)	A	Compound quantitation (Z)

Santa Susana Field Laboratory
Volatiles - Laboratory Blank Data Qualification Summary - SDG PH178

No Sample Data Qualified in this SDG

Santa Susana Field Laboratory
Volatiles - Field Blank Data Qualification Summary - SDG PH178

No Sample Data Qualified in this SDG

LDC #: 31965B1a **VALIDATION COMPLETENESS WORKSHEET** Date: 6/20/14
SDG #: PH178 Level IV Page: 1 of 1
Laboratory: Eurofins Lancaster Laboratories Reviewer: KR
2nd Reviewer: QA

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: 5/15/14
II.	GC/MS Instrument performance check	A	
III.	Initial calibration	A	RSD ≤30? r²
IV.	Continuing calibration/ICV	CW	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 SW R~~	
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	TB = 1 EB = 5 FB = FB-051314 (SDG # PH175)

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 2	TB-051514 W	11		21		31 1	VBLKB62
2 1	SVL-534-SA5B-SB-3.0-3.5	12		22		32	~~VBLKY~~ 12
3 1	SVL-538-SA5B-SB-1.5-2.0	13		23		33 4	VBLKY98
4 1	SVL-566-SA5B-SB-2.0-2.5	14		24		34	
5 2	EB2-051514 W	15		25		35	
6		16		26		36	
7		17		27		37	
8		18		28		38	
9		19		29		39	
10		20		30		40	

LDC #: 31965B1a

VALIDATION FINDINGS CHECKLIST

Reviewer: BR
2nd Reviewer: SW

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 #: 31965Bk

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?	✗	✓ SW		
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. Chlorotrifluoroethene
O. Carbon tetrachloride	II. 2-Chloroethylvinyl ether	CCC. tert-Butylbenzene	WWW. Ethanol	QQQQ. Freon 113a
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 #: 31965B1a

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 ≤25 %D and ≥0.05 RRF ?

#	Date	Standard ID	Compound	Finding %D (Limit: ≤25.0%)	Finding RRF (Limit: ≥0.05)	Associated Samples	Qualifications
	3/5/14	ICV - bm0305V01	JJ	28		All soil	J/UJ/A
		29602					
	5/29/14	CCV - bv0	QQQQ	28		All soil	J/UJ/A

CONCAL.wpd

LDC #: 31965B1a

VALIDATION FINDINGS WORKSHEET
Laboratory Control Samples (LCS)

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

#	Date	LCS/LCSD ID	Compound	LCS %R (Limits)	LCSD %R (Limits)	RPD (Limits)	Associated Samples	Qualifications
		LCS/D Y99	PPPP	42 (47-120)	42 (47-120)	( )	All water	J/UJ/P
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
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				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		

LDC # 31965B1a

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 (50 std)	Recalculated RRF (50 std)	Reported Average RRF (Initial)	Recalculated Average RRF (Initial)	Reported %RSD	Recalculated %RSD
1	ICAL HP09953	3/25/2013	tert-Butyl alcohol (IS1)	1.2249	1.2249	1.1733	1.1733	11	11
			Trichloroethene (IS2)	0.2855	0.2855	0.2871	0.2871	7	7
			Tetrachloroethene (IS3)	0.4567	0.4567	0.4412	0.4413	6	6
			1,1,2,2-Tetrachloroethane (IS4)	0.6931	0.6931	0.6742	0.6742	13	13

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 # 31965B1a

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:

$RRF = (A_x)(C_{is})/(A_{is})(C_x)$

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 (300 std)	Recalculated RRF (300 std)	Reported Average RRF (Initial)	Recalculated Average RRF (Initial)	Reported %RSD	Recalculated %RSD
1	ICAL HP09953	2/5/2014	Vinyl acetate (IS1)	0.4770	0.4770	0.4703	0.4703	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 # 31965B1a

VALIDATION FINDINGS WORKSHEET

Initial Calibration Results Verification

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:

$RRF = (A_x)(C_{is})/(A_{is})(C_x)$

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 HP09935	5/19/2014	tert-Butyl alcohol (IS1)	1.4155	1.4155	1.4269	1.4269	4	4
			Trichloroethene (IS2)	0.3206	0.3206	0.3112	0.3112	8	8
			Tetrachloroethene (IS3)	0.4916	0.4916	0.4899	0.4900	9	9
			1,1,2,2-Tetrachloroethane (IS4)	1.3664	1.3664	1.3609	1.3609	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 # 31965B1a

VALIDATION FINDINGS WORKSHEET

Initial Calibration Results Verification

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:

$RRF = (A_x)(C_{is})/(A_{is})(C_x)$

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 (50 std)	Recalculated RRF (50 std)	Reported Average RRF (Initial)	Recalculated Average RRF (Initial)	Reported %RSD	Recalculated %RSD
1	ICAL HP09953	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#: 31965B1a

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	by29c01	5/29/2014	tert-Butyl alcohol (IS1)	1.1733	1.1694	1.1694	0	0
			Trichloroethene (IS2)	0.2871	0.2910	0.2910	1	1
			Tetrachloroethene (IS3)	0.4412	0.5319	0.5319	21	21
			1,1,2,2-Tetrachloroethane (IS4)	0.6742	0.6001	0.6001	11	11
2	by29c02	5/29/2014	Vinyl acetate (IS1)	0.4703	0.5074	0.5074	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#: 31965B1a

VALIDATION FINDINGS WORKSHEET
Continuing Calibration Calculation Verification

Reviewer: BR
2nd Reviewer:

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	yy19131	5/19/2014	tert-Butyl alcohol (IS1)	1.4269	1.4058	1.4058	1	1
			Trichloroethene (IS2)	0.3112	0.3201	0.3201	3	3
			Tetrachloroethene (IS3)	0.4899	0.4830	0.4830	1	1
			1,1,2,2-Tetrachloroethane (IS4)	1.3609	1.3419	1.3419	1	1
2	yy19c05	5/19/2014	Vinyl acetate (IS1)	0.6990	0.7411	0.7411	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 #: 31965B1a

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	50.0	49.24	98	98	0
1,2-Dichloroethane-d4	↓	49.292	99	99	0
Toluene-d8		49.571	99	~~99~~ 99	0
Bromofluorobenzene		47.576	95	95	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					

Sample ID:

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

LDC #: 31965B2a

VALIDATION FINDINGS WORKSHEET
Laboratory Control Sample 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 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/D B62

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
1,1-Dichloroethene	20	20	20.56	19.98	103	103	100	100	3	3
Trichloroethene	↓	↓	20.42	20.22	102	102	101	101	1	1
Benzene			19.12	18.57	96	96	93	93	3	3
Toluene			18.8	17.81	94	94	89	89	5	5
Chlorobenzene			19.93	19	100	100	95	95	5	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 #: 31965B1c

VALIDATION FINDINGS WORKSHEET
Sample Calculation Verification

Page: 1 of 1
Reviewer: BR
2nd reviewer: GM

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:

S= 20.42 ug/kg

Sample I.D. A11, NB:

LCSB62

Conc. = $\frac{(128048)(50)(5)}{(1092094)(0.2871)(5)(\ )}$

= 20.41971096 ug/kg

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

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

July 23, 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 June 24, 2014. Attachment 1 is a summary of the samples that were reviewed for each analysis.

LDC Project #32029:

SDG #	Fraction
PH188, PH191	Volatiles, 1,4-Dioxane, Semivolatiles, Chlorinated Pesticides, Polychlorinated Biphenyls, Metals, Herbicides, Explosives, Glycols, Terphenyls, Formaldehyde, Perchlorate, Total Petroleum Hydrocarbons as Gasolines, Total Petroleum Hydrocarbons as Extractables, Dioxins and Dibenzofurans, Wet Chemistry

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, CLPNFG, 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

90/10 ADR/IV

LDC #32029 (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)		SVOA (8270D -SIM)		Pest. (8081B)		PCBs (8082A)		Metals & Hg (SW846)		Herbs. (8151A)		TPH-G (8015M)		TPH-E (8015M)		Dioxins (1613B)		Expl. (8330A)		Glycols (8015C)		CLO_4 (6850)		Terp-henyls (8015B)		Formal dehyde (8315A)					
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	PH188	06/24/14	07/23/14	-	-	-	-	-	-	0	4	-	-	0	4	0	4	-	-	1	3	0	8	0	4	-	-	-	-	-	-	-	-	-	-				
B	PH191	06/24/14	07/23/14	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	2	0	1	0	1	0	1	0	1	0	1	0	1	0				
Total	T/SM			1	0	1	0	1	0	1	4	1	0	1	4	1	4	1	0	2	3	2	8	1	4	1	0	1	0	1	0	1	0	1	0	0	0	0	45

90/10 ADR/IV

LDC #32029 (CDM Federal Programs-Chantilly VA / Santa Susana Field Laboratory, FDG Block 2)

LDC	SDG#	DATE REC'D	(4) DATE DUE	Br,Cl,F, SO_4 O-PO4		NO_3-N NO_2-N (300.0)		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
B	PH191	06/24/14	07/23/14	1	0	1	0	1	0																														
Total	T/SM			1	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3

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: PH188

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

July 22, 2014

INTRODUCTION

This Data Validation Report (DVR) presents Level III data validation results for samples collected on May 20, 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)
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. Please note that sample names 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, 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 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 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 TPH as extractables and metals. The associated sample results were qualified as detected estimated (J) or non-detected estimated (UJ) as applicable.

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). 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.

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
FDG2-SL-874-SA5A-SB-4.0-5.0	Cobalt	11 (≤10)	All soil samples in SDG PH188	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 PH188	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, metals, PCBs, TPH as extractables, TPH as gasoline, and dioxins and diobenzofurans. All RPDs were within QC limits with the exception of SVOCs, metals, and dioxins and diobenzofurans. 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 contaminate concentrations were detected in the trip blank.

One equipment blank (from SDG PH196) was collected and analyzed for SVOCs, PCBs, metals, TPH as gasoline, TPH as extractables, 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, 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
20-May-2014	TB1-052014	7471503	TB	5030B	8015M	III
20-May-2014	SL-874-SA5A-SB-0.0-0.5	7471504	N	3050B	6010C	III
20-May-2014	SL-874-SA5A-SB-0.0-0.5	7471504	N	3050B	6020A	III
20-May-2014	SL-874-SA5A-SB-0.0-0.5	7471504	N	3546	8015M	III
20-May-2014	SL-874-SA5A-SB-0.0-0.5	7471504	N	3546	8082A	III
20-May-2014	SL-874-SA5A-SB-0.0-0.5	7471504	N	3546	8270D SIM	III
20-May-2014	SL-874-SA5A-SB-0.0-0.5	7471504	N	METHOD	1613B	III
20-May-2014	SL-874-SA5A-SB-0.0-0.5	7471504	N	METHOD	7471B	III
20-May-2014	SL-874-SA5A-SB-4.0-5.0	7471505	N	3050B	6010C	III
20-May-2014	SL-874-SA5A-SB-4.0-5.0	7471505	N	3050B	6020A	III
20-May-2014	SL-874-SA5A-SB-4.0-5.0	7471505	N	3546	8015M	III
20-May-2014	SL-874-SA5A-SB-4.0-5.0	7471505	N	3546	8082A	III
20-May-2014	SL-874-SA5A-SB-4.0-5.0	7471505	N	3546	8270D SIM	III
20-May-2014	SL-874-SA5A-SB-4.0-5.0	7471505	N	5035A	8015M	III
20-May-2014	SL-874-SA5A-SB-4.0-5.0	7471505	N	METHOD	1613B	III
20-May-2014	SL-874-SA5A-SB-4.0-5.0	7471505	N	METHOD	7471B	III
20-May-2014	SL-874-SA5A-SB-4.0-5.0MS	7471506	MS	3050B	6010C	III
20-May-2014	SL-874-SA5A-SB-4.0-5.0MS	7471506	MS	3050B	6020A	III
20-May-2014	SL-874-SA5A-SB-4.0-5.0MS	7471506	MS	3546	8015M	III
20-May-2014	SL-874-SA5A-SB-4.0-5.0MS	7471506	MS	3546	8082A	III
20-May-2014	SL-874-SA5A-SB-4.0-5.0MS	7471506	MS	3546	8270D SIM	III
20-May-2014	SL-874-SA5A-SB-4.0-5.0MS	7471506	MS	5035A	8015M	III
20-May-2014	SL-874-SA5A-SB-4.0-5.0MS	7471506	MS	METHOD	1613B	III
20-May-2014	SL-874-SA5A-SB-4.0-5.0MS	7471506	MS	METHOD	7471B	III
20-May-2014	SL-874-SA5A-SB-4.0-5.0MSD	7471507	MSD	3050B	6010C	III
20-May-2014	SL-874-SA5A-SB-4.0-5.0MSD	7471507	MSD	3050B	6020A	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
20-May-2014	SL-874-SA5A-SB-4.0-5.0MSD	7471507	MSD	3546	8015M	III
20-May-2014	SL-874-SA5A-SB-4.0-5.0MSD	7471507	MSD	3546	8082A	III
20-May-2014	SL-874-SA5A-SB-4.0-5.0MSD	7471507	MSD	3546	8270D SIM	III
20-May-2014	SL-874-SA5A-SB-4.0-5.0MSD	7471507	MSD	5035A	8015M	III
20-May-2014	SL-874-SA5A-SB-4.0-5.0MSD	7471507	MSD	METHOD	1613B	III
20-May-2014	SL-874-SA5A-SB-4.0-5.0MSD	7471507	MSD	METHOD	7471B	III
20-May-2014	SL-874-SA5A-SB-4.0-5.0DUP	7471508	DUP	3050B	6010C	III
20-May-2014	SL-874-SA5A-SB-4.0-5.0DUP	7471508	DUP	3050B	6020A	III
20-May-2014	SL-874-SA5A-SB-4.0-5.0DUP	7471508	DUP	METHOD	7471B	III
20-May-2014	SL-1174-SA5A-SB-4.0-5.0	7471509	FD	3050B	6010C	III
20-May-2014	SL-1174-SA5A-SB-4.0-5.0	7471509	FD	3050B	6020A	III
20-May-2014	SL-1174-SA5A-SB-4.0-5.0	7471509	FD	3546	8015M	III
20-May-2014	SL-1174-SA5A-SB-4.0-5.0	7471509	FD	3546	8082A	III
20-May-2014	SL-1174-SA5A-SB-4.0-5.0	7471509	FD	3546	8270D SIM	III
20-May-2014	SL-1174-SA5A-SB-4.0-5.0	7471509	FD	5035A	8015M	III
20-May-2014	SL-1174-SA5A-SB-4.0-5.0	7471509	FD	METHOD	1613B	III
20-May-2014	SL-1174-SA5A-SB-4.0-5.0	7471509	FD	METHOD	7471B	III
20-May-2014	SL-874-SA5A-SB-12.0-13.0	7471510	N	3050B	6010C	III
20-May-2014	SL-874-SA5A-SB-12.0-13.0	7471510	N	3050B	6020A	III
20-May-2014	SL-874-SA5A-SB-12.0-13.0	7471510	N	3546	8015M	III
20-May-2014	SL-874-SA5A-SB-12.0-13.0	7471510	N	3546	8082A	III
20-May-2014	SL-874-SA5A-SB-12.0-13.0	7471510	N	3546	8270D SIM	III
20-May-2014	SL-874-SA5A-SB-12.0-13.0	7471510	N	5035A	8015M	III
20-May-2014	SL-874-SA5A-SB-12.0-13.0	7471510	N	METHOD	1613B	III
20-May-2014	SL-874-SA5A-SB-12.0-13.0	7471510	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: PH188 **Laboratory: LL**

EDD Filename: PH188_v3 **eQAPP Name: CDM_SSFL_140617_Lan**

Method Category: METALS

Method: 6010C **Matrix: SO**

Sample ID: FDG2-SL-1174-SA5A-SB-4.0-5.0 **Collected: 5/20/2014 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
ANTIMONY	4.18	U	0.773	MDL	4.18	PQL	mg/Kg	UJ	Q
ARSENIC	3.84	J	0.731	MDL	4.18	PQL	mg/Kg	J	Z
BARIUM	106		0.0345	MDL	1.04	PQL	mg/Kg	J	Q, E, FD
BERYLLIUM	0.529	J	0.0699	MDL	1.04	PQL	mg/Kg	J	Z
BORON	4.55	J	0.877	MDL	10.4	PQL	mg/Kg	J	Z
CADMIUM	0.565	J	0.0793	MDL	1.04	PQL	mg/Kg	J	Z
COBALT	5.58		0.103	MDL	1.04	PQL	mg/Kg	J	A
MOLYBDENUM	0.277	J	0.177	MDL	2.09	PQL	mg/Kg	J	Z, FD
PHOSPHORUS	412		3.02	MDL	10.4	PQL	mg/Kg	J	Q
TIN	2.49	J	0.230	MDL	10.4	PQL	mg/Kg	U	B
Zirconium	3.87	J	0.877	MDL	5.22	PQL	mg/Kg	U	F, F
CHROMIUM	18.4		0.167	MDL	3.13	PQL	mg/Kg	J	E

Sample ID: FDG2-SL-874-SA5A-SB-0.0-0.5 **Collected: 5/20/2014 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	4.15	U	0.769	MDL	4.15	PQL	mg/Kg	UJ	Q
ARSENIC	3.62	J	0.727	MDL	4.15	PQL	mg/Kg	J	Z
BARIUM	81.4		0.0343	MDL	1.04	PQL	mg/Kg	J	Q, E
BERYLLIUM	0.430	J	0.0696	MDL	1.04	PQL	mg/Kg	J	Z
BORON	4.30	J	0.872	MDL	10.4	PQL	mg/Kg	J	Z
CADMIUM	0.435	J	0.0789	MDL	1.04	PQL	mg/Kg	J	Z
CHROMIUM	17.6		0.166	MDL	3.12	PQL	mg/Kg	J	E
COBALT	4.62		0.103	MDL	1.04	PQL	mg/Kg	J	A
PHOSPHORUS	362		3.00	MDL	10.4	PQL	mg/Kg	J	Q
TIN	2.49	J	0.228	MDL	10.4	PQL	mg/Kg	U	B
Zirconium	2.83	J	0.872	MDL	5.19	PQL	mg/Kg	U	F, F

Sample ID: FDG2-SL-874-SA5A-SB-12.0-13.0 **Collected: 5/20/2014 10:15:00** **Analysis Type: RES** **Dilution: 1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
ANTIMONY	4.10	U	0.758	MDL	4.10	PQL	mg/Kg	UJ	Q
BARIUM	73.9		0.0338	MDL	1.02	PQL	mg/Kg	J	Q, E
BERYLLIUM	0.540	J	0.0686	MDL	1.02	PQL	mg/Kg	J	Z
BORON	3.61	J	0.860	MDL	10.2	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: PH188 **Laboratory: LL**

EDD Filename: PH188_v3 **eQAPP Name: CDM_SSFL_140617_Lan**

Method Category: METALS

Method: 6010C **Matrix: SO**

Sample ID: FDG2-SL-874-SA5A-SB-12.0-13.0 **Collected: 5/20/2014 10:15:00** **Analysis Type: RES** **Dilution: 1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
CADMIUM	0.541	J	0.0778	MDL	1.02	PQL	mg/Kg	J	Z
CHROMIUM	21.8		0.164	MDL	3.07	PQL	mg/Kg	J	E
COBALT	3.96		0.101	MDL	1.02	PQL	mg/Kg	J	A
MOLYBDENUM	0.206	J	0.174	MDL	2.05	PQL	mg/Kg	J	Z
PHOSPHORUS	412		2.96	MDL	10.2	PQL	mg/Kg	J	Q
TIN	2.68	J	0.225	MDL	10.2	PQL	mg/Kg	U	B
Zirconium	2.86	J	0.860	MDL	5.12	PQL	mg/Kg	U	F, F

Sample ID: FDG2-SL-874-SA5A-SB-4.0-5.0 **Collected: 5/20/2014 9:15:00** **Analysis Type: RES** **Dilution: 1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
ANTIMONY	4.30	U	0.796	MDL	4.30	PQL	mg/Kg	UJ	Q
BARIUM	247		0.0355	MDL	1.08	PQL	mg/Kg	J	Q, E, FD
BERYLLIUM	0.604	J	0.0720	MDL	1.08	PQL	mg/Kg	J	Z
BORON	7.29	J	0.903	MDL	10.8	PQL	mg/Kg	J	Z
CADMIUM	0.590	J	0.0817	MDL	1.08	PQL	mg/Kg	J	Z
CHROMIUM	22.0		0.172	MDL	3.23	PQL	mg/Kg	J	E
COBALT	5.61		0.106	MDL	1.08	PQL	mg/Kg	J	A
MOLYBDENUM	0.474	J	0.183	MDL	2.15	PQL	mg/Kg	J	Z, FD
PHOSPHORUS	400		3.11	MDL	10.8	PQL	mg/Kg	J	Q
TIN	2.57	J	0.237	MDL	10.8	PQL	mg/Kg	U	B
Zirconium	4.29	J	0.903	MDL	5.38	PQL	mg/Kg	U	F, F

Method Category: METALS

Method: 6020A **Matrix: SO**

Sample ID: FDG2-SL-1174-SA5A-SB-4.0-5.0 **Collected: 5/20/2014 9:25:00** **Analysis Type: REA** **Dilution: 2**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
SELENIUM	0.161	J	0.104	MDL	0.418	PQL	mg/Kg	J	Z

Sample ID: FDG2-SL-1174-SA5A-SB-4.0-5.0 **Collected: 5/20/2014 9:25:00** **Analysis Type: RES** **Dilution: 2**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
SILVER	0.209	U	0.0271	MDL	0.209	PQL	mg/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: PH188 **Laboratory: LL**

EDD Filename: PH188_v3 **eQAPP Name: CDM_SSFL_140617_Lan**

Method Category: METALS

Method: 6020A **Matrix: SO**

Sample ID: **FDG2-SL-874-SA5A-SB-12.0-13.0** *Collected:* **5/20/2014 10:15:00** *Analysis Type:* **REA** *Dilution:* **2**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
SELENIUM	0.150	J	0.102	MDL	0.410	PQL	mg/Kg	J	Z

Sample ID: **FDG2-SL-874-SA5A-SB-4.0-5.0** *Collected:* **5/20/2014 9:15:00** *Analysis Type:* **REA** *Dilution:* **2**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
SELENIUM	0.148	J	0.108	MDL	0.430	PQL	mg/Kg	J	Z

Sample ID: **FDG2-SL-874-SA5A-SB-4.0-5.0** *Collected:* **5/20/2014 9:15:00** *Analysis Type:* **RES** *Dilution:* **2**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
SILVER	0.0297	J	0.0280	MDL	0.215	PQL	mg/Kg	J	Z, FD

Method Category: METALS

Method: 7471B **Matrix: SO**

Sample ID: **FDG2-SL-1174-SA5A-SB-4.0-5.0** *Collected:* **5/20/2014 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	0.0124	J	0.0102	MDL	0.0171	PQL	mg/Kg	J	Z

Sample ID: **FDG2-SL-874-SA5A-SB-12.0-13.0** *Collected:* **5/20/2014 10:15:00** *Analysis Type:* **RES** *Dilution:* **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
MERCURY	0.0114	J	0.0106	MDL	0.0176	PQL	mg/Kg	J	Z

Sample ID: **FDG2-SL-874-SA5A-SB-4.0-5.0** *Collected:* **5/20/2014 9:15:00** *Analysis Type:* **RES** *Dilution:* **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
MERCURY	0.0118	J	0.0104	MDL	0.0174	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: PH188 **Laboratory: LL**

EDD Filename: PH188_v3 **eQAPP Name: CDM_SSFL_140617_Lan**

Method Category: SVOA

Method: 1613B **Matrix: SO**

Sample ID: **FDG2-SL-1174-SA5A-SB-4.0-5.0** ***Collected:*** **5/20/2014 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-HPCDD	0.842	JB	0.0545	MDL	5.38	PQL	ng/Kg	J	Z, FD
1,2,3,4,6,7,8-HPCDF	0.192	JB	0.0159	MDL	5.38	PQL	ng/Kg	UJ	B, FD
1,2,3,4,7,8,9-HPCDF	0.0562	JBQ	0.0268	MDL	5.38	PQL	ng/Kg	U	B
1,2,3,4,7,8-HxCDD	5.38	U	0.0451	MDL	5.38	PQL	ng/Kg	UJ	FD
1,2,3,4,7,8-HXCDF	0.0937	JBQ	0.0399	MDL	5.38	PQL	ng/Kg	U	B
1,2,3,6,7,8-HXCDD	0.297	JBQ	0.0445	MDL	5.38	PQL	ng/Kg	J	Z
1,2,3,6,7,8-HXCDF	0.106	JBQ	0.0367	MDL	5.38	PQL	ng/Kg	U	B
1,2,3,7,8,9-HXCDD	0.392	JB	0.0425	MDL	5.38	PQL	ng/Kg	J	Z
1,2,3,7,8,9-HXCDF	0.370	JB	0.0440	MDL	5.38	PQL	ng/Kg	J	Z
1,2,3,7,8-PECDD	0.172	JBQ	0.0644	MDL	5.38	PQL	ng/Kg	U	B
1,2,3,7,8-PECDF	0.239	JBQ	0.0344	MDL	5.38	PQL	ng/Kg	U	B
2,3,4,6,7,8-HXCDF	0.107	JBQ	0.0391	MDL	5.38	PQL	ng/Kg	U	B
2,3,4,7,8-PECDF	0.187	JBQ	0.0333	MDL	5.38	PQL	ng/Kg	U	B
2,3,7,8-TCDF	0.122	JQ	0.0719	MDL	1.08	PQL	ng/Kg	J	Z, FD
OCDD	6.72	JB	0.0407	MDL	10.8	PQL	ng/Kg	J	Z, FD
OCDF	0.500	JB	0.0752	MDL	10.8	PQL	ng/Kg	J	Z, FD

Sample ID: **FDG2-SL-874-SA5A-SB-0.0-0.5** ***Collected:*** **5/20/2014 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	0.270	JBQ	0.0491	MDL	5.21	PQL	ng/Kg	U	B
1,2,3,4,6,7,8-HPCDF	0.0734	JBQ	0.0180	MDL	5.21	PQL	ng/Kg	U	B
1,2,3,4,7,8-HXCDF	0.0533	JBQ	0.0389	MDL	5.21	PQL	ng/Kg	U	B
1,2,3,6,7,8-HXCDD	0.0631	JB	0.0335	MDL	5.21	PQL	ng/Kg	U	B
1,2,3,7,8,9-HXCDF	0.0794	JB	0.0433	MDL	5.21	PQL	ng/Kg	U	B
1,2,3,7,8-PECDD	0.0940	JBQ	0.0673	MDL	5.21	PQL	ng/Kg	U	B
1,2,3,7,8-PECDF	0.0519	JBQ	0.0407	MDL	5.21	PQL	ng/Kg	U	B
2,3,7,8-TCDD	0.149	JQ	0.106	MDL	1.04	PQL	ng/Kg	J	Z
OCDD	3.21	JB	0.0359	MDL	10.4	PQL	ng/Kg	U	B
OCDF	0.209	JB	0.0777	MDL	10.4	PQL	ng/Kg	U	B

Sample ID: **FDG2-SL-874-SA5A-SB-12.0-13.0** ***Collected:*** **5/20/2014 10:15:00** ***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-HPCDD	0.118	JBQ	0.0422	MDL	5.13	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: PH188 **Laboratory: LL**

EDD Filename: PH188_v3 **eQAPP Name: CDM_SSFL_140617_Lan**

Method Category: SVOA

Method: 1613B **Matrix: SO**

Sample ID: FDG2-SL-874-SA5A-SB-12.0-13.0 **Collected: 5/20/2014 10:15:00** **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	0.0606	JBQ	0.0130	MDL	5.13	PQL	ng/Kg	U	B
1,2,3,4,7,8,9-HPCDF	0.0309	JB	0.0202	MDL	5.13	PQL	ng/Kg	U	B
1,2,3,4,7,8-HXCDF	0.0742	JBQ	0.0309	MDL	5.13	PQL	ng/Kg	U	B
1,2,3,6,7,8-HXCDF	0.0470	JBQ	0.0286	MDL	5.13	PQL	ng/Kg	U	B
1,2,3,7,8-PECDD	0.0874	JBQ	0.0584	MDL	5.13	PQL	ng/Kg	U	B
1,2,3,7,8-PECDF	0.0598	JB	0.0321	MDL	5.13	PQL	ng/Kg	U	B
2,3,4,6,7,8-HXCDF	0.0341	JBQ	0.0315	MDL	5.13	PQL	ng/Kg	U	B
2,3,4,7,8-PECDF	0.0511	JBQ	0.0313	MDL	5.13	PQL	ng/Kg	U	B
OCDD	0.739	JB	0.0364	MDL	10.3	PQL	ng/Kg	U	B
OCDF	0.151	JBQ	0.0755	MDL	10.3	PQL	ng/Kg	U	B

Sample ID: FDG2-SL-874-SA5A-SB-4.0-5.0 **Collected: 5/20/2014 9:15:00** **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-HPCDD	1.76	JB	0.0651	MDL	5.27	PQL	ng/Kg	J	Z, FD
1,2,3,4,6,7,8-HPCDF	0.386	JBQ	0.0173	MDL	5.27	PQL	ng/Kg	J	Z, FD
1,2,3,4,7,8,9-HPCDF	0.0420	JB	0.0292	MDL	5.27	PQL	ng/Kg	U	B
1,2,3,4,7,8-HxCDD	0.0535	JQ	0.0356	MDL	5.27	PQL	ng/Kg	J	Z, FD
1,2,3,4,7,8-HXCDF	0.134	JBQ	0.0340	MDL	5.27	PQL	ng/Kg	U	B
1,2,3,6,7,8-HXCDD	0.394	JBQ	0.0367	MDL	5.27	PQL	ng/Kg	J	Z
1,2,3,6,7,8-HXCDF	0.129	JBQ	0.0310	MDL	5.27	PQL	ng/Kg	U	B
1,2,3,7,8,9-HXCDD	0.447	JB	0.0346	MDL	5.27	PQL	ng/Kg	J	Z
1,2,3,7,8,9-HXCDF	0.422	JBQ	0.0331	MDL	5.27	PQL	ng/Kg	J	Z
1,2,3,7,8-PECDD	0.192	JBQ	0.0391	MDL	5.27	PQL	ng/Kg	U	B
1,2,3,7,8-PECDF	0.266	JB	0.0295	MDL	5.27	PQL	ng/Kg	U	B
2,3,4,6,7,8-HXCDF	0.112	JB	0.0332	MDL	5.27	PQL	ng/Kg	U	B
2,3,4,7,8-PECDF	0.252	JB	0.0305	MDL	5.27	PQL	ng/Kg	U	B
2,3,7,8-TCDF	1.05	U	0.0521	MDL	1.05	PQL	ng/Kg	UJ	FD
OCDD	14.0	QB	0.0392	MDL	10.5	PQL	ng/Kg	J	FD
OCDF	0.953	JB	0.0526	MDL	10.5	PQL	ng/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: PH188 **Laboratory: LL**

EDD Filename: PH188_v3 **eQAPP Name: CDM_SSFL_140617_Lan**

Method Category: SVOA

Method: 8015M **Matrix: SO**

Sample ID: **FDG2-SL-874-SA5A-SB-4.0-5.0** *Collected:* **5/20/2014 9:15:00** *Analysis Type:* **RES** *Dilution:* **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
EFH (C21-C30)	16		2.2	MDL	5.4	PQL	mg/Kg	J	Q, Q
EFH (C30-C40)	31		4.3	MDL	11	PQL	mg/Kg	J	Q, Q, Q

Method Category: SVOA

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

Sample ID: **FDG2-SL-1174-SA5A-SB-4.0-5.0** *Collected:* **5/20/2014 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
2-METHYLNAPHTHALENE	1.8	U	0.72	MDL	1.8	PQL	ug/Kg	UJ	FD
BENZO(B)FLUORANTHENE	0.93	J	0.72	MDL	1.8	PQL	ug/Kg	J	Z
CHRYSENE	1.2	J	0.36	MDL	1.8	PQL	ug/Kg	J	Z
FLUORANTHENE	1.7	J	0.72	MDL	1.8	PQL	ug/Kg	J	Z
PHENANTHRENE	1.7	J	0.72	MDL	1.8	PQL	ug/Kg	J	Z, FD
PYRENE	0.89	J	0.72	MDL	1.8	PQL	ug/Kg	J	Z

Sample ID: **FDG2-SL-874-SA5A-SB-4.0-5.0** *Collected:* **5/20/2014 9:15:00** *Analysis Type:* **RES-BASE/NEUTRAL** *Dilution:* **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
2-METHYLNAPHTHALENE	1.0	J	0.71	MDL	1.8	PQL	ug/Kg	J	Z, FD
BENZO(B)FLUORANTHENE	1.2	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
PHENANTHRENE	2.9		0.71	MDL	1.8	PQL	ug/Kg	J	FD
PYRENE	0.91	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: PH188 **Laboratory: LL**

EDD Filename: PH188_v3 **eQAPP Name: CDM_SSFL_140617_Lan**

Reason Code Legend

Reason Code	*Description*
*#	Professional Judgment
A	ICP Serial Dilution
B	Method Blank Contamination
E	Laboratory Duplicate Precision
E	Matrix Spike Precision
F	Equipment Blank Contamination
F	Field Blank Contamination
FD	Field Duplicate Precision
Q	Laboratory Duplicate Precision
Q	Matrix Spike Lower Estimation
Q	Matrix Spike Lower Rejection
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

PH188

Method Blank Outlier Report

Lab Reporting Batch ID: PH188 **Laboratory: LL**

EDD Filename: PH188_v3 **eQAPP Name: CDM_SSFL_140617_Lan**

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

Method Blank Sample ID	Analysis Date	Analyte	Result	Associated Samples
BLK1480B370327	5/30/2014 3:27:00 AM	1,2,3,4,6,7,8-HPCDD	0.104 ng/Kg	FDG2-SL-1174-SA5A-SB-4.0-5.0 FDG2-SL-874-SA5A-SB-0.0-0.5 FDG2-SL-874-SA5A-SB-12.0-13.0 FDG2-SL-874-SA5A-SB-4.0-5.0
		1,2,3,4,6,7,8-HPCDF	0.0707 ng/Kg	
		1,2,3,4,7,8,9-HPCDF	0.0368 ng/Kg	
		1,2,3,4,7,8-HXCDF	0.0887 ng/Kg	
		1,2,3,6,7,8-HXCDD	0.0322 ng/Kg	
		1,2,3,6,7,8-HXCDF	0.0451 ng/Kg	
		1,2,3,7,8,9-HXCDD	0.0351 ng/Kg	
		1,2,3,7,8,9-HXCDF	0.0531 ng/Kg	
		1,2,3,7,8-PECDD	0.0674 ng/Kg	
		1,2,3,7,8-PECDF	0.0961 ng/Kg	
		2,3,4,6,7,8-HXCDF	0.0468 ng/Kg	
		2,3,4,7,8-PECDF	0.0685 ng/Kg	
		OCDD	0.662 ng/Kg	
		OCDF	0.0875 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-1174-SA5A-SB-4.0-5.0(RES)	1,2,3,4,6,7,8-HPCDF	0.192 ng/Kg	0.192U ng/Kg
FDG2-SL-1174-SA5A-SB-4.0-5.0(RES)	1,2,3,4,7,8,9-HPCDF	0.0562 ng/Kg	0.0562U ng/Kg
FDG2-SL-1174-SA5A-SB-4.0-5.0(RES)	1,2,3,4,7,8-HXCDF	0.0937 ng/Kg	0.0937U ng/Kg
FDG2-SL-1174-SA5A-SB-4.0-5.0(RES)	1,2,3,6,7,8-HXCDF	0.106 ng/Kg	0.106U ng/Kg
FDG2-SL-1174-SA5A-SB-4.0-5.0(RES)	1,2,3,7,8-PECDD	0.172 ng/Kg	0.172U ng/Kg
FDG2-SL-1174-SA5A-SB-4.0-5.0(RES)	1,2,3,7,8-PECDF	0.239 ng/Kg	0.239U ng/Kg
FDG2-SL-1174-SA5A-SB-4.0-5.0(RES)	2,3,4,6,7,8-HXCDF	0.107 ng/Kg	0.107U ng/Kg
FDG2-SL-1174-SA5A-SB-4.0-5.0(RES)	2,3,4,7,8-PECDF	0.187 ng/Kg	0.187U ng/Kg
FDG2-SL-874-SA5A-SB-0.0-0.5(RES)	1,2,3,4,6,7,8-HPCDD	0.270 ng/Kg	0.270U ng/Kg
FDG2-SL-874-SA5A-SB-0.0-0.5(RES)	1,2,3,4,6,7,8-HPCDF	0.0734 ng/Kg	0.0734U ng/Kg
FDG2-SL-874-SA5A-SB-0.0-0.5(RES)	1,2,3,4,7,8-HXCDF	0.0533 ng/Kg	0.0533U ng/Kg
FDG2-SL-874-SA5A-SB-0.0-0.5(RES)	1,2,3,6,7,8-HXCDD	0.0631 ng/Kg	0.0631U ng/Kg
FDG2-SL-874-SA5A-SB-0.0-0.5(RES)	1,2,3,7,8,9-HXCDF	0.0794 ng/Kg	0.0794U ng/Kg
FDG2-SL-874-SA5A-SB-0.0-0.5(RES)	1,2,3,7,8-PECDD	0.0940 ng/Kg	0.0940U ng/Kg
FDG2-SL-874-SA5A-SB-0.0-0.5(RES)	1,2,3,7,8-PECDF	0.0519 ng/Kg	0.0519U ng/Kg
FDG2-SL-874-SA5A-SB-0.0-0.5(RES)	OCDD	3.21 ng/Kg	3.21U ng/Kg
FDG2-SL-874-SA5A-SB-0.0-0.5(RES)	OCDF	0.209 ng/Kg	0.209U ng/Kg
FDG2-SL-874-SA5A-SB-12.0-13.0(RES)	1,2,3,4,6,7,8-HPCDD	0.118 ng/Kg	0.118U ng/Kg
FDG2-SL-874-SA5A-SB-12.0-13.0(RES)	1,2,3,4,6,7,8-HPCDF	0.0606 ng/Kg	0.0606U ng/Kg
FDG2-SL-874-SA5A-SB-12.0-13.0(RES)	1,2,3,4,7,8,9-HPCDF	0.0309 ng/Kg	0.0309U ng/Kg
FDG2-SL-874-SA5A-SB-12.0-13.0(RES)	1,2,3,4,7,8-HXCDF	0.0742 ng/Kg	0.0742U ng/Kg
FDG2-SL-874-SA5A-SB-12.0-13.0(RES)	1,2,3,6,7,8-HXCDF	0.0470 ng/Kg	0.0470U ng/Kg
FDG2-SL-874-SA5A-SB-12.0-13.0(RES)	1,2,3,7,8-PECDD	0.0874 ng/Kg	0.0874U ng/Kg
FDG2-SL-874-SA5A-SB-12.0-13.0(RES)	1,2,3,7,8-PECDF	0.0598 ng/Kg	0.0598U ng/Kg
FDG2-SL-874-SA5A-SB-12.0-13.0(RES)	2,3,4,6,7,8-HXCDF	0.0341 ng/Kg	0.0341U ng/Kg
FDG2-SL-874-SA5A-SB-12.0-13.0(RES)	2,3,4,7,8-PECDF	0.0511 ng/Kg	0.0511U ng/Kg
FDG2-SL-874-SA5A-SB-12.0-13.0(RES)	OCDD	0.739 ng/Kg	0.739U ng/Kg
FDG2-SL-874-SA5A-SB-12.0-13.0(RES)	OCDF	0.151 ng/Kg	0.151U ng/Kg
FDG2-SL-874-SA5A-SB-4.0-5.0(RES)	1,2,3,4,7,8,9-HPCDF	0.0420 ng/Kg	0.0420U ng/Kg
FDG2-SL-874-SA5A-SB-4.0-5.0(RES)	1,2,3,4,7,8-HXCDF	0.134 ng/Kg	0.134U ng/Kg

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

Method Blank Outlier Report

Lab Reporting Batch ID: PH188 **Laboratory: LL**

EDD Filename: PH188_v3 **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-874-SA5A-SB-4.0-5.0(RES)	1,2,3,6,7,8-HXCDF	0.129 ng/Kg	0.129U ng/Kg
FDG2-SL-874-SA5A-SB-4.0-5.0(RES)	1,2,3,7,8-PECDD	0.192 ng/Kg	0.192U ng/Kg
FDG2-SL-874-SA5A-SB-4.0-5.0(RES)	1,2,3,7,8-PECDF	0.266 ng/Kg	0.266U ng/Kg
FDG2-SL-874-SA5A-SB-4.0-5.0(RES)	2,3,4,6,7,8-HXCDF	0.112 ng/Kg	0.112U ng/Kg
FDG2-SL-874-SA5A-SB-4.0-5.0(RES)	2,3,4,7,8-PECDF	0.252 ng/Kg	0.252U ng/Kg

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

Method Blank Sample ID	Analysis Date	Analyte	Result	Associated Samples
P14737BB222033	5/28/2014 8:33:00 PM	ALUMINUM BORON CALCIUM TIN ZINC	9.28 mg/Kg 0.858 mg/Kg 12.8 mg/Kg 1.36 mg/Kg 0.956 mg/Kg	FDG2-SL-1174-SA5A-SB-4.0-5.0 FDG2-SL-874-SA5A-SB-0.0-0.5 FDG2-SL-874-SA5A-SB-12.0-13.0 FDG2-SL-874-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-1174-SA5A-SB-4.0-5.0(RES)	TIN	2.49 mg/Kg	2.49U mg/Kg
FDG2-SL-874-SA5A-SB-0.0-0.5(RES)	TIN	2.49 mg/Kg	2.49U mg/Kg
FDG2-SL-874-SA5A-SB-12.0-13.0(RES)	BORON	3.61 mg/Kg	3.61U mg/Kg
FDG2-SL-874-SA5A-SB-12.0-13.0(RES)	TIN	2.68 mg/Kg	2.68U mg/Kg
FDG2-SL-874-SA5A-SB-4.0-5.0(RES)	TIN	2.57 mg/Kg	2.57U mg/Kg

Field Blank Outlier Report

Lab Reporting Batch ID: PH188 **Laboratory: LL**

EDD Filename: PH188_v3 **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-1174-SA5A-SB-4.0-5.0 FDG2-SL-874-SA5A-SB-0.0-0.5 FDG2-SL-874-SA5A-SB-12.0-13.0 FDG2-SL-874-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-1174-SA5A-SB-4.0-5.0(RES)	Zirconium	3.87 mg/Kg	3.87U mg/Kg
FDG2-SL-874-SA5A-SB-0.0-0.5(RES)	Zirconium	2.83 mg/Kg	2.83U mg/Kg
FDG2-SL-874-SA5A-SB-12.0-13.0(RES)	Zirconium	2.86 mg/Kg	2.86U mg/Kg
FDG2-SL-874-SA5A-SB-4.0-5.0(RES)	Zirconium	4.29 mg/Kg	4.29U mg/Kg

Equipment Rinsate Blank Outlier Report

Lab Reporting Batch ID: PH188 **Laboratory: LL**

EDD Filename: PH188_v3 **eQAPP Name: CDM_SSFL_140617_Lan**

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

Equipment Blank Sample ID	Collected Date	Analyte	Result	Associated Samples
EB2-052214(RES)	5/22/2014 3:30:00 PM	Zirconium	0.0108 mg/L	FDG2-SL-1174-SA5A-SB-4.0-5.0 FDG2-SL-874-SA5A-SB-0.0-0.5 FDG2-SL-874-SA5A-SB-12.0-13.0 FDG2-SL-874-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-1174-SA5A-SB-4.0-5.0(RES)	Zirconium	3.87 mg/Kg	3.87U mg/Kg
FDG2-SL-874-SA5A-SB-0.0-0.5(RES)	Zirconium	2.83 mg/Kg	2.83U mg/Kg
FDG2-SL-874-SA5A-SB-12.0-13.0(RES)	Zirconium	2.86 mg/Kg	2.86U mg/Kg
FDG2-SL-874-SA5A-SB-4.0-5.0(RES)	Zirconium	4.29 mg/Kg	4.29U mg/Kg

Matrix Spike/Matrix Spike Duplicate Outlier Report

Lab Reporting Batch ID: PH188 **Laboratory: LL**

EDD Filename: PH188_v3 **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-874-SA5A-SB-4.0-5.0MS **FDG2-SL-874-SA5A-SB-4.0-5.0MSD** (FDG2-SL-874-SA5A-SB-4.0-5.0)	EFH (C21-C30) EFH (C30-C40)	- 130	42 28	49.00-123.00 49.00-123.00	26 (20.00) 38 (20.00)	EFH (C21-C30) EFH (C30-C40)	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-874-SA5A-SB-4.0-5.0MS (TOT) **FDG2-SL-874-SA5A-SB-4.0-5.0MSD (TOT)** (FDG2-SL-1174-SA5A-SB-4.0-5.0 FDG2-SL-874-SA5A-SB-0.0-0.5 FDG2-SL-874-SA5A-SB-12.0-13.0 FDG2-SL-874-SA5A-SB-4.0-5.0)	ALUMINUM CALCIUM MANGANESE TITANIUM	372 149 156 150	821 - - 258	75.00-125.00 75.00-125.00 75.00-125.00 75.00-125.00	- - - -	ALUMINUM CALCIUM MANGANESE TITANIUM	No Qual, >4x
FDG2-SL-874-SA5A-SB-4.0-5.0MS (TOT) **FDG2-SL-874-SA5A-SB-4.0-5.0MSD (TOT)** (FDG2-SL-1174-SA5A-SB-4.0-5.0 FDG2-SL-874-SA5A-SB-0.0-0.5 FDG2-SL-874-SA5A-SB-12.0-13.0 FDG2-SL-874-SA5A-SB-4.0-5.0)	IRON MAGNESIUM	-2173 -196	-1295 -75	75.00-125.00 75.00-125.00	- -	IRON MAGNESIUM	No Qual, >4x
FDG2-SL-874-SA5A-SB-4.0-5.0MS (TOT) **FDG2-SL-874-SA5A-SB-4.0-5.0MSD (TOT)** (FDG2-SL-1174-SA5A-SB-4.0-5.0 FDG2-SL-874-SA5A-SB-0.0-0.5 FDG2-SL-874-SA5A-SB-12.0-13.0 FDG2-SL-874-SA5A-SB-4.0-5.0)	ANTIMONY BARIUM PHOSPHORUS	52 35 -	51 37 38	75.00-125.00 75.00-125.00 75.00-125.00	- - -	ANTIMONY BARIUM PHOSPHORUS	J(all detects) UJ(all non-detects)

Lab Duplicate Outlier Report

Lab Reporting Batch ID: PH188 **Laboratory: LL**

EDD Filename: PH188_v3 **eQAPP Name: CDM_SSFL_140617_Lan**

Method: 6010C
Matrix: SO

QC Sample ID (Associated Sample ID)	Analyte	Sample RPD	eQAPP RPD	Flag
FDG2-SL-874-SA5A-SB-4.0-5.0DUP (TOT) (FDG2-SL-1174-SA5A-SB-4.0-5.0 FDG2-SL-874-SA5A-SB-0.0-0.5 FDG2-SL-874-SA5A-SB-12.0-13.0 FDG2-SL-874-SA5A-SB-4.0-5.0)	ARSENIC	28	20.00	
	BARIUM	84	20.00	J (all detects)
	BORON	32	20.00	UJ (all non-detects)
	CHROMIUM	22	20.00	
	LEAD	23	20.00	As, B, Pb, Mo, No Qual,
	MOLYBDENUM	29	20.00	OK by Difference

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

Field Duplicate RPD Report

Lab Reporting Batch ID: PH188 **Laboratory: LL**

EDD Filename: PH188_v3 **eQAPP Name: CDM_SSFL_140617_Lan**

Method: 160.3M
Matrix: SO

Analyte	Concentration (%)		Sample RPD	eQAPP RPD	Flag
	FDG2-SL-874-SA5A-SB-4.0-5.0	FDG2-SL-1174-SA5A-SB-4.0-5.0			
MOISTURE	7.0	7.9	12		No Qualifiers Applied

Method: 1613B
Matrix: SO

Analyte	Concentration (ng/Kg)		Sample RPD	eQAPP RPD	Flag
	FDG2-SL-874-SA5A-SB-4.0-5.0	FDG2-SL-1174-SA5A-SB-4.0-5.0			
1,2,3,4,7,8,9-HPCDF	0.0420	0.0562	29	50.00	
1,2,3,4,7,8-HXCDF	0.134	0.0937	35	50.00	
1,2,3,6,7,8-HXCDD	0.394	0.297	28	50.00	
1,2,3,6,7,8-HXCDF	0.129	0.106	20	50.00	
1,2,3,7,8,9-HXCDD	0.447	0.392	13	50.00	
1,2,3,7,8,9-HXCDF	0.422	0.370	13	50.00	No Qualifiers Applied
1,2,3,7,8-PECDD	0.192	0.172	11	50.00	
1,2,3,7,8-PECDF	0.266	0.239	11	50.00	
2,3,4,6,7,8-HXCDF	0.112	0.107	5	50.00	
2,3,4,7,8-PECDF	0.252	0.187	30	50.00	
TEQ WHO 2005 - EDLx0.0	0.158	0.0887	56		
1,2,3,4,6,7,8-HPCDD	1.76	0.842	71	50.00	
1,2,3,4,6,7,8-HPCDF	0.386	0.192	67	50.00	
1,2,3,4,7,8-HxCDD	0.0535	5.38 U	200	50.00	J(all detects)
2,3,7,8-TCDF	1.05 U	0.122	200	50.00	UJ(all non-detects)
OCDD	14.0	6.72	70	50.00	
OCDF	0.953	0.500	62	50.00	

Method: 6010C
Matrix: SO

Analyte	Concentration (mg/Kg)		Sample RPD	eQAPP RPD	Flag
	FDG2-SL-874-SA5A-SB-4.0-5.0 (TOT)	FDG2-SL-1174-SA5A-SB-4.0-5.0 (TOT)			
ALUMINUM	16200	14900	8	50.00	
ARSENIC	4.42	3.84	14	50.00	
BERYLLIUM	0.604	0.529	13	50.00	
BORON	7.29	4.55	46	50.00	
CADMIUM	0.590	0.565	4	50.00	
CALCIUM	3140	3440	9	50.00	
CHROMIUM	22.0	18.4	18	50.00	
COBALT	5.61	5.58	1	50.00	
COPPER	11.0	10.0	10	50.00	
IRON	20000	20100	0	50.00	
LEAD	7.41	5.67	27	50.00	
LITHIUM	23.3	23.1	1	50.00	No Qualifiers Applied
MAGNESIUM	4540	4420	3	50.00	
MANGANESE	313	367	16	50.00	
NICKEL	11.9	11.0	8	50.00	
PHOSPHORUS	400	412	3	50.00	
POTASSIUM	3470	3450	1	50.00	
SODIUM	119	104	13	50.00	
TIN	2.57	2.49	3	50.00	
TITANIUM	1160	1100	5	50.00	
VANADIUM	37.5	34.8	7	50.00	
ZINC	60.5	57.4	5	50.00	
Zirconium	4.29	3.87	10	50.00	
BARIUM	247	106	80	50.00	J(all detects)
MOLYBDENUM	0.474	0.277	52	50.00	

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

Field Duplicate RPD Report

Lab Reporting Batch ID: PH188 **Laboratory: LL**

EDD Filename: PH188_v3 **eQAPP Name: CDM_SSFL_140617_Lan**

Method: 6020A
Matrix: SO

Analyte	Concentration (mg/Kg)		Sample RPD	eQAPP RPD	Flag
	FDG2-SL-874-SA5A-SB-4.0-5.0 (TOT)	FDG2-SL-1174-SA5A-SB-4.0-5.0 (TOT)			
SELENIUM	0.148	0.161	8	50.00	No Qualifiers Applied
STRONTIUM	24.5	21.4	14	50.00	
THALLIUM	0.275	0.289	5	50.00	
SILVER	0.0297	0.209 U	200	50.00	J(all detects) UJ(all non-detects)

Method: 7471B
Matrix: SO

Analyte	Concentration (mg/Kg)		Sample RPD	eQAPP RPD	Flag
	FDG2-SL-874-SA5A-SB-4.0-5.0 (TOT)	FDG2-SL-1174-SA5A-SB-4.0-5.0 (TOT)			
MERCURY	0.0118	0.0124	5	50.00	No Qualifiers Applied

Method: 8015M
Matrix: SO

Analyte	Concentration (mg/Kg)		Sample RPD	eQAPP RPD	Flag
	FDG2-SL-874-SA5A-SB-4.0-5.0	FDG2-SL-1174-SA5A-SB-4.0-5.0			
EFH (C21-C30)	16	11	37	50.00	No Qualifiers Applied
EFH (C30-C40)	31	21	38	50.00	

Method: 8270D SIM
Matrix: SO

Analyte	Concentration (ug/Kg)		Sample RPD	eQAPP RPD	Flag
	FDG2-SL-874-SA5A-SB-4.0-5.0	FDG2-SL-1174-SA5A-SB-4.0-5.0			
BENZO(B)FLUORANTHENE	1.2	0.93	25	50.00	No Qualifiers Applied
CHRYSENE	1.4	1.2	15	50.00	
FLUORANTHENE	1.8	1.7	6	50.00	
PYRENE	0.91	0.89	2	50.00	
2-METHYLNAPHTHALENE	1.0	1.8 U	200	50.00	J(all detects)
PHENANTHRENE	2.9	1.7	52	50.00	UJ(all non-detects)

Reporting Limit Outliers

Lab Reporting Batch ID: PH188 **Laboratory: LL**

EDD Filename: PH188_v3 **eQAPP Name: CDM_SSFL_140617_Lan**

Method: 1613B

Matrix: SO

SampleID	Analyte	Lab Qual	Result	Reporting Limit	RL Type	Units	Flag
FDG2-SL-1174-SA5A-SB-4.0-5.0	1,2,3,4,6,7,8-HPCDD	JB	0.842	5.38	PQL	ng/Kg	
	1,2,3,4,6,7,8-HPCDF	JB	0.192	5.38	PQL	ng/Kg	
	1,2,3,4,7,8,9-HPCDF	JBQ	0.0562	5.38	PQL	ng/Kg	
	1,2,3,4,7,8-HXCDF	JBQ	0.0937	5.38	PQL	ng/Kg	
	1,2,3,6,7,8-HXCDD	JBQ	0.297	5.38	PQL	ng/Kg	
	1,2,3,6,7,8-HXCDF	JBQ	0.106	5.38	PQL	ng/Kg	
	1,2,3,7,8,9-HXCDD	JB	0.392	5.38	PQL	ng/Kg	
	1,2,3,7,8,9-HXCDF	JB	0.370	5.38	PQL	ng/Kg	J (all detects)
	1,2,3,7,8-PECDD	JBQ	0.172	5.38	PQL	ng/Kg	
	1,2,3,7,8-PECDF	JBQ	0.239	5.38	PQL	ng/Kg	
	2,3,4,6,7,8-HXCDF	JBQ	0.107	5.38	PQL	ng/Kg	
	2,3,4,7,8-PECDF	JBQ	0.187	5.38	PQL	ng/Kg	
	2,3,7,8-TCDF	JQ	0.122	1.08	PQL	ng/Kg	
	OCDD	JB	6.72	10.8	PQL	ng/Kg	
	OCDF	JB	0.500	10.8	PQL	ng/Kg	
FDG2-SL-874-SA5A-SB-0.0-0.5	1,2,3,4,6,7,8-HPCDD	JBQ	0.270	5.21	PQL	ng/Kg	
	1,2,3,4,6,7,8-HPCDF	JBQ	0.0734	5.21	PQL	ng/Kg	
	1,2,3,4,7,8-HXCDF	JBQ	0.0533	5.21	PQL	ng/Kg	
	1,2,3,6,7,8-HXCDD	JB	0.0631	5.21	PQL	ng/Kg	
	1,2,3,7,8,9-HXCDF	JB	0.0794	5.21	PQL	ng/Kg	J (all detects)
	1,2,3,7,8-PECDD	JBQ	0.0940	5.21	PQL	ng/Kg	
	1,2,3,7,8-PECDF	JBQ	0.0519	5.21	PQL	ng/Kg	
	2,3,7,8-TCDD	JQ	0.149	1.04	PQL	ng/Kg	
	OCDD	JB	3.21	10.4	PQL	ng/Kg	
	OCDF	JB	0.209	10.4	PQL	ng/Kg	
FDG2-SL-874-SA5A-SB-12.0-13.0	1,2,3,4,6,7,8-HPCDD	JBQ	0.118	5.13	PQL	ng/Kg	
	1,2,3,4,6,7,8-HPCDF	JBQ	0.0606	5.13	PQL	ng/Kg	
	1,2,3,4,7,8,9-HPCDF	JB	0.0309	5.13	PQL	ng/Kg	
	1,2,3,4,7,8-HXCDF	JBQ	0.0742	5.13	PQL	ng/Kg	
	1,2,3,6,7,8-HXCDF	JBQ	0.0470	5.13	PQL	ng/Kg	
	1,2,3,7,8-PECDD	JBQ	0.0874	5.13	PQL	ng/Kg	J (all detects)
	1,2,3,7,8-PECDF	JB	0.0598	5.13	PQL	ng/Kg	
	2,3,4,6,7,8-HXCDF	JBQ	0.0341	5.13	PQL	ng/Kg	
	2,3,4,7,8-PECDF	JBQ	0.0511	5.13	PQL	ng/Kg	
	OCDD	JB	0.739	10.3	PQL	ng/Kg	
	OCDF	JBQ	0.151	10.3	PQL	ng/Kg	
FDG2-SL-874-SA5A-SB-4.0-5.0	1,2,3,4,6,7,8-HPCDD	JB	1.76	5.27	PQL	ng/Kg	
	1,2,3,4,6,7,8-HPCDF	JBQ	0.386	5.27	PQL	ng/Kg	
	1,2,3,4,7,8,9-HPCDF	JB	0.0420	5.27	PQL	ng/Kg	
	1,2,3,4,7,8-HxCDD	JQ	0.0535	5.27	PQL	ng/Kg	
	1,2,3,4,7,8-HXCDF	JBQ	0.134	5.27	PQL	ng/Kg	
	1,2,3,6,7,8-HXCDD	JBQ	0.394	5.27	PQL	ng/Kg	
	1,2,3,6,7,8-HXCDF	JBQ	0.129	5.27	PQL	ng/Kg	
	1,2,3,7,8,9-HXCDD	JB	0.447	5.27	PQL	ng/Kg	J (all detects)
	1,2,3,7,8,9-HXCDF	JBQ	0.422	5.27	PQL	ng/Kg	
	1,2,3,7,8-PECDD	JBQ	0.192	5.27	PQL	ng/Kg	
	1,2,3,7,8-PECDF	JB	0.266	5.27	PQL	ng/Kg	
	2,3,4,6,7,8-HXCDF	JB	0.112	5.27	PQL	ng/Kg	
	2,3,4,7,8-PECDF	JB	0.252	5.27	PQL	ng/Kg	
	OCDF	JB	0.953	10.5	PQL	ng/Kg	

Reporting Limit Outliers

Lab Reporting Batch ID: PH188 **Laboratory: LL**

EDD Filename: PH188_v3 **eQAPP Name: CDM_SSFL_140617_Lan**

Method: 6010C

Matrix: SO

SampleID	Analyte	Lab Qual	Result	Reporting Limit	RL Type	Units	Flag
FDG2-SL-1174-SA5A-SB-4.0-5.0	ARSENIC	J	3.84	4.18	PQL	mg/Kg	J (all detects)
	BERYLLIUM	J	0.529	1.04	PQL	mg/Kg	
	BORON	J	4.55	10.4	PQL	mg/Kg	
	CADMIUM	J	0.565	1.04	PQL	mg/Kg	
	MOLYBDENUM	J	0.277	2.09	PQL	mg/Kg	
	TIN	J	2.49	10.4	PQL	mg/Kg	
	Zirconium	J	3.87	5.22	PQL	mg/Kg	
FDG2-SL-874-SA5A-SB-0.0-0.5	ARSENIC	J	3.62	4.15	PQL	mg/Kg	J (all detects)
	BERYLLIUM	J	0.430	1.04	PQL	mg/Kg	
	BORON	J	4.30	10.4	PQL	mg/Kg	
	CADMIUM	J	0.435	1.04	PQL	mg/Kg	
	TIN	J	2.49	10.4	PQL	mg/Kg	
	Zirconium	J	2.83	5.19	PQL	mg/Kg	
FDG2-SL-874-SA5A-SB-12.0-13.0	BERYLLIUM	J	0.540	1.02	PQL	mg/Kg	J (all detects)
	BORON	J	3.61	10.2	PQL	mg/Kg	
	CADMIUM	J	0.541	1.02	PQL	mg/Kg	
	MOLYBDENUM	J	0.206	2.05	PQL	mg/Kg	
	TIN	J	2.68	10.2	PQL	mg/Kg	
	Zirconium	J	2.86	5.12	PQL	mg/Kg	
FDG2-SL-874-SA5A-SB-4.0-5.0	BERYLLIUM	J	0.604	1.08	PQL	mg/Kg	J (all detects)
	BORON	J	7.29	10.8	PQL	mg/Kg	
	CADMIUM	J	0.590	1.08	PQL	mg/Kg	
	MOLYBDENUM	J	0.474	2.15	PQL	mg/Kg	
	TIN	J	2.57	10.8	PQL	mg/Kg	
	Zirconium	J	4.29	5.38	PQL	mg/Kg	

Method: 6020A

Matrix: SO

SampleID	Analyte	Lab Qual	Result	Reporting Limit	RL Type	Units	Flag
FDG2-SL-1174-SA5A-SB-4.0-5.0	SELENIUM	J	0.161	0.418	PQL	mg/Kg	J (all detects)
FDG2-SL-874-SA5A-SB-12.0-13.0	SELENIUM	J	0.150	0.410	PQL	mg/Kg	J (all detects)
FDG2-SL-874-SA5A-SB-4.0-5.0	SELENIUM	J	0.148	0.430	PQL	mg/Kg	J (all detects)
	SILVER	J	0.0297	0.215	PQL	mg/Kg	

Method: 7471B

Matrix: SO

SampleID	Analyte	Lab Qual	Result	Reporting Limit	RL Type	Units	Flag
FDG2-SL-1174-SA5A-SB-4.0-5.0	MERCURY	J	0.0124	0.0171	PQL	mg/Kg	J (all detects)
FDG2-SL-874-SA5A-SB-12.0-13.0	MERCURY	J	0.0114	0.0176	PQL	mg/Kg	J (all detects)
FDG2-SL-874-SA5A-SB-4.0-5.0	MERCURY	J	0.0118	0.0174	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: PH188 **Laboratory: LL**

EDD Filename: PH188_v3 **eQAPP Name: CDM_SSFL_140617_Lan**

Method: 7471B

Matrix: SO

SampleID	Analyte	Lab Qual	Result	Reporting Limit	RL Type	Units	Flag

Method: 8270D SIM

Matrix: SO

SampleID	Analyte	Lab Qual	Result	Reporting Limit	RL Type	Units	Flag
FDG2-SL-1174-SA5A-SB-4.0-5.0	BENZO(B)FLUORANTHENE	J	0.93	1.8	PQL	ug/Kg	
	CHRYSENE	J	1.2	1.8	PQL	ug/Kg	
	FLUORANTHENE	J	1.7	1.8	PQL	ug/Kg	J (all detects)
	PHENANTHRENE	J	1.7	1.8	PQL	ug/Kg	
	PYRENE	J	0.89	1.8	PQL	ug/Kg	
FDG2-SL-874-SA5A-SB-4.0-5.0	2-METHYLNAPHTHALENE	J	1.0	1.8	PQL	ug/Kg	
	BENZO(B)FLUORANTHENE	J	1.2	1.8	PQL	ug/Kg	
	CHRYSENE	J	1.4	1.8	PQL	ug/Kg	J (all detects)
	PYRENE	J	0.91	1.8	PQL	ug/Kg	

LDC #: 32029A4
SDG #: PH188
Laboratory: Eurofins Lancaster Laboratories

VALIDATION COMPLETENESS WORKSHEET

ADR

Date: 6/20/14
Page: 1 of 1
Reviewer: KK
2nd Reviewer: AL

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

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:
II.	ICP/MS Tune	N	
III.	Calibration	–	
IV.	Blanks	A	No qualifying hits for ICB/CCB
V.	ICP Interference Check Sample (ICS) Analysis	–	
VI.	Matrix Spike Analysis	SW N	MS/MSD
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	–	FD = 2, 3
XV	Field Blanks	SW	FB = FB-052114 SDG# PH191 EB = EB2-052214 (PH196)

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-874-SA5A-SB-0.0-0.5	11		21		31	
2	FDG2-SL-874-SA5A-SB-4.0-5.0	12		22		32	
3	FDG2-SL-1174-SA5A-SB-4.0-5.0	13		23		33	
4	FDG2-SL-874-SA5A-SB-12.0-13.0	14		24		34	
5	FDG2-SL-874-SA5A-SB-4.0-5.0MS	15		25		35	
6	FDG2-SL-874-SA5A-SB-4.0-5.0MSD	16		26		36	
7	FDG2-SL-874-SA5A-SB-4.0-5.0DUP	17		27		37	
8		18		28		38	
9		19		29		39	
10		20		30		40	

Notes: _____

LDC #: 32029A4

VALIDATION FINDINGS WORKSHEET
Sample Specific Element Reference

Reviewer: KK
2nd reviewer: _____

All circled elements are applicable to each sample.

Sample ID	Matrix	Target Analyte List (TAL)
1-4	Soil	Al, Sb, As, Ba, Be, B, Cd, 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
QC5-7	Soil	Al, Sb, As, Ba, Be, B, Cd, 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
		Al, Sb, As, Ba, Be, B, Cd, 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 #: 32029A4

VALIDATION FINDINGS WORKSHEET
Field Blanks

Reviewer: KK
2nd Reviewer: ON

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

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

Analyte	Blank ID	Sample Identification											
	1 (mg/L)	(mg/kg) Action Limit	1	2	3	4							
Zr	0.0110	5.50	2.83	4.29	3.87	2.86							

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 #: 32029A4

VALIDATION FINDINGS WORKSHEET
Field Blanks

Reviewer: SM
2nd Reviewer:

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

Blank units: mg/l **Associated sample units:** mg/kg
Sampling date: 5/22/14 Soil factor applied 100
Field blank type: (circle one) Field Blank / Rinsate / Other: Associated Samples: All

Analyte	Blank ID	Sample Identification										
	EB2-052214 (PH196)	Action Limit	1	2	3	4						
Zr	0.0108	5.40	2.83	4.29	3.87	2.86						

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".

>4x

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QUALITY ASSURANCE SUMMARY
FORM 5A(MS/MSD)
MATRIX SPIKE/MATRIX SPIKE DUPLICATE
SDG No.: PH188
Matrix: SOIL Level (low/med): LOW

Background Lab Sample ID: 7471505BKG Matrix Spike Lab Sample ID: 7471506MS Matrix Spike Duplicate Lab Sample ID: 7471507MSD
Batch Id(s): P14737B, P14138B

		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		15077.2240		15799.8087		16719.2600		194.1748	200.0000	MG/KG	372		821		6			20	P
Antimony		0.7400	U	25.1388		25.7470		48.5437	50.0000	MG/KG	52	N	51	N	2		75 - 125	20	P
Arsenic		4.1100		18.1495		18.5110		14.5631	15.0000	MG/KG	96		96		2		75 - 125	20	P
Barium		229.5740		297.2029		303.1120		194.1748	200.0000	MG/KG	35	N	37	N	2		75 - 125	20	P
Beryllium		0.5620	B	5.4524		5.6390		4.8544	5.0000	MG/KG	101		102		3		75 - 125	20	P
Boron		6.7790	B	197.7252		203.6840		194.1748	200.0000	MG/KG	98		98		3		75 - 125	20	P
Cadmium		0.5490	B	5.2553		5.4090		4.8544	5.0000	MG/KG	97		97		3		75 - 125	20	P
Calcium		2922.0890		3499.1408		3333.7350		388.3495	400.0000	MG/KG	149		103		5			20	P
Chromium		20.4370		36.1767		38.1970		19.4175	20.0000	MG/KG	81		89		5		75 - 125	20	P
Cobalt		5.2200		51.6757		53.5250		48.5437	50.0000	MG/KG	96		97		4		75 - 125	20	P
Copper		10.2590		34.9660		36.5290		24.2718	25.0000	MG/KG	102		105		4		75 - 125	20	P
Iron		18611.9190		16501.9854		17317.2320		97.0874	100.0000	MG/KG	-2173		-1295		5			20	P
Lead		6.8920		21.2291		20.8850		14.5631	15.0000	MG/KG	98		93		2		75 - 125	20	P
Lithium		21.6980		117.9398		122.4810		97.0874	100.0000	MG/KG	99		101		4		75 - 125	20	P
Magnesium		4221.3380		3841.4194		4071.8270		194.1748	200.0000	MG/KG	-196		-75		6			20	P
Manganese		291.0670		366.9010		350.5210		48.5437	50.0000	MG/KG	156		119		5			20	P
Mercury		0.0109	B	0.1872		0.1680		0.1651	0.1644	MG/KG	107		96		11		65 - 135	20	CV
Molybdenum		0.4410	B	185.6796		191.5500		194.1748	200.0000	MG/KG	95		96		3		75 - 125	20	P
Nickel		11.0400		57.5845		59.7340		48.5437	50.0000	MG/KG	96		97		4		75 - 125	20	P
Phosphorus		371.5600		474.9204		409.8270		97.0874	100.0000	MG/KG	106		38	N	15		75 - 125	20	P
Potassium		3224.7770		4274.3272		4315.1720		970.8738	1000.0000	MG/KG	108		109		1		75 - 125	20	P
Selenium	78	0.1373	B	2.0524		2.1120		1.9417	2.0000	MG/KG	99		99		3		75 - 125	20	MS
Silver	107	0.0276	B	10.2039		10.2440		9.7087	10.0000	MG/KG	105		102		0		75 - 125	20	MS
Sodium		111.0220		1034.4136		1073.5840		970.8738	1000.0000	MG/KG	95		96		4		75 - 125	20	P
Strontium	88	22.8200		31.0291		30.1800		7.7670	8.0000	MG/KG	106		92		3		75 - 125	20	MS
Thallium	203	0.2560		0.7212		0.7038		0.3883	0.4000	MG/KG	120		112		2		75 - 125	20	MS
Tin		2.3870	B	352.1097		362.6580		388.3495	400.0000	MG/KG	90		90		3		75 - 125	20	P
Titanium		1074.1990		1220.2078		1331.7550		97.0874	100.0000	MG/KG	150		258		9			20	P
Vanadium		34.8650		81.7874		85.7960		48.5437	50.0000	MG/KG	97		102		5		75 - 125	20	P
Zinc		56.2590		101.3602		100.6030		48.5437	50.0000	MG/KG	93		89		1		75 - 125	20	P
Zirconium		3.9890	B	98.7417		102.2970		97.0874	100.0000	MG/KG	98		98		4		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.: PH188
Matrix: SOIL Level (low/med): LOW

Background Lab Sample ID: 7471505BKG Duplicate Lab Sample ID: 7471508DUP
Batch ID(s): P14737B, P14138B
Concentration Units: MG/KG

Analyte	Mass	Control Limit	Samples (S)	C	Duplicate (D)	C	RPD	Q	M
Aluminum			15077.2240		13172.7860		13		P
Antimony			0.7400	U	0.7400	U			P
Arsenic		4.0	4.1100		3.0940	B	28		P
Barium			229.5740		94.1420		84	*	P
Beryllium			0.5620	B	0.4860	B	15		P
Boron			6.7790	B	4.9280	B	32		P
Cadmium			0.5490	B	0.4910	B	11		P
Calcium			2922.0890		2520.8370		15		P
Chromium			20.4370		16.3790		22	*	P
Cobalt			5.2200		5.0370		4		P
Copper		2.0	10.2590		8.9330		14		P
Iron			18611.9190		17426.7630		7		P
Lead		3.0	6.8920		5.4820		23		P
Lithium			21.6980		20.2870		7		P
Magnesium			4221.3380		3839.8420		9		P
Manganese			291.0670		293.9320		1		P
Mercury			0.0109	B	0.0097	B	12		CV
Molybdenum			0.4410	B	0.3290	B	29		P
Nickel			11.0400		10.7650		3		P
Phosphorus			371.5600		354.0090		5		P
Potassium			3224.7770		3074.5320		5		P
Selenium	78		0.1373	B	0.1183	B	15		MS
Silver	107		0.0276	B	0.0297	B	7		MS
Sodium		100.0	111.0220		102.0390		8		P
Strontium	88		22.8200		19.6980		15		MS
Thallium	203	0.2	0.2560		0.2524		1		MS
Tin			2.3870	B	2.2340	B	7		P
Titanium			1074.1990		993.9750		8		P
Vanadium			34.8650		30.5970		13		P
Zinc			56.2590		52.0170		8		P
Zirconium			3.9890	B	4.0810	B	2		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

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QUALITY ASSURANCE SUMMARY
FORM 9
SERIAL DILUTIONS
SDG No.: PH188
Matrix: SOIL Level (low/med): LOW

Background Lab Sample ID: 7471505BKG Serial Dilution Lab Sample ID: 7471505L
Batch ID(s): P14737B
Concentration Units: UG/L

Analyte	Mass	Initial Sample Result (I)	C	Serial Dilution Result (S)	C	% Diff.	Q	M
Aluminum		150772.2400		160976.4000		7		P
Antimony		7.4000	U	37.0000	U			P
Arsenic		41.1000		35.0000	U	100		P
Barium		2295.7400		2368.3500		3		P
Beryllium		5.6200	B	3.9000	B	31		P
Boron		67.7900	B	83.3000	B	23		P
Cadmium		5.4900	B	5.1500	B	6		P
Calcium		29220.8900		31391.4500		7		P
Chromium		204.3700		214.0500		5		P
Cobalt		52.2000		57.8500		11	E	P
Copper		102.5900		109.4500		7		P
Iron		186119.1900		195022.9000		5		P
Lead		68.9200		72.2500	B	5		P
Lithium		216.9800		230.8500		6		P
Magnesium		42213.3800		44577.7000		6		P
Manganese		2910.6700		3073.0000		6		P
Molybdenum		4.4100	B	10.4000	B	136		P
Nickel		110.4000		120.7500		9		P
Phosphorus		3715.6000		3852.6000		4		P
Potassium		32247.7700		34272.2500		6		P
Selenium	78	0.6864	B	2.5000	U	100		MS
Silver	107	0.1379	B	0.6500	U	100		MS
Sodium		1110.2200		1249.8500	B	13		P
Strontium	88	114.1000		116.0500		2		MS
Thallium	203	1.2800		1.2985	B	1		MS
Tin		23.8700	B	25.7000	B	8		P
Titanium		10741.9900		11366.6000		6		P
Vanadium		348.6500		363.1000		4		P
Zinc		562.5900		594.0500		6		P
Zirconium		39.8900	B	47.9500	B	20		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

METHODS:
P = ICP Atomic Emission Spectrometer
MS = ICP Mass Spectrometry

CONCENTRATION QUALIFIERS:
U= Below MDL
B= Below LOQ
FLAGS:
E = Matrix Effects exist as proven by Serial Dilution or Spiked Dilution

Data Validation Report
Santa Susana Field Laboratory

Go Backs, Subgroup FDG Block 2

SDG: PH191

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

July 22, 2014

INTRODUCTION

This Data Validation Report (DVR) presents Level III data validation results for samples collected on May 21, 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
SVOCs by EPA SW 846 Method 8270D utilizing SIM
Pesticides by EPA SW 846 Method 8081B
Polychlorinated Biphenyls (PCBs) by EPA SW 846 Method 8082A
Herbicides by EPA SW 846 Method 8151A
Explosives by EPA SW 846 Method 8330A
Glycols by EPA SW 846 Method 8015C
Terphenyls by EPA SW 846 Method 8015B
Formaldehyde by EPA Method 8315A
Perchlorate by EPA SW 846 Method 6850
Metals by EPA SW 846 Method 6010C, 6020A, and 7470A.
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

Wet Chemistry:
Bromide, Chloride, Sulfate, Othrophosphate, Nitrate as Nitrogen, and Nitrite as Nitrogen by EPA Method 300.0
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 duplicates (DUP), laboratory control sample/laboratory control sample duplicates (LCS/LCSD), method 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 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 with the exception of one sample for orthophosphate. The associated sample result was qualified as rejected (R) due to holding time grossly outside of QC limits (>2x 48 hours). 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 three blanks for SVOCs, 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 glycols. The associated sample results were qualified as detected estimated (J) as applicable.

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 two LCS/LCSD pairs for VOCs and SVOCs. 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 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 PH191	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 collected for this SDG.

No equipment blank was associated to the samples in this SDG.

One field blank was collected and analyzed for VOCs, 1,4-Dioxane, SVOCs, pesticides, PCBs, herbicides, explosives, glycols, perchlorate, terphenyls, formaldehyde, metals, TPH as gasoline, TPH as extractables, bromide, chloride, fluoride, sulfate, orthophosphate, nitrate as nitrogen, nitrate as nitrogen, hexavalent chromium, and dioxins and dibenzofurans. The field blank had detections for VOCs, SVOCs, metals, and dioxins and dibenzofurans. The field blank did not associate to any samples in this SDG, therefore no samples were qualified due to field blank contamination.

XV. Overall Assessment of Data

One orthophosphate result was rejected due to holding times grossly outside of QC limits. This result is 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
21-May-2014	FB-052114	7472961	FB	3005A	6010C	III
21-May-2014	FB-052114	7472961	FB	3510C	8015B	III
21-May-2014	FB-052114	7472961	FB	3510C	8015M	III
21-May-2014	FB-052114	7472961	FB	3510C	8081B	III
21-May-2014	FB-052114	7472961	FB	3510C	8082A	III
21-May-2014	FB-052114	7472961	FB	3510C	8270D	III
21-May-2014	FB-052114	7472961	FB	3510C	8270D SIM	III
21-May-2014	FB-052114	7472961	FB	5030B	8015M	III
21-May-2014	FB-052114	7472961	FB	5030B	8260B	III
21-May-2014	FB-052114	7472961	FB	5030B	8260B SIM	III
21-May-2014	FB-052114	7472961	FB	8330	8330A	III
21-May-2014	FB-052114	7472961	FB	Gen Prep	300.0	III
21-May-2014	FB-052114	7472961	FB	Gen Prep	6850	III
21-May-2014	FB-052114	7472961	FB	Gen Prep	7199	III
21-May-2014	FB-052114	7472961	FB	Gen Prep	8015C	III
21-May-2014	FB-052114	7472961	FB	M3010A	6020A	III
21-May-2014	FB-052114	7472961	FB	METHOD	1613B	III
21-May-2014	FB-052114	7472961	FB	METHOD	7470A	III
21-May-2014	FB-052114	7472961	FB	METHOD	8151A	III
21-May-2014	FB-052114	7472961	FB	METHOD	8315A	III
21-May-2014	FB-052114MSD	P472961M241907A	MSD	Gen Prep	6850	III
21-May-2014	FB-052114MSD	P472961M322027A	MSD	Gen Prep	8015C	III
21-May-2014	FB-052114MS	P472961R241854A	MS	Gen Prep	6850	III
21-May-2014	FB-052114MS	P472961R322012A	MS	Gen Prep	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*

Attachment 2
Overall Data Qualification Summary

Data Qualifier Summary

Lab Reporting Batch ID: PH191 **Laboratory: LL**

EDD Filename: PH191_v1 **eQAPP Name: CDM_SSFL_140617_Lan**

Method Category: GENCHEM

Method: 300.0 **Matrix: AQ**

Sample ID: FB-052114 *Collected:* 5/21/2014 2:00:00 *Analysis Type:* RE *Dilution:* 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
Orthophosphate	0.50	U	0.20	MDL	0.50	PQL	mg/L	R	H

Method Category: METALS

Method: 6010C **Matrix: AQ**

Sample ID: FB-052114 *Collected:* 5/21/2014 2:00:00 *Analysis Type:* RES *Dilution:* 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
Zirconium	0.0110	J	0.0084	MDL	0.100	PQL	mg/L	U	B, B

Method Category: SVOA

Method: 1613B **Matrix: AQ**

Sample ID: FB-052114 *Collected:* 5/21/2014 2:00:00 *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	1.23	JBQ	0.142	MDL	9.90	PQL	pg/L	U	B
1,2,3,4,6,7,8-HPCDF	0.176	JBQ	0.0588	MDL	9.90	PQL	pg/L	U	B
1,2,3,4,7,8,9-HPCDF	0.328	JBQ	0.0704	MDL	9.90	PQL	pg/L	U	B
1,2,3,4,7,8-HXCDF	0.108	JBQ	0.100	MDL	9.90	PQL	pg/L	U	B
1,2,3,7,8,9-HXCDF	0.182	JQ	0.101	MDL	9.90	PQL	pg/L	J	Z
1,2,3,7,8-PECDF	0.333	JBQ	0.110	MDL	9.90	PQL	pg/L	U	B
2,3,4,6,7,8-HXCDF	0.188	JBQ	0.0902	MDL	9.90	PQL	pg/L	U	B
OCDD	6.37	JBQ	0.209	MDL	19.8	PQL	pg/L	U	B
OCDF	0.531	JBQ	0.166	MDL	19.8	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: PH191 **Laboratory: LL**

EDD Filename: PH191_v1 **eQAPP Name: CDM_SSFL_140617_Lan**

Method Category: SVOA

Method: 8270D **Matrix: AQ**

Sample ID: FB-052114 *Collected:* 5/21/2014 2:00:00 *Analysis Type:* RES-BASE/NEUTRAL *Dilution:* 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
NAPHTHALENE	0.2	J	0.1	MDL	0.5	PQL	ug/L	J	Z

Method Category: SVOA

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

Sample ID: FB-052114 *Collected:* 5/21/2014 2:00:00 *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	0.022	J	0.011	MDL	0.053	PQL	ug/L	J	Z, L
2-METHYLNAPHTHALENE	0.032	J	0.011	MDL	0.053	PQL	ug/L	J	Z
BIS(2-ETHYLHEXYL)PHTHALATE	0.058	J	0.053	MDL	1.1	PQL	ug/L	UJ	L, E, B
Di-n-butylphthalate	0.089	J	0.053	MDL	1.1	PQL	ug/L	J	Z

Method Category: VOA

Method: 8260B **Matrix: AQ**

Sample ID: FB-052114 *Collected:* 5/21/2014 2:00:00 *Analysis Type:* RES *Dilution:* 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
CHLOROFORM	0.7	J	0.5	MDL	5	PQL	ug/L	J	Z
Chlorotrifluoroethylene	5	U	2	MDL	5	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: PH191 **Laboratory: LL**

EDD Filename: PH191_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
H	Sampling to Analysis Rejection
L	Laboratory Control Precision
L	Laboratory Control Spike Lower Estimation
L	Laboratory Control Spike Upper Estimation
Q	Matrix Spike Precision
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

PH191

QC Outlier Report: HoldingTimes

Lab Reporting Batch ID: PH191 **Laboratory: LL**

EDD Filename: PH191_v1 **eQAPP Name: CDM_SSFL_140617_Lan**

Method: 300.0 **Preparation Method: Gen Prep**

Matrix: AQ

Sample ID	*Type*	*Actual*	*Criteria*	*Units*	*Flag*
FB-052114 (RE)	Sampling To Analysis	216.00	48.00	HOURS	J (all detects) R (all non-detects)

Method Blank Outlier Report

Lab Reporting Batch ID: PH191 **Laboratory: LL**

EDD Filename: PH191_v1 **eQAPP Name: CDM_SSFL_140617_Lan**

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

Method Blank Sample ID	Analysis Date	Analyte	Result	Associated Samples
BLK1480B370404	5/31/2014 4:04:00 AM	1,2,3,4,6,7,8-HPCDD	0.923 pg/L	FB-052114
		1,2,3,4,6,7,8-HPCDF	0.283 pg/L	
		1,2,3,4,7,8,9-HPCDF	0.365 pg/L	
		1,2,3,4,7,8-HxCDD	0.213 pg/L	
		1,2,3,4,7,8-HXCDF	0.316 pg/L	
		1,2,3,6,7,8-HXCDD	0.251 pg/L	
		1,2,3,7,8,9-HXCDD	0.159 pg/L	
		1,2,3,7,8-PECDF	0.603 pg/L	
		2,3,4,6,7,8-HXCDF	0.178 pg/L	
		OCDD	7.17 pg/L	
		OCDF	0.452 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
FB-052114(RES)	1,2,3,4,6,7,8-HPCDD	1.23 pg/L	1.23U pg/L
FB-052114(RES)	1,2,3,4,6,7,8-HPCDF	0.176 pg/L	0.176U pg/L
FB-052114(RES)	1,2,3,4,7,8,9-HPCDF	0.328 pg/L	0.328U pg/L
FB-052114(RES)	1,2,3,4,7,8-HXCDF	0.108 pg/L	0.108U pg/L
FB-052114(RES)	1,2,3,7,8-PECDF	0.333 pg/L	0.333U pg/L
FB-052114(RES)	2,3,4,6,7,8-HXCDF	0.188 pg/L	0.188U pg/L
FB-052114(RES)	OCDD	6.37 pg/L	6.37U pg/L
FB-052114(RES)	OCDF	0.531 pg/L	0.531U pg/L

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

Method Blank Sample ID	Analysis Date	Analyte	Result	Associated Samples
P14835BB221845	5/29/2014 6:45:00 PM	Zirconium	0.0110 mg/L	FB-052114

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
FB-052114(RES)	Zirconium	0.0110 mg/L	0.0110U mg/L

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

Method Blank Sample ID	Analysis Date	Analyte	Result	Associated Samples
PLKWN14B260205	6/3/2014 2:05:00 AM	BIS(2-ETHYLHEXYL)PHTHALATE	0.056 ug/L	FB-052114

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
FB-052114(RES)	BIS(2-ETHYLHEXYL)PHTHALATE	0.058 ug/L	1.1U ug/L

Matrix Spike/Matrix Spike Duplicate Outlier Report

Lab Reporting Batch ID: PH191 **Laboratory: LL**

EDD Filename: PH191_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*
FB-052114MSD	ETHYLENE GLYCOL	-	-	50.00-155.00	26 (20.00)	ETHYLENE GLYCOL	J (all detects)
(FB-052114)	Propylene glycol	-	-	54.00-145.00	29 (20.00)	Propylene glycol	

Lab Control Spike/Lab Control Spike Duplicate Outlier Report

Lab Reporting Batch ID: PH191 **Laboratory: LL**

EDD Filename: PH191_v1 **eQAPP Name: CDM_SSFL_140617_Lan**

Method: 8270D SIM
Matrix: AQ

QC Sample ID (Associated Samples)	Compound	LCS %R	LCSD %R	%R Limits	RPD (Limits)	Affected Compounds	Flag
P4WNLCSQ260235 **P4WNLCSY260304** (FB-052114)	1-METHYLNAPHTHALENE BIS(2-ETHYLHEXYL)PHTHALAT	84 160	- -	86.00-130.00 70.00-143.00	- 77 (30.00)	1-METHYLNAPHTHALENE BIS(2-ETHYLHEXYL)PHTHALA	J (all detects) UJ (all non-detects)

Method: 8260B
Matrix: AQ

QC Sample ID (Associated Samples)	Compound	LCS %R	LCSD %R	%R Limits	RPD (Limits)	Affected Compounds	Flag
LCSY18Q211044A (FB-052114)	Chlorotrifluoroethylene	46	-	47.00-120.00	-	Chlorotrifluoroethylene	J(all detects) UJ(all non-detects)

Reporting Limit Outliers

Lab Reporting Batch ID: PH191 **Laboratory: LL**

EDD Filename: PH191_v1 **eQAPP Name: CDM_SSFL_140617_Lan**

Method: 1613B

Matrix: AQ

SampleID	Analyte	Lab Qual	Result	Reporting Limit	RL Type	Units	Flag
FB-052114	1,2,3,4,6,7,8-HPCDD	JBQ	1.23	9.90	PQL	pg/L	
	1,2,3,4,6,7,8-HPCDF	JBQ	0.176	9.90	PQL	pg/L	
	1,2,3,4,7,8,9-HPCDF	JBQ	0.328	9.90	PQL	pg/L	
	1,2,3,4,7,8-HXCDF	JBQ	0.108	9.90	PQL	pg/L	
	1,2,3,7,8,9-HXCDF	JQ	0.182	9.90	PQL	pg/L	J (all detects)
	1,2,3,7,8-PECDF	JBQ	0.333	9.90	PQL	pg/L	
	2,3,4,6,7,8-HXCDF	JBQ	0.188	9.90	PQL	pg/L	
	OCDD	JBQ	6.37	19.8	PQL	pg/L	
	OCDF	JBQ	0.531	19.8	PQL	pg/L	

Method: 6010C

Matrix: AQ

SampleID	Analyte	Lab Qual	Result	Reporting Limit	RL Type	Units	Flag
FB-052114	Zirconium	J	0.0110	0.100	PQL	mg/L	J (all detects)

Method: 8260B

Matrix: AQ

SampleID	Analyte	Lab Qual	Result	Reporting Limit	RL Type	Units	Flag
FB-052114	CHLOROFORM	J	0.7	5	PQL	ug/L	J (all detects)

Method: 8270D

Matrix: AQ

SampleID	Analyte	Lab Qual	Result	Reporting Limit	RL Type	Units	Flag
FB-052114	NAPHTHALENE	J	0.2	0.5	PQL	ug/L	J (all detects)

Method: 8270D SIM

Matrix: AQ

SampleID	Analyte	Lab Qual	Result	Reporting Limit	RL Type	Units	Flag
FB-052114	1-METHYLNAPHTHALENE	J	0.022	0.053	PQL	ug/L	
	2-METHYLNAPHTHALENE	J	0.032	0.053	PQL	ug/L	
	BIS(2-ETHYLHEXYL)PHTHALATE	J	0.058	1.1	PQL	ug/L	J (all detects)
	Di-n-butylphthalate	J	0.089	1.1	PQL	ug/L	

LDC #: 32029B4

VALIDATION COMPLETENESS WORKSHEET

Date: 6/20/14

SDG #: PH191

ADR

Page: 1 of 1

Laboratory: Eurofins Lancaster Laboratories

Reviewer: KK

2nd Reviewer: CL

METHOD: Metals (EPA SW 846 Method 6010C/6020A/~~7000~~ 7470 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:
II.	ICP/MS Tune	A	
III.	Calibration	—	
IV.	Blanks	SW	
V.	ICP Interference Check Sample (ICS) Analysis	~~N~~ —	
VI.	Matrix Spike Analysis	N	
VII.	Duplicate Sample Analysis	N	
VIII.	Laboratory Control Samples (LCS)	N	LCS/D
IX.	Internal Standard (ICP-MS)	N	
X.	Furnace Atomic Absorption QC	N	
XI.	ICP Serial Dilution	N	
XII.	Sample Result Verification	N	
XIII.	Overall Assessment of Data	N	
XIV.	Field Duplicates	N	
XV	Field Blanks	—	FB=1 ~~EB=EB2-052214~~

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

Validated Samples: Water

1	FB-052114	11		21		31	
2		12		22		32	
3		13		23		33	
4		14		24		34	
5		15		25		35	
6		16		26		36	
7		17		27		37	
8		18		28		38	
9		19		29		39	
10		20		30		40	

Notes: _____

LDC #: 32029B4

VALIDATION FINDINGS WORKSHEET
Sample Specific Element Reference

Reviewer: VH
2nd reviewer: CV

All circled elements are applicable to each sample.

Sample ID	Matrix	Target Analyte List (TAL)
1	Water	Al, Sb, As, Ba, Be, B, Cd, 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 #: 32029B4

VALIDATION FINDINGS WORKSHEET
PB/ICB/CCB QUALIFIED SAMPLES

Reviewer: KK
2nd Reviewer: OK

METHOD: Trace metals (EPA SW 864 Method 6010C/6020A/7470A) Soil preparation factor applied: ~~100~~ 1
Sample Concentration units, unless otherwise noted: mg/l Associated Samples: All

					Sample Identification										
Analyte	Maximum PB[a] (mg/Kg)	Maximum PB[a] (ug/L)	Maximum ICB/CCB[a] (ug/L)	Action Level (mg/l)	1										
~~Zr~~			~~10.4~~	~~0.0520~~	~~0.0110~~	OK									
Zr		11.5	~~11.5~~	0.0575	0.0110										

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.

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

July 23, 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 June 24, 2014. Attachment 1 is a summary of the samples that were reviewed for each analysis.

LDC Project #32030:

SDG #	Fraction
PH185, PH189, PH195	Volatiles, Semivolatiles, Polychlorinated Biphenyls, Metals, Total Petroleum Hydrocarbons as Gasoline, Total Petroleum Hydrocarbons as Extractables, Dioxins and 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, CLPNFG, 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

2,571 pages-CD

Attachment 1

90/10 ADR/IV

LDC #32030 (CDM Federal Programs-Chantilly VA / Santa Susana Field Laboratory, Trench)

LDC	SDG#	DATE REC'D	(4) DATE DUE	VOA (8260B)		SVOA (8270D -SIM)		PCBs (8082A)		Metals & Hg (SW846)		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	PH185	06/24/14	07/23/14	-	-	0	6	0	6	0	6	1	3	0	12	0	6																				
B	PH189	06/24/14	07/23/14	-	-	0	8	0	8	0	8	1	5	0	16	0	8																				
C	PH195	06/24/14	07/23/14	1	0	1	5	1	5	1	5	2	3	2	10	1	5																				
Total	T/SM			1	0	1	19	1	19	1	19	4	11	2	38	1	19	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	136

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: PH185

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

July 22, 2014

INTRODUCTION

This Data Validation Report (DVR) presents Level IV data validation results for samples collected on May 19, 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)
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 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 benzo(b)fluoranthene. 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 with the exception of several samples for TPH as extractables with silica gel cleanup. 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 SVOCs, TPH as extractables, 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 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 several metals. The associated sample results were qualified as detected estimated (J). The details regarding the qualification of data are provided in Enclosures I and II.

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 TPH as extractables with and without silica gel cleanup. The associated sample results were qualified as detected estimated (J) or non-detected estimates (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 with the exception of nickel. The associated sample results were qualified as detected estimated (J). The details regarding the qualification of data are provided in Enclosure II.

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 PH185	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, PCBs, metals, TPH as extractables, and dioxins and dibenzofurans. All RPDs were within QC limits with the exception of 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 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 was collected and analyzed for SVOCs, PCBs, metals, TPH as gasoline, TPH as extractables, 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, PCBs, metals, TPH as gasoline, TPH as extractables, 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

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
19-May-2014	TB2-051914	7470321	TB	5030B	8015M	IV
19-May-2014	SL-534-SA8-TR-0.5	7470312	N	3050B	6010C	IV
19-May-2014	SL-534-SA8-TR-0.5	7470312	N	3050B	6020A	IV
19-May-2014	SL-534-SA8-TR-0.5	7470312	N	3546	8015M	IV
19-May-2014	SL-534-SA8-TR-0.5	7470312	N	3546	8082A	IV
19-May-2014	SL-534-SA8-TR-0.5	7470312	N	3546	8270D SIM	IV
19-May-2014	SL-534-SA8-TR-0.5	7470312	N	METHOD	1613B	IV
19-May-2014	SL-534-SA8-TR-0.5	7470312	N	METHOD	7471B	IV
19-May-2014	SL-534-SA8-TR-5.0	7470313	N	3050B	6010C	IV
19-May-2014	SL-534-SA8-TR-5.0	7470313	N	3050B	6020A	IV
19-May-2014	SL-534-SA8-TR-5.0	7470313	N	3546	8015M	IV
19-May-2014	SL-534-SA8-TR-5.0	7470313	N	3546	8082A	IV
19-May-2014	SL-534-SA8-TR-5.0	7470313	N	3546	8270D SIM	IV
19-May-2014	SL-534-SA8-TR-5.0	7470313	N	5035A	8015M	IV
19-May-2014	SL-534-SA8-TR-5.0	7470313	N	METHOD	1613B	IV
19-May-2014	SL-534-SA8-TR-5.0	7470313	N	METHOD	7471B	IV
19-May-2014	SL-548-SA8-TR-10.0	7470320	N	3050B	6010C	IV
19-May-2014	SL-548-SA8-TR-10.0	7470320	N	3050B	6020A	IV
19-May-2014	SL-548-SA8-TR-10.0	7470320	N	3546	8015M	IV
19-May-2014	SL-548-SA8-TR-10.0	7470320	N	3546	8082A	IV
19-May-2014	SL-548-SA8-TR-10.0	7470320	N	3546	8270D SIM	IV
19-May-2014	SL-548-SA8-TR-10.0	7470320	N	5035A	8015M	IV
19-May-2014	SL-548-SA8-TR-10.0	7470320	N	METHOD	1613B	IV
19-May-2014	SL-548-SA8-TR-10.0	7470320	N	METHOD	7471B	IV
19-May-2014	SL-548-SA8-TR-5.0	7470316	N	3050B	6010C	IV
19-May-2014	SL-548-SA8-TR-5.0	7470316	N	3050B	6020A	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
19-May-2014	SL-548-SA8-TR-5.0	7470316	N	3546	8015M	IV
19-May-2014	SL-548-SA8-TR-5.0	7470316	N	3546	8082A	IV
19-May-2014	SL-548-SA8-TR-5.0	7470316	N	3546	8270D SIM	IV
19-May-2014	SL-548-SA8-TR-5.0	7470316	N	5035A	8015M	IV
19-May-2014	SL-548-SA8-TR-5.0	7470316	N	METHOD	1613B	IV
19-May-2014	SL-548-SA8-TR-5.0	7470316	N	METHOD	7471B	IV
19-May-2014	SL-548-SA8-TR-5.0 MS	7470317	MS	3050B	6010C	IV
19-May-2014	SL-548-SA8-TR-5.0 MS	7470317	MS	3050B	6020A	IV
19-May-2014	SL-548-SA8-TR-5.0 MS	7470317	MS	3546	8015M	IV
19-May-2014	SL-548-SA8-TR-5.0 MS	7470317	MS	3546	8082A	IV
19-May-2014	SL-548-SA8-TR-5.0 MS	7470317	MS	3546	8270D SIM	IV
19-May-2014	SL-548-SA8-TR-5.0 MS	7470317	MS	5035A	8015M	IV
19-May-2014	SL-548-SA8-TR-5.0 MS	7470317	MS	METHOD	1613B	IV
19-May-2014	SL-548-SA8-TR-5.0 MS	7470317	MS	METHOD	7471B	IV
19-May-2014	SL-548-SA8-TR-5.0 MSD	7470318	MSD	3050B	6010C	IV
19-May-2014	SL-548-SA8-TR-5.0 MSD	7470318	MSD	3050B	6020A	IV
19-May-2014	SL-548-SA8-TR-5.0 MSD	7470318	MSD	3546	8015M	IV
19-May-2014	SL-548-SA8-TR-5.0 MSD	7470318	MSD	3546	8082A	IV
19-May-2014	SL-548-SA8-TR-5.0 MSD	7470318	MSD	3546	8270D SIM	IV
19-May-2014	SL-548-SA8-TR-5.0 MSD	7470318	MSD	5035A	8015M	IV
19-May-2014	SL-548-SA8-TR-5.0 MSD	7470318	MSD	METHOD	1613B	IV
19-May-2014	SL-548-SA8-TR-5.0 MSD	7470318	MSD	METHOD	7471B	IV
19-May-2014	SL-548-SA8-TR-5.0 DUP	7470319	DUP	3050B	6010C	IV
19-May-2014	SL-548-SA8-TR-5.0 DUP	7470319	DUP	3050B	6020A	IV
19-May-2014	SL-548-SA8-TR-5.0 DUP	7470319	DUP	METHOD	7471B	IV
19-May-2014	SL-848-SA8-TR-5.0	7470315	FD	3050B	6010C	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
19-May-2014	SL-848-SA8-TR-5.0	7470315	FD	3050B	6020A	IV
19-May-2014	SL-848-SA8-TR-5.0	7470315	FD	3546	8015M	IV
19-May-2014	SL-848-SA8-TR-5.0	7470315	FD	3546	8082A	IV
19-May-2014	SL-848-SA8-TR-5.0	7470315	FD	3546	8270D SIM	IV
19-May-2014	SL-848-SA8-TR-5.0	7470315	FD	5035A	8015M	IV
19-May-2014	SL-848-SA8-TR-5.0	7470315	FD	METHOD	1613B	IV
19-May-2014	SL-848-SA8-TR-5.0	7470315	FD	METHOD	7471B	IV
19-May-2014	SL-548-SA8-TR-0.5	7470314	N	3050B	6010C	IV
19-May-2014	SL-548-SA8-TR-0.5	7470314	N	3050B	6020A	IV
19-May-2014	SL-548-SA8-TR-0.5	7470314	N	3546	8015M	IV
19-May-2014	SL-548-SA8-TR-0.5	7470314	N	3546	8082A	IV
19-May-2014	SL-548-SA8-TR-0.5	7470314	N	3546	8270D SIM	IV
19-May-2014	SL-548-SA8-TR-0.5	7470314	N	METHOD	1613B	IV
19-May-2014	SL-548-SA8-TR-0.5	7470314	N	METHOD	7471B	IV

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: PH185 **Laboratory: LL**

EDD Filename: PH185_v3 **eQAPP Name: CDM_SSFL_140617_Lan**

Method Category: METALS

Method: 6010C **Matrix: SO**

Sample ID: SL-534-SA8-TR-0.5 **Collected: 5/19/2014 9:10:00** **Analysis Type: RES** **Dilution: 1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
ANTIMONY	4.13	U	0.765	MDL	4.13	PQL	mg/Kg	UJ	Q
ARSENIC	3.16	J	0.723	MDL	4.13	PQL	mg/Kg	J	Z
BERYLLIUM	0.589	J	0.0692	MDL	1.03	PQL	mg/Kg	J	Z
BORON	8.29	J	0.868	MDL	10.3	PQL	mg/Kg	J	Z
CADMIUM	1.03	U	0.0785	MDL	1.03	PQL	mg/Kg	UJ	Q
CALCIUM	35700		3.45	MDL	20.7	PQL	mg/Kg	J	E, E
COBALT	5.69		0.102	MDL	1.03	PQL	mg/Kg	J	E
MANGANESE	305		0.0858	MDL	1.03	PQL	mg/Kg	J	E
NICKEL	12.2		0.134	MDL	2.07	PQL	mg/Kg	J	A
POTASSIUM	2050		8.62	MDL	103	PQL	mg/Kg	J	Q
TIN	3.09	J	0.227	MDL	10.3	PQL	mg/Kg	U	B
Zirconium	4.00	J	0.868	MDL	5.17	PQL	mg/Kg	U	F, F
LEAD	8.90		0.517	MDL	3.10	PQL	mg/Kg	J	Q

Sample ID: SL-534-SA8-TR-5.0 **Collected: 5/19/2014 9:40:00** **Analysis Type: RES** **Dilution: 1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
ANTIMONY	4.24	U	0.784	MDL	4.24	PQL	mg/Kg	UJ	Q
ARSENIC	1.33	J	0.741	MDL	4.24	PQL	mg/Kg	U	B
BERYLLIUM	0.505	J	0.0709	MDL	1.06	PQL	mg/Kg	J	Z
BORON	6.99	J	0.890	MDL	10.6	PQL	mg/Kg	J	Z
CADMIUM	1.06	U	0.0805	MDL	1.06	PQL	mg/Kg	UJ	Q
CALCIUM	5600		3.54	MDL	21.2	PQL	mg/Kg	J	E, E
COBALT	5.58		0.105	MDL	1.06	PQL	mg/Kg	J	E
LEAD	7.98		0.529	MDL	3.18	PQL	mg/Kg	J	Q
MANGANESE	313		0.0879	MDL	1.06	PQL	mg/Kg	J	E
NICKEL	11.2		0.138	MDL	2.12	PQL	mg/Kg	J	A
POTASSIUM	1610		8.83	MDL	106	PQL	mg/Kg	J	Q
TIN	3.08	J	0.233	MDL	10.6	PQL	mg/Kg	U	B
Zirconium	3.99	J	0.890	MDL	5.29	PQL	mg/Kg	U	F, F

Sample ID: SL-548-SA8-TR-0.5 **Collected: 5/19/2014 1:37:00** **Analysis Type: RES** **Dilution: 1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
ANTIMONY	4.40	U	0.813	MDL	4.40	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: PH185 **Laboratory: LL**

EDD Filename: PH185_v3 **eQAPP Name: CDM_SSFL_140617_Lan**

Method Category: METALS

Method: 6010C **Matrix: SO**

Sample ID: SL-548-SA8-TR-0.5 **Collected: 5/19/2014 1:37:00** **Analysis Type: RES** **Dilution: 1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
ARSENIC	3.58	J	0.769	MDL	4.40	PQL	mg/Kg	J	Z
BERYLLIUM	1.02	J	0.0736	MDL	1.10	PQL	mg/Kg	J	Z
CADMIUM	1.10	U	0.0835	MDL	1.10	PQL	mg/Kg	UJ	Q
CALCIUM	15400		3.67	MDL	22.0	PQL	mg/Kg	J	E, E
COBALT	10.7		0.109	MDL	1.10	PQL	mg/Kg	J	E
LEAD	14.9		0.549	MDL	3.30	PQL	mg/Kg	J	Q
MANGANESE	504		0.0912	MDL	1.10	PQL	mg/Kg	J	E
NICKEL	20.8		0.143	MDL	2.20	PQL	mg/Kg	J	A
POTASSIUM	5930		9.16	MDL	110	PQL	mg/Kg	J	Q
SODIUM	108	J	18.4	MDL	110	PQL	mg/Kg	J	Z
TIN	3.13	J	0.242	MDL	11.0	PQL	mg/Kg	U	B

Sample ID: SL-548-SA8-TR-10.0 **Collected: 5/19/2014 1:09:00** **Analysis Type: RES** **Dilution: 1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
ANTIMONY	4.45	U	0.823	MDL	4.45	PQL	mg/Kg	UJ	Q
ARSENIC	3.82	J	0.778	MDL	4.45	PQL	mg/Kg	J	Z
BERYLLIUM	0.822	J	0.0745	MDL	1.11	PQL	mg/Kg	J	Z
BORON	10.9	J	0.934	MDL	11.1	PQL	mg/Kg	J	Z
CADMIUM	1.11	U	0.0845	MDL	1.11	PQL	mg/Kg	UJ	Q
CALCIUM	27900		3.71	MDL	22.2	PQL	mg/Kg	J	E, E
COBALT	6.40		0.110	MDL	1.11	PQL	mg/Kg	J	E
LEAD	10.0		0.556	MDL	3.34	PQL	mg/Kg	J	Q
MANGANESE	308		0.0923	MDL	1.11	PQL	mg/Kg	J	E
NICKEL	16.1		0.145	MDL	2.22	PQL	mg/Kg	J	A
POTASSIUM	2360		9.28	MDL	111	PQL	mg/Kg	J	Q
TIN	3.24	J	0.245	MDL	11.1	PQL	mg/Kg	U	B
Zirconium	5.45	J	0.934	MDL	5.56	PQL	mg/Kg	U	F

Sample ID: SL-548-SA8-TR-5.0 **Collected: 5/19/2014 1:17:00** **Analysis Type: RES** **Dilution: 1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
ANTIMONY	4.53	U	0.839	MDL	4.53	PQL	mg/Kg	UJ	Q
ARSENIC	2.92	J	0.793	MDL	4.53	PQL	mg/Kg	J	Z
BERYLLIUM	1.00	J	0.0759	MDL	1.13	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: PH185 **Laboratory: LL**

EDD Filename: PH185_v3 **eQAPP Name: CDM_SSFL_140617_Lan**

Method Category: METALS

Method: 6010C **Matrix: SO**

Sample ID: SL-548-SA8-TR-5.0 **Collected: 5/19/2014 1:17:00** **Analysis Type: RES** **Dilution: 1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
CADMIUM	1.13	U	0.0861	MDL	1.13	PQL	mg/Kg	UJ	Q
CALCIUM	18000		3.79	MDL	22.7	PQL	mg/Kg	J	E, E, FD
COBALT	7.01		0.112	MDL	1.13	PQL	mg/Kg	J	E
LEAD	13.1		0.567	MDL	3.40	PQL	mg/Kg	J	Q
MANGANESE	261		0.0941	MDL	1.13	PQL	mg/Kg	J	E
NICKEL	17.1		0.147	MDL	2.27	PQL	mg/Kg	J	A
POTASSIUM	2740		9.45	MDL	113	PQL	mg/Kg	J	Q
TIN	3.34	J	0.249	MDL	11.3	PQL	mg/Kg	U	B

Sample ID: SL-848-SA8-TR-5.0 **Collected: 5/19/2014 1:22:00** **Analysis Type: RES** **Dilution: 1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
ANTIMONY	4.38	U	0.809	MDL	4.38	PQL	mg/Kg	UJ	Q
ARSENIC	2.99	J	0.766	MDL	4.38	PQL	mg/Kg	J	Z
BERYLLIUM	0.873	J	0.0733	MDL	1.09	PQL	mg/Kg	J	Z
CADMIUM	1.09	U	0.0831	MDL	1.09	PQL	mg/Kg	UJ	Q
CALCIUM	46300		3.65	MDL	21.9	PQL	mg/Kg	J	E, E, FD
COBALT	7.31		0.108	MDL	1.09	PQL	mg/Kg	J	E
LEAD	11.3		0.547	MDL	3.28	PQL	mg/Kg	J	Q
MANGANESE	260		0.0908	MDL	1.09	PQL	mg/Kg	J	E
NICKEL	15.5		0.142	MDL	2.19	PQL	mg/Kg	J	A
POTASSIUM	2600		9.12	MDL	109	PQL	mg/Kg	J	Q
TIN	3.31	J	0.241	MDL	10.9	PQL	mg/Kg	U	B

Method Category: METALS

Method: 6020A **Matrix: SO**

Sample ID: SL-534-SA8-TR-0.5 **Collected: 5/19/2014 9:10:00** **Analysis Type: REA** **Dilution: 2**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
SELENIUM	0.117	J	0.103	MDL	0.413	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: PH185 **Laboratory: LL**

EDD Filename: PH185_v3 **eQAPP Name: CDM_SSFL_140617_Lan**

Method Category: METALS

Method: 6020A **Matrix: SO**

Sample ID: SL-534-SA8-TR-0.5 **Collected: 5/19/2014 9:10:00** **Analysis Type: RES** **Dilution: 2**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
SILVER	0.0442	J	0.0269	MDL	0.207	PQL	mg/Kg	J	Z

Sample ID: SL-534-SA8-TR-5.0 **Collected: 5/19/2014 9:40:00** **Analysis Type: RES** **Dilution: 2**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
SILVER	0.0298	J	0.0275	MDL	0.212	PQL	mg/Kg	J	Z

Sample ID: SL-548-SA8-TR-0.5 **Collected: 5/19/2014 1:37:00** **Analysis Type: REA** **Dilution: 2**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
SELENIUM	0.178	J	0.110	MDL	0.440	PQL	mg/Kg	J	Z

Sample ID: SL-548-SA8-TR-0.5 **Collected: 5/19/2014 1:37:00** **Analysis Type: RES** **Dilution: 2**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
SILVER	0.0623	J	0.0286	MDL	0.220	PQL	mg/Kg	J	Z

Sample ID: SL-548-SA8-TR-10.0 **Collected: 5/19/2014 1:09:00** **Analysis Type: RES** **Dilution: 2**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
SILVER	0.0543	J	0.0289	MDL	0.222	PQL	mg/Kg	J	Z

Sample ID: SL-548-SA8-TR-5.0 **Collected: 5/19/2014 1:17:00** **Analysis Type: RES** **Dilution: 2**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
SILVER	0.0496	J	0.0295	MDL	0.227	PQL	mg/Kg	J	Z

Sample ID: SL-848-SA8-TR-5.0 **Collected: 5/19/2014 1:22:00** **Analysis Type: RES** **Dilution: 2**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
SILVER	0.0509	J	0.0284	MDL	0.219	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: PH185 **Laboratory: LL**

EDD Filename: PH185_v3 **eQAPP Name: CDM_SSFL_140617_Lan**

Method Category: METALS

Method: 7471B **Matrix: SO**

Sample ID: SL-548-SA8-TR-0.5 *Collected:* 5/19/2014 1:37:00 *Analysis Type:* RES *Dilution:* 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
MERCURY	0.0139	J	0.0108	MDL	0.0180	PQL	mg/Kg	J	Z

Sample ID: SL-548-SA8-TR-10.0 *Collected:* 5/19/2014 1:09:00 *Analysis Type:* RES *Dilution:* 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
MERCURY	0.0163	J	0.0114	MDL	0.0190	PQL	mg/Kg	J	Z

Sample ID: SL-548-SA8-TR-5.0 *Collected:* 5/19/2014 1:17:00 *Analysis Type:* RES *Dilution:* 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
MERCURY	0.0127	J	0.0113	MDL	0.0188	PQL	mg/Kg	J	Z

Sample ID: SL-848-SA8-TR-5.0 *Collected:* 5/19/2014 1:22:00 *Analysis Type:* RES *Dilution:* 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
MERCURY	0.0125	J	0.0112	MDL	0.0187	PQL	mg/Kg	J	Z

Method Category: SVOA

Method: 1613B **Matrix: SO**

Sample ID: SL-534-SA8-TR-0.5 *Collected:* 5/19/2014 9:10:00 *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	1.13	JB	0.0255	MDL	5.18	PQL	ng/Kg	J	Z
1,2,3,4,6,7,8-HPCDF	0.244	JB	0.0101	MDL	5.18	PQL	ng/Kg	J	Z
1,2,3,4,7,8,9-HPCDF	0.0432	JBQ	0.0229	MDL	5.18	PQL	ng/Kg	U	B
1,2,3,4,7,8-HxCDD	0.0451	JQ	0.0227	MDL	5.18	PQL	ng/Kg	J	Z
1,2,3,4,7,8-HXCDF	0.0484	JB	0.0267	MDL	5.18	PQL	ng/Kg	U	B
1,2,3,6,7,8-HXCDD	0.140	JBQ	0.0241	MDL	5.18	PQL	ng/Kg	J	Z
1,2,3,6,7,8-HXCDF	0.0986	JBQ	0.0220	MDL	5.18	PQL	ng/Kg	U	B
1,2,3,7,8,9-HXCDD	0.100	JBQ	0.0237	MDL	5.18	PQL	ng/Kg	U	B
1,2,3,7,8,9-HXCDF	0.0364	JB	0.0321	MDL	5.18	PQL	ng/Kg	U	B
1,2,3,7,8-PECDD	0.0374	JQ	0.0238	MDL	5.18	PQL	ng/Kg	J	Z
1,2,3,7,8-PECDF	0.223	JBQ	0.0186	MDL	5.18	PQL	ng/Kg	J	Z
2,3,4,6,7,8-HXCDF	0.0899	JB	0.0243	MDL	5.18	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: PH185 **Laboratory: LL**

EDD Filename: PH185_v3 **eQAPP Name: CDM_SSFL_140617_Lan**

Method Category: SVOA

Method: 1613B **Matrix: SO**

Sample ID: **SL-534-SA8-TR-0.5** ***Collected:*** **5/19/2014 9:10:00** ***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	0.0798	J	0.0407	MDL	1.04	PQL	ng/Kg	J	Z
OCDD	8.27	JB	0.0189	MDL	10.4	PQL	ng/Kg	J	Z
OCDF	0.424	JBQ	0.0262	MDL	10.4	PQL	ng/Kg	U	B

Sample ID: **SL-534-SA8-TR-5.0** ***Collected:*** **5/19/2014 9:40:00** ***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	0.393	JB	0.0219	MDL	5.18	PQL	ng/Kg	J	Z
1,2,3,4,6,7,8-HPCDF	0.217	JB	0.00813	MDL	5.18	PQL	ng/Kg	U	B
1,2,3,4,7,8,9-HPCDF	0.0561	JB	0.0207	MDL	5.18	PQL	ng/Kg	U	B
1,2,3,4,7,8-HxCDD	0.0213	JQ	0.0152	MDL	5.18	PQL	ng/Kg	J	Z
1,2,3,4,7,8-HXCDF	0.0412	JBQ	0.0159	MDL	5.18	PQL	ng/Kg	U	B
1,2,3,6,7,8-HXCDD	0.0225	JB	0.0150	MDL	5.18	PQL	ng/Kg	U	B
1,2,3,6,7,8-HXCDF	0.0238	JBQ	0.0129	MDL	5.18	PQL	ng/Kg	U	B
1,2,3,7,8,9-HXCDD	0.0190	JBQ	0.0150	MDL	5.18	PQL	ng/Kg	U	B
1,2,3,7,8,9-HXCDF	0.0200	JBQ	0.0160	MDL	5.18	PQL	ng/Kg	U	B
1,2,3,7,8-PECDD	0.0283	JQ	0.0195	MDL	5.18	PQL	ng/Kg	J	Z
1,2,3,7,8-PECDF	0.0383	JB	0.0101	MDL	5.18	PQL	ng/Kg	U	B
2,3,4,6,7,8-HXCDF	0.0478	JBQ	0.0145	MDL	5.18	PQL	ng/Kg	U	B
2,3,4,7,8-PECDF	0.0197	JBQ	0.0113	MDL	5.18	PQL	ng/Kg	U	B
OCDD	4.14	JB	0.0189	MDL	10.4	PQL	ng/Kg	J	Z
OCDF	0.781	JBQ	0.0285	MDL	10.4	PQL	ng/Kg	J	Z

Sample ID: **SL-548-SA8-TR-0.5** ***Collected:*** **5/19/2014 1:37:00** ***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	2.59	JB	0.0184	MDL	5.37	PQL	ng/Kg	J	Z
1,2,3,4,6,7,8-HPCDF	0.352	JB	0.00878	MDL	5.37	PQL	ng/Kg	J	Z
1,2,3,4,7,8,9-HPCDF	0.0502	JBQ	0.0206	MDL	5.37	PQL	ng/Kg	U	B
1,2,3,4,7,8-HxCDD	0.0438	JQ	0.0270	MDL	5.37	PQL	ng/Kg	J	Z
1,2,3,4,7,8-HXCDF	0.0505	JBQ	0.0196	MDL	5.37	PQL	ng/Kg	U	B
1,2,3,6,7,8-HXCDD	0.230	JBQ	0.0279	MDL	5.37	PQL	ng/Kg	J	Z
1,2,3,6,7,8-HXCDF	0.0533	JBQ	0.0157	MDL	5.37	PQL	ng/Kg	U	B
1,2,3,7,8,9-HXCDD	0.317	JB	0.0264	MDL	5.37	PQL	ng/Kg	J	Z
1,2,3,7,8,9-HXCDF	0.272	JB	0.0183	MDL	5.37	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: PH185 **Laboratory: LL**

EDD Filename: PH185_v3 **eQAPP Name: CDM_SSFL_140617_Lan**

Method Category: SVOA

Method: 1613B **Matrix: SO**

Sample ID: SL-548-SA8-TR-0.5 **Collected: 5/19/2014 1:37:00** **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-PECDD	0.0253	JQ	0.0233	MDL	5.37	PQL	ng/Kg	J	Z
1,2,3,7,8-PECDF	0.148	JB	0.0121	MDL	5.37	PQL	ng/Kg	U	B
2,3,4,6,7,8-HXCDF	0.0448	JBQ	0.0167	MDL	5.37	PQL	ng/Kg	U	B
2,3,4,7,8-PECDF	0.0525	JBQ	0.0129	MDL	5.37	PQL	ng/Kg	U	B
2,3,7,8-TCDF	0.0392	J	0.0245	MDL	1.07	PQL	ng/Kg	J	Z
OCDF	0.941	JB	0.0242	MDL	10.7	PQL	ng/Kg	J	Z

Sample ID: SL-548-SA8-TR-10.0 **Collected: 5/19/2014 1:09:00** **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	0.107	JBQ	0.0160	MDL	5.69	PQL	ng/Kg	U	B
1,2,3,4,6,7,8-HPCDF	0.0422	JB	0.00498	MDL	5.69	PQL	ng/Kg	U	B
1,2,3,4,7,8,9-HPCDF	0.0297	JBQ	0.0112	MDL	5.69	PQL	ng/Kg	U	B
1,2,3,4,7,8-HXCDF	0.0303	JBQ	0.0159	MDL	5.69	PQL	ng/Kg	U	B
1,2,3,6,7,8-HXCDD	0.0283	JBQ	0.0186	MDL	5.69	PQL	ng/Kg	U	B
1,2,3,6,7,8-HXCDF	0.0498	JBQ	0.0124	MDL	5.69	PQL	ng/Kg	U	B
1,2,3,7,8,9-HXCDD	0.0296	JBQ	0.0186	MDL	5.69	PQL	ng/Kg	U	B
1,2,3,7,8,9-HXCDF	0.0188	JBQ	0.0187	MDL	5.69	PQL	ng/Kg	U	B
1,2,3,7,8-PECDD	0.0744	JQ	0.0255	MDL	5.69	PQL	ng/Kg	J	Z
1,2,3,7,8-PECDF	0.0948	JBQ	0.0118	MDL	5.69	PQL	ng/Kg	U	B
2,3,4,6,7,8-HXCDF	0.0348	JB	0.0136	MDL	5.69	PQL	ng/Kg	U	B
2,3,4,7,8-PECDF	0.0429	JBQ	0.0129	MDL	5.69	PQL	ng/Kg	U	B
2,3,7,8-TCDD	0.0380	JB	0.0281	MDL	1.14	PQL	ng/Kg	U	B
2,3,7,8-TCDF	0.0245	JQ	0.0217	MDL	1.14	PQL	ng/Kg	J	Z
OCDD	0.401	JBQ	0.0262	MDL	11.4	PQL	ng/Kg	U	B
OCDF	0.154	JBQ	0.0284	MDL	11.4	PQL	ng/Kg	U	B

Sample ID: SL-548-SA8-TR-5.0 **Collected: 5/19/2014 1:17:00** **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	0.111	JB	0.0201	MDL	5.77	PQL	ng/Kg	U	B
1,2,3,4,6,7,8-HPCDF	0.209	JBQ	0.00857	MDL	5.77	PQL	ng/Kg	UJ	B, FD
1,2,3,4,7,8,9-HPCDF	0.0636	JBQ	0.0176	MDL	5.77	PQL	ng/Kg	U	B
1,2,3,4,7,8-HxCDD	0.0310	JQ	0.0184	MDL	5.77	PQL	ng/Kg	J	Z
1,2,3,4,7,8-HXCDF	0.111	JB	0.0138	MDL	5.77	PQL	ng/Kg	UJ	B, 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: PH185 **Laboratory: LL**

EDD Filename: PH185_v3 **eQAPP Name: CDM_SSFL_140617_Lan**

Method Category: SVOA

Method: 1613B **Matrix: SO**

Sample ID: **SL-548-SA8-TR-5.0** *Collected:* **5/19/2014 1:17:00** *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	0.0290	JBQ	0.0191	MDL	5.77	PQL	ng/Kg	UJ	B, FD
1,2,3,6,7,8-HXCDF	0.0637	JBQ	0.0116	MDL	5.77	PQL	ng/Kg	UJ	B, FD
1,2,3,7,8,9-HXCDF	0.0470	JB	0.0160	MDL	5.77	PQL	ng/Kg	U	B
1,2,3,7,8-PECDD	0.0232	JQ	0.0204	MDL	5.77	PQL	ng/Kg	J	Z, FD
1,2,3,7,8-PECDF	0.0686	JB	0.0116	MDL	5.77	PQL	ng/Kg	UJ	B, FD
2,3,4,6,7,8-HXCDF	0.0428	JBQ	0.0132	MDL	5.77	PQL	ng/Kg	UJ	B, FD
2,3,4,7,8-PECDF	0.0262	JBQ	0.0120	MDL	5.77	PQL	ng/Kg	U	B
OCDD	0.434	JB	0.0219	MDL	11.5	PQL	ng/Kg	U	B
OCDF	0.559	JBQ	0.0336	MDL	11.5	PQL	ng/Kg	UJ	B, FD

Sample ID: **SL-848-SA8-TR-5.0** *Collected:* **5/19/2014 1:22:00** *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	0.0786	JBQ	0.0185	MDL	5.59	PQL	ng/Kg	U	B
1,2,3,4,6,7,8-HPCDF	0.0246	JBQ	0.00655	MDL	5.59	PQL	ng/Kg	UJ	B, FD
1,2,3,4,7,8,9-HPCDF	0.0695	JBQ	0.0178	MDL	5.59	PQL	ng/Kg	U	B
1,2,3,4,7,8-HxCDD	0.0245	JQ	0.0194	MDL	5.59	PQL	ng/Kg	J	Z
1,2,3,4,7,8-HXCDF	0.0172	JB	0.0119	MDL	5.59	PQL	ng/Kg	UJ	B, FD
1,2,3,6,7,8-HXCDD	5.59	U	0.0198	MDL	5.59	PQL	ng/Kg	UJ	FD
1,2,3,6,7,8-HXCDF	5.59	U	0.00909	MDL	5.59	PQL	ng/Kg	UJ	FD
1,2,3,7,8,9-HXCDF	0.0438	JBQ	0.0139	MDL	5.59	PQL	ng/Kg	U	B
1,2,3,7,8-PECDD	5.59	U	0.0263	MDL	5.59	PQL	ng/Kg	UJ	FD
1,2,3,7,8-PECDF	0.0148	JB	0.0130	MDL	5.59	PQL	ng/Kg	UJ	B, FD
2,3,4,6,7,8-HXCDF	0.0235	JB	0.0104	MDL	5.59	PQL	ng/Kg	UJ	B, FD
2,3,4,7,8-PECDF	0.0260	JBQ	0.0144	MDL	5.59	PQL	ng/Kg	U	B
OCDD	0.359	JB	0.0229	MDL	11.2	PQL	ng/Kg	U	B
OCDF	0.197	JBQ	0.0381	MDL	11.2	PQL	ng/Kg	UJ	B, 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: PH185 **Laboratory: LL**

EDD Filename: PH185_v3 **eQAPP Name: CDM_SSFL_140617_Lan**

Method Category: SVOA

Method: 8015M **Matrix: SO**

Sample ID: SL-534-SA8-TR-0.5 **Collected: 5/19/2014 9:10:00** **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	5.2	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

Sample ID: SL-534-SA8-TR-0.5 **Collected: 5/19/2014 9:10:00** **Analysis Type: RES** **Dilution: 1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
EFH (C21-C30)	4.6	J	2.1	MDL	5.2	PQL	mg/Kg	J	Z

Sample ID: SL-534-SA8-TR-5.0 **Collected: 5/19/2014 9:40:00** **Analysis Type: REA** **Dilution: 1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
EFH (C30-C40)	5.0	J	4.3	MDL	11	PQL	mg/Kg	J	Z

Sample ID: SL-534-SA8-TR-5.0 **Collected: 5/19/2014 9:40:00** **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	5.3	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-548-SA8-TR-0.5 **Collected: 5/19/2014 1:37:00** **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, 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

* 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: PH185 **Laboratory: LL**

EDD Filename: PH185_v3 **eQAPP Name: CDM_SSFL_140617_Lan**

Method Category: SVOA

Method: 8015M **Matrix: SO**

Sample ID: SL-548-SA8-TR-10.0 **Collected: 5/19/2014 1:09:00** **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	5.7	U	2.3	MDL	5.7	PQL	mg/Kg	UJ	L, S
EFH (C15-C20) SG	5.7	U	2.3	MDL	5.7	PQL	mg/Kg	UJ	L, S
EFH (C21-C30) SG	5.7	U	2.3	MDL	5.7	PQL	mg/Kg	UJ	L, S
EFH (C30-C40) SG	11	U	4.6	MDL	11	PQL	mg/Kg	UJ	S
EFH (C8-C11) SG	5.7	U	2.3	MDL	5.7	PQL	mg/Kg	UJ	L, S

Sample ID: SL-548-SA8-TR-5.0 **Collected: 5/19/2014 1:17:00** **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)	5.8	U	2.3	MDL	5.8	PQL	mg/Kg	UJ	FD
EFH (C30-C40)	12	U	4.6	MDL	12	PQL	mg/Kg	UJ	FD

Sample ID: SL-548-SA8-TR-5.0 **Collected: 5/19/2014 1:17:00** **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	5.8	U	2.3	MDL	5.8	PQL	mg/Kg	UJ	L, S
EFH (C15-C20) SG	5.8	U	2.3	MDL	5.8	PQL	mg/Kg	UJ	L, S
EFH (C21-C30) SG	5.8	U	2.3	MDL	5.8	PQL	mg/Kg	UJ	L, S
EFH (C30-C40) SG	12	U	4.6	MDL	12	PQL	mg/Kg	UJ	S
EFH (C8-C11) SG	5.8	U	2.3	MDL	5.8	PQL	mg/Kg	UJ	L, S

Sample ID: SL-848-SA8-TR-5.0 **Collected: 5/19/2014 1:22:00** **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)	2.9	J	2.3	MDL	5.7	PQL	mg/Kg	J	Z, FD
EFH (C30-C40)	15		4.6	MDL	11	PQL	mg/Kg	J	FD

Sample ID: SL-848-SA8-TR-5.0 **Collected: 5/19/2014 1:22:00** **Analysis Type: REA2** **Dilution: 1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
EFH (C12-C14) SG	5.7	U	2.3	MDL	5.7	PQL	mg/Kg	UJ	L, S
EFH (C15-C20) SG	5.7	U	2.3	MDL	5.7	PQL	mg/Kg	UJ	L, S
EFH (C21-C30) SG	5.7	U	2.3	MDL	5.7	PQL	mg/Kg	UJ	L, S
EFH (C30-C40) SG	11	U	4.6	MDL	11	PQL	mg/Kg	UJ	S
EFH (C8-C11) SG	5.7	U	2.3	MDL	5.7	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: PH185 **Laboratory: LL**

EDD Filename: PH185_v3 **eQAPP Name: CDM_SSFL_140617_Lan**

Method Category: SVOA

Method: 8015M **Matrix: SO**

Method Category: SVOA

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

Sample ID: **SL-534-SA8-TR-0.5** ***Collected:*** **5/19/2014 9:10:00** ***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	0.71	J	0.69	MDL	1.7	PQL	ug/Kg	J	Z
BENZO(B)FLUORANTHENE	1.7	U	0.69	MDL	1.7	PQL	ug/Kg	UJ	C
CHRYSENE	0.99	J	0.35	MDL	1.7	PQL	ug/Kg	J	Z
NAPHTHALENE	0.73	J	0.69	MDL	1.7	PQL	ug/Kg	J	Z

Sample ID: **SL-534-SA8-TR-5.0** ***Collected:*** **5/19/2014 9:40:00** ***Analysis Type:*** **RES-BASE/NEUTRAL** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
BENZO(B)FLUORANTHENE	1.8	U	0.71	MDL	1.8	PQL	ug/Kg	UJ	C

Sample ID: **SL-548-SA8-TR-0.5** ***Collected:*** **5/19/2014 1:37:00** ***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	0.83	J	0.73	MDL	1.8	PQL	ug/Kg	J	Z
ANTHRACENE	0.61	J	0.37	MDL	1.8	PQL	ug/Kg	J	Z
BENZO(A)ANTHRACENE	0.85	J	0.73	MDL	1.8	PQL	ug/Kg	J	Z
BENZO(B)FLUORANTHENE	1.3	J	0.73	MDL	1.8	PQL	ug/Kg	J	Z, C
BIS(2-ETHYLHEXYL)PHTHALATE	14	J	6.6	MDL	20	PQL	ug/Kg	J	Z

Sample ID: **SL-548-SA8-TR-10.0** ***Collected:*** **5/19/2014 1:09:00** ***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	1.9	U	0.76	MDL	1.9	PQL	ug/Kg	UJ	C

Sample ID: **SL-548-SA8-TR-5.0** ***Collected:*** **5/19/2014 1:17:00** ***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	1.9	U	0.77	MDL	1.9	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: PH185 **Laboratory: LL**

EDD Filename: PH185_v3 **eQAPP Name: CDM_SSFL_140617_Lan**

Method Category: **SVOA**

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

Sample ID: **SL-848-SA8-TR-5.0** ***Collected:*** **5/19/2014 1:22:00** ***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(B)FLUORANTHENE	1.9	U	0.76	MDL	1.9	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: PH185 **Laboratory: LL**

EDD Filename: PH185_v3 **eQAPP Name: CDM_SSFL_140617_Lan**

Reason Code Legend

Reason Code	*Description*
*#	Professional Judgment
A	ICP Serial Dilution
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

PH185

Method Blank Outlier Report

Lab Reporting Batch ID: PH185 **Laboratory: LL**

EDD Filename: PH185_v3 **eQAPP Name: CDM_SSFL_140617_Lan**

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

Method Blank Sample ID	Analysis Date	Analyte	Result	Associated Samples
BLK1470B371326	5/29/2014 1:26:00 PM	1,2,3,4,6,7,8-HPCDD	0.0514 ng/Kg	SL-534-SA8-TR-0.5
		1,2,3,4,6,7,8-HPCDF	0.0453 ng/Kg	SL-534-SA8-TR-5.0
		1,2,3,4,7,8,9-HPCDF	0.0269 ng/Kg	SL-548-SA8-TR-0.5
		1,2,3,4,7,8-HXCDF	0.0282 ng/Kg	SL-548-SA8-TR-10.0
		1,2,3,6,7,8-HXCDD	0.0211 ng/Kg	SL-548-SA8-TR-5.0
		1,2,3,6,7,8-HXCDF	0.0254 ng/Kg	SL-848-SA8-TR-5.0
		1,2,3,7,8,9-HXCDD	0.0209 ng/Kg	
		1,2,3,7,8,9-HXCDF	0.0446 ng/Kg	
		1,2,3,7,8-PECDF	0.0315 ng/Kg	
		2,3,4,6,7,8-HXCDF	0.0380 ng/Kg	
		2,3,4,7,8-PECDF	0.0159 ng/Kg	
		2,3,7,8-TCDD	0.0397 ng/Kg	
		OCDD	0.217 ng/Kg	
		OCDF	0.125 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-534-SA8-TR-0.5(RES)	1,2,3,4,7,8,9-HPCDF	0.0432 ng/Kg	0.0432U ng/Kg
SL-534-SA8-TR-0.5(RES)	1,2,3,4,7,8-HXCDF	0.0484 ng/Kg	0.0484U ng/Kg
SL-534-SA8-TR-0.5(RES)	1,2,3,6,7,8-HXCDF	0.0986 ng/Kg	0.0986U ng/Kg
SL-534-SA8-TR-0.5(RES)	1,2,3,7,8,9-HXCDD	0.100 ng/Kg	0.100U ng/Kg
SL-534-SA8-TR-0.5(RES)	1,2,3,7,8,9-HXCDF	0.0364 ng/Kg	0.0364U ng/Kg
SL-534-SA8-TR-0.5(RES)	2,3,4,6,7,8-HXCDF	0.0899 ng/Kg	0.0899U ng/Kg
SL-534-SA8-TR-0.5(RES)	OCDF	0.424 ng/Kg	0.424U ng/Kg
SL-534-SA8-TR-5.0(RES)	1,2,3,4,6,7,8-HPCDF	0.217 ng/Kg	0.217U ng/Kg
SL-534-SA8-TR-5.0(RES)	1,2,3,4,7,8,9-HPCDF	0.0561 ng/Kg	0.0561U ng/Kg
SL-534-SA8-TR-5.0(RES)	1,2,3,4,7,8-HXCDF	0.0412 ng/Kg	0.0412U ng/Kg
SL-534-SA8-TR-5.0(RES)	1,2,3,6,7,8-HXCDD	0.0225 ng/Kg	0.0225U ng/Kg
SL-534-SA8-TR-5.0(RES)	1,2,3,6,7,8-HXCDF	0.0238 ng/Kg	0.0238U ng/Kg
SL-534-SA8-TR-5.0(RES)	1,2,3,7,8,9-HXCDD	0.0190 ng/Kg	0.0190U ng/Kg
SL-534-SA8-TR-5.0(RES)	1,2,3,7,8,9-HXCDF	0.0200 ng/Kg	0.0200U ng/Kg
SL-534-SA8-TR-5.0(RES)	1,2,3,7,8-PECDF	0.0383 ng/Kg	0.0383U ng/Kg
SL-534-SA8-TR-5.0(RES)	2,3,4,6,7,8-HXCDF	0.0478 ng/Kg	0.0478U ng/Kg
SL-534-SA8-TR-5.0(RES)	2,3,4,7,8-PECDF	0.0197 ng/Kg	0.0197U ng/Kg
SL-548-SA8-TR-0.5(RES)	1,2,3,4,7,8,9-HPCDF	0.0502 ng/Kg	0.0502U ng/Kg
SL-548-SA8-TR-0.5(RES)	1,2,3,4,7,8-HXCDF	0.0505 ng/Kg	0.0505U ng/Kg
SL-548-SA8-TR-0.5(RES)	1,2,3,6,7,8-HXCDF	0.0533 ng/Kg	0.0533U ng/Kg
SL-548-SA8-TR-0.5(RES)	1,2,3,7,8-PECDF	0.148 ng/Kg	0.148U ng/Kg
SL-548-SA8-TR-0.5(RES)	2,3,4,6,7,8-HXCDF	0.0448 ng/Kg	0.0448U ng/Kg
SL-548-SA8-TR-0.5(RES)	2,3,4,7,8-PECDF	0.0525 ng/Kg	0.0525U ng/Kg
SL-548-SA8-TR-10.0(RES)	1,2,3,4,6,7,8-HPCDD	0.107 ng/Kg	0.107U ng/Kg
SL-548-SA8-TR-10.0(RES)	1,2,3,4,6,7,8-HPCDF	0.0422 ng/Kg	0.0422U ng/Kg
SL-548-SA8-TR-10.0(RES)	1,2,3,4,7,8,9-HPCDF	0.0297 ng/Kg	0.0297U ng/Kg
SL-548-SA8-TR-10.0(RES)	1,2,3,4,7,8-HXCDF	0.0303 ng/Kg	0.0303U ng/Kg
SL-548-SA8-TR-10.0(RES)	1,2,3,6,7,8-HXCDD	0.0283 ng/Kg	0.0283U ng/Kg
SL-548-SA8-TR-10.0(RES)	1,2,3,6,7,8-HXCDF	0.0498 ng/Kg	0.0498U ng/Kg
SL-548-SA8-TR-10.0(RES)	1,2,3,7,8,9-HXCDD	0.0296 ng/Kg	0.0296U ng/Kg

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

Method Blank Outlier Report

Lab Reporting Batch ID: PH185 **Laboratory: LL**

EDD Filename: PH185_v3 **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-548-SA8-TR-10.0(RES)	1,2,3,7,8,9-HXCDF	0.0188 ng/Kg	0.0188U ng/Kg
SL-548-SA8-TR-10.0(RES)	1,2,3,7,8-PECDF	0.0948 ng/Kg	0.0948U ng/Kg
SL-548-SA8-TR-10.0(RES)	2,3,4,6,7,8-HXCDF	0.0348 ng/Kg	0.0348U ng/Kg
SL-548-SA8-TR-10.0(RES)	2,3,4,7,8-PECDF	0.0429 ng/Kg	0.0429U ng/Kg
SL-548-SA8-TR-10.0(RES)	2,3,7,8-TCDD	0.0380 ng/Kg	0.0380U ng/Kg
SL-548-SA8-TR-10.0(RES)	OCDD	0.401 ng/Kg	0.401U ng/Kg
SL-548-SA8-TR-10.0(RES)	OCDF	0.154 ng/Kg	0.154U ng/Kg
SL-548-SA8-TR-5.0(RES)	1,2,3,4,6,7,8-HPCDD	0.111 ng/Kg	0.111U ng/Kg
SL-548-SA8-TR-5.0(RES)	1,2,3,4,6,7,8-HPCDF	0.209 ng/Kg	0.209U ng/Kg
SL-548-SA8-TR-5.0(RES)	1,2,3,4,7,8,9-HPCDF	0.0636 ng/Kg	0.0636U ng/Kg
SL-548-SA8-TR-5.0(RES)	1,2,3,4,7,8-HXCDF	0.111 ng/Kg	0.111U ng/Kg
SL-548-SA8-TR-5.0(RES)	1,2,3,6,7,8-HXCDD	0.0290 ng/Kg	0.0290U ng/Kg
SL-548-SA8-TR-5.0(RES)	1,2,3,6,7,8-HXCDF	0.0637 ng/Kg	0.0637U ng/Kg
SL-548-SA8-TR-5.0(RES)	1,2,3,7,8,9-HXCDF	0.0470 ng/Kg	0.0470U ng/Kg
SL-548-SA8-TR-5.0(RES)	1,2,3,7,8-PECDF	0.0686 ng/Kg	0.0686U ng/Kg
SL-548-SA8-TR-5.0(RES)	2,3,4,6,7,8-HXCDF	0.0428 ng/Kg	0.0428U ng/Kg
SL-548-SA8-TR-5.0(RES)	2,3,4,7,8-PECDF	0.0262 ng/Kg	0.0262U ng/Kg
SL-548-SA8-TR-5.0(RES)	OCDD	0.434 ng/Kg	0.434U ng/Kg
SL-548-SA8-TR-5.0(RES)	OCDF	0.559 ng/Kg	0.559U ng/Kg
SL-848-SA8-TR-5.0(RES)	1,2,3,4,6,7,8-HPCDD	0.0786 ng/Kg	0.0786U ng/Kg
SL-848-SA8-TR-5.0(RES)	1,2,3,4,6,7,8-HPCDF	0.0246 ng/Kg	0.0246U ng/Kg
SL-848-SA8-TR-5.0(RES)	1,2,3,4,7,8,9-HPCDF	0.0695 ng/Kg	0.0695U ng/Kg
SL-848-SA8-TR-5.0(RES)	1,2,3,4,7,8-HXCDF	0.0172 ng/Kg	0.0172U ng/Kg
SL-848-SA8-TR-5.0(RES)	1,2,3,7,8,9-HXCDF	0.0438 ng/Kg	0.0438U ng/Kg
SL-848-SA8-TR-5.0(RES)	1,2,3,7,8-PECDF	0.0148 ng/Kg	0.0148U ng/Kg
SL-848-SA8-TR-5.0(RES)	2,3,4,6,7,8-HXCDF	0.0235 ng/Kg	0.0235U ng/Kg
SL-848-SA8-TR-5.0(RES)	2,3,4,7,8-PECDF	0.0260 ng/Kg	0.0260U ng/Kg
SL-848-SA8-TR-5.0(RES)	OCDD	0.359 ng/Kg	0.359U ng/Kg
SL-848-SA8-TR-5.0(RES)	OCDF	0.197 ng/Kg	0.197U ng/Kg

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

Method Blank Sample ID	Analysis Date	Analyte	Result	Associated Samples
P14337AB220659	5/29/2014 6:59:00 AM	CALCIUM TIN ZINC	7.84 mg/Kg 1.46 mg/Kg 0.461 mg/Kg	SL-534-SA8-TR-0.5 SL-534-SA8-TR-5.0 SL-548-SA8-TR-0.5 SL-548-SA8-TR-10.0 SL-548-SA8-TR-5.0 SL-848-SA8-TR-5.0

Method Blank Outlier Report

Lab Reporting Batch ID: PH185 **Laboratory: LL**

EDD Filename: PH185_v3 **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-534-SA8-TR-0.5(RES)	TIN	3.09 mg/Kg	3.09U mg/Kg
SL-534-SA8-TR-5.0(RES)	TIN	3.08 mg/Kg	3.08U mg/Kg
SL-548-SA8-TR-0.5(RES)	TIN	3.13 mg/Kg	3.13U mg/Kg
SL-548-SA8-TR-10.0(RES)	TIN	3.24 mg/Kg	3.24U mg/Kg
SL-548-SA8-TR-5.0(RES)	TIN	3.34 mg/Kg	3.34U mg/Kg
SL-848-SA8-TR-5.0(RES)	TIN	3.31 mg/Kg	3.31U mg/Kg

Field Blank Outlier Report

Lab Reporting Batch ID: PH185 **Laboratory: LL**

EDD Filename: PH185_v3 **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-534-SA8-TR-0.5 SL-534-SA8-TR-5.0 SL-548-SA8-TR-0.5 SL-548-SA8-TR-10.0 SL-548-SA8-TR-5.0 SL-848-SA8-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-534-SA8-TR-0.5(RES)	Zirconium	4.00 mg/Kg	4.00U mg/Kg
SL-534-SA8-TR-5.0(RES)	Zirconium	3.99 mg/Kg	3.99U mg/Kg
SL-548-SA8-TR-10.0(RES)	Zirconium	5.45 mg/Kg	5.45U mg/Kg

Equipment Rinsate Blank Outlier Report

Lab Reporting Batch ID: PH185 **Laboratory: LL**

EDD Filename: PH185_v3 **eQAPP Name: CDM_SSFL_140617_Lan**

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

Equipment Blank Sample ID	Collected Date	Analyte	Result	Associated Samples
EB3-052214(RES)	5/22/2014 3:45:00 PM	CALCIUM MANGANESE Zirconium	0.15 mg/L 0.0009 mg/L 0.0108 mg/L	SL-534-SA8-TR-0.5 SL-534-SA8-TR-5.0 SL-548-SA8-TR-0.5 SL-548-SA8-TR-10.0 SL-548-SA8-TR-5.0 SL-848-SA8-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-534-SA8-TR-0.5(RES)	Zirconium	4.00 mg/Kg	4.00U mg/Kg
SL-534-SA8-TR-5.0(RES)	Zirconium	3.99 mg/Kg	3.99U mg/Kg

Surrogate Outlier Report

Lab Reporting Batch ID: PH185 **Laboratory: LL**

EDD Filename: PH185_v3. **eQAPP Name: CDM_SSFL_140617_Lan**

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

Sample ID (Analysis Type)	*Surrogate*	*Sample % Recovery*	*% Recovery Limits*	*Affected Compounds*	*Flag*
SL-548-SA8-TR-0.5 (REA)	O-TERPHENYL	61	66.00-123.00	All Target Analytes	J (all detects) UJ (all non-detects)
SL-548-SA8-TR-10.0 (REA2)	O-TERPHENYL	51	66.00-123.00	All Target Analytes	J(all detects) UJ(all non-detects)
SL-548-SA8-TR-5.0 (REA2)	O-TERPHENYL	64	66.00-123.00	All Target Analytes	J(all detects) UJ(all non-detects)
SL-848-SA8-TR-5.0 (REA2)	O-TERPHENYL	52	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: PH185 **Laboratory: LL**

EDD Filename: PH185_v3 **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
SL-548-SA8-TR-5.0 MSD (SL-548-SA8-TR-5.0)	EFH (C30-C40)	-	-	49.00-123.00	42 (20.00)	EFH (C30-C40)	J (all detects)

Method: 8270D SIM
Matrix: SO

QC Sample ID (Associated Samples)	Compound	MS %R	MSD %R	%R Limits	RPD (Limits)	Affected Compounds	Flag
SL-548-SA8-TR-5.0 MSD (SL-548-SA8-TR-5.0)	BENZO(G,H,I)PERYLENE	-	-	33.00-141.00	65 (30.00)	BENZO(G,H,I)PERYLENE	J(all detects)

Method: 6010C
Matrix: SO

QC Sample ID (Associated Samples)	Compound	MS %R	MSD %R	%R Limits	RPD (Limits)	Affected Compounds	Flag
SL-548-SA8-TR-5.0 MS (TOT) SL-548-SA8-TR-5.0 MSD (TOT) (SL-534-SA8-TR-0.5 SL-534-SA8-TR-5.0 SL-548-SA8-TR-0.5 SL-548-SA8-TR-10.0 SL-548-SA8-TR-5.0 SL-848-SA8-TR-5.0)	ALUMINUM POTASSIUM TITANIUM	2456 126 445	3885 164 622	75.00-125.00 75.00-125.00 75.00-125.00	- - -	ALUMINUM POTASSIUM TITANIUM	J(all detects) Al, Ti No Qual, >4x
SL-548-SA8-TR-5.0 MS (TOT) SL-548-SA8-TR-5.0 MSD (TOT) (SL-534-SA8-TR-0.5 SL-534-SA8-TR-5.0 SL-548-SA8-TR-0.5 SL-548-SA8-TR-10.0 SL-548-SA8-TR-5.0 SL-848-SA8-TR-5.0)	IRON MAGNESIUM	-1341 13	1088 323	75.00-125.00 75.00-125.00	- -	IRON MAGNESIUM	No Qual, >4x
SL-548-SA8-TR-5.0 MS (TOT) SL-548-SA8-TR-5.0 MSD (TOT) (SL-534-SA8-TR-0.5 SL-534-SA8-TR-5.0 SL-548-SA8-TR-0.5 SL-548-SA8-TR-10.0 SL-548-SA8-TR-5.0 SL-848-SA8-TR-5.0)	ANTIMONY CADMIUM CALCIUM LEAD	41 - 11145 72	34 74 2442 -	75.00-125.00 75.00-125.00 75.00-125.00 75.00-125.00	- - 81 (20.00) -	ANTIMONY CADMIUM CALCIUM LEAD	J(all detects) UJ(all non-detects) Ca, No Qual %R, >4x

Matrix Spike/Matrix Spike Duplicate Outlier Report

Lab Reporting Batch ID: PH185 **Laboratory: LL**

EDD Filename: PH185_v3 **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*
SL-548-SA8-TR-5.0 MSD (TOT) (SL-534-SA8-TR-0.5 SL-534-SA8-TR-5.0 SL-548-SA8-TR-0.5 SL-548-SA8-TR-10.0 SL-548-SA8-TR-5.0 SL-848-SA8-TR-5.0)	STRONTIUM	-	153	75.00-125.00	-	STRONTIUM	No Qual, >4x

Lab Duplicate Outlier Report

Lab Reporting Batch ID: PH185 **Laboratory: LL**

EDD Filename: PH185_v3 **eQAPP Name: CDM_SSFL_140617_Lan**

Method: 6010C
Matrix: SO

QC Sample ID (Associated Sample ID)	*Analyte*	*Sample RPD*	*eQAPP RPD*	*Flag*
SL-548-SA8-TR-5.0 DUP (TOT)	CALCIUM	77	20.00	
(SL-534-SA8-TR-0.5	COBALT	24	20.00	
SL -534-SA8-TR-5.0	MANGANESE	30	20.00	
SL -548-SA8-TR-0.5				J (all detects)
SL -548-SA8-TR-10.0				UJ (all non-detects)
SL -548-SA8-TR-5.0				
SL -848-SA8-TR-5.0)				

Method: 6020A
Matrix: SO

QC Sample ID (Associated Sample ID)	*Analyte*	*Sample RPD*	*eQAPP RPD*	*Flag*
SL-548-SA8-TR-5.0 DUP (TOT)	SILVER	27	20.00	
(SL-534-SA8-TR-0.5				
SL -534-SA8-TR-5.0				No Qual,
SL -548-SA8-TR-0.5				OK by Difference
SL -548-SA8-TR-10.0				
SL -548-SA8-TR-5.0				
SL -848-SA8-TR-5.0)				

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: PH185 **Laboratory: LL**

EDD Filename: PH185_v3 **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*
P41416AQ321722A (SL-534-SA8-TR-0.5 SL -534-SA8-TR-5.0 SL -548-SA8-TR-0.5 SL -548-SA8-TR-10.0 SL -548-SA8-TR-5.0 SL -848-SA8-TR-5.0)	EFH (C12-C14)	117	-	76.00-115.00	-	EFH (C12-C14)	J (all detects)
P41417AQ321743A (SL-534-SA8-TR-0.5 SL -534-SA8-TR-5.0 SL -548-SA8-TR-0.5 SL -548-SA8-TR-10.0 SL -548-SA8-TR-5.0 SL -848-SA8-TR-5.0)	EFH (C12-C14) SG EFH (C15-C20) SG EFH (C21-C30) SG EFH (C8-C11) SG	71 74 73 57	- - - -	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)

Field Duplicate RPD Report

Lab Reporting Batch ID: PH185 **Laboratory: LL**

EDD Filename: PH185_v3 **eQAPP Name: CDM_SSFL_140617_Lan**

Method: 160.3M
Matrix: SO

Analyte	Concentration (%)		Sample RPD	eQAPP RPD	Flag
	SL-548-SA8-TR-5.0	SL-848-SA8-TR-5.0			
MOISTURE	13.5	12.1	11		No Qualifiers Applied

Method: 1613B
Matrix: SO

Analyte	Concentration (ng/Kg)		Sample RPD	eQAPP RPD	Flag
	SL-548-SA8-TR-5.0	SL-848-SA8-TR-5.0			
1,2,3,4,6,7,8-HPCDD	0.111	0.0786	34	50.00	
1,2,3,4,7,8,9-HPCDF	0.0636	0.0695	9	50.00	
1,2,3,4,7,8-HxCDD	0.0310	0.0245	23	50.00	
1,2,3,7,8,9-HXCDF	0.0470	0.0438	7	50.00	No Qualifiers Applied
2,3,4,7,8-PECDF	0.0262	0.0260	1	50.00	
OCDD	0.434	0.359	19	50.00	
1,2,3,4,6,7,8-HPCDF	0.209	0.0246	158	50.00	
1,2,3,4,7,8-HXCDF	0.111	0.0172	146	50.00	
1,2,3,6,7,8-HXCDD	0.0290	5.59 U	200	50.00	
1,2,3,6,7,8-HXCDF	0.0637	5.59 U	200	50.00	J(all detects)
1,2,3,7,8-PECDD	0.0232	5.59 U	200	50.00	UJ(all non-detects)
1,2,3,7,8-PECDF	0.0686	0.0148	129	50.00	
2,3,4,6,7,8-HXCDF	0.0428	0.0235	58	50.00	
OCDF	0.559	0.197	96	50.00	

Method: 6010C
Matrix: SO

Analyte	Concentration (mg/Kg)		Sample RPD	eQAPP RPD	Flag
	SL-548-SA8-TR-5.0 (TOT)	SL-848-SA8-TR-5.0 (TOT)			
ALUMINUM	29100	27300	6	50.00	
ARSENIC	2.92	2.99	2	50.00	
BARIUM	123	112	9	50.00	
BERYLLIUM	1.00	0.873	14	50.00	
BORON	12.6	12.9	2	50.00	
CHROMIUM	35.4	33.0	7	50.00	
COBALT	7.01	7.31	4	50.00	
COPPER	19.1	17.6	8	50.00	
IRON	31900	29300	8	50.00	
LEAD	13.1	11.3	15	50.00	
LITHIUM	26.2	24.5	7	50.00	
MAGNESIUM	7090	6420	10	50.00	No Qualifiers Applied
MANGANESE	261	260	0	50.00	
NICKEL	17.1	15.5	10	50.00	
PHOSPHORUS	240	239	0	50.00	
POTASSIUM	2740	2600	5	50.00	
SODIUM	163	154	6	50.00	
TIN	3.34	3.31	1	50.00	
TITANIUM	1020	1020	0	50.00	
VANADIUM	61.7	57.9	6	50.00	
ZINC	64.4	58.8	9	50.00	
Zirconium	6.04	5.60	8	50.00	
CALCIUM	18000	46300	88	50.00	J(all detects)

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

Field Duplicate RPD Report

Lab Reporting Batch ID: PH185 **Laboratory: LL**

EDD Filename: PH185_v3 **eQAPP Name: CDM_SSFL_140617_Lan**

Method: 6020A
Matrix: SO

Analyte	*Concentration (mg/Kg)* SL-548-SA8-TR-5.0 (TOT)	SL-848-SA8-TR-5.0 (TOT)	*Sample RPD*	*eQAPP RPD*	*Flag*
SILVER	0.0496	0.0509	3	50.00	
STRONTIUM	47.7	53.9	12	50.00	No Qualifiers Applied
THALLIUM	0.316	0.322	2	50.00	

Method: 7471B
Matrix: SO

Analyte	*Concentration (mg/Kg)* SL-548-SA8-TR-5.0 (TOT)	SL-848-SA8-TR-5.0 (TOT)	*Sample RPD*	*eQAPP RPD*	*Flag*
MERCURY	0.0127	0.0125	2	50.00	No Qualifiers Applied

Method: 8015M
Matrix: SO

Analyte	*Concentration (mg/Kg)* SL-548-SA8-TR-5.0	SL-848-SA8-TR-5.0	*Sample RPD*	*eQAPP RPD*	*Flag*
EFH (C21-C30)	5.8 U	2.9	200	50.00	J(all detects)
EFH (C30-C40)	12 U	15	200	50.00	UJ(all non-detects)

Reporting Limit Outliers

Lab Reporting Batch ID: PH185 **Laboratory: LL**

EDD Filename: PH185_v3. **eQAPP Name: CDM_SSFL_140617_Lan**

Method: 1613B

Matrix: SO

SampleID	Analyte	Lab Qual	Result	Reporting Limit	RL Type	Units	Flag
SL-534-SA8-TR-0.5	1,2,3,4,6,7,8-HPCDD	JB	1.13	5.18	PQL	ng/Kg	
	1,2,3,4,6,7,8-HPCDF	JB	0.244	5.18	PQL	ng/Kg	
	1,2,3,4,7,8,9-HPCDF	JBQ	0.0432	5.18	PQL	ng/Kg	
	1,2,3,4,7,8-HxCDD	JQ	0.0451	5.18	PQL	ng/Kg	
	1,2,3,4,7,8-HXCDF	JB	0.0484	5.18	PQL	ng/Kg	
	1,2,3,6,7,8-HXCDD	JBQ	0.140	5.18	PQL	ng/Kg	
	1,2,3,6,7,8-HXCDF	JBQ	0.0986	5.18	PQL	ng/Kg	
	1,2,3,7,8,9-HXCDD	JBQ	0.100	5.18	PQL	ng/Kg	J (all detects)
	1,2,3,7,8,9-HXCDF	JB	0.0364	5.18	PQL	ng/Kg	
	1,2,3,7,8-PECDD	JQ	0.0374	5.18	PQL	ng/Kg	
	1,2,3,7,8-PECDF	JBQ	0.223	5.18	PQL	ng/Kg	
	2,3,4,6,7,8-HXCDF	JB	0.0899	5.18	PQL	ng/Kg	
	2,3,7,8-TCDF	J	0.0798	1.04	PQL	ng/Kg	
	OCDD	JB	8.27	10.4	PQL	ng/Kg	
	OCDF	JBQ	0.424	10.4	PQL	ng/Kg	
SL-534-SA8-TR-5.0	1,2,3,4,6,7,8-HPCDD	JB	0.393	5.18	PQL	ng/Kg	
	1,2,3,4,6,7,8-HPCDF	JB	0.217	5.18	PQL	ng/Kg	
	1,2,3,4,7,8,9-HPCDF	JB	0.0561	5.18	PQL	ng/Kg	
	1,2,3,4,7,8-HxCDD	JQ	0.0213	5.18	PQL	ng/Kg	
	1,2,3,4,7,8-HXCDF	JBQ	0.0412	5.18	PQL	ng/Kg	
	1,2,3,6,7,8-HXCDD	JB	0.0225	5.18	PQL	ng/Kg	
	1,2,3,6,7,8-HXCDF	JBQ	0.0238	5.18	PQL	ng/Kg	
	1,2,3,7,8,9-HXCDD	JBQ	0.0190	5.18	PQL	ng/Kg	J (all detects)
	1,2,3,7,8,9-HXCDF	JBQ	0.0200	5.18	PQL	ng/Kg	
	1,2,3,7,8-PECDD	JQ	0.0283	5.18	PQL	ng/Kg	
	1,2,3,7,8-PECDF	JB	0.0383	5.18	PQL	ng/Kg	
	2,3,4,6,7,8-HXCDF	JBQ	0.0478	5.18	PQL	ng/Kg	
	2,3,4,7,8-PECDF	JBQ	0.0197	5.18	PQL	ng/Kg	
	OCDD	JB	4.14	10.4	PQL	ng/Kg	
	OCDF	JBQ	0.781	10.4	PQL	ng/Kg	
SL-548-SA8-TR-0.5	1,2,3,4,6,7,8-HPCDD	JB	2.59	5.37	PQL	ng/Kg	
	1,2,3,4,6,7,8-HPCDF	JB	0.352	5.37	PQL	ng/Kg	
	1,2,3,4,7,8,9-HPCDF	JBQ	0.0502	5.37	PQL	ng/Kg	
	1,2,3,4,7,8-HxCDD	JQ	0.0438	5.37	PQL	ng/Kg	
	1,2,3,4,7,8-HXCDF	JBQ	0.0505	5.37	PQL	ng/Kg	
	1,2,3,6,7,8-HXCDD	JBQ	0.230	5.37	PQL	ng/Kg	
	1,2,3,6,7,8-HXCDF	JBQ	0.0533	5.37	PQL	ng/Kg	
	1,2,3,7,8,9-HXCDD	JB	0.317	5.37	PQL	ng/Kg	J (all detects)
	1,2,3,7,8,9-HXCDF	JB	0.272	5.37	PQL	ng/Kg	
	1,2,3,7,8-PECDD	JQ	0.0253	5.37	PQL	ng/Kg	
	1,2,3,7,8-PECDF	JB	0.148	5.37	PQL	ng/Kg	
	2,3,4,6,7,8-HXCDF	JBQ	0.0448	5.37	PQL	ng/Kg	
	2,3,4,7,8-PECDF	JBQ	0.0525	5.37	PQL	ng/Kg	
	2,3,7,8-TCDF	J	0.0392	1.07	PQL	ng/Kg	
	OCDF	JB	0.941	10.7	PQL	ng/Kg	

Reporting Limit Outliers

Lab Reporting Batch ID: PH185 **Laboratory: LL**

EDD Filename: PH185_v3. **eQAPP Name: CDM_SSFL_140617_Lan**

Method: 1613B

Matrix: SO

SampleID	Analyte	Lab Qual	Result	Reporting Limit	RL Type	Units	Flag
SL-548-SA8-TR-10.0	1,2,3,4,6,7,8-HPCDD	JBQ	0.107	5.69	PQL	ng/Kg	J (all detects)
	1,2,3,4,6,7,8-HPCDF	JB	0.0422	5.69	PQL	ng/Kg	
	1,2,3,4,7,8,9-HPCDF	JBQ	0.0297	5.69	PQL	ng/Kg	
	1,2,3,4,7,8-HXCDF	JBQ	0.0303	5.69	PQL	ng/Kg	
	1,2,3,6,7,8-HXCDD	JBQ	0.0283	5.69	PQL	ng/Kg	
	1,2,3,6,7,8-HXCDF	JBQ	0.0498	5.69	PQL	ng/Kg	
	1,2,3,7,8,9-HXCDD	JBQ	0.0296	5.69	PQL	ng/Kg	
	1,2,3,7,8,9-HXCDF	JBQ	0.0188	5.69	PQL	ng/Kg	
	1,2,3,7,8-PECDD	JQ	0.0744	5.69	PQL	ng/Kg	
	1,2,3,7,8-PECDF	JBQ	0.0948	5.69	PQL	ng/Kg	
	2,3,4,6,7,8-HXCDF	JB	0.0348	5.69	PQL	ng/Kg	
	2,3,4,7,8-PECDF	JBQ	0.0429	5.69	PQL	ng/Kg	
	2,3,7,8-TCDD	JB	0.0380	1.14	PQL	ng/Kg	
	2,3,7,8-TCDF	JQ	0.0245	1.14	PQL	ng/Kg	
	OCDD	JBQ	0.401	11.4	PQL	ng/Kg	
	OCDF	JBQ	0.154	11.4	PQL	ng/Kg	
SL-548-SA8-TR-5.0	1,2,3,4,6,7,8-HPCDD	JB	0.111	5.77	PQL	ng/Kg	J (all detects)
	1,2,3,4,6,7,8-HPCDF	JBQ	0.209	5.77	PQL	ng/Kg	
	1,2,3,4,7,8,9-HPCDF	JBQ	0.0636	5.77	PQL	ng/Kg	
	1,2,3,4,7,8-HxCDD	JQ	0.0310	5.77	PQL	ng/Kg	
	1,2,3,4,7,8-HXCDF	JB	0.111	5.77	PQL	ng/Kg	
	1,2,3,6,7,8-HXCDD	JBQ	0.0290	5.77	PQL	ng/Kg	
	1,2,3,6,7,8-HXCDF	JBQ	0.0637	5.77	PQL	ng/Kg	
	1,2,3,7,8,9-HXCDF	JB	0.0470	5.77	PQL	ng/Kg	
	1,2,3,7,8-PECDD	JQ	0.0232	5.77	PQL	ng/Kg	
	1,2,3,7,8-PECDF	JB	0.0686	5.77	PQL	ng/Kg	
	2,3,4,6,7,8-HXCDF	JBQ	0.0428	5.77	PQL	ng/Kg	
	2,3,4,7,8-PECDF	JBQ	0.0262	5.77	PQL	ng/Kg	
	OCDD	JB	0.434	11.5	PQL	ng/Kg	
	OCDF	JBQ	0.559	11.5	PQL	ng/Kg	
SL-848-SA8-TR-5.0	1,2,3,4,6,7,8-HPCDD	JBQ	0.0786	5.59	PQL	ng/Kg	J (all detects)
	1,2,3,4,6,7,8-HPCDF	JBQ	0.0246	5.59	PQL	ng/Kg	
	1,2,3,4,7,8,9-HPCDF	JBQ	0.0695	5.59	PQL	ng/Kg	
	1,2,3,4,7,8-HxCDD	JQ	0.0245	5.59	PQL	ng/Kg	
	1,2,3,4,7,8-HXCDF	JB	0.0172	5.59	PQL	ng/Kg	
	1,2,3,7,8,9-HXCDF	JBQ	0.0438	5.59	PQL	ng/Kg	
	1,2,3,7,8-PECDF	JB	0.0148	5.59	PQL	ng/Kg	
	2,3,4,6,7,8-HXCDF	JB	0.0235	5.59	PQL	ng/Kg	
	2,3,4,7,8-PECDF	JBQ	0.0260	5.59	PQL	ng/Kg	
	OCDD	JB	0.359	11.2	PQL	ng/Kg	
	OCDF	JBQ	0.197	11.2	PQL	ng/Kg	

Method: 6010C

Matrix: SO

SampleID	Analyte	Lab Qual	Result	Reporting Limit	RL Type	Units	Flag
SL-534-SA8-TR-0.5	ARSENIC	J	3.16	4.13	PQL	mg/Kg	J (all detects)
	BERYLLIUM	J	0.589	1.03	PQL	mg/Kg	
	BORON	J	8.29	10.3	PQL	mg/Kg	
	TIN	J	3.09	10.3	PQL	mg/Kg	
	Zirconium	J	4.00	5.17	PQL	mg/Kg	

Reporting Limit Outliers

Lab Reporting Batch ID: PH185 **Laboratory: LL**

EDD Filename: PH185_v3. **eQAPP Name: CDM_SSFL_140617_Lan**

Method: 6010C

Matrix: SO

SampleID	Analyte	Lab Qual	Result	Reporting Limit	RL Type	Units	Flag
SL-534-SA8-TR-5.0	ARSENIC	J	1.33	4.24	PQL	mg/Kg	J (all detects)
	BERYLLIUM	J	0.505	1.06	PQL	mg/Kg	
	BORON	J	6.99	10.6	PQL	mg/Kg	
	TIN	J	3.08	10.6	PQL	mg/Kg	
	Zirconium	J	3.99	5.29	PQL	mg/Kg	
SL-548-SA8-TR-0.5	ARSENIC	J	3.58	4.40	PQL	mg/Kg	J (all detects)
	BERYLLIUM	J	1.02	1.10	PQL	mg/Kg	
	SODIUM	J	108	110	PQL	mg/Kg	
	TIN	J	3.13	11.0	PQL	mg/Kg	
SL-548-SA8-TR-10.0	ARSENIC	J	3.82	4.45	PQL	mg/Kg	J (all detects)
	BERYLLIUM	J	0.822	1.11	PQL	mg/Kg	
	BORON	J	10.9	11.1	PQL	mg/Kg	
	TIN	J	3.24	11.1	PQL	mg/Kg	
	Zirconium	J	5.45	5.56	PQL	mg/Kg	
SL-548-SA8-TR-5.0	ARSENIC	J	2.92	4.53	PQL	mg/Kg	J (all detects)
	BERYLLIUM	J	1.00	1.13	PQL	mg/Kg	
	TIN	J	3.34	11.3	PQL	mg/Kg	
SL-848-SA8-TR-5.0	ARSENIC	J	2.99	4.38	PQL	mg/Kg	J (all detects)
	BERYLLIUM	J	0.873	1.09	PQL	mg/Kg	
	TIN	J	3.31	10.9	PQL	mg/Kg	

Method: 6020A

Matrix: SO

SampleID	Analyte	Lab Qual	Result	Reporting Limit	RL Type	Units	Flag
SL-534-SA8-TR-0.5	SELENIUM	J	0.117	0.413	PQL	mg/Kg	J (all detects)
	SILVER	J	0.0442	0.207	PQL	mg/Kg	
SL-534-SA8-TR-5.0	SILVER	J	0.0298	0.212	PQL	mg/Kg	J (all detects)
SL-548-SA8-TR-0.5	SELENIUM	J	0.178	0.440	PQL	mg/Kg	J (all detects)
	SILVER	J	0.0623	0.220	PQL	mg/Kg	
SL-548-SA8-TR-10.0	SILVER	J	0.0543	0.222	PQL	mg/Kg	J (all detects)
SL-548-SA8-TR-5.0	SILVER	J	0.0496	0.227	PQL	mg/Kg	J (all detects)
SL-848-SA8-TR-5.0	SILVER	J	0.0509	0.219	PQL	mg/Kg	J (all detects)

Method: 7471B

Matrix: SO

SampleID	Analyte	Lab Qual	Result	Reporting Limit	RL Type	Units	Flag
SL-548-SA8-TR-0.5	MERCURY	J	0.0139	0.0180	PQL	mg/Kg	J (all detects)
SL-548-SA8-TR-10.0	MERCURY	J	0.0163	0.0190	PQL	mg/Kg	J (all detects)
SL-548-SA8-TR-5.0	MERCURY	J	0.0127	0.0188	PQL	mg/Kg	J (all detects)
SL-848-SA8-TR-5.0	MERCURY	J	0.0125	0.0187	PQL	mg/Kg	J (all detects)

Reporting Limit Outliers

Lab Reporting Batch ID: PH185 **Laboratory: LL**

EDD Filename: PH185_v3. **eQAPP Name: CDM_SSFL_140617_Lan**

Method: 8015M

Matrix: SO

SampleID	Analyte	Lab Qual	Result	Reporting Limit	RL Type	Units	Flag
SL-534-SA8-TR-0.5	EFH (C21-C30)	J	4.6	5.2	PQL	mg/Kg	J (all detects)
SL-534-SA8-TR-5.0	EFH (C30-C40)	J	5.0	11	PQL	mg/Kg	J (all detects)
SL-848-SA8-TR-5.0	EFH (C21-C30)	J	2.9	5.7	PQL	mg/Kg	J (all detects)

Method: 8270D SIM

Matrix: SO

SampleID	Analyte	Lab Qual	Result	Reporting Limit	RL Type	Units	Flag
SL-534-SA8-TR-0.5	2-METHYLNAPHTHALENE	J	0.71	1.7	PQL	ug/Kg	
	CHRYSENE	J	0.99	1.7	PQL	ug/Kg	J (all detects)
	NAPHTHALENE	J	0.73	1.7	PQL	ug/Kg	
SL-548-SA8-TR-0.5	1-METHYLNAPHTHALENE	J	0.83	1.8	PQL	ug/Kg	
	ANTHRACENE	J	0.61	1.8	PQL	ug/Kg	
	BENZO(A)ANTHRACENE	J	0.85	1.8	PQL	ug/Kg	J (all detects)
	BENZO(B)FLUORANTHENE	J	1.3	1.8	PQL	ug/Kg	
	BIS(2-ETHYLHEXYL)PHTHALATE	J	14	20	PQL	ug/Kg	

Enclosure II

Level IV Data Validation Reports

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: Santa Susana Field Laboratory

Collection Date: May 19, 2014

LDC Report Date: July 10, 2014

Matrix: Soil

Parameters: Semivolatiles

Validation Level: Level IV

Laboratory: Eurofins Lancaster Laboratories

Sample Delivery Group (SDG): PH185

Sample Identification

SL-534-SA8-TR-0.5
SL-534-SA8-TR-5.0
SL-548-SA8-TR-0.5
SL-848-SA8-TR-5.0
SL-548-SA8-TR-5.0
SL-548-SA8-TR-10.0
SL-548-SA8-TR-5.0MS
SL-548-SA8-TR-5.0MSD

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 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 with the following exceptions:

Date	Compound	%D	Associated Samples	Flag	A or P
5/2/14	Benzo(b)fluoranthene	26	All samples in SDG PH185	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.

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 EB3-052214 (from SDG PH195) was identified as an equipment blank. No semivolatile contaminants were found with the following exceptions:

Blank ID	Sampling Date	Compound	Concentration	Associated Samples
EB3-052214	5/22/14	Di-n-butylphthalate Diethylphthalate Bis(2-ethylhexyl)phthalate	0.10 ug/L 0.097 ug/L 0.097 ug/L	All samples in SDG PH185

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 PH185

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
SL-548-SA8-TR-5.0MS/MSD (SL-548-SA8-TR-5.0)	Benzo(g,h,i)perylene	-	-	65 (≤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.

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 PH185	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 SL-848-SA8-TR-5.0 and SL-548-SA8-TR-5.0 were identified as field duplicates. No semivolatiles were detected in any of the samples.

Santa Susana Field Laboratory
Semivolatiles - Data Qualification Summary - SDG PH185

SDG	Sample	Compound	Flag	A or P	Reason (Code)
PH185	SL-534-SA8-TR-0.5 SL-534-SA8-TR-5.0 SL-548-SA8-TR-0.5 SL-848-SA8-TR-5.0 SL-548-SA8-TR-5.0 SL-548-SA8-TR-10.0	Benzo(b)fluoranthene	J (all detects) UJ (all non-detects)	A	Continuing calibration (%D) (C)
PH185	SL-548-SA8-TR-5.0	Benzo(g,h,i)perylene	J (all detects)	A	Matrix spike/Matrix spike duplicate (RPD) (Q)
PH185	SL-534-SA8-TR-0.5 SL-534-SA8-TR-5.0 SL-548-SA8-TR-0.5 SL-848-SA8-TR-5.0 SL-548-SA8-TR-5.0 SL-548-SA8-TR-10.0	All compounds reported below the RL.	J (all detects)	A	Compound quantitation (Z)

Santa Susana Field Laboratory
Semivolatiles - Laboratory Blank Data Qualification Summary - SDG PH185

No Sample Data Qualified in this SDG

Santa Susana Field Laboratory
Semivolatiles - Field Blank Data Qualification Summary - SDG PH185

No Sample Data Qualified in this SDG

LDC #: 32030A2b **VALIDATION COMPLETENESS WORKSHEET** Date: 7/1/14

SDG #: PH185 Level IV Page: 1 of 1

Laboratory: Eurofins Lancaster Laboratories Reviewer: BR

2nd Reviewer: SM

METHOD: GC/MS ~~Polynuclear Aromatic Hydrocarbons~~ SVOCs (EPA SW 846 Method 8270C/D-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: 5/19/14
II.	GC/MS Instrument performance check	A	
III.	Initial calibration	A	RSD≤30?, r^2
IV.	Continuing calibration/ICV	SW	ICV/CCV≤25?
V.	Blanks	A	
VI.	Surrogate spikes	A	
VII.	Matrix spike/Matrix spike duplicates	SW	
VIII.	Laboratory control samples	A	LCS
IX.	Regional Quality Assurance and Quality Control	N	
X.	Internal standards	A	
XI.	Target compound identification	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 = 4+5 9
XVII.	Field blanks	SW	EB = EBJ-052214 (SDG# PH185) 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-534-SA8-TR-0.5	11		21		31	SBLKLD142
2	SL-534-SA8-TR-5.0	12		22		32	
3	SL-548-SA8-TR-0.5	13		23		33	
4	SL-848-SA8-TR-5.0	14		24		34	
5	SL-548-SA8-TR-5.0	15		25		35	
6	SL-548-SA8-TR-10.0	16		26		36	
7	SL-548-SA8-TR-5.0MS	17		27		37	
8	SL-548-SA8-TR-5.0MSD	18		28		38	
9		19		29		39	
10		20		30		40	

LDC #: 32030A26

VALIDATION FINDINGS CHECKLIST

Reviewer: KR
2nd Reviewer: SM

Method: Semivolatiles (EPA SW 846 Method 8270C) D
RSD

Validation Area	Yes	No	NA	Findings/Comments
I. Technical holding times				
All technical holding times were met.	✓			
Cooler temperature criteria was met.	✓			
II. GC/MS Instrument performance check				
Were the DFTPP performance results reviewed and found to be within the specified criteria?	✓			
Were all samples analyzed within the 12 hour clock criteria?	✓			
III. Initial calibration				
Did the laboratory perform a 5 point calibration prior to sample analysis?	✓			
Were all percent relative standard deviations (%RSD) and relative response factors (RRF) within method criteria for all CCCs and SPCCs?	✓			
Was a curve fit used for evaluation?	✓			
Did the initial calibration meet the curve fit acceptance criteria of ≥ 0.990?	✓			
Were all percent relative standard deviations (%RSD) ≤ 30% and relative response factors (RRF) ≥ 0.05?	✓			
IV. Continuing calibration				
Was a continuing calibration standard analyzed at least once every 12 hours for each instrument?	✓			
Were all percent differences (%D) and relative response factors (RRF) within method criteria for all CCCs and SPCCs?	✓			
Were all percent differences (%D) ≤ 25% and relative response factors (RRF) ≥ 0.05?		✓		
V. Blanks				
Was a method blank associated with every sample in this SDG?	✓			
Was a method blank analyzed for each matrix and concentration?	✓			
Was there contamination in the method blanks? If yes, please see the Blanks validation completeness worksheet.		✓		
VI. Surrogate spikes				
Were all surrogate %R within QC limits?	✓			
If 2 or more base neutral or acid surrogates were outside QC limits, was a reanalysis performed to confirm %R?			✓	
If any %R was less than 10 percent, was a reanalysis performed to confirm %R?			✓	
VII. Matrix spike/Matrix spike duplicates				
Were a matrix spike (MS) and matrix spike duplicate (MSD) analyzed for each matrix in this SDG? If no, indicate which matrix does not have an associated MS/MSD. Soil / Water.	✓			
Was a MS/MSD analyzed every 20 samples of each matrix?	✓			
Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?		✓		
VIII. Laboratory control samples				
Was an LCS analyzed for this SDG?	✓			

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 #: 32030A2b

VALIDATION FINDINGS WORKSHEET
Continuing Calibration

Page: 1 of 1
Reviewer: KR
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 continuing calibration standard analyzed at least once every 12 hours for each instrument?

Y (N) N/A Were percent differences (%D) ≤~~20~~ 25% and relative response factors (RRF) within the method criteria?

Cod: C

#	Date	Standard ID	Compound	Finding %D (Limit: <~~20.0%~~ 25?)	Finding RRF (Limit)	Associated Samples	Qualifications
	5/2/14	CCV - fe0020	GGG	26		All	J/UJ/A

LDC #: 32030A2b

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 = EB3-052214 (SDG # PH195)

Code: F

Blank units: ug/L **Associated sample units:** ug/kg
Sampling date: 5/22/14
Field blank type: (circle one) Field Blank / Rinsate / (Other:) EB Associated Samples: All (ND + 75x)

Compound	Blank ID	Sample Identification								
	EB									
XX	0.10									
LL	0.097									
EEE	0.097									

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 + 75x)

Compound	Blank ID	Sample Identification								
	FB		+							
XX	0.089									
EEE	0.058									
TTT	0.022									
W	0.032									
S ~~AAAAA~~ 6*	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 #: 32030A26

VALIDATION FINDINGS WORKSHEET
Matrix Spike/Matrix Spike Duplicates

Page: 1 of 1
Reviewer: SR
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	Qualifications
		7/8	LLL	( )	( )	65 (30)	5	J det/A (Q)
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
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				( )	( )	( )		
				( )	( )	( )		

LDC #: 32030A2b

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	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# 32030A2b

VALIDATION FINDINGS WORSHEET
Continuing Calibration Results Verification

Reviewer: BR
2nd Reviewer: [illegible]

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	fe0721	05/26/14	N-Nitrosodimethylamine (IS1)	0.850	0.926	0.926	9	9
			Naphthalene (IS2)	1.222	1.223	1.223	0	0
			Fluorene (IS3)	1.460	1.414	1.414	3	3
			Anthracene (IS4)	1.187	1.298	1.298	9	9
			Chrysene (IS5)	1.553	1.471	1.471	5	5
			Benzo(a)pyrene (IS6)	1.619	1.719	1.719	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# 32030A2b

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	fe0761	05/27/14	N-Nitrosodimethylamine (IS1)	0.850	0.934	0.934	10	10
			Naphthalene (IS2)	1.222	1.198	1.198	2	2
			Fluorene (IS3)	1.460	1.466	1.466	0	0
			Anthracene (IS4)	1.187	1.312	1.312	11	11
			Chrysene (IS5)	1.553	1.487	1.487	4	4
			Benzo(a)pyrene (IS6)	1.619	1.674	1.674	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 #: 32030A2b

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: (

	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
Fluoranthene-d10	33.22	32.69	98	98	0
Benzo(a)pyrene-d12	↓	35.32	106	106	0
1-Methylnaphthalene-d10		28.74	87	87	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 #: 32030A25

VALIDATION FINDINGS WORKSHEET
Matrix Spike/Matrix Spike 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 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: 7/8

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	33.22	33.22	0	35.02	33.33	105	105	100	100	5	5
Pentachlorophenol											
Pyrene	33.22	33.22	0	31.1	30.27	94	94	91	91	3	3

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

LDC #: 32030A26

VALIDATION FINDINGS WORKSHEET

Laboratory Control Sample/Laboratory Control Sample Duplicates Results Verification

Reviewer: BR
2nd Reviewer: [illegible]

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

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

% Recovery = 100 * (SC/SA

Where: SSC = Spike concentration
SA = Spike added

RPD = | LCS - LCSD | * 2/(LCS + LCSD)

LCS = Laboratory control sample percent recovery

LCSD = Laboratory control sample duplicate percent recovery

LCS/LCSD samples: 142LDLCS

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	-	35.04	-	105	105	-	-	-	-
Pentachlorophenol										
Pyrene	33.33	-	32.97	-	99	99	-	-	-	-

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 #: 32030A26

VALIDATION FINDINGS WORKSHEET
Sample Calculation Verification

Reviewer: BR
2nd reviewer: SM

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

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. 5 (1), S:

S = 0.73

Conc. = $\frac{(5049)(1.00)(1000)(\quad)(\quad)}{(196943)(1.222)(30.1)(0.96)(\quad)}$

= 0.725847929 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: May 19, 2014

LDC Report Date: July 10, 2014

Matrix: Soil

Parameters: Polychlorinated Biphenyls

Validation Level: Level IV

Laboratory: Eurofins Lancaster Laboratories

Sample Delivery Group (SDG): PH185

Sample Identification

SL-534-SA8-TR-0.5
SL-534-SA8-TR-5.0
SL-548-SA8-TR-0.5
SL-848-SA8-TR-5.0
SL-548-SA8-TR-5.0
SL-548-SA8-TR-10.0
SL-548-SA8-TR-5.0MS
SL-548-SA8-TR-5.0MSD

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 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 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 EB3-052214 (from SDG PH195) 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

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 PH185	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 SL-848-SA8-TR-5.0 and SL-548-SA8-TR-5.0 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 PH185

SDG	Sample	Compound	Flag	A or P	Reason (Code)
PH185	SL-534-SA8-TR-0.5 SL-534-SA8-TR-5.0 SL-548-SA8-TR-0.5 SL-848-SA8-TR-5.0 SL-548-SA8-TR-5.0 SL-548-SA8-TR-10.0	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 PH185

No Sample Data Qualified in this SDG

Santa Susana Field Laboratory
Polychlorinated Biphenyls - Field Blank Data Qualification Summary - SDG PH185

No Sample Data Qualified in this SDG

LDC #: 32030A3b **VALIDATION COMPLETENESS WORKSHEET** Date: 7/2/14
SDG #: PH185 Level IV Page: 1 of 1
Laboratory: Eurofins Lancaster Laboratories Reviewer: BR
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: 5/19/14
II.	GC Instrument Performance Check	N	
III.	Initial calibration	A	RSD ≤ 20%
IV.	Continuing calibration/ICV	A	1 CCV/ICV ≤ 20%
V.	Blanks	A	
VI.	Surrogate spikes	A	
VII.	Matrix spike/Matrix spike duplicates	A	
VIII.	Laboratory control samples	A	LCS/D
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	FD = ~~3~~ 4 + 5
XVI.	Field blanks	ND	EB = EB3-052214 (SDG # PH185) FB = FB-052114 (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

1	SL-534-SA8-TR-0.5	11		21		31	PBLK07142
2	SL-534-SA8-TR-5.0	12		22		32	
3	SL-548-SA8-TR-0.5	13		23		33	
4	SL-848-SA8-TR-5.0	14		24		34	
5	SL-548-SA8-TR-5.0	15		25		35	
6	SL-548-SA8-TR-10.0	16		26		36	
7	SL-548-SA8-TR-5.0MS	17		27		37	
8	SL-548-SA8-TR-5.0MSD	18		28		38	
9		19		29		39	
10		20		30		40	

Notes:

LDC #: 32030A36

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#: 32030A3b

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	5/20/2014	PCB1260-1 (ZB-MultiR1)	2229	2229	2342	2342	8	8
			PCB1260-1 (ZB-MultiR2I)	2627	2627	2871	2871	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#: 32030A3b

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	AR163TW	5/25/2014 23:03	PCB1260 (ZB-MultiR1)	200	186.86	186.87	7	7
			PCB1260 (ZB-MultiR2)	200	189.43	189.42	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#: 32030A3b

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	AR163TX	5/26/2014 3:21	PCB1260 (ZB-MultiR1)	200	189.52	189.53	5	5
			PCB1260 (ZB-MultiR2)	200	191.84	191.84	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 #: 32030A3b

VALIDATION FINDINGS WORKSHEET
Surrogate Results Verification

Page: 1 of 1
Reviewer: SR
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	MultiR2	10.1	9.493668	94	94	0
Decachlorobiphenyl	MultiR1	10.2	10.39493	102	102	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 #: 32030A36

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: 7|8

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	167	167	0	169.33	169.83	101	101	102	102	0	0

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

LDC #: 32030 &36

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: LCS07K12

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	-	170.3	-	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 #: 32030A2b

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?

LCS07142
28 Multi_R2

Aroclor 1260-1 = $\frac{(1416560)(10)}{(2871)(30)}$ ~~191.84~~

= 164.4676652

1260-2 = 167.935444

1260-3 = 164.279954

1260-4 = 171.571332

1260-5 = 181.996657

1260-6 = 169.543034

Average = 170.2990144

Example:

Sample I.D. #11 ND:

Conc. = _____

=

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

Note: _____

RECALC.wpd

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: Santa Susana Field Laboratory

Collection Date: May 19, 2014

LDC Report Date: July 18, 2014

Matrix: Soil

Parameters: Metals

Validation Level: Level IV

Laboratory: Euorfins Lancaster Laboratories

Sample Delivery Group (SDG): PH185

Sample Identification

SL-534-SA8-TR-0.5
SL-534-SA8-TR-5.0
SL-548-SA8-TR-0.5
SL-848-SA8-TR-5.0
SL-548-SA8-TR-5.0
SL-548-SA8-TR-10.0
SL-548-SA8-TR-5.0MS
SL-548-SA8-TR-5.0MSD
SL-548-SA8-TR-5.0DUP

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 Methods 6010C, 6020A, and 7471B for Metals. The metals analyzed were Aluminum, Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Calcium, Chromium, Cobalt, Copper, Iron, Lead, Lithium, Magnesium, Molybdenum, Manganese, Mercury, 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)	Calcium Zinc Tin	7.84 mg/Kg 0.461 mg/Kg 1.46 mg/Kg	All samples in SDG PH185
ICB/CCB	Aluminum Arsenic Barium Calcium Magnesium Manganese Titanium	923 ug/L 5.2 ug/L 0.76 ug/L 1110 ug/L 638 ug/L 1.6 ug/L 4.2 ug/L	All samples in SDG PH185
ICB/CCB	Iron	750 ug/L	SL-534-SA8-TR-0.5 SL-534-SA8-TR-5.0 SL-548-SA8-TR-10.0

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-534-SA8-TR-0.5	Tin	3.09 mg/Kg	3.09U mg/Kg
SL-534-SA8-TR-5.0	Arsenic Tin	1.33 mg/Kg 3.09 mg/Kg	1.33U mg/Kg 3.09U mg/Kg
SL-548-SA8-TR-0.5	Tin	3.13 mg/Kg	3.13U mg/Kg
SL-848-SA8-TR-5.0	Tin	3.31 mg/Kg	3.31 mg/Kg
SL-548-SA8-TR-5.0	Tin	3.34 mg/Kg	3.34U mg/Kg
SL-548-SA8-TR-10.0	Tin	3.24 mg/Kg	3.24U mg/Kg

Sample EB3-052214 (from SDG PH195) was identified as an equipment blank . No metal contaminants were found with the following exceptions:

Blank ID	Sampling Date	Analyte	Concentration	Associated Samples
EB3-052214	5/22/14	Calcium Manganese Zirconium Strontium	0.150 mg/L 0.00090 mg/L 0.0108 mg/L 0.00046 mg/L	All samples in SDG PH185

Sample FB-052114 (from SDG PH191) was identified as a field blank . No metal contaminants were found with the following exceptions:

Blank ID	Sampling Date	Analyte	Concentration	Associated Samples
FB-052114	5/21/14	Zirconium	0.0110 mg/L	All samples in SDG PH185

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-534-SA8-TR-0.5	Zirconium	4.00 mg/Kg	4.00U mg/Kg
SL-534-SA8-TR-5.0	Zirconium	3.99 mg/Kg	3.99U mg/Kg
SL-548-SA8-TR-10.0	Zirconium	5.45 mg/Kg	5.45U mg/Kg

V. ICP Interference Check Sample (ICS) Analysis

The frequency of analysis was met.

The criteria for analysis were met.

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 with the following exceptions:

Spike ID (Associated Samples)	Analyte	MS (%R) (Limits)	MSD (%R) (Limits)	RPD (Limits)	Flag	A or P
SL-548-SA8-TR-5.0MS/MSD (All samples in SDG PH185)	Antimony Cadmium Lead Calcium	41 (75-125) - 72 (75-125) -	34 (75-125) 74 (75-125) - -	- - - 81 (≤20)	J (all detects) UJ (all non-detects)	A
SL-548-SA8-TR-5.0MS/MSD (All samples in SDG PH185)	Potassium	126 (75-125)	164 (75-125)	-	J (all detects)	A

For SL-548-SA8-TR-5.0MS/MSD, no data were qualified for Aluminum, Calcium, Iron, Magnesium, Strontium, 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 with the following exceptions:

DUP ID (Associated Samples)	Analyte	RPD (Limits)	Difference (Limits)	Flag	A or P
SL-548-SA8-TR-5.0DUP (All samples in SDG PH185)	Calcium Cobalt Manganese	77 (≤20) 24 (≤20) 30 (≤20)	- - -	J (all detects) UJ (all non-detects)	A

VIII. Laboratory Control Samples (LCS)

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

IX. Internal Standards (ICP-MS)

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 with the following exceptions:

Diluted Sample	Analyte	%D (Limits)	Associated Samples	Flag	A or P
SL-548-SA8-TR-5.0	Nickel	13 (≤10)	All samples in SDG PH185	J (all detects) UJ (all non-detects)	A

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 PH185	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 SL-848-SA8-TR-5.0 and SL-548-SA8-TR-5.0 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
	SL-848-SA8-TR-5.0	SL-548-SA8-TR-5.0			
Aluminum	27300	29100	6 (≤50)	-	-
Arsenic	2.99	2.92	2 (≤50)	-	-
Barium	112	123	9 (≤50)	-	-
Beryllium	0.873	1.00	14 (≤50)	-	-
Boron	12.9	12.6	2 (≤50)	-	-

Analyte	Concentration (mg/Kg)		RPD (Limits)	Flag	A or P
	SL-848-SA8-TR-5.0	SL-548-SA8-TR-5.0			
Calcium	46300	18000	88 (≤50)	J (all detects)	A
Chromium	33.0	35.4	7 (≤50)	-	-
Cobalt	7.31	7.01	4 (≤50)	-	-
Copper	17.6	19.1	8 (≤50)	-	-
Iron	29300	31900	8 (≤50)	-	-
Lead	11.3	13.1	15 (≤50)	-	-
Lithium	24.5	26.2	7 (≤50)	-	-
Magnesium	6420	7090	10 (≤50)	-	-
Manganese	260	261	0 (≤50)	-	-
Mercury	0.0125	0.0127	2 (≤50)	-	-
Nickel	15.5	17.1	10 (≤50)	-	-
Phosphorus	239	240	0 (≤50)	-	-
Potassium	2600	2740	5 (≤50)	-	-
Tin	3.31	3.34	1 (≤50)	-	-
Titanium	1020	1020	0 (≤50)	-	-
Strontium	53.9	47.7	12 (≤50)	-	-
Silver	0.0509	0.0496	3 (≤50)	-	-
Sodium	154	163	6 (≤50)	-	-
Thallium	0.322	0.316	2 (≤50)	-	-
Vanadium	57.9	61.7	6 (≤50)	-	-

Analyte	Concentration (mg/Kg)		RPD (Limits)	Flag	A or P
	SL-848-SA8-TR-5.0	SL-548-SA8-TR-5.0			
Zinc	58.8	64.4	9 (≤50)	-	-
Zirconium	5.60	6.04	8 (≤50)	-	-

Santa Susana Field Laboratory
Metals - Data Qualification Summary - SDG PH185

SDG	Sample	Analyte	Flag	A or P	Reason (Code)
PH185	SL-534-SA8-TR-0.5 SL-534-SA8-TR-5.0 SL-548-SA8-TR-0.5 SL-848-SA8-TR-5.0 SL-548-SA8-TR-5.0 SL-548-SA8-TR-10.0	Antimony Cadmium Lead	J (all detects) UJ (all non-detects)	A	Matrix spike/Matrix spike duplicate (%R)(Q)
PH185	SL-534-SA8-TR-0.5 SL-534-SA8-TR-5.0 SL-548-SA8-TR-0.5 SL-848-SA8-TR-5.0 SL-548-SA8-TR-5.0 SL-548-SA8-TR-10.0	Calcium	J (all detects) UJ (all non-detects)	A	Matrix spike/Matrix spike duplicate (RPD)(E)
PH185	SL-534-SA8-TR-0.5 SL-534-SA8-TR-5.0 SL-548-SA8-TR-0.5 SL-848-SA8-TR-5.0 SL-548-SA8-TR-5.0 SL-548-SA8-TR-10.0	Potassium	J (all detects)	A	Matrix spike/Matrix spike duplicate (%R)(Q)
PH185	SL-534-SA8-TR-0.5 SL-534-SA8-TR-5.0 SL-548-SA8-TR-0.5 SL-848-SA8-TR-5.0 SL-548-SA8-TR-5.0 SL-548-SA8-TR-10.0	Calcium Cobalt Manganese	J (all detects) UJ (all non-detects)	A	Duplicate sample analysis (RPD)(E)
PH185	SL-534-SA8-TR-0.5 SL-534-SA8-TR-5.0 SL-548-SA8-TR-0.5 SL-848-SA8-TR-5.0 SL-548-SA8-TR-5.0 SL-548-SA8-TR-10.0	Nickel	J (all detects) UJ (all non-detects)	A	ICP serial dilution (%D) (A)
PH185	SL-534-SA8-TR-0.5 SL-534-SA8-TR-5.0 SL-548-SA8-TR-0.5 SL-848-SA8-TR-5.0 SL-548-SA8-TR-5.0 SL-548-SA8-TR-10.0	All analytes reported below the RL and above the MDL.	J (all detects)	A	Sample result verification (Z)
PH185	SL-848-SA8-TR-5.0 SL-548-SA8-TR-5.0	Calcium	J (all detects)	A	Field duplicates (FD)

Santa Susana Field Laboratory
Metals - Laboratory Blank Data Qualification Summary - SDG PH185

SDG	Sample	Analyte	Modified Final Concentration	A or P	Code
PH185	SL-534-SA8-TR-0.5	Tin	3.09U mg/Kg	A	B
PH185	SL-534-SA8-TR-5.0	Arsenic Tin	1.33U mg/Kg 3.09U mg/Kg	A	B
PH185	SL-548-SA8-TR-0.5	Tin	3.13U mg/Kg	A	B
PH185	SL-848-SA8-TR-5.0	Tin	3.31 mg/Kg	A	B
PH185	SL-548-SA8-TR-5.0	Tin	3.34U mg/Kg	A	B
PH185	SL-548-SA8-TR-10.0	Tin	3.24U mg/Kg	A	B

Santa Susana Field Laboratory
Metals - Field Blank Data Qualification Summary - SDG PH185

SDG	Sample	Analyte	Modified Final Concentration	A or P	Code
PH185	SL-534-SA8-TR-0.5	Zirconium	4.00U mg/Kg	A	F
PH185	SL-534-SA8-TR-5.0	Zirconium	3.99U mg/Kg	A	F
PH185	SL-548-SA8-TR-10.0	Zirconium	5.45U mg/Kg	A	F

LDC #: 32030A4 **VALIDATION COMPLETENESS WORKSHEET** Date: 06/26/14

SDG #: PH185 Level IV Page: 1 of 1

Laboratory: Eurofins Lancaster Laboratories Reviewer: JO

2nd Reviewer: CR

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

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: 05/19/14
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 (7.8)
VII.	Duplicate Sample Analysis	SW	Dup
VIII.	Laboratory Control Samples (LCS)	A	LCS
IX.	Internal Standard (ICP-MS)	A	
X.	Furnace Atomic Absorption QC	N	
XI.	ICP Serial Dilution	SW	
XII.	Sample Result Verification	A	
XIII.	Overall Assessment of Data	A	
XIV.	Field Duplicates	~~A~~ SW	FD = 4,5
XV	Field Blanks	SW	EB = EB3-052214 (SDG: PH195), 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: Soils

1	SL-534-SA8-TR-0.5	11		21		31	
2	SL-534-SA8-TR-5.0	12		22		32	
3	SL-548-SA8-TR-0.5	13		23		33	
4	SL-848-SA8-TR-5.0	14		24		34	
5	SL-548-SA8-TR-5.0	15		25		35	
6	SL-548-SA8-TR-10.0	16		26		36	
7	SL-548-SA8-TR-5.0MS	17		27		37	
8	SL-548-SA8-TR-5.0MSD	18		28		38	
9	SL-548-SA8-TR-5.0DUP	19		29		39	
10		20		30		40	

Notes: _____

DC #: 320304

VALIDATION FINDINGS CHECKLIST

Reviewer: SD
2nd Reviewer: CN

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?	✓			

DC #: 32030A4

VALIDATION FINDINGS CHECKLIST

Reviewer: SD
2nd Reviewer: CN

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.	✓		✓ SM	
Target analytes were detected in the field duplicates.	✓		✓ SM	
XIII. Field blanks				
Field blanks were identified in this SDG.	✓			
Target analytes were detected in the field blanks.	✓			

LDC #: 32030A4

VALIDATION FINDINGS WORKSHEET
Sample Specific Element Reference

Reviewer: JD
2nd reviewer: [signature]

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
QC:7-9	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
Analysis Method		
ICP	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
ICP-MS	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

Comments: Mercury by CVAA if performed

LDC #: 32030A4

VALIDATION FINDINGS WORKSHEET
PB/ICB/CCB QUALIFIED SAMPLES

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

METHOD: Trace metals (EPA SW 864 Method 6010C/6020A/7471B) Soil preparation factor applied: 100x

Sample Concentration units, unless otherwise noted: mg/kg Associated Samples: All (Reason: B)

Analyte	Maximum PB[a] (mg/Kg)	Maximum PB[a] (ug/L)	Maximum ICB/CCB[a] (ug/L)	Action Level (mg/kg)	Sample Identification 1	2	3	4	5	6					
Al			923	461.5											
As			5.2	2.6		1.33									
Ba			0.76	0.38											
Ca	7.837		1110	555											
Mg			638	319											
Mn			1.6	0.8											
Ti			4.2	2.1											
Zn	0.461			2.305											
Sn	1.455			7.275	3.09	3.08	3.13	3.31	3.34	3.24					

Sample Concentration units, unless otherwise noted: mg/kg Associated Samples: 1, 2, 6 (Reason: B)

Analyte	Maximum PB[a] (mg/Kg)	Maximum PB[a] (ug/L)	Maximum ICB/CCB[a] (ug/L)	Action Level (mg/kg)	Sample Identification ~~1~~ NO Quals	~~2~~	3	4	5	~~6~~ 6 a					
Fe			750	375											

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 #: 32030A4

VALIDATION FINDINGS WORKSHEET
Field Blanks

Reviewer: JD
2nd Reviewer: DR

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

Blank units: mg/L **Associated sample units:** mg/kg
Sampling date: 05/22/14 Soil factor applied 100
Field blank type: (circle one) Field Blank / Rinsate / Other: EB Associated Samples: All (Reason: F)

Analyte	Blank ID	Sample Identification											
	EB3-052214	Action Limit (mg/kg)	1	2									
Ca	0.150	75											
Mn	0.00090	0.45											
Zr	0.0108	5.4	4.00	3.99									
Sr	0.00046	0.23											

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 #: 32030A4

VALIDATION FINDINGS WORKSHEET
Field Blanks

Reviewer: JO
2nd Reviewer: 2

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

Blank units: mg/L **Associated sample units:** mg/kg
Sampling date: 05/21/14 Soil factor applied 100
Field blank type: (circle one) Field Blank / Rinsate / Other: FB Associated Samples: All (Reason F)

Analyte	Blank ID	Sample Identification										
	FB-052114	Action Limit (mg/kg)	1	2	6							
Zr	0.0110	5.5	4.00	3.99	5.45							

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 #: 32030A4

VALIDATION FINDINGS WORKSHEET
Matrix Spike/Matrix Spike Duplicates

Reviewer: JO
2nd Reviewer: 02

METHOD: Trace metals (EPA SW 846 Method 6010C/6020A/7471B)

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 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
	7/8	S	Sb	41	34		All	J/UJ/A (Reason: Q)
			Cd		74		All	J/UJ/A (Reason: Q)
			Pb	72			All	J/UJ/A (Reason: Q)
			K	126	164		All	Jdet/A (Reason: Q)
			Ca			81	All	J/UJ/A (Reason: Q) E

Comments: Al, Ca, Fe, Mg, Sr, Ti > 4X

LDC #: 32030A4

VALIDATION FINDINGS WORKSHEET
Duplicate Analysis

Reviewer: SD
2nd Reviewer: a

METHOD: Trace Metals (EPA SW 846 Method 601C0/6020A/7471B)

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

Y N N/A Was a duplicate sample analyzed for each matrix in this SDG?

Y N N/A Were all duplicate sample relative percent differences (RPD) ≤ 20% for water samples and ≤ 20% for soil samples? If no, see qualifications below. A control limit of ±R.L. (±2X R.L. for soil) was used for sample values that were <5X the R.L., including the case when only one of the duplicate sample values was <5X R.L.. If field blanks were used for laboratory duplicates, note in the Overall Assessment.

LEVEL IV ONLY:

Y N N/A Were recalculated results acceptable? See Level IV Recalculation Worksheet for recalculations.

#	Date	Duplicate ID	Matrix	Analyte	RPD (≤ 20%)	Difference (Limits)	Associated Samples	Qualifications
		9	S	Ca	77		All	J/UJ/A (Reason:E)
				Co	24		All	J/UJ/A (Reason:E)
				Mn	30		All	J/UJ/A (Reason:E)

Comments: Cd, Ag ok by difference

LDC #: 32030A4

VALIDATION FINDINGS WORKSHEET
ICP Serial Dilution

Reviewer: SD
2nd Reviewer: [signature]

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

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

(Y) N N/A If analyte concentrations were > 50X the MDL (ICP) ,or >100X the MDL (ICP/MS), was a serial dilution analyzed?
Y (N) N/A Were ICP serial dilution percent differences (%D) ≤10%?
Y (N) N/A Is there evidence of negative interference? If yes, professional judgement will be used to qualify the data.

LEVEL IV ONLY:

(Y) N N/A Were recalculated results acceptable? See Level IV Recalculation Worksheet for recalculations.

#	Diluted Sample ID	Matrix	Analyte	%D (Limits)	Associated Samples	Qualifications
	5	S	Ni	13	All	J/UJ/A (Reason: A)

Comments:

LDC#: 32030A4

VALIDATION FINDINGS WORKSHEET
Field Duplicates

METHOD: Metals (EPA Method 6010C/6020A/7471B)

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

Analyte	Concentration (mg/Kg)		RPD (≤50)	Parent Only
	4	5		
Aluminum	27300	29100	6	
Arsenic	2.99	2.92	2	
Barium	112	123	9	
Beryllium	0.873	1.00U	~~200~~ 14	~~J (all detects) A~~
Boron	12.9	12.6	2	
Calcium	46300	18000	88	~~J (all detects) A~~ J det /A
Chromium	33.0	35.4	7	
Cobalt	7.31	7.01	4	
Copper	17.6	19.1	8	
Iron	29300	31900	8	
Lead	11.3	13.1	15	
Lithium	24.5	26.2	7	
Magnesium	6420	7090	10	
Manganese	260	261	0	
Mercury	0.0125	0.0127	2	
Nickel	15.5	17.1	10	
Phosphorus	239	240	0	
Potassium	2600	2740	5	
Tin	3.31	3.34	1	

LDC#: 32030A4

VALIDATION FINDINGS WORKSHEET
Field Duplicates

Reviewer: SD
2nd Reviewer: CV

METHOD: Metals (EPA Method 6010C/6020A/7471B)

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

Analyte	Concentration (mg/Kg)		RPD (≤50)	Parent Only
	4	5		
Titanium	1020	1020	0	
Strontium	53.9	47.7	12	
Silver	0.0509	0.0496	3	
Sodium	154	163	6	
Thallium	0.322	~~0.277~~ 0.316	~~15~~ 2 SW	
Vanadium	57.9	61.7	6	
Zinc	58.8	64.4	9	
Zirconium	5.60	6.04	8	

LDC #: 32030A4

VALIDATION FINDINGS WORKSHEET
Level IV Recalculation Worksheet

Reviewer: JD
2nd Reviewer: DR

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

Percent recoveries (%R) for an ICP interference check sample, a laboratory control sample and a matrix spike sample were recalculated using the following formula:

$$\%R = \frac{\text{Found}}{\text{True}} \times 100$$

Where, Found = Concentration of each analyte measured in the analysis of the sample. For the matrix spike calculation, Found = SSR (spiked sample result) - SR (sample result).
True = Concentration of each analyte in the source.

A sample and duplicate relative percent difference (RPD) was recalculated using the following formula:

$$RPD = \frac{|S-D|}{(S+D)/2} \times 100$$

Where, S = Original sample concentration
D = Duplicate sample concentration

An ICP serial dilution percent difference (%D) was recalculated using the following formula:

$$\%D = \frac{|I-SDR|}{I} \times 100$$

Where, I = Initial Sample Result (mg/L)
SDR = Serial Dilution Result (mg/L) (Instrument Reading x 5)

Sample ID	Type of Analysis	Element	Found / S / I (units)	True / D / SDR (units)	Recalculated %R / RPD / %D	Reported %R / RPD / %D	Acceptable (Y/N)
ICS (8:33)	ICP interference check	Co	449.36 ug/L	500 ug/L	89.9 %R	89.9%R	Y
LCS (8:48)	Laboratory control sample	Ba	208,600 ug/L	200,000 ug/L	104 %R	104%R	Y
MS (9:03)	Matrix spike	Cu	(SSR-SR) 25.4019 mg/kg	24.5098 mg/kg	104%R	104%R	Y
Dup (8:59)	Duplicate	Cr	29.8416 mg/kg	30.6275 mg/kg	3% RPD	3%RPD	Y
Ser (9:11)	ICP serial dilution	Al	264,847.99 mg/kg	251,382.33 mg/kg	5%D	5%D	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 #: 32030A4

VALIDATION FINDINGS WORKSHEET
Initial and Continuing Calibration Calculation Verification

Reviewer: JD
2nd Reviewer: DR

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

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 8:14	ICP (Initial calibration)	Pb	587.08	600.0	97.8%	97.8%	Y
ICV 6:02	ICP/MS (Initial calibration)	Se	52.71	50.0	105.4%	105.4%	Y
ICV 08:22	CVAA (Initial calibration)	Hg	2.439	2.5	97.6%	97.6%	Y
CCV 9:22	ICP (Continuing calibration)	Mn	510.57	500.0	102.1%	102.1%	Y
CCV 6:42	ICP/MS (Continuing calibration)	Ag	26.02	25	104.1%	104.1%	Y
CCV 8:53	CVAA (Continuing calibration)	Hg	1.0617	1.0	106%	106%	Y
	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 #: 32030A4

VALIDATION FINDINGS WORKSHEET
Sample Calculation Verification

Reviewer: JD
2nd reviewer: CN

6010C/6020A/7471B

METHOD: Trace Metals (EPA SW 846 Method ~~6010/6020/7000~~)

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

Y N N/A Have results been reported and calculated correctly?
Y N N/A Are results within the calibrated range of the instruments and within the linear range of the ICP?
Y N N/A Are all detection limits below the CRDL?

Detected analyte results for V (1) were recalculated and verified using the following equation:

Concentration = $\left(\frac{(RD)(FV)(Dil)}{(In.\ Vol.)} \Big/ \%Solid\right)$ %solid = 95.8

RD = Raw data concentration RD = 0.40046 ppm
FV = Final volume (ml) FV = 100 ml
In. Vol. = Initial volume (ml) or weight (G) In W. = 1.0 g
Dil = Dilution factor D:1=1

Recalculation:

$$\frac{(0.40046\ mg/L)(100\ ml)}{(1.01\ g)} = 39.6495\ mg/kg$$

$$\frac{39.6495\ mg/kg}{95.8\%} = 41.4\ mg/l$$

#	Sample ID	Analyte	Reported Concentration (mg/kg)	Calculated Concentration (mg/kg)	Acceptable (Y/N)
	1	V	41.4	41.4	Y
	2	Zn	51.2	51.2	Y
	3	K	5930	5930	Y
	4	Na	154	154	Y
	5	Tl	0.32	0.32	Y
	6	Cu	14.7	14.7	Y

Note: _____

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: Santa Susana Field Laboratory

Collection Date: May 19, 2014

LDC Report Date: July 10, 2014

Matrix: Soil/Water

Parameters: Total Petroleum Hydrocarbons as Gasoline

Validation Level: Level IV

Laboratory: Eurofins Lancaster Laboratories

Sample Delivery Group (SDG): PH185

Sample Identification

SL-534-SA8-TR-5.0
SL-548-SA8-TR-5.0
SL-548-SA8-TR-10.0
TB2-051914
SL-548-SA8-TR-5.0MS
SL-548-SA8-TR-5.0MSD
SL-848-SA8-TR-5.0

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) 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 TB2-051914 was identified as a trip blank. No total petroleum hydrocarbons as gasoline contaminants were found.

Sample EB3-052214 (from SDG PH195) 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 PH185	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 SL-548-SA8-TR-5.0 and SL-848-SA8-TR-5.0 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 PH185

SDG	Sample	Compound	Flag	A or P	Reason (Code)
PH185	SL-534-SA8-TR-5.0 SL-548-SA8-TR-5.0 SL-548-SA8-TR-10.0 TB2-051914 SL-848-SA8-TR-5.0	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 PH185

No Sample Data Qualified in this SDG

Santa Susana Field Laboratory
Total Petroleum Hydrocarbons as Gasoline - Field Blank Data Qualification Summary - SDG PH185

No Sample Data Qualified in this SDG

LDC #: 32030A7 **VALIDATION COMPLETENESS WORKSHEET** Date: 7/2/14

SDG #: PH185 Level IV Page: 1 of 1

Laboratory: Eurofins Lancaster Laboratories Reviewer: KK

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: 5/19/14
II	Initial calibration	A	RSD ≤ 20%
III.	Calibration verification/ICV	A	1 of 1 CCV ≤ 20?
IV.	Blanks	A	
V	Surrogate recovery	A	
VI.	Matrix spike/Matrix spike duplicates	A	
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	ND	FD = 2 + 7
XIII.	Field blanks	ND	TB = 4 EB = EB3-052214 (SDG # PH185) 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	SL-534-SA8-TR-5.0	11		21		31	BLKVB
2	SL-548-SA8-TR-5.0	12		22		32	BLKVF
3	SL-548-SA8-TR-10.0	13		23		33	
4	TB2-051914	14		24		34	
5	SL-548-SA8-TR-5.0MS	15		25		35	
6	SL-548-SA8-TR-5.0MSD	16		26		36	
7	SL-548-SA8-TR-5.0	17		27		37	
8		18		28		38	
9		19		29		39	
10		20		30		40	

Notes:

LDC #: 32030A7

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 #: 32030A7

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 #: 32030A7

VALIDATION FINDINGS WORKSHEET
Initial Calibration Calculation Verification

Reviewer: BR
2nd Reviewer:

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 #: 32030A7

VALIDATION FINDINGS WORKSHEET
Continuing Calibration Calculation Verification

Page: 1 of 1
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	SGCKXWQ	5/21/2014 16:23	GRO	220.04	218.86	218.86	1	1
2	WGCCXXU	5/27/2014 10:10	GRO	1100.20	1060.10	1060.10	4	4
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 #: 32030A7

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	
Trifluorotoluene-F	DB-MTB	721.2	610.7/25	85	85	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 #: 32030A7

VALIDATION FINDINGS WORKSHEET
Matrix Spike/Matrix Spike Duplicates Results Verification

Reviewer: SR
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 (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)	9.03	9.70	0	7.26	8.46	80	80	87	87	15	15
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 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 #: 32030A7

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: LCSA7

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	-	8.85	-	80	80	-	-	-	-
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 #: 32030A7

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. All Compound Name NJD

#5 MS = 8.4

Concentration = $\frac{(22521050 - 2851029)(5)(25)}{(55635)(6.09)(1000)(8.865)}$

$= 8.389447181$ 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:	May 19, 2014
LDC Report Date:	July 18, 2014
Matrix:	Soil
Parameters:	Total Petroleum Hydrocarbons as Extractables
Validation Level:	Level IV
Laboratory:	Eurofins Lancaster Laboratories
Sample Delivery Group (SDG):	PH185

Sample Identification

SL-534-SA8-TR-0.5
SL-534-SA8-TR-5.0
SL-548-SA8-TR-0.5
SL-848-SA8-TR-5.0
SL-548-SA8-TR-5.0
SL-548-SA8-TR-10.0
SL-534-SA8-TR-0.5(SGCU)
SL-534-SA8-TR-5.0(SGCU)
SL-548-SA8-TR-0.5(SGCU)
SL-848-SA8-TR-5.0(SGCU)
SL-548-SA8-TR-5.0(SGCU)
SL-548-SA8-TR-10.0(SGCU)
SL-548-SA8-TR-5.0MS
SL-548-SA8-TR-5.0MSD
SL-548-SA8-TR-5.0 MS(SGCU)
SL-548-SA8-TR-5.0 MSD(SGCU)

Samples appended with SGCU underwent Silica Gel cleanup

Introduction

This data review covers 16 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 EB3-052214 (from SDG PH195) 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	Column	Surrogate	%R (Limits)	Compound	Flag	A or P
SL-548-SA8-TR-0.5(SGCU)	ZB-5	Ortho-Terphenyl	61 (66-123)	All TCL compounds	J (all detects) UJ (all non-detects)	A
SL-848-SA8-TR-5.0(SGCU)	ZB-5	Ortho-Terphenyl	52 (66-123)	All TCL compounds	J (all detects) UJ (all non-detects)	A

Sample	Column	Surrogate	%R (Limits)	Compound	Flag	A or P
SL-548-SA8-TR-5.0(SGCU)	ZB-5	Ortho-Terphenyl	64 (66-123)	All TCL compounds	J (all detects) UJ (all non-detects)	A
SL-548-SA8-TR-10.0(SGCU)	ZB-5	Ortho-Terphenyl	51 (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
SL-548-SA8-TR-5.0MS/MSD (SL-548-SA8-TR-5.0)	Extractable fuel hydrocarbons (C30-C40)	-	-	42 (≤20)	J (all 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
LCS 16141	Extractable fuel hydrocarbons (C12-C14)	117 (76-115)	SL-534-SA8-TR-0.5 SL-534-SA8-TR-5.0 SL-548-SA8-TR-0.5 SL-848-SA8-TR-5.0 SL-548-SA8-TR-5.0 SL-548-SA8-TR-10.0	J (all detects)	P
LCS 17141	Extractable fuel hydrocarbons (C8-C11) Extractable fuel hydrocarbons (C12-C14) Extractable fuel hydrocarbons (C15-C20) Extractable fuel hydrocarbons (C21-C30)	57 (60-115) 71 (76-115) 74 (78-127) 73 (77-127)	SL-534-SA8-TR-0.5(SGCU) SL-534-SA8-TR-5.0(SGCU) SL-548-SA8-TR-0.5(SGCU) SL-848-SA8-TR-5.0(SGCU) SL-548-SA8-TR-5.0(SGCU) SL-548-SA8-TR-10.0(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 PH185	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 SL-848-SA8-TR-5.0 and SL-548-SA8-TR-5.0 and samples SL-848-SA8-TR-5.0(SGCU) and SL-548-SA8-TR-5.0(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 (ug/Kg)		RPD (Limits)	Flag	A or P
	SL-848-SA8-TR-5.0	SL-548-SA8-TR-5.0			
Extractable fuel hydrocarbons (C21-C30)	2.9	5.8U	200 (≤50)	J (all detects) UJ (all non-detects)	A
Extractable fuel hydrocarbons (C30-C40)	15	12U	200 (≤50)	J (all detects) UJ (all non-detects)	A

Santa Susana Field Laboratory
Total Petroleum Hydrocarbons as Extractables - Data Qualification Summary - SDG PH185

SDG	Sample	Compound	Flag	A or P	Reason (Codes)
PH185	SL-548-SA8-TR-0.5(SGCU) SL-848-SA8-TR-5.0(SGCU) SL-548-SA8-TR-5.0(SGCU) SL-548-SA8-TR-10.0(SGCU)	All TCL compounds	J (all detects) UJ (all non-detects)	A	Surrogate recovery (%R) (S)
PH185	SL-548-SA8-TR-5.0	Extractable fuel hydrocarbons (C30-C40)	J (all detects)	A	Matrix spike/Matrix spike duplicate (RPD) (Q)
PH185	SL-534-SA8-TR-0.5 SL-534-SA8-TR-5.0 SL-548-SA8-TR-0.5 SL-848-SA8-TR-5.0 SL-548-SA8-TR-5.0 SL-548-SA8-TR-10.0	Extractable fuel hydrocarbons (C12-C14)	J (all detects)	P	Laboratory control samples (%R) (L)
PH185	SL-534-SA8-TR-0.5(SGCU) SL-534-SA8-TR-5.0(SGCU) SL-548-SA8-TR-0.5(SGCU) SL-848-SA8-TR-5.0(SGCU) SL-548-SA8-TR-5.0(SGCU) SL-548-SA8-TR-10.0(SGCU)	Extractable fuel hydrocarbons (C8-C11) Extractable fuel hydrocarbons (C12-C14) Extractable fuel hydrocarbons (C15-C20) Extractable fuel hydrocarbons (C21-C30)	J (all detects) UJ (all non-detects)	P	Laboratory control samples (%R) (L)
PH185	SL-534-SA8-TR-0.5 SL-534-SA8-TR-5.0 SL-548-SA8-TR-0.5 SL-848-SA8-TR-5.0 SL-548-SA8-TR-5.0 SL-548-SA8-TR-10.0 SL-534-SA8-TR-0.5(SGCU) SL-534-SA8-TR-5.0(SGCU) SL-548-SA8-TR-0.5(SGCU) SL-848-SA8-TR-5.0(SGCU) SL-548-SA8-TR-5.0(SGCU) SL-548-SA8-TR-10.0(SGCU)	All compounds reported below the RL.	J (all detects)	A	Compound quantitation (Z)
PH185	SL-848-SA8-TR-5.0 SL-548-SA8-TR-5.0	Extractable fuel hydrocarbons (C21-C30) Extractable fuel hydrocarbons (C30-C40)	J (all detects) UJ (all non-detects)	A	Field duplicates (RPD) (FD)

Santa Susana Field Laboratory
Total Petroleum Hydrocarbons as Extractables - Laboratory Blank Data Qualification Summary - SDG PH185

No Sample Data Qualified in this SDG

Santa Susana Field Laboratory
Total Petroleum Hydrocarbons as Extractables - Field Blank Data Qualification Summary - SDG PH185

No Sample Data Qualified in this SDG

LDC #: 32030A8 **VALIDATION COMPLETENESS WORKSHEET** Date: 7/2/14
SDG #: PH185 Level IV Page: 1 of 1
Laboratory: Eurofins Lancaster Laboratories Reviewer: KR
2nd Reviewer: SM

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: 5/19/14
II	Initial calibration	A	RSD ≤20?
III.	Calibration verification/ICV	A	ICV/CCV ≤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	
XII.	Field duplicates	SW	FD = 4+5, 10+11 9
XIII.	Field blanks	ND	EB = EB3-052214 (SDG # PH185) 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:** Indicates sample underwent Level IV validation

1	SL-534-SA8-TR-0.5 S (Soil)	11	SL-548-SA8-TR-5.0(SGCU)	21		31	PBLK16141
2	SL-534-SA8-TR-5.0	12	SL-548-SA8-TR-10.0(SGCU)	22		32	PBLK17141
3	SL-548-SA8-TR-0.5	13	SL-548-SA8-TR-5.0MS	23		33	
4	SL-848-SA8-TR-5.0	14	SL-548-SA8-TR-5.0MSD	24		34	
5	SL-548-SA8-TR-5.0	15	SL-548-SA8-TR-5.0(SGCU) MS	25		35	
6	SL-548-SA8-TR-10.0	16	SL-548-SA8-TR-5.0(SGCU) MSD	26		36	
7	SL-534-SA8-TR-0.5(SGCU)	17		27		37	
8	SL-534-SA8-TR-5.0(SGCU)	18		28		38	
9	SL-548-SA8-TR-0.5(SGCU)	19		29		39	
10	SL-848-SA8-TR-5.0(SGCU)	20		30		40	

Notes: Samples appended with SGCU underwent Silica Gel Cleanup

LDC #: 32030A8

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?		✓		

LDC #: 32030A8

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 #: 32030A8

VALIDATION FINDINDS WORKSHEET
Surrogate Recovery

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

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 (Col. 5)
	~~10~~ 9	~~ZB-5~~	H	61 (66-123)	J | UJ | A
				( )	
				( )	
	10	ZB-5	H	52 ( )	
				( )	
				( )	
	11	ZB-5	H	64 ( )	
				( )	
				( )	
	12	ZB-5	H	51 ( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	

	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	Z	2-Bromonaphthalene
C`	a,a,a-Trifluorotoluene	I	Fluorobenzene (FBZ)	O	Decachlorobiphenyl (DCB)	U	Tripentyltin	AA	1-Chlorooctadecane
D	Bromochlorobenene	J	n-Triacontane	P	1-methylnaphthalene	V	Tri-n-propyltin	BB	2,4-DCAA
E	1,4-Dichlorobutane	K	Hexacosane	Q	Dichlorophenyl Acetic Acid (DCAA)	W	Tributyl Phosphate		
F	1,4-Difluorobenzene (DFB)	L	Bromobenzene	R	4-Nitrophenol	X	Triphenyl Phosphate		

LDC #: 32030A8

VALIDATION FINDINGS WORKSHEET
Matrix Spike/Matrix Spike Duplicates

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
	13|14	EFH(C30-C40)	( )	( )	42 (20)	5	J det | A (Q)
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
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LDC #: 32030A8

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
	LCS16141	EFH(C12-C24)	117 (76-115)	( )	( )	1-6	J det / P
	LCS17141	EFH(C8-C11)*	57 (60-115)	( )	( )	7-12	J / UJ / P
		EFH(C12-C14)*	71 (76-115)	( )	( )		
		EFH(C15-C20)*	74 (78-127	( )	( )		
		EFH(C21-C30)*	73 (77-127	( )	( )		
		* with Silica Gel					

LDC #: 8203048

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 (µg/kg)		%RPD Limit 50 ?	Qualification
	4	5		Parent only / All Samples
EFH (C21-C30)	2.9	5.8 U	200	J/UJ/A } Cdc
EFH (C30-C40)	15	12 U	200	J/UJ/A } (FD)

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

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

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

LDC #: 32030A8

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 #: 32030A8

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 CP23-19879B	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 #: 32030A8

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_3RW	5/23/2014 16:39	C8-C40	288.01	272.59	272.59	5	5
2	TPH_3SA	5/23/2014 16:39	C8-C40	288.01	278.01	278.01	3	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 #: 32038A8

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	ZB-5	2.00	1.811911	91	91	0
Orthoterphenyl	↓	↓	2.049446	102	102	0

Sample ID: 7

Surrogate	Column/Detector	Surrogate Spiked	Surrogate Found	Percent Recovery	Percent Recovery	Percent Difference
				Reported	Recalculated	
Chlorobenzene	ZB-5	2.00	1.341505	67	67	0
Orthoterphenyl	↓	↓	1.502149	75	75	0

Sample ID: ___

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

LDC #: 32030A8

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

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

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

MS/MSD samples: 13 | 14

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 (8015)											
Benzene (8021B)											
Methane (RSK-175)											
2,4-D (8151)											
Dinoseb (8151)											
Naphthalene (8310)											
Anthracene (8310)											
HMX (8330)											
2,4,6-Trinitrotoluene (8330)											
~~EH~~ (C8-C11)	5.02	5.02	0	4.52	4.44	90	90	88	88	2	1.8

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

LDC #: 32038A8

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: LCS71141

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)										
EFH C8-C11 (GW/Si. gel)	5.02	—	2-86	—	57	57	—	—	—	—

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 #: 32030A

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. 1 Compound Name EFH C30-C40

Concentration = $\frac{(7301450)(1000)}{(23612)(30)(0.958)(1000)}$

$= 10.759743775$

#	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: May 19, 2014

LDC Report Date: July 18, 2014

Matrix: Soil

Parameters: Dioxins/Dibenzofurans

Validation Level: Level IV

Laboratory: Eurofins Lancaster Laboratories

Sample Delivery Group (SDG): PH185

Sample Identification

SL-534-SA8-TR-0.5
SL-534-SA8-TR-5.0
SL-548-SA8-TR-0.5
SL-848-SA8-TR-5.0
SL-548-SA8-TR-5.0
SL-548-SA8-TR-10.0
SL-548-SA8-TR-5.0MS
SL-548-SA8-TR-5.0MSD

Introduction

This data review covers 8 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
BLK147001	5/27/14	2,3,7,8-TCDD	0.0397 ng/Kg	All samples in SDG PH185
		1,2,3,6,7,8-HxCDD	0.0211 ng/Kg	
		1,2,3,7,8,9-HxCDD	0.0209 ng/Kg	
		1,2,3,4,6,7,8-HpCDD	0.0514 ng/Kg	
		OCDD	0.217 ng/Kg	
		1,2,3,7,8-PeCDF	0.0315 ng/Kg	
		2,3,4,7,8-PeCDF	0.0159 ng/Kg	
		1,2,3,4,7,8-HxCDF	0.0282 ng/Kg	
		1,2,3,6,7,8-HxCDF	0.0254 ng/Kg	
		2,3,4,6,7,8-HxCDF	0.0380 ng/Kg	
		1,2,3,7,8,9-HxCDF	0.0446 ng/Kg	
		1,2,3,4,6,7,8-HpCDF	0.0453 ng/Kg	
		1,2,3,4,7,8,9-HpCDF	0.0269 ng/Kg	
		OCDF	0.125 ng/Kg	

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-534-SA8-TR-0.5	1,2,3,7,8,9-HxCDD	0.100 ng/Kg	0.100U ng/Kg
	1,2,3,4,7,8-HxCDF	0.0484 ng/Kg	0.0484U ng/Kg
	1,2,3,6,7,8-HxCDF	0.0986 ng/Kg	0.0986U ng/Kg
	2,3,4,6,7,8-HxCDF	0.0899 ng/Kg	0.0899U ng/Kg
	1,2,3,7,8,9-HxCDF	0.0364 ng/Kg	0.0364U ng/Kg
	1,2,3,4,7,8,9-HpCDF	0.0432 ng/Kg	0.0432U ng/Kg
	OCDF	0.424 ng/Kg	0.424U ng/Kg
SL-534-SA8-TR-5.0	1,2,3,6,7,8-HxCDD	0.0225 ng/Kg	0.0225U ng/Kg
	1,2,3,7,8,9-HxCDD	0.0190 ng/Kg	0.0190U ng/Kg
	1,2,3,7,8-PeCDF	0.0383 ng/Kg	0.0383U ng/Kg
	2,3,4,7,8-PeCDF	0.0197 ng/Kg	0.0197U ng/Kg
	1,2,3,4,7,8-HxCDF	0.0412 ng/Kg	0.0412U ng/Kg
	1,2,3,6,7,8-HxCDF	0.0238 ng/Kg	0.0238U ng/Kg
	2,3,4,6,7,8-HxCDF	0.0478 ng/Kg	0.0478U ng/Kg
	1,2,3,7,8,9-HxCDF	0.0200 ng/Kg	0.0200U ng/Kg
	1,2,3,4,6,7,8-HpCDF	0.217 ng/Kg	0.217U ng/Kg
	1,2,3,4,7,8,9-HpCDF	0.0561 ng/Kg	0.0561U ng/Kg
SL-548-SA8-TR-0.5	1,2,3,7,8-PeCDF	0.148 ng/Kg	0.148U ng/Kg
	2,3,4,7,8-PeCDF	0.0525 ng/Kg	0.0525U ng/Kg
	1,2,3,4,7,8-HxCDF	0.0505 ng/Kg	0.0505U ng/Kg
	1,2,3,6,7,8-HxCDF	0.0533 ng/Kg	0.0533U ng/Kg
	2,3,4,6,7,8-HxCDF	0.0448 ng/Kg	0.0448U ng/Kg
	1,2,3,4,7,8,9-HpCDF	0.0502 ng/Kg	0.0502U ng/Kg

Sample	Compound	Reported Concentration	Modified Final Concentration
SL-848-SA8-TR-5.0	1,2,3,4,6,7,8-HpCDD	0.0786 ng/Kg	0.0786U ng/Kg
	OCDD	0.359 ng/Kg	0.359U ng/Kg
	1,2,3,7,8-PeCDF	0.0148 ng/Kg	0.0148U ng/Kg
	2,3,4,7,8-PeCDF	0.0260 ng/Kg	0.0260U ng/Kg
	1,2,3,4,7,8-HxCDF	0.0172 ng/Kg	0.0172U ng/Kg
	2,3,4,6,7,8-HxCDF	0.0235 ng/Kg	0.0235U ng/Kg
	1,2,3,7,8,9-HxCDF	0.0438 ng/Kg	0.0438U ng/Kg
	1,2,3,4,6,7,8-HpCDF	0.0246 ng/Kg	0.0246U ng/Kg
	1,2,3,4,7,8,9-HpCDF	0.0695 ng/Kg	0.0695U ng/Kg
	OCDF	0.197 ng/Kg	0.197U ng/Kg
SL-548-SA8-TR-5.0	1,2,3,6,7,8-HxCDD	0.0290 ng/Kg	0.0290U ng/Kg
	1,2,3,4,6,7,8-HpCDD	0.111 ng/Kg	0.111U ng/Kg
	OCDD	0.434 ng/Kg	0.434U ng/Kg
	1,2,3,7,8-PeCDF	0.0686 ng/Kg	0.0686U ng/Kg
	2,3,478-PeCDF	0.0262 ng/Kg	0.0262U ng/Kg
	1,2,3,4,7,8-HxCDF	0.111 ng/Kg	0.111U ng/Kg
	1,2,3,6,7,8-HxCDF	0.0637 ng/Kg	0.0637U ng/Kg
	2,3,4,6,7,8-HxCDF	0.0428 ng/Kg	0.0428U ng/Kg
	1,2,3,7,8,9-HxCDF	0.0470 ng/Kg	0.0470U ng/Kg
	1,2,3,4,6,7,8-HpCDF	0.209 ng/Kg	0.209U ng/Kg
	1,2,3,4,7,8,9-HpCDF	0.0636 ng/Kg	0.0636U ng/Kg
	OCDF	0.559 ng/Kg	0.559U ng/Kg
SL-548-SA8-TR-10.0	2,3,7,8-TCDD	0.0380 ng/Kg	0.0380U ng/Kg
	1,2,3,6,7,8-HxCDD	0.0283 ng/Kg	0.0283U ng/Kg
	1,2,3,7,8,9-HxCDD	0.0296 ng/Kg	0.0296U ng/Kg
	1,2,3,7,8-PeCDF	0.107 ng/Kg	0.107U ng/Kg
	1,2,3,4,6,7,8-HpCDD	0.401 ng/Kg	0.401U ng/Kg
	OCDD	0.0948 ng/Kg	0.0948U ng/Kg
	2,3,4,7,8-PeCDF	0.0429 ng/Kg	0.0429U ng/Kg
	1,2,3,4,7,8-HxCDF	0.0303 ng/Kg	0.0303U ng/Kg
	1,2,3,6,7,8-HxCDF	0.0498 ng/Kg	0.0498U ng/Kg
	2,3,4,6,7,8-HxCDF	0.0348 ng/Kg	0.0348U ng/Kg
	1,2,3,7,8,9-HxCDF	0.0188 ng/Kg	0.0188U ng/Kg
	1,2,3,4,6,7,8-HpCDF	0.0422 ng/Kg	0.0422U ng/Kg
	1,2,3,4,7,8,9-HpCDF	0.0297 ng/Kg	0.0297U ng/Kg
	OCDF	0.154 ng/Kg	0.154U ng/Kg

Sample EB3-052214 (from SDG PH195) 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
EB3-052214	5/22/14	1,2,3,4,6,7,8-HpCDD	0.865 pg/L	All samples in SDG PH185
		OCDD	9.68 pg/L	
		2,3,7,8-TCDF	0.203 pg/L	
		1,2,3,7,8-PeCDF	0.289 pg/L	
		2,3,4,6,7,8-HxCDF	0.192 pg/L	
		1,2,3,4,6,7,8-HpCDF	0.177 pg/L	
		1,2,3,4,7,8,9-HpCDF	0.106 pg/L	
		OCDF	1.11 pg/L	

Sample FB-052114 (FROM SDG PH191) was identified as a rinsate. 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 1,2,3,4,6,7,8-HpCDF OCDF 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 PH185

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.

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 PH185	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 SL-848-SA8-TR-5.0 and SL-548-SA8-TR-5.0 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
	SL-848-SA8-TR-5.0	SL-548-SA8-TR-5.0			
1,2,3,7,8-PeCDD	5.59U	0.0232	200 (≤50)	J (all detects) UJ (all non-detects)	A
1,2,3,4,7,8-HxCDD	0.0245	0.0310	23 (≤50)	-	-
1,2,3,6,7,8-HxCDD	5.59U	0.0290	200 (≤50)	J (all detects) UJ (all non-detects)	A
1,2,3,4,6,7,8-HpCDD	0.0786	0.111	34 (≤50)	-	-
OCDD	0.359	0.434	19 (≤50)	-	-
1,2,3,7,8-PeCDF	0.0148	0.0686	129 (≤50)	J (all detects)	A
2,3,4,7,8-PeCDF	0.0260	0.0262	1 (≤50)	-	-
1,2,3,4,7,8-HxCDF	0.0172	0.111	146 (≤50)	J (all detects)	A
1,2,3,6,7,8-HxCDF	5.59U	0.0637	200 (≤50)	J (all detects) UJ (all non-detects)	A
2,3,4,6,7,8-HxCDF	0.0235	0.0428	58 (≤50)	J (all detects)	A
1,2,3,7,8,9-HxCDF	0.0438	0.0470	7 (≤50)	-	-
1,2,3,4,6,7,8-HpCDF	0.0246	0.209	158 (≤50)	J (all detects)	A
1,2,3,4,7,8,9-HpCDF	0.0695	0.0636	9 (≤50)	-	-
OCDF	0.197	0.559	96 (≤50)	J (all detects)	A

Santa Susana Field Laboratory
Dioxins/Dibenzofurans - Data Qualification Summary - SDG PH185

SDG	Sample	Analyte	Flag	A or P	Reason (Code)
PH185	SL-534-SA8-TR-0.5 SL-534-SA8-TR-5.0 SL-548-SA8-TR-0.5 SL-848-SA8-TR-5.0 SL-548-SA8-TR-5.0 SL-548-SA8-TR-10.0	All compounds reported below the RL.	J (all detects)	A	Compound quantitation (Z)
PH185	SL-848-SA8-TR-5.0 SL-548-SA8-TR-5.0	1,2,3,7,8-PeCDD 1,2,3,6,7,8-HxCDD 1,2,3,6,7,8-HxCDF	J (all detects) UJ (all non-detects)	A	Field duplicates (RPD) (FD)
PH185	SL-848-SA8-TR-5.0 SL-548-SA8-TR-5.0	1,2,3,7,8-PeCDF 1,2,3,4,7,8-HxCDF 2,3,4,6,7,8-HxCDF 1,2,3,4,6,7,8-HpCDF OCDF	J (all detects)	A	Field duplicates (RPD) (FD)

Santa Susana Field Laboratory
Dioxins/Dibenzofurans - Laboratory Blank Data Qualification Summary - SDG PH185

SDG	Sample	Analyte	Modified Final Concentration	A or P	Code
PH185	SL-534-SA8-TR-0.5	1,2,3,7,8,9-HxCDD 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 1,2,3,4,7,8,9-HpCDF OCDF	0.100U ng/Kg 0.0484U ng/Kg 0.0986U ng/Kg 0.0899U ng/Kg 0.0364U ng/Kg 0.0432U ng/Kg 0.424U ng/Kg	A	B
PH185	SL-534-SA8-TR-5.0	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 1,2,3,7,8,9-HxCDF 1,2,3,4,6,7,8-HpCDF 1,2,3,4,7,8,9-HpCDF	0.0225U ng/Kg 0.0190U ng/Kg 0.0383U ng/Kg 0.0197U ng/Kg 0.0412U ng/Kg 0.0238U ng/Kg 0.0478U ng/Kg 0.0200U ng/Kg 0.217U ng/Kg 0.0561U ng/Kg	A	B
PH185	SL-548-SA8-TR-0.5	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	0.148U ng/Kg 0.0525U ng/Kg 0.0505U ng/Kg 0.0533U ng/Kg 0.0448U ng/Kg 0.0502U ng/Kg	A	B

SDG	Sample	Analyte	Modified Final Concentration	A or P	Code
PH185	SL-848-SA8-TR-5.0	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 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	0.0786U ng/Kg 0.359U ng/Kg 0.0148U ng/Kg 0.0260U ng/Kg 0.0172U ng/Kg 0.0235U ng/Kg 0.0438U ng/Kg 0.0246U ng/Kg 0.0695U ng/Kg 0.197U ng/Kg	A	B
PH185	SL-548-SA8-TR-5.0	1,2,3,6,7,8-HxCDD 1,2,3,4,6,7,8-HpCDD OCDD 1,2,3,7,8-PeCDF 2,3,478-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	0.0290U ng/Kg 0.111U ng/Kg 0.434U ng/Kg 0.0686U ng/Kg 0.0262U ng/Kg 0.111U ng/Kg 0.0637U ng/Kg 0.0428U ng/Kg 0.0470U ng/Kg 0.209U ng/Kg 0.0636U ng/Kg 0.559U ng/Kg	A	B
PH185	SL-548-SA8-TR-10.0	2,3,7,8-TCDD 1,2,3,6,7,8-HxCDD 1,2,3,7,8,9-HxCDD 1,2,3,7,8-PeCDF 1,2,3,4,6,7,8-HpCDD OCDD 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	0.0380U ng/Kg 0.0283U ng/Kg 0.0296U ng/Kg 0.107U ng/Kg 0.401U ng/Kg 0.0948U ng/Kg 0.0429U ng/Kg 0.0303U ng/Kg 0.0498U ng/Kg 0.0348U ng/Kg 0.0188U ng/Kg 0.0422U ng/Kg 0.0297U ng/Kg 0.154U ng/Kg	A	B

Santa Susana Field Laboratory
Dioxins/Dibenzofurans - Field Blank Data Qualification Summary - SDG PH185

No Sample Data Qualified in this SDG

LDC #: 32030A21 **VALIDATION COMPLETENESS WORKSHEET** Date: 6-26-14
SDG #: PH185 Level IV Page: 1 of 1
Laboratory: Eurofins Lancaster Laboratories Reviewer: SM
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: 5/19/14
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	A	
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=4+5
XV.	Field blanks	SW	EB=EB3-052214(PH195), 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-534-SA8-TR-0.5	11		21		31	
2	SL-534-SA8-TR-5.0	12		22		32	
3	SL-548-SA8-TR-0.5	13		23		33	
4	SL-848-SA8-TR-5.0	14		24		34	
5	SL-548-SA8-TR-5.0	15		25		35	
6	SL-548-SA8-TR-10.0	16		26		36	
7	SL-548-SA8-TR-5.0MS	17		27		37	
8	SL-548-SA8-TR-5.0MSD	18		28		38	
9		19		29		39	
10		20	BLK147001	30		40	

Notes:

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 #: 32030A21

VALIDATION FINDINGS CHECKLIST

Page: 1 of 2
Reviewer: Om
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 #: 32030A21

VALIDATION FINDINGS CHECKLIST

Reviewer: CK
2nd Reviewer: SM

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.	✓			

LDC #: 32030A21

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 #: 32030A21

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: 05/27/14 **Blank analysis date:** 05/29/14 **Associated samples:** All Qual U (B)
Conc. units: ng/kg

Compound	Blank ID	Sample Identification								
	BLK147001	5x	1	2	3	4	5	6		
A	0.0397*	0.199						0.0380		
D	0.0211*	0.106		0.0225			0.0290*	0.0283*		
E	0.0209*	0.105	0.100*	0.0190*				0.0296*		
F	0.0514*	0.257				0.0786*	0.111	0.107*		
G	0.217*	1.085				0.359	0.434	0.401*		
I	0.0315*	0.158		0.0383	0.148	0.0148	0.0686	0.0948*		
J	0.0159*	0.080		0.0197*	0.0525*	0.0260*	0.0262*	0.0429*		
K	0.0282	0.141	0.0484	0.0412*	0.0505*	0.0172	0.111	0.0303*		
L	0.0254*	0.127	0.0986*	0.0238*	0.0533*		0.0637*	0.0498*		
M	0.0380*	0.190	0.0899	0.0478*	0.0448*	0.0235	0.0428*	0.0348		
N	0.0446	0.223	0.0364	0.0200*		0.0438*	0.0470	0.0188*		
O	0.0453*	0.227		0.217		0.0246*	0.209*	0.0422		
P	0.0269*	0.135	0.0432*	0.0561	0.0502*	0.0695*	0.0636*	0.0297*		
Q	0.125*	0.625	0.424*			0.197*	0.559*	0.154*		

*EMPC

LDC #: 32030A21

VALIDATION FINDINGS WORKSHEET
Field Blanks

Reviewer: PH
2nd Reviewer: SM

METHOD: HRGC/HRMS Dioxins/Furans (EPA Method 1613B)

Blank units: pg/L **Associated sample units:** ng/kg
Sampling date: 05/22/14
Field blank type: (circle one) Field Blank / Rinsate / Other: EB Associated Samples: All >5x

Compound	Blank ID	Sample Identification								
	EB3-052214	5X								
F	0.865*	0.00433								
G	9.68*	0.04840								
H	0.203*	0.00102								
I	0.289*	0.00145								
M	0.192*	0.00096								
O	0.177*	0.00089								
P	0.106*	0.00053								
Q	1.11*	0.00555								

*EMPC

EB3-052214 (PH195)

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_EB3-052214.wpd

LDC#: 32030A21

VALIDATION FINDINGS WORKSHEET
Field Duplicates

Reviewer: 1st
2nd Reviewer: SM

Dioxins/Furans (EPA Method 1613B)

Analyte	Concentration (ng/kg)		RPD (≤ 50%)	Qualifiers (Parents Only)
	4	5		
B	5.59U	0.0232	200	J/UJ/A (FD)
C	0.0245	0.0310	23	--
D	5.59U	0.0290	200	J/UJ/A (FD)
F	0.0786	0.111	34	--
G	0.359	0.434	19	--
I	0.0148	0.0686	129	Jdets/A (FD)
J	0.0260	0.0262	1	--
K	0.0172	0.111	146	Jdets/A (FD)
L	5.59U	0.0637	200	J/UJ/A (FD)
M	0.0235	0.0428	58	Jdets/A (FD)
N	0.0438	0.0470	7	--
O	0.0246	0.209	158	Jdets/A (FD)
P	0.0695	0.0636	9	--
Q	0.197	0.559	96	Jdets/A (FD)

LDC #: 32030A21

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	DF17280	5-6-14	2,3,7,8-TCDF (^{13}C-2,3,7,8-TCDF)	1.125	1.125	1.090	1.090	9.97	9.97
			2,3,7,8-TCDD (^{13}C-2,3,7,8-TCDD)	1.212	1.212	1.200	1.200	6.84	6.85
			1,2,3,6,7,8-HxCDD (^{13}C-1,2,3,6,7,8-HxCDD)	1.056	1.0565	1.028	1.028	9.26	9.24
			1,2,3,4,6,7,8-HpCDD (^{13}C-1,2,4,6,7,8,-HpCDD)	1.122	1.122	1.101	1.101	6.60	6.58
			OCDF (^{13}C-OCDF)	0.984	0.9835	0.954	0.954	7.35	7.36
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 #: 32030A21

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	14MAY29-03	5-29-14	2,3,7,8-TCDF (^{13}C-2,3,7,8-TCDF)	10	9.147	9.146	91	91
			2,3,7,8-TCDD (^{13}C-2,3,7,8-TCDD)	10	9.415	9.414	94	94
			1,2,3,6,7,8-HxCDD (^{13}C-1,2,3,6,7,8-HxCDD)	50	47.478	47.495	95	95
			1,2,3,4,6,7,8-HpCDD (^{13}C-1,2,4,6,7,8,-HpCDD)	50	47.136	47.130	94	94
			OCDF (^{13}C-OCDF)	100	93.783	93.737	94	94
2	14MAY29-17	5-29-14	2,3,7,8-TCDF (^{13}C-2,3,7,8-TCDF)	10	9.382	9.382	94	94
			2,3,7,8-TCDD (^{13}C-2,3,7,8-TCDD)	10	9.729	9.729	97	97
			1,2,3,6,7,8-HxCDD (^{13}C-1,2,3,6,7,8-HxCDD)	50	46.631	46.648	93	93
			1,2,3,4,6,7,8-HpCDD (^{13}C-1,2,4,6,7,8,-HpCDD)	50	47.800	47.794	96	96
			OCDF (^{13}C-OCDF)	100	95.114	95.067	95	95
3	14MAY30-03	5-30-14	2,3,7,8-TCDF (^{13}C-2,3,7,8-TCDF)	10	9.704	9.703	97	97
			2,3,7,8-TCDD (^{13}C-2,3,7,8-TCDD)	10	9.767	9.7616	98	98
			1,2,3,6,7,8-HxCDD (^{13}C-1,2,3,6,7,8-HxCDD)	50	48.004	48.021	96	96
			1,2,3,4,6,7,8-HpCDD (^{13}C-1,2,4,6,7,8,-HpCDD)	50	48.701	48.695	97	97
			OCDF (^{13}C-OCDF)	100	95.316	95.270	95	95

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 #: 32030A2|

VALIDATION FINDINGS WORKSHEET
Routine Calibration Results Verification

Reviewer: QM
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	14MA130-17	5-31-14	2,3,7,8-TCDF (^{13}C-2,3,7,8-TCDF)	10	9.430	9.430	94	94
			2,3,7,8-TCDD (^{13}C-2,3,7,8-TCDD)	10	9.852	9.851	99	99
			1,2,3,6,7,8-HxCDD (^{13}C-1,2,3,6,7,8-HxCDD)	50	47.145	47.161	94	94
			1,2,3,4,6,7,8-HpCDD (^{13}C-1,2,4,6,7,8,-HpCDD)	50	48.640	48.634	97	97
			OCDF (^{13}C-OCDF)	100	95.187	95.140	95	95
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 #: 32030A21

VALIDATION FINDINGS WORKSHEET
Matrix Spike/Matrix Spike Duplicates Results Verification

Reviewer: [illegible]
2nd Reviewer: SM

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: 7/8

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	22.3	22.7	ND	21.7	22.7	97	97	100	100	4	4.5
1,2,3,7,8-PeCDD	112	113	0.0232	108	109	96	96	97	97	2	1
1,2,3,4,7,8-HxCDD	112	113	0.0310	110	110	98	98	97	97	0	0
1,2,3,4,7,8,9-HpCDF	112	113	0.01636	110	109	99	99	96	96.5	1	1
OCDF	223	227	0.559	217	220	97	97	97	97	1	1

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 #: 32030A21

VALIDATION FINDINGS WORKSHEET
Laboratory Control Sample Results Verification

Reviewer: 9m
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: OPR147001

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		96.7		97	97				
1,2,3,4,7,8-HxCDD	100		94.1		94	94				
1,2,3,4,7,8,9-HpCDF	100		96.5		97	97				
OCDF	200		189		95	94.5				

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 #: 32030A21

VALIDATION FINDINGS WORKSHEET
Sample Calculation Verification

Reviewer: QM
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, G:

Conc. = $\frac{(14984+13955)(4000)(1)}{(657498+592891)(1.160)(10.07)(0.958)}$

= 8.27 ng/kg

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

Data Validation Report
Santa Susana Field Laboratory

Go Backs, Subgroup Trench

SDG: PH189

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

July 22, 2014

INTRODUCTION

This Data Validation Report (DVR) presents Level III data validation results for samples collected on May 20, 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)
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 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 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

Surrogate percent recoveries (%R) were within QC limits with the exception of one sample for TPH as extractables with silica gel cleanup. The associated sample results were qualified as 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 from SDG PH185. 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 PH185.

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 from SDG PH185. The associated sample results were qualified as detected estimated (J). The details regarding the qualification of data are provided in Enclosure I of the DVR for PH185.

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.

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-548-SA8-TR-5.0	Nickel	13 (≤10)	All soil samples in SDG PH189	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 PH189	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 PH195) was collected and analyzed for SVOCs, PCBs, metals, TPH as gasoline, TPH as extractables, 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.

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, 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
20-May-2014	TB3-052014	7471531	TB	5030B	8015M	III
20-May-2014	SL-611-SA8-TR-0.5	7471532	N	3050B	6010C	III
20-May-2014	SL-611-SA8-TR-0.5	7471532	N	3050B	6020A	III
20-May-2014	SL-611-SA8-TR-0.5	7471532	N	3546	8015M	III
20-May-2014	SL-611-SA8-TR-0.5	7471532	N	3546	8082A	III
20-May-2014	SL-611-SA8-TR-0.5	7471532	N	3546	8270D SIM	III
20-May-2014	SL-611-SA8-TR-0.5	7471532	N	METHOD	1613B	III
20-May-2014	SL-611-SA8-TR-0.5	7471532	N	METHOD	7471B	III
20-May-2014	SL-611-SA8-TR-5.0	7471533	N	3050B	6010C	III
20-May-2014	SL-611-SA8-TR-5.0	7471533	N	3050B	6020A	III
20-May-2014	SL-611-SA8-TR-5.0	7471533	N	3546	8015M	III
20-May-2014	SL-611-SA8-TR-5.0	7471533	N	3546	8082A	III
20-May-2014	SL-611-SA8-TR-5.0	7471533	N	3546	8270D SIM	III
20-May-2014	SL-611-SA8-TR-5.0	7471533	N	5035A	8015M	III
20-May-2014	SL-611-SA8-TR-5.0	7471533	N	METHOD	1613B	III
20-May-2014	SL-611-SA8-TR-5.0	7471533	N	METHOD	7471B	III
20-May-2014	SL-611-SA8-TR-10.5	7471534	N	3050B	6010C	III
20-May-2014	SL-611-SA8-TR-10.5	7471534	N	3050B	6020A	III
20-May-2014	SL-611-SA8-TR-10.5	7471534	N	3546	8015M	III
20-May-2014	SL-611-SA8-TR-10.5	7471534	N	3546	8082A	III
20-May-2014	SL-611-SA8-TR-10.5	7471534	N	3546	8270D SIM	III
20-May-2014	SL-611-SA8-TR-10.5	7471534	N	5035A	8015M	III
20-May-2014	SL-611-SA8-TR-10.5	7471534	N	METHOD	1613B	III
20-May-2014	SL-611-SA8-TR-10.5	7471534	N	METHOD	7471B	III
20-May-2014	SL-569-SA6-TR-0.5	7471539	N	3050B	6010C	III
20-May-2014	SL-569-SA6-TR-0.5	7471539	N	3050B	6020A	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
20-May-2014	SL-569-SA6-TR-0.5	7471539	N	3546	8015M	III
20-May-2014	SL-569-SA6-TR-0.5	7471539	N	3546	8082A	III
20-May-2014	SL-569-SA6-TR-0.5	7471539	N	3546	8270D SIM	III
20-May-2014	SL-569-SA6-TR-0.5	7471539	N	METHOD	1613B	III
20-May-2014	SL-569-SA6-TR-0.5	7471539	N	METHOD	7471B	III
20-May-2014	SL-569-SA6-TR-2.5	7471538	N	3050B	6010C	III
20-May-2014	SL-569-SA6-TR-2.5	7471538	N	3050B	6020A	III
20-May-2014	SL-569-SA6-TR-2.5	7471538	N	3546	8015M	III
20-May-2014	SL-569-SA6-TR-2.5	7471538	N	3546	8082A	III
20-May-2014	SL-569-SA6-TR-2.5	7471538	N	3546	8270D SIM	III
20-May-2014	SL-569-SA6-TR-2.5	7471538	N	5035A	8015M	III
20-May-2014	SL-569-SA6-TR-2.5	7471538	N	METHOD	1613B	III
20-May-2014	SL-569-SA6-TR-2.5	7471538	N	METHOD	7471B	III
20-May-2014	SL-570-SA6-TR-0.5	7471537	N	3050B	6010C	III
20-May-2014	SL-570-SA6-TR-0.5	7471537	N	3050B	6020A	III
20-May-2014	SL-570-SA6-TR-0.5	7471537	N	3546	8015M	III
20-May-2014	SL-570-SA6-TR-0.5	7471537	N	3546	8082A	III
20-May-2014	SL-570-SA6-TR-0.5	7471537	N	3546	8270D SIM	III
20-May-2014	SL-570-SA6-TR-0.5	7471537	N	METHOD	1613B	III
20-May-2014	SL-570-SA6-TR-0.5	7471537	N	METHOD	7471B	III
20-May-2014	SL-570-SA6-TR-2.0	7471536	N	3050B	6010C	III
20-May-2014	SL-570-SA6-TR-2.0	7471536	N	3050B	6020A	III
20-May-2014	SL-570-SA6-TR-2.0	7471536	N	3546	8015M	III
20-May-2014	SL-570-SA6-TR-2.0	7471536	N	3546	8082A	III
20-May-2014	SL-570-SA6-TR-2.0	7471536	N	3546	8270D SIM	III
20-May-2014	SL-570-SA6-TR-2.0	7471536	N	5035A	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
20-May-2014	SL-570-SA6-TR-2.0	7471536	N	METHOD	1613B	III
20-May-2014	SL-570-SA6-TR-2.0	7471536	N	METHOD	7471B	III
20-May-2014	SL-570-SA6-TR-6.0	7471535	N	3050B	6010C	III
20-May-2014	SL-570-SA6-TR-6.0	7471535	N	3050B	6020A	III
20-May-2014	SL-570-SA6-TR-6.0	7471535	N	3546	8015M	III
20-May-2014	SL-570-SA6-TR-6.0	7471535	N	3546	8082A	III
20-May-2014	SL-570-SA6-TR-6.0	7471535	N	3546	8270D SIM	III
20-May-2014	SL-570-SA6-TR-6.0	7471535	N	5035A	8015M	III
20-May-2014	SL-570-SA6-TR-6.0	7471535	N	METHOD	1613B	III
20-May-2014	SL-570-SA6-TR-6.0	7471535	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: PH189 **Laboratory: LL**

EDD Filename: PH189_v3 **eQAPP Name: CDM_SSFL_140617_Lan**

Method Category: METALS

Method: 6010C **Matrix: SO**

Sample ID: **SL-569-SA6-TR-0.5** ***Collected:*** **5/20/2014 10:58:00** ***Analysis Type:*** **RES** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
ANTIMONY	4.10	U	0.758	MDL	4.10	PQL	mg/Kg	UJ	Q
ARSENIC	2.20	J	0.717	MDL	4.10	PQL	mg/Kg	J	Z
BERYLLIUM	0.474	J	0.0686	MDL	1.02	PQL	mg/Kg	J	Z
BORON	7.06	J	0.861	MDL	10.2	PQL	mg/Kg	J	Z
CADMIUM	1.02	U	0.0779	MDL	1.02	PQL	mg/Kg	UJ	Q
CALCIUM	4170		3.42	MDL	20.5	PQL	mg/Kg	J	E, E
COBALT	5.08		0.101	MDL	1.02	PQL	mg/Kg	J	E
MANGANESE	295		0.0850	MDL	1.02	PQL	mg/Kg	J	E
NICKEL	9.63		0.133	MDL	2.05	PQL	mg/Kg	J	A
POTASSIUM	3130		8.55	MDL	102	PQL	mg/Kg	J	Q
SODIUM	89.4	J	17.1	MDL	102	PQL	mg/Kg	J	Z
TIN	3.22	J	0.225	MDL	10.2	PQL	mg/Kg	U	B
Zirconium	1.89	J	0.861	MDL	5.12	PQL	mg/Kg	U	F, F
LEAD	7.36		0.512	MDL	3.07	PQL	mg/Kg	J	Q

Sample ID: **SL-569-SA6-TR-2.5** ***Collected:*** **5/20/2014 11:15:00** ***Analysis Type:*** **RES** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
ANTIMONY	4.11	U	0.759	MDL	4.11	PQL	mg/Kg	UJ	Q
ARSENIC	2.83	J	0.718	MDL	4.11	PQL	mg/Kg	J	Z
BERYLLIUM	0.817	J	0.0688	MDL	1.03	PQL	mg/Kg	J	Z
BORON	7.65	J	0.862	MDL	10.3	PQL	mg/Kg	J	Z
CADMIUM	1.03	U	0.0780	MDL	1.03	PQL	mg/Kg	UJ	Q
CALCIUM	2120		3.43	MDL	20.5	PQL	mg/Kg	J	E, E
COBALT	5.67		0.102	MDL	1.03	PQL	mg/Kg	J	E
LEAD	8.23		0.513	MDL	3.08	PQL	mg/Kg	J	Q
MANGANESE	268		0.0852	MDL	1.03	PQL	mg/Kg	J	E
MOLYBDENUM	0.467	J	0.174	MDL	2.05	PQL	mg/Kg	J	Z
NICKEL	11.2		0.133	MDL	2.05	PQL	mg/Kg	J	A
POTASSIUM	2200		8.56	MDL	103	PQL	mg/Kg	J	Q
SODIUM	90.7	J	17.1	MDL	103	PQL	mg/Kg	J	Z
TIN	3.36	J	0.226	MDL	10.3	PQL	mg/Kg	U	B
Zirconium	2.75	J	0.862	MDL	5.13	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: PH189 **Laboratory: LL**

EDD Filename: PH189_v3 **eQAPP Name: CDM_SSFL_140617_Lan**

Method Category: METALS

Method: 6010C **Matrix: SO**

Sample ID: SL-570-SA6-TR-0.5 **Collected: 5/20/2014 12:10:00** **Analysis Type: RES** **Dilution: 1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
ANTIMONY	4.13	U	0.764	MDL	4.13	PQL	mg/Kg	UJ	Q
ARSENIC	2.22	J	0.722	MDL	4.13	PQL	mg/Kg	J	Z
BERYLLIUM	0.571	J	0.0691	MDL	1.03	PQL	mg/Kg	J	Z
BORON	8.14	J	0.867	MDL	10.3	PQL	mg/Kg	J	Z
CADMIUM	1.03	U	0.0784	MDL	1.03	PQL	mg/Kg	UJ	Q
CALCIUM	2760		3.45	MDL	20.6	PQL	mg/Kg	J	E, E
COBALT	5.79		0.102	MDL	1.03	PQL	mg/Kg	J	E
LEAD	8.41		0.516	MDL	3.10	PQL	mg/Kg	J	Q
MANGANESE	324		0.0857	MDL	1.03	PQL	mg/Kg	J	E
MOLYBDENUM	0.243	J	0.175	MDL	2.06	PQL	mg/Kg	J	Z
NICKEL	12.1		0.134	MDL	2.06	PQL	mg/Kg	J	A
POTASSIUM	3610		8.61	MDL	103	PQL	mg/Kg	J	Q
SODIUM	78.9	J	17.2	MDL	103	PQL	mg/Kg	J	Z
TIN	3.01	J	0.227	MDL	10.3	PQL	mg/Kg	U	B
Zirconium	2.53	J	0.867	MDL	5.16	PQL	mg/Kg	U	F, F

Sample ID: SL-570-SA6-TR-2.0 **Collected: 5/20/2014 1:00:00** **Analysis Type: RES** **Dilution: 1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
ANTIMONY	4.05	U	0.750	MDL	4.05	PQL	mg/Kg	UJ	Q
ARSENIC	2.24	J	0.709	MDL	4.05	PQL	mg/Kg	J	Z
BERYLLIUM	0.628	J	0.0679	MDL	1.01	PQL	mg/Kg	J	Z
BORON	8.13	J	0.851	MDL	10.1	PQL	mg/Kg	J	Z
CADMIUM	1.01	U	0.0770	MDL	1.01	PQL	mg/Kg	UJ	Q
CALCIUM	2110		3.38	MDL	20.3	PQL	mg/Kg	J	E, E
COBALT	5.76		0.100	MDL	1.01	PQL	mg/Kg	J	E
LEAD	7.33		0.507	MDL	3.04	PQL	mg/Kg	J	Q
MANGANESE	440		0.0841	MDL	1.01	PQL	mg/Kg	J	E
MOLYBDENUM	0.447	J	0.172	MDL	2.03	PQL	mg/Kg	J	Z
NICKEL	12.4		0.132	MDL	2.03	PQL	mg/Kg	J	A
POTASSIUM	3700		8.45	MDL	101	PQL	mg/Kg	J	Q
SODIUM	79.9	J	16.9	MDL	101	PQL	mg/Kg	J	Z
TIN	3.07	J	0.223	MDL	10.1	PQL	mg/Kg	U	B
Zirconium	3.15	J	0.851	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: PH189 **Laboratory: LL**

EDD Filename: PH189_v3 **eQAPP Name: CDM_SSFL_140617_Lan**

Method Category: METALS

Method: 6010C **Matrix: SO**

Sample ID: SL-570-SA6-TR-6.0 **Collected: 5/20/2014 1:43:00** **Analysis Type: RES** **Dilution: 1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
ANTIMONY	4.23	U	0.782	MDL	4.23	PQL	mg/Kg	UJ	Q
ARSENIC	3.03	J	0.740	MDL	4.23	PQL	mg/Kg	J	Z
BERYLLIUM	0.887	J	0.0708	MDL	1.06	PQL	mg/Kg	J	Z
BORON	8.53	J	0.887	MDL	10.6	PQL	mg/Kg	J	Z
CADMIUM	1.06	U	0.0803	MDL	1.06	PQL	mg/Kg	UJ	Q
CALCIUM	2550		3.53	MDL	21.1	PQL	mg/Kg	J	E, E
COBALT	6.11		0.105	MDL	1.06	PQL	mg/Kg	J	E
LEAD	9.18		0.528	MDL	3.17	PQL	mg/Kg	J	Q
MANGANESE	249		0.0877	MDL	1.06	PQL	mg/Kg	J	E
MOLYBDENUM	0.322	J	0.180	MDL	2.11	PQL	mg/Kg	J	Z
NICKEL	13.1		0.137	MDL	2.11	PQL	mg/Kg	J	A
POTASSIUM	1680		8.81	MDL	106	PQL	mg/Kg	J	Q
TIN	3.64	J	0.232	MDL	10.6	PQL	mg/Kg	U	B
Zirconium	3.41	J	0.887	MDL	5.28	PQL	mg/Kg	U	F, F

Sample ID: SL-611-SA8-TR-0.5 **Collected: 5/20/2014 9:10:00** **Analysis Type: RES** **Dilution: 1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
ANTIMONY	4.21	U	0.778	MDL	4.21	PQL	mg/Kg	UJ	Q
ARSENIC	3.28	J	0.736	MDL	4.21	PQL	mg/Kg	J	Z
BERYLLIUM	0.714	J	0.0705	MDL	1.05	PQL	mg/Kg	J	Z
CADMIUM	1.05	U	0.0799	MDL	1.05	PQL	mg/Kg	UJ	Q
CALCIUM	53400		3.51	MDL	21.0	PQL	mg/Kg	J	E, E
COBALT	8.21		0.104	MDL	1.05	PQL	mg/Kg	J	E
LEAD	17.2		0.526	MDL	3.16	PQL	mg/Kg	J	Q
MANGANESE	403		0.0873	MDL	1.05	PQL	mg/Kg	J	E
NICKEL	17.7		0.137	MDL	2.10	PQL	mg/Kg	J	A
POTASSIUM	6150		8.77	MDL	105	PQL	mg/Kg	J	Q
TIN	3.09	J	0.231	MDL	10.5	PQL	mg/Kg	U	B

Sample ID: SL-611-SA8-TR-10.5 **Collected: 5/20/2014 9:20:00** **Analysis Type: RES** **Dilution: 1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
ANTIMONY	4.39	U	0.812	MDL	4.39	PQL	mg/Kg	UJ	Q
ARSENIC	2.45	J	0.769	MDL	4.39	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: PH189 **Laboratory: LL**

EDD Filename: PH189_v3 **eQAPP Name: CDM_SSFL_140617_Lan**

Method Category: METALS

Method: 6010C **Matrix: SO**

Sample ID: **SL-611-SA8-TR-10.5** *Collected:* **5/20/2014 9:20:00** *Analysis Type:* **RES** *Dilution:* **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
BERYLLIUM	0.878	J	0.0736	MDL	1.10	PQL	mg/Kg	J	Z
CADMIUM	1.10	U	0.0834	MDL	1.10	PQL	mg/Kg	UJ	Q
CALCIUM	23500		3.67	MDL	22.0	PQL	mg/Kg	J	E, E
COBALT	9.55		0.109	MDL	1.10	PQL	mg/Kg	J	E
LEAD	13.3		0.549	MDL	3.29	PQL	mg/Kg	J	Q
MANGANESE	392		0.0911	MDL	1.10	PQL	mg/Kg	J	E
NICKEL	19.2		0.143	MDL	2.20	PQL	mg/Kg	J	A
POTASSIUM	4280		9.16	MDL	110	PQL	mg/Kg	J	Q
TIN	3.33	J	0.242	MDL	11.0	PQL	mg/Kg	U	B

Sample ID: **SL-611-SA8-TR-5.0** *Collected:* **5/20/2014 9:15:00** *Analysis Type:* **RES** *Dilution:* **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
ANTIMONY	4.22	U	0.781	MDL	4.22	PQL	mg/Kg	UJ	Q
ARSENIC	1.96	J	0.739	MDL	4.22	PQL	mg/Kg	U	B
BERYLLIUM	0.837	J	0.0707	MDL	1.06	PQL	mg/Kg	J	Z
CADMIUM	1.06	U	0.0802	MDL	1.06	PQL	mg/Kg	UJ	Q
CALCIUM	30500		3.53	MDL	21.1	PQL	mg/Kg	J	E, E
COBALT	9.63		0.105	MDL	1.06	PQL	mg/Kg	J	E
LEAD	12.8		0.528	MDL	3.17	PQL	mg/Kg	J	Q
MANGANESE	411		0.0876	MDL	1.06	PQL	mg/Kg	J	E
NICKEL	18.9		0.137	MDL	2.11	PQL	mg/Kg	J	A
POTASSIUM	5590		8.81	MDL	106	PQL	mg/Kg	J	Q
SODIUM	93.4	J	17.6	MDL	106	PQL	mg/Kg	J	Z
TIN	2.88	J	0.232	MDL	10.6	PQL	mg/Kg	U	B

Method Category: METALS

Method: 6020A **Matrix: SO**

Sample ID: **SL-569-SA6-TR-0.5** *Collected:* **5/20/2014 10:58:00** *Analysis Type:* **RES** *Dilution:* **2**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
THALLIUM	0.196	J	0.0307	MDL	0.205	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: PH189 **Laboratory: LL**

EDD Filename: PH189_v3 **eQAPP Name: CDM_SSFL_140617_Lan**

Method Category: METALS

Method: 6020A **Matrix: SO**

Sample ID: SL-569-SA6-TR-2.5 **Collected: 5/20/2014 11:15:00** **Analysis Type: REA2** **Dilution: 2**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
SELENIUM	0.155	J	0.103	MDL	0.411	PQL	mg/Kg	J	Z

Sample ID: SL-569-SA6-TR-2.5 **Collected: 5/20/2014 11:15:00** **Analysis Type: RES** **Dilution: 2**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
SILVER	0.0509	J	0.0267	MDL	0.205	PQL	mg/Kg	J	Z

Sample ID: SL-570-SA6-TR-0.5 **Collected: 5/20/2014 12:10:00** **Analysis Type: REA2** **Dilution: 2**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
SELENIUM	0.154	J	0.103	MDL	0.413	PQL	mg/Kg	J	Z

Sample ID: SL-570-SA6-TR-0.5 **Collected: 5/20/2014 12:10:00** **Analysis Type: RES** **Dilution: 2**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
SILVER	0.0617	J	0.0268	MDL	0.206	PQL	mg/Kg	J	Z

Sample ID: SL-570-SA6-TR-2.0 **Collected: 5/20/2014 1:00:00** **Analysis Type: REA2** **Dilution: 2**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
SELENIUM	0.126	J	0.101	MDL	0.405	PQL	mg/Kg	J	Z

Sample ID: SL-570-SA6-TR-2.0 **Collected: 5/20/2014 1:00:00** **Analysis Type: RES** **Dilution: 2**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
SILVER	0.0513	J	0.0263	MDL	0.203	PQL	mg/Kg	J	Z

Sample ID: SL-570-SA6-TR-6.0 **Collected: 5/20/2014 1:43:00** **Analysis Type: RES** **Dilution: 2**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
SILVER	0.0847	J	0.0275	MDL	0.211	PQL	mg/Kg	J	Z

Sample ID: SL-611-SA8-TR-0.5 **Collected: 5/20/2014 9:10:00** **Analysis Type: REA2** **Dilution: 2**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
SELENIUM	0.287	J	0.105	MDL	0.421	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: PH189 **Laboratory: LL**

EDD Filename: PH189_v3 **eQAPP Name: CDM_SSFL_140617_Lan**

Method Category: METALS

Method: 6020A **Matrix: SO**

Sample ID: **SL-611-SA8-TR-0.5** *Collected:* **5/20/2014 9:10:00** *Analysis Type:* **RES** *Dilution:* **2**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
SILVER	0.0335	J	0.0273	MDL	0.210	PQL	mg/Kg	J	Z

Sample ID: **SL-611-SA8-TR-10.5** *Collected:* **5/20/2014 9:20:00** *Analysis Type:* **REA2** *Dilution:* **2**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
SELENIUM	0.194	J	0.110	MDL	0.439	PQL	mg/Kg	J	Z

Sample ID: **SL-611-SA8-TR-10.5** *Collected:* **5/20/2014 9:20:00** *Analysis Type:* **RES** *Dilution:* **2**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
SILVER	0.0414	J	0.0285	MDL	0.220	PQL	mg/Kg	J	Z

Sample ID: **SL-611-SA8-TR-5.0** *Collected:* **5/20/2014 9:15:00** *Analysis Type:* **REA2** *Dilution:* **2**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
SELENIUM	0.255	J	0.106	MDL	0.422	PQL	mg/Kg	J	Z

Sample ID: **SL-611-SA8-TR-5.0** *Collected:* **5/20/2014 9:15:00** *Analysis Type:* **RES** *Dilution:* **2**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
SILVER	0.0429	J	0.0275	MDL	0.211	PQL	mg/Kg	J	Z

Method Category: METALS

Method: 7471B **Matrix: SO**

Sample ID: **SL-569-SA6-TR-2.5** *Collected:* **5/20/2014 11:15:00** *Analysis Type:* **RES** *Dilution:* **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
MERCURY	0.0159	J	0.0102	MDL	0.0170	PQL	mg/Kg	J	Z

Sample ID: **SL-570-SA6-TR-0.5** *Collected:* **5/20/2014 12:10:00** *Analysis Type:* **RES** *Dilution:* **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
MERCURY	0.0155	J	0.010	MDL	0.0166	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: PH189 **Laboratory: LL**

EDD Filename: PH189_v3 **eQAPP Name: CDM_SSFL_140617_Lan**

Method Category: METALS

Method: 7471B **Matrix: SO**

Sample ID: **SL-611-SA8-TR-10.5** *Collected:* **5/20/2014 9:20:00** *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	0.0109	MDL	0.0182	PQL	mg/Kg	J	Z

Sample ID: **SL-611-SA8-TR-5.0** *Collected:* **5/20/2014 9:15:00** *Analysis Type:* **RES** *Dilution:* **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
MERCURY	0.0120	J	0.0106	MDL	0.0177	PQL	mg/Kg	J	Z

Method Category: SVOA

Method: 1613B **Matrix: SO**

Sample ID: **SL-569-SA6-TR-0.5** *Collected:* **5/20/2014 10:58:00** *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	1.77	JB	0.0639	MDL	5.06	PQL	ng/Kg	J	Z
1,2,3,4,6,7,8-HPCDF	0.144	JB	0.0122	MDL	5.06	PQL	ng/Kg	U	B
1,2,3,4,7,8-HxCDD	0.0631	JQ	0.0386	MDL	5.06	PQL	ng/Kg	J	Z
1,2,3,4,7,8-HXCDF	0.102	JBQ	0.0318	MDL	5.06	PQL	ng/Kg	U	B
1,2,3,6,7,8-HXCDD	0.0884	JBQ	0.0391	MDL	5.06	PQL	ng/Kg	U	B
1,2,3,6,7,8-HXCDF	0.0557	JBQ	0.0265	MDL	5.06	PQL	ng/Kg	U	B
1,2,3,7,8,9-HXCDD	0.212	JBQ	0.0384	MDL	5.06	PQL	ng/Kg	J	Z
1,2,3,7,8,9-HXCDF	0.0756	JBQ	0.0354	MDL	5.06	PQL	ng/Kg	U	B
1,2,3,7,8-PECDD	0.0527	JBQ	0.0458	MDL	5.06	PQL	ng/Kg	U	B
1,2,3,7,8-PECDF	0.107	JBQ	0.0304	MDL	5.06	PQL	ng/Kg	U	B
2,3,4,6,7,8-HXCDF	0.0336	JBQ	0.0304	MDL	5.06	PQL	ng/Kg	U	B
2,3,4,7,8-PECDF	0.0528	JBQ	0.0323	MDL	5.06	PQL	ng/Kg	U	B
OCDF	0.510	JBQ	0.0837	MDL	10.1	PQL	ng/Kg	J	Z

Sample ID: **SL-569-SA6-TR-2.5** *Collected:* **5/20/2014 11:15:00** *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-HPCDD	0.143	JB	0.0330	MDL	5.12	PQL	ng/Kg	U	B
1,2,3,4,6,7,8-HPCDF	0.0497	JBQ	0.0120	MDL	5.12	PQL	ng/Kg	U	B
1,2,3,4,7,8,9-HPCDF	0.0285	JBQ	0.0206	MDL	5.12	PQL	ng/Kg	U	B
1,2,3,4,7,8-HXCDF	0.0574	JBQ	0.0264	MDL	5.12	PQL	ng/Kg	U	B
1,2,3,6,7,8-HXCDD	0.0478	JBQ	0.0299	MDL	5.12	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: PH189 **Laboratory: LL**

EDD Filename: PH189_v3 **eQAPP Name: CDM_SSFL_140617_Lan**

Method Category: SVOA

Method: 1613B **Matrix: SO**

Sample ID: **SL-569-SA6-TR-2.5** ***Collected:*** **5/20/2014 11:15:00** ***Analysis Type:*** **RES** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
1,2,3,6,7,8-HXCDF	0.0568	JB	0.0233	MDL	5.12	PQL	ng/Kg	U	B
1,2,3,7,8,9-HXCDD	0.0506	JB	0.0286	MDL	5.12	PQL	ng/Kg	U	B
1,2,3,7,8,9-HXCDF	0.0814	JBQ	0.0258	MDL	5.12	PQL	ng/Kg	U	B
1,2,3,7,8-PECDF	0.0831	JBQ	0.0292	MDL	5.12	PQL	ng/Kg	U	B
2,3,4,6,7,8-HXCDF	0.0263	JBQ	0.0246	MDL	5.12	PQL	ng/Kg	U	B
2,3,4,7,8-PECDF	0.0484	JBQ	0.0285	MDL	5.12	PQL	ng/Kg	U	B
OCDD	1.19	JB	0.0357	MDL	10.2	PQL	ng/Kg	U	B
OCDF	0.193	JBQ	0.0724	MDL	10.2	PQL	ng/Kg	U	B

Sample ID: **SL-570-SA6-TR-0.5** ***Collected:*** **5/20/2014 12:10:00** ***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-HPCDF	0.511	JB	0.0196	MDL	5.10	PQL	ng/Kg	J	Z
1,2,3,4,7,8-HxCDD	0.188	J	0.0502	MDL	5.10	PQL	ng/Kg	J	Z
1,2,3,4,7,8-HXCDF	0.0778	JBQ	0.0342	MDL	5.10	PQL	ng/Kg	U	B
1,2,3,6,7,8-HXCDD	0.313	JBQ	0.0494	MDL	5.10	PQL	ng/Kg	J	Z
1,2,3,6,7,8-HXCDF	0.101	JB	0.0311	MDL	5.10	PQL	ng/Kg	U	B
1,2,3,7,8,9-HXCDD	0.507	JBQ	0.0485	MDL	5.10	PQL	ng/Kg	J	Z
1,2,3,7,8,9-HXCDF	0.141	JB	0.0352	MDL	5.10	PQL	ng/Kg	U	B
1,2,3,7,8-PECDD	0.177	JB	0.0508	MDL	5.10	PQL	ng/Kg	U	B
1,2,3,7,8-PECDF	0.135	JB	0.0285	MDL	5.10	PQL	ng/Kg	U	B
2,3,4,6,7,8-HXCDF	0.0900	JBQ	0.0322	MDL	5.10	PQL	ng/Kg	U	B
2,3,4,7,8-PECDF	0.0683	JBQ	0.0288	MDL	5.10	PQL	ng/Kg	U	B
2,3,7,8-TCDF	0.0700	JQ	0.0594	MDL	1.02	PQL	ng/Kg	J	Z
OCDF	1.71	JB	0.0796	MDL	10.2	PQL	ng/Kg	J	Z

Sample ID: **SL-570-SA6-TR-2.0** ***Collected:*** **5/20/2014 1:00:00** ***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	0.343	JBQ	0.0468	MDL	5.14	PQL	ng/Kg	U	B
1,2,3,4,6,7,8-HPCDF	0.0639	JBQ	0.0134	MDL	5.14	PQL	ng/Kg	U	B
1,2,3,4,7,8,9-HPCDF	0.0366	JBQ	0.0239	MDL	5.14	PQL	ng/Kg	U	B
1,2,3,4,7,8-HXCDF	0.0398	JB	0.0311	MDL	5.14	PQL	ng/Kg	U	B
1,2,3,6,7,8-HXCDD	0.131	JB	0.0360	MDL	5.14	PQL	ng/Kg	U	B
1,2,3,7,8,9-HXCDD	0.183	JBQ	0.0341	MDL	5.14	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: PH189 **Laboratory: LL**

EDD Filename: PH189_v3 **eQAPP Name: CDM_SSFL_140617_Lan**

Method Category: SVOA

Method: 1613B **Matrix: SO**

Sample ID: SL-570-SA6-TR-2.0 **Collected: 5/20/2014 1:00:00** **Analysis Type: RES** **Dilution: 1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
1,2,3,7,8,9-HXCDF	0.238	JBQ	0.0318	MDL	5.14	PQL	ng/Kg	U	B
1,2,3,7,8-PECDF	0.0597	JBQ	0.0320	MDL	5.14	PQL	ng/Kg	U	B
2,3,4,6,7,8-HXCDF	0.0393	JBQ	0.0299	MDL	5.14	PQL	ng/Kg	U	B
2,3,4,7,8-PECDF	0.0321	JBQ	0.0315	MDL	5.14	PQL	ng/Kg	U	B
OCDD	4.52	JB	0.0443	MDL	10.3	PQL	ng/Kg	J	Z
OCDF	0.280	JBQ	0.0791	MDL	10.3	PQL	ng/Kg	U	B

Sample ID: SL-570-SA6-TR-6.0 **Collected: 5/20/2014 1:43:00** **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	0.161	JB	0.0424	MDL	5.30	PQL	ng/Kg	U	B
1,2,3,4,6,7,8-HPCDF	0.0279	JB	0.0132	MDL	5.30	PQL	ng/Kg	U	B
1,2,3,4,7,8,9-HPCDF	0.0246	JBQ	0.0238	MDL	5.30	PQL	ng/Kg	U	B
1,2,3,4,7,8-HXCDF	0.0647	JBQ	0.0262	MDL	5.30	PQL	ng/Kg	U	B
1,2,3,6,7,8-HXCDF	0.0383	JBQ	0.0231	MDL	5.30	PQL	ng/Kg	U	B
1,2,3,7,8,9-HXCDD	0.0334	JBQ	0.0302	MDL	5.30	PQL	ng/Kg	U	B
1,2,3,7,8-PECDD	0.117	JBQ	0.0494	MDL	5.30	PQL	ng/Kg	U	B
1,2,3,7,8-PECDF	0.139	JB	0.0287	MDL	5.30	PQL	ng/Kg	U	B
2,3,4,7,8-PECDF	0.107	JBQ	0.0296	MDL	5.30	PQL	ng/Kg	U	B
2,3,7,8-TCDF	0.0531	JQ	0.0489	MDL	1.06	PQL	ng/Kg	J	Z
OCDD	1.93	JB	0.0363	MDL	10.6	PQL	ng/Kg	U	B
OCDF	0.132	JBQ	0.0711	MDL	10.6	PQL	ng/Kg	U	B

Sample ID: SL-611-SA8-TR-0.5 **Collected: 5/20/2014 9:10:00** **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	2.98	JB	0.109	MDL	5.34	PQL	ng/Kg	J	Z
1,2,3,4,6,7,8-HPCDF	0.792	JBQ	0.0329	MDL	5.34	PQL	ng/Kg	J	Z
1,2,3,4,7,8,9-HPCDF	0.122	JBQ	0.0593	MDL	5.34	PQL	ng/Kg	U	B
1,2,3,4,7,8-HxCDD	0.0787	JQ	0.0564	MDL	5.34	PQL	ng/Kg	J	Z
1,2,3,4,7,8-HXCDF	0.416	JB	0.0812	MDL	5.34	PQL	ng/Kg	U	B
1,2,3,6,7,8-HXCDD	0.214	JBQ	0.0583	MDL	5.34	PQL	ng/Kg	J	Z
1,2,3,6,7,8-HXCDF	1.16	JB	0.0715	MDL	5.34	PQL	ng/Kg	J	Z
1,2,3,7,8,9-HXCDD	0.182	JBQ	0.0547	MDL	5.34	PQL	ng/Kg	J	Z
2,3,4,6,7,8-HXCDF	0.415	JB	0.0775	MDL	5.34	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: PH189 **Laboratory: LL**

EDD Filename: PH189_v3 **eQAPP Name: CDM_SSFL_140617_Lan**

Method Category: SVOA

Method: 1613B **Matrix: SO**

Sample ID: **SL-611-SA8-TR-0.5** ***Collected:*** **5/20/2014 9:10:00** ***Analysis Type:*** **RES** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
2,3,4,7,8-PECDF	0.958	JBQ	0.0865	MDL	5.34	PQL	ng/Kg	J	Z
OCDF	1.51	JBQ	0.112	MDL	10.7	PQL	ng/Kg	J	Z

Sample ID: **SL-611-SA8-TR-10.5** ***Collected:*** **5/20/2014 9:20:00** ***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	0.377	JBQ	0.0491	MDL	5.39	PQL	ng/Kg	U	B
1,2,3,4,6,7,8-HPCDF	0.157	JB	0.0137	MDL	5.39	PQL	ng/Kg	U	B
1,2,3,4,7,8,9-HPCDF	0.0432	JBQ	0.0245	MDL	5.39	PQL	ng/Kg	U	B
1,2,3,4,7,8-HxCDD	0.100	J	0.0321	MDL	5.39	PQL	ng/Kg	J	Z
1,2,3,4,7,8-HXCDF	0.151	JBQ	0.0348	MDL	5.39	PQL	ng/Kg	U	B
1,2,3,6,7,8-HXCDD	0.0832	JBQ	0.0325	MDL	5.39	PQL	ng/Kg	U	B
1,2,3,6,7,8-HXCDF	0.227	JBQ	0.0296	MDL	5.39	PQL	ng/Kg	J	Z
1,2,3,7,8,9-HXCDD	0.0692	JBQ	0.0342	MDL	5.39	PQL	ng/Kg	U	B
1,2,3,7,8,9-HXCDF	0.0685	JBQ	0.0366	MDL	5.39	PQL	ng/Kg	U	B
1,2,3,7,8-PECDD	0.249	JBQ	0.0667	MDL	5.39	PQL	ng/Kg	U	B
1,2,3,7,8-PECDF	1.95	JB	0.0409	MDL	5.39	PQL	ng/Kg	J	Z
2,3,4,6,7,8-HXCDF	0.0789	JB	0.0319	MDL	5.39	PQL	ng/Kg	U	B
2,3,4,7,8-PECDF	0.237	JB	0.0421	MDL	5.39	PQL	ng/Kg	U	B
2,3,7,8-TCDD	0.0778	JQ	0.0715	MDL	1.08	PQL	ng/Kg	J	Z
2,3,7,8-TCDF	0.232	J	0.0643	MDL	1.08	PQL	ng/Kg	J	Z
OCDD	4.16	JB	0.0450	MDL	10.8	PQL	ng/Kg	J	Z
OCDF	0.440	JB	0.0828	MDL	10.8	PQL	ng/Kg	J	Z

Sample ID: **SL-611-SA8-TR-5.0** ***Collected:*** **5/20/2014 9:15:00** ***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-HPCDD	0.188	JBQ	0.0397	MDL	5.33	PQL	ng/Kg	U	B
1,2,3,4,6,7,8-HPCDF	0.0443	JB	0.0118	MDL	5.33	PQL	ng/Kg	U	B
1,2,3,6,7,8-HXCDF	0.0718	JBQ	0.0252	MDL	5.33	PQL	ng/Kg	U	B
1,2,3,7,8,9-HXCDD	0.0432	JB	0.0356	MDL	5.33	PQL	ng/Kg	U	B
1,2,3,7,8,9-HXCDF	0.0558	JBQ	0.0310	MDL	5.33	PQL	ng/Kg	U	B
1,2,3,7,8-PECDD	0.0680	JBQ	0.0514	MDL	5.33	PQL	ng/Kg	U	B
1,2,3,7,8-PECDF	0.241	JBQ	0.0335	MDL	5.33	PQL	ng/Kg	U	B
2,3,4,6,7,8-HXCDF	0.0521	JBQ	0.0266	MDL	5.33	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: PH189 **Laboratory: LL**

EDD Filename: PH189_v3 **eQAPP Name: CDM_SSFL_140617_Lan**

Method Category: SVOA

Method: 1613B **Matrix: SO**

Sample ID: SL-611-SA8-TR-5.0 *Collected:* 5/20/2014 9:15:00 *Analysis Type:* RES *Dilution:* 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
2,3,4,7,8-PECDF	0.0352	JB	0.0346	MDL	5.33	PQL	ng/Kg	U	B
2,3,7,8-TCDD	0.0883	JQ	0.0814	MDL	1.07	PQL	ng/Kg	J	Z
OCDD	0.976	JB	0.0399	MDL	10.7	PQL	ng/Kg	U	B
OCDF	0.215	JB	0.0817	MDL	10.7	PQL	ng/Kg	U	B

Method Category: SVOA

Method: 8015M **Matrix: SO**

Sample ID: SL-611-SA8-TR-10.5 *Collected:* 5/20/2014 9:20:00 *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	S
EFH (C15-C20) SG	5.6	U	2.2	MDL	5.6	PQL	mg/Kg	UJ	S
EFH (C21-C30) SG	5.6	U	2.2	MDL	5.6	PQL	mg/Kg	UJ	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	S

Method Category: SVOA

Method: 8082A **Matrix: SO**

Sample ID: SL-611-SA8-TR-10.5 *Collected:* 5/20/2014 9:20:00 *Analysis Type:* RES *Dilution:* 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
AROCLOR 1254	11	J	4.8	MDL	19	PQL	ug/Kg	J	Z
AROCLOR 1260	9.7	J	4.3	MDL	19	PQL	ug/Kg	J	Z

Method Category: SVOA

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

Sample ID: SL-611-SA8-TR-0.5 *Collected:* 5/20/2014 9:10:00 *Analysis Type:* RES-BASE/NEUTRAL *Dilution:* 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
BENZO(A)ANTHRACENE	0.85	J	0.71	MDL	1.8	PQL	ug/Kg	J	Z
BENZO(A)PYRENE	0.72	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: PH189 **Laboratory: LL**

EDD Filename: PH189_v3 **eQAPP Name: CDM_SSFL_140617_Lan**

Method Category: **SVOA**

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

Sample ID: **SL-611-SA8-TR-0.5** ***Collected:*** **5/20/2014 9:10:00** ***Analysis Type:*** **RES-BASE/NEUTRAL** ***Dilution:*** **1**

Analyte	*Lab Result*	*Lab Qual*	*DL*	*DL Type*	*RL*	*RL Type*	*Units*	*Data Review Qual*	*Reason Code*
BENZO(G,H,I)PERYLENE	1.3	J	0.71	MDL	1.8	PQL	ug/Kg	J	Z
BIS(2-ETHYLHEXYL)PHTHALATE	11	J	6.4	MDL	19	PQL	ug/Kg	J	Z
FLUORANTHENE	1.5	J	0.71	MDL	1.8	PQL	ug/Kg	J	Z
INDENO(1,2,3-CD)PYRENE	0.90	J	0.71	MDL	1.8	PQL	ug/Kg	J	Z
NAPHTHALENE	1.0	J	0.71	MDL	1.8	PQL	ug/Kg	J	Z
PHENANTHRENE	1.3	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

* 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: PH189 **Laboratory: LL**

EDD Filename: PH189_v3 **eQAPP Name: CDM_SSFL_140617_Lan**

Reason Code Legend

Reason Code	*Description*
*#	Professional Judgment
A	Professional Judgment
B	Calibration Blank Contamination
B	Method Blank Contamination
E	Laboratory Duplicate Precision
E	Matrix Spike Precision
F	Equipment Blank Contamination
F	Field Blank Contamination
Q	Laboratory Duplicate Precision
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

PH189

Method Blank Outlier Report

Lab Reporting Batch ID: PH189 **Laboratory: LL**

EDD Filename: PH189_v3 **eQAPP Name: CDM_SSFL_140617_Lan**

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

Method Blank Sample ID	Analysis Date	Analyte	Result	Associated Samples
BLK1480B370327	5/30/2014 3:27:00 AM	1,2,3,4,6,7,8-HPCDD	0.104 ng/Kg	SL-569-SA6-TR-0.5
		1,2,3,4,6,7,8-HPCDF	0.0707 ng/Kg	SL-569-SA6-TR-2.5
		1,2,3,4,7,8,9-HPCDF	0.0368 ng/Kg	SL-570-SA6-TR-0.5
		1,2,3,4,7,8-HXCDF	0.0887 ng/Kg	SL-570-SA6-TR-2.0
		1,2,3,6,7,8-HXCDD	0.0322 ng/Kg	SL-570-SA6-TR-6.0
		1,2,3,6,7,8-HXCDF	0.0451 ng/Kg	SL-611-SA8-TR-0.5
		1,2,3,7,8,9-HXCDD	0.0351 ng/Kg	SL-611-SA8-TR-10.5
		1,2,3,7,8,9-HXCDF	0.0531 ng/Kg	SL-611-SA8-TR-5.0
		1,2,3,7,8-PECDD	0.0674 ng/Kg	
		1,2,3,7,8-PECDF	0.0961 ng/Kg	
		2,3,4,6,7,8-HXCDF	0.0468 ng/Kg	
		2,3,4,7,8-PECDF	0.0685 ng/Kg	
		OCDD	0.662 ng/Kg	
		OCDF	0.0875 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-569-SA6-TR-0.5(RES)	1,2,3,4,6,7,8-HPCDF	0.144 ng/Kg	0.144U ng/Kg
SL-569-SA6-TR-0.5(RES)	1,2,3,4,7,8-HXCDF	0.102 ng/Kg	0.102U ng/Kg
SL-569-SA6-TR-0.5(RES)	1,2,3,6,7,8-HXCDD	0.0884 ng/Kg	0.0884U ng/Kg
SL-569-SA6-TR-0.5(RES)	1,2,3,6,7,8-HXCDF	0.0557 ng/Kg	0.0557U ng/Kg
SL-569-SA6-TR-0.5(RES)	1,2,3,7,8,9-HXCDF	0.0756 ng/Kg	0.0756U ng/Kg
SL-569-SA6-TR-0.5(RES)	1,2,3,7,8-PECDD	0.0527 ng/Kg	0.0527U ng/Kg
SL-569-SA6-TR-0.5(RES)	1,2,3,7,8-PECDF	0.107 ng/Kg	0.107U ng/Kg
SL-569-SA6-TR-0.5(RES)	2,3,4,6,7,8-HXCDF	0.0336 ng/Kg	0.0336U ng/Kg
SL-569-SA6-TR-0.5(RES)	2,3,4,7,8-PECDF	0.0528 ng/Kg	0.0528U ng/Kg
SL-569-SA6-TR-2.5(RES)	1,2,3,4,6,7,8-HPCDD	0.143 ng/Kg	0.143U ng/Kg
SL-569-SA6-TR-2.5(RES)	1,2,3,4,6,7,8-HPCDF	0.0497 ng/Kg	0.0497U ng/Kg
SL-569-SA6-TR-2.5(RES)	1,2,3,4,7,8,9-HPCDF	0.0285 ng/Kg	0.0285U ng/Kg
SL-569-SA6-TR-2.5(RES)	1,2,3,4,7,8-HXCDF	0.0574 ng/Kg	0.0574U ng/Kg
SL-569-SA6-TR-2.5(RES)	1,2,3,6,7,8-HXCDD	0.0478 ng/Kg	0.0478U ng/Kg
SL-569-SA6-TR-2.5(RES)	1,2,3,6,7,8-HXCDF	0.0568 ng/Kg	0.0568U ng/Kg
SL-569-SA6-TR-2.5(RES)	1,2,3,7,8,9-HXCDD	0.0506 ng/Kg	0.0506U ng/Kg
SL-569-SA6-TR-2.5(RES)	1,2,3,7,8,9-HXCDF	0.0814 ng/Kg	0.0814U ng/Kg
SL-569-SA6-TR-2.5(RES)	1,2,3,7,8-PECDF	0.0831 ng/Kg	0.0831U ng/Kg
SL-569-SA6-TR-2.5(RES)	2,3,4,6,7,8-HXCDF	0.0263 ng/Kg	0.0263U ng/Kg
SL-569-SA6-TR-2.5(RES)	2,3,4,7,8-PECDF	0.0484 ng/Kg	0.0484U ng/Kg
SL-569-SA6-TR-2.5(RES)	OCDD	1.19 ng/Kg	1.19U ng/Kg
SL-569-SA6-TR-2.5(RES)	OCDF	0.193 ng/Kg	0.193U ng/Kg
SL-570-SA6-TR-0.5(RES)	1,2,3,4,7,8-HXCDF	0.0778 ng/Kg	0.0778U ng/Kg
SL-570-SA6-TR-0.5(RES)	1,2,3,6,7,8-HXCDF	0.101 ng/Kg	0.101U ng/Kg
SL-570-SA6-TR-0.5(RES)	1,2,3,7,8,9-HXCDF	0.141 ng/Kg	0.141U ng/Kg
SL-570-SA6-TR-0.5(RES)	1,2,3,7,8-PECDD	0.177 ng/Kg	0.177U ng/Kg
SL-570-SA6-TR-0.5(RES)	1,2,3,7,8-PECDF	0.135 ng/Kg	0.135U ng/Kg
SL-570-SA6-TR-0.5(RES)	2,3,4,6,7,8-HXCDF	0.0900 ng/Kg	0.0900U ng/Kg
SL-570-SA6-TR-0.5(RES)	2,3,4,7,8-PECDF	0.0683 ng/Kg	0.0683U ng/Kg
SL-570-SA6-TR-2.0(RES)	1,2,3,4,6,7,8-HPCDD	0.343 ng/Kg	0.343U ng/Kg

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

Method Blank Outlier Report

Lab Reporting Batch ID: PH189 **Laboratory: LL**

EDD Filename: PH189_v3 **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-570-SA6-TR-2.0(RES)	1,2,3,4,6,7,8-HPCDF	0.0639 ng/Kg	0.0639U ng/Kg
SL-570-SA6-TR-2.0(RES)	1,2,3,4,7,8,9-HPCDF	0.0366 ng/Kg	0.0366U ng/Kg
SL-570-SA6-TR-2.0(RES)	1,2,3,4,7,8-HXCDF	0.0398 ng/Kg	0.0398U ng/Kg
SL-570-SA6-TR-2.0(RES)	1,2,3,6,7,8-HXCDD	0.131 ng/Kg	0.131U ng/Kg
SL-570-SA6-TR-2.0(RES)	1,2,3,7,8,9-HXCDF	0.238 ng/Kg	0.238U ng/Kg
SL-570-SA6-TR-2.0(RES)	1,2,3,7,8-PECDF	0.0597 ng/Kg	0.0597U ng/Kg
SL-570-SA6-TR-2.0(RES)	2,3,4,6,7,8-HXCDF	0.0393 ng/Kg	0.0393U ng/Kg
SL-570-SA6-TR-2.0(RES)	2,3,4,7,8-PECDF	0.0321 ng/Kg	0.0321U ng/Kg
SL-570-SA6-TR-2.0(RES)	OCDF	0.280 ng/Kg	0.280U ng/Kg
SL-570-SA6-TR-6.0(RES)	1,2,3,4,6,7,8-HPCDD	0.161 ng/Kg	0.161U ng/Kg
SL-570-SA6-TR-6.0(RES)	1,2,3,4,6,7,8-HPCDF	0.0279 ng/Kg	0.0279U ng/Kg
SL-570-SA6-TR-6.0(RES)	1,2,3,4,7,8,9-HPCDF	0.0246 ng/Kg	0.0246U ng/Kg
SL-570-SA6-TR-6.0(RES)	1,2,3,4,7,8-HXCDF	0.0647 ng/Kg	0.0647U ng/Kg
SL-570-SA6-TR-6.0(RES)	1,2,3,6,7,8-HXCDF	0.0383 ng/Kg	0.0383U ng/Kg
SL-570-SA6-TR-6.0(RES)	1,2,3,7,8,9-HXCDD	0.0334 ng/Kg	0.0334U ng/Kg
SL-570-SA6-TR-6.0(RES)	1,2,3,7,8-PECDD	0.117 ng/Kg	0.117U ng/Kg
SL-570-SA6-TR-6.0(RES)	1,2,3,7,8-PECDF	0.139 ng/Kg	0.139U ng/Kg
SL-570-SA6-TR-6.0(RES)	2,3,4,7,8-PECDF	0.107 ng/Kg	0.107U ng/Kg
SL-570-SA6-TR-6.0(RES)	OCDD	1.93 ng/Kg	1.93U ng/Kg
SL-570-SA6-TR-6.0(RES)	OCDF	0.132 ng/Kg	0.132U ng/Kg
SL-611-SA8-TR-0.5(RES)	1,2,3,4,7,8,9-HPCDF	0.122 ng/Kg	0.122U ng/Kg
SL-611-SA8-TR-0.5(RES)	1,2,3,4,7,8-HXCDF	0.416 ng/Kg	0.416U ng/Kg
SL-611-SA8-TR-10.5(RES)	1,2,3,4,6,7,8-HPCDD	0.377 ng/Kg	0.377U ng/Kg
SL-611-SA8-TR-10.5(RES)	1,2,3,4,6,7,8-HPCDF	0.157 ng/Kg	0.157U ng/Kg
SL-611-SA8-TR-10.5(RES)	1,2,3,4,7,8,9-HPCDF	0.0432 ng/Kg	0.0432U ng/Kg
SL-611-SA8-TR-10.5(RES)	1,2,3,4,7,8-HXCDF	0.151 ng/Kg	0.151U ng/Kg
SL-611-SA8-TR-10.5(RES)	1,2,3,6,7,8-HXCDD	0.0832 ng/Kg	0.0832U ng/Kg
SL-611-SA8-TR-10.5(RES)	1,2,3,7,8,9-HXCDD	0.0692 ng/Kg	0.0692U ng/Kg
SL-611-SA8-TR-10.5(RES)	1,2,3,7,8,9-HXCDF	0.0685 ng/Kg	0.0685U ng/Kg
SL-611-SA8-TR-10.5(RES)	1,2,3,7,8-PECDD	0.249 ng/Kg	0.249U ng/Kg
SL-611-SA8-TR-10.5(RES)	2,3,4,6,7,8-HXCDF	0.0789 ng/Kg	0.0789U ng/Kg
SL-611-SA8-TR-10.5(RES)	2,3,4,7,8-PECDF	0.237 ng/Kg	0.237U ng/Kg
SL-611-SA8-TR-5.0(RES)	1,2,3,4,6,7,8-HPCDD	0.188 ng/Kg	0.188U ng/Kg
SL-611-SA8-TR-5.0(RES)	1,2,3,4,6,7,8-HPCDF	0.0443 ng/Kg	0.0443U ng/Kg
SL-611-SA8-TR-5.0(RES)	1,2,3,6,7,8-HXCDF	0.0718 ng/Kg	0.0718U ng/Kg
SL-611-SA8-TR-5.0(RES)	1,2,3,7,8,9-HXCDD	0.0432 ng/Kg	0.0432U ng/Kg
SL-611-SA8-TR-5.0(RES)	1,2,3,7,8,9-HXCDF	0.0558 ng/Kg	0.0558U ng/Kg
SL-611-SA8-TR-5.0(RES)	1,2,3,7,8-PECDD	0.0680 ng/Kg	0.0680U ng/Kg
SL-611-SA8-TR-5.0(RES)	1,2,3,7,8-PECDF	0.241 ng/Kg	0.241U ng/Kg
SL-611-SA8-TR-5.0(RES)	2,3,4,6,7,8-HXCDF	0.0521 ng/Kg	0.0521U ng/Kg

Method Blank Outlier Report

Lab Reporting Batch ID: PH189 **Laboratory: LL**

EDD Filename: PH189_v3 **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-611-SA8-TR-5.0(RES)	2,3,4,7,8-PECDF	0.0352 ng/Kg	0.0352U ng/Kg
SL-611-SA8-TR-5.0(RES)	OCDD	0.976 ng/Kg	0.976U ng/Kg
SL-611-SA8-TR-5.0(RES)	OCDF	0.215 ng/Kg	0.215U ng/Kg

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

Method Blank Sample ID	Analysis Date	Analyte	Result	Associated Samples
P14337AB220659	5/29/2014 6:59:00 AM	CALCIUM TIN ZINC	7.84 mg/Kg 1.46 mg/Kg 0.461 mg/Kg	SL-569-SA6-TR-0.5 SL-569-SA6-TR-2.5 SL-570-SA6-TR-0.5 SL-570-SA6-TR-2.0 SL-570-SA6-TR-6.0 SL-611-SA8-TR-0.5 SL-611-SA8-TR-10.5 SL-611-SA8-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-569-SA6-TR-0.5(RES)	TIN	3.22 mg/Kg	3.22U mg/Kg
SL-569-SA6-TR-2.5(RES)	TIN	3.36 mg/Kg	3.36U mg/Kg
SL-570-SA6-TR-0.5(RES)	TIN	3.01 mg/Kg	3.01U mg/Kg
SL-570-SA6-TR-2.0(RES)	TIN	3.07 mg/Kg	3.07U mg/Kg
SL-570-SA6-TR-6.0(RES)	TIN	3.64 mg/Kg	3.64U mg/Kg
SL-611-SA8-TR-0.5(RES)	TIN	3.09 mg/Kg	3.09U mg/Kg
SL-611-SA8-TR-10.5(RES)	TIN	3.33 mg/Kg	3.33U mg/Kg
SL-611-SA8-TR-5.0(RES)	TIN	2.88 mg/Kg	2.88U mg/Kg

Field Blank Outlier Report

Lab Reporting Batch ID: PH189 **Laboratory: LL**

EDD Filename: PH189_v3 **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-569-SA6-TR-0.5 SL-569-SA6-TR-2.5 SL-570-SA6-TR-0.5 SL-570-SA6-TR-2.0 SL-570-SA6-TR-6.0 SL-611-SA8-TR-0.5 SL-611-SA8-TR-10.5 SL-611-SA8-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-569-SA6-TR-0.5(RES)	Zirconium	1.89 mg/Kg	1.89U mg/Kg
SL-569-SA6-TR-2.5(RES)	Zirconium	2.75 mg/Kg	2.75U mg/Kg
SL-570-SA6-TR-0.5(RES)	Zirconium	2.53 mg/Kg	2.53U mg/Kg
SL-570-SA6-TR-2.0(RES)	Zirconium	3.15 mg/Kg	3.15U mg/Kg
SL-570-SA6-TR-6.0(RES)	Zirconium	3.41 mg/Kg	3.41U mg/Kg

Equipment Rinsate Blank Outlier Report

Lab Reporting Batch ID: PH189 **Laboratory: LL**

EDD Filename: PH189_v3 **eQAPP Name: CDM_SSFL_140617_Lan**

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

Equipment Blank Sample ID	Collected Date	Analyte	Result	Associated Samples
EB3-052214(RES)	5/22/2014 3:45:00 PM	CALCIUM MANGANESE Zirconium	0.15 mg/L 0.0009 mg/L 0.0108 mg/L	SL-569-SA6-TR-0.5 SL-569-SA6-TR-2.5 SL-570-SA6-TR-0.5 SL-570-SA6-TR-2.0 SL-570-SA6-TR-6.0 SL-611-SA8-TR-0.5 SL-611-SA8-TR-10.5 SL-611-SA8-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-569-SA6-TR-0.5(RES)	Zirconium	1.89 mg/Kg	1.89U mg/Kg
SL-569-SA6-TR-2.5(RES)	Zirconium	2.75 mg/Kg	2.75U mg/Kg
SL-570-SA6-TR-0.5(RES)	Zirconium	2.53 mg/Kg	2.53U mg/Kg
SL-570-SA6-TR-2.0(RES)	Zirconium	3.15 mg/Kg	3.15U mg/Kg
SL-570-SA6-TR-6.0(RES)	Zirconium	3.41 mg/Kg	3.41U mg/Kg

Surrogate Outlier Report

Lab Reporting Batch ID: PH189 **Laboratory: LL**

EDD Filename: PH189_v3. **eQAPP Name: CDM_SSFL_140617_Lan**

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

Sample ID (Analysis Type)	*Surrogate*	*Sample % Recovery*	*% Recovery Limits*	*Affected Compounds*	*Flag*
SL-611-SA8-TR-10.5 (REA2)	O-TERPHENYL	64	66.00-123.00	All Target Analytes	J (all detects) UJ (all non-detects)

Reporting Limit Outliers

Lab Reporting Batch ID: PH189 **Laboratory: LL**

EDD Filename: PH189_v3. **eQAPP Name: CDM_SSFL_140617_Lan**

Method: 1613B

Matrix: SO

SampleID	Analyte	Lab Qual	Result	Reporting Limit	RL Type	Units	Flag
SL-569-SA6-TR-0.5	1,2,3,4,6,7,8-HPCDD	JB	1.77	5.06	PQL	ng/Kg	
	1,2,3,4,6,7,8-HPCDF	JB	0.144	5.06	PQL	ng/Kg	
	1,2,3,4,7,8-HxCDD	JQ	0.0631	5.06	PQL	ng/Kg	
	1,2,3,4,7,8-HXCDF	JBQ	0.102	5.06	PQL	ng/Kg	
	1,2,3,6,7,8-HXCDD	JBQ	0.0884	5.06	PQL	ng/Kg	
	1,2,3,6,7,8-HXCDF	JBQ	0.0557	5.06	PQL	ng/Kg	
	1,2,3,7,8,9-HXCDD	JBQ	0.212	5.06	PQL	ng/Kg	J (all detects)
	1,2,3,7,8,9-HXCDF	JBQ	0.0756	5.06	PQL	ng/Kg	
	1,2,3,7,8-PECDD	JBQ	0.0527	5.06	PQL	ng/Kg	
	1,2,3,7,8-PECDF	JBQ	0.107	5.06	PQL	ng/Kg	
	2,3,4,6,7,8-HXCDF	JBQ	0.0336	5.06	PQL	ng/Kg	
	2,3,4,7,8-PECDF	JBQ	0.0528	5.06	PQL	ng/Kg	
	OCDF	JBQ	0.510	10.1	PQL	ng/Kg	
SL-569-SA6-TR-2.5	1,2,3,4,6,7,8-HPCDD	JB	0.143	5.12	PQL	ng/Kg	
	1,2,3,4,6,7,8-HPCDF	JBQ	0.0497	5.12	PQL	ng/Kg	
	1,2,3,4,7,8,9-HPCDF	JBQ	0.0285	5.12	PQL	ng/Kg	
	1,2,3,4,7,8-HXCDF	JBQ	0.0574	5.12	PQL	ng/Kg	
	1,2,3,6,7,8-HXCDD	JBQ	0.0478	5.12	PQL	ng/Kg	
	1,2,3,6,7,8-HXCDF	JB	0.0568	5.12	PQL	ng/Kg	
	1,2,3,7,8,9-HXCDD	JB	0.0506	5.12	PQL	ng/Kg	J (all detects)
	1,2,3,7,8,9-HXCDF	JBQ	0.0814	5.12	PQL	ng/Kg	
	1,2,3,7,8-PECDF	JBQ	0.0831	5.12	PQL	ng/Kg	
	2,3,4,6,7,8-HXCDF	JBQ	0.0263	5.12	PQL	ng/Kg	
	2,3,4,7,8-PECDF	JBQ	0.0484	5.12	PQL	ng/Kg	
	OCDD	JB	1.19	10.2	PQL	ng/Kg	
	OCDF	JBQ	0.193	10.2	PQL	ng/Kg	
SL-570-SA6-TR-0.5	1,2,3,4,6,7,8-HPCDF	JB	0.511	5.10	PQL	ng/Kg	
	1,2,3,4,7,8-HxCDD	J	0.188	5.10	PQL	ng/Kg	
	1,2,3,4,7,8-HXCDF	JBQ	0.0778	5.10	PQL	ng/Kg	
	1,2,3,6,7,8-HXCDD	JBQ	0.313	5.10	PQL	ng/Kg	
	1,2,3,6,7,8-HXCDF	JB	0.101	5.10	PQL	ng/Kg	
	1,2,3,7,8,9-HXCDD	JBQ	0.507	5.10	PQL	ng/Kg	
	1,2,3,7,8,9-HXCDF	JB	0.141	5.10	PQL	ng/Kg	J (all detects)
	1,2,3,7,8-PECDD	JB	0.177	5.10	PQL	ng/Kg	
	1,2,3,7,8-PECDF	JB	0.135	5.10	PQL	ng/Kg	
	2,3,4,6,7,8-HXCDF	JBQ	0.0900	5.10	PQL	ng/Kg	
	2,3,4,7,8-PECDF	JBQ	0.0683	5.10	PQL	ng/Kg	
	2,3,7,8-TCDF	JQ	0.0700	1.02	PQL	ng/Kg	
	OCDF	JB	1.71	10.2	PQL	ng/Kg	
SL-570-SA6-TR-2.0	1,2,3,4,6,7,8-HPCDD	JBQ	0.343	5.14	PQL	ng/Kg	
	1,2,3,4,6,7,8-HPCDF	JBQ	0.0639	5.14	PQL	ng/Kg	
	1,2,3,4,7,8,9-HPCDF	JBQ	0.0366	5.14	PQL	ng/Kg	
	1,2,3,4,7,8-HXCDF	JB	0.0398	5.14	PQL	ng/Kg	
	1,2,3,6,7,8-HXCDD	JB	0.131	5.14	PQL	ng/Kg	
	1,2,3,7,8,9-HXCDD	JBQ	0.183	5.14	PQL	ng/Kg	J (all detects)
	1,2,3,7,8,9-HXCDF	JBQ	0.238	5.14	PQL	ng/Kg	
	1,2,3,7,8-PECDF	JBQ	0.0597	5.14	PQL	ng/Kg	
	2,3,4,6,7,8-HXCDF	JBQ	0.0393	5.14	PQL	ng/Kg	
	2,3,4,7,8-PECDF	JBQ	0.0321	5.14	PQL	ng/Kg	
	OCDD	JB	4.52	10.3	PQL	ng/Kg	
	OCDF	JBQ	0.280	10.3	PQL	ng/Kg	

Reporting Limit Outliers

Lab Reporting Batch ID: PH189 **Laboratory: LL**

EDD Filename: PH189_v3. **eQAPP Name: CDM_SSFL_140617_Lan**

Method: 1613B

Matrix: SO

SampleID	Analyte	Lab Qual	Result	Reporting Limit	RL Type	Units	Flag
SL-570-SA6-TR-6.0	1,2,3,4,6,7,8-HPCDD	JB	0.161	5.30	PQL	ng/Kg	
	1,2,3,4,6,7,8-HPCDF	JB	0.0279	5.30	PQL	ng/Kg	
	1,2,3,4,7,8,9-HPCDF	JBQ	0.0246	5.30	PQL	ng/Kg	
	1,2,3,4,7,8-HXCDF	JBQ	0.0647	5.30	PQL	ng/Kg	
	1,2,3,6,7,8-HXCDF	JBQ	0.0383	5.30	PQL	ng/Kg	
	1,2,3,7,8,9-HXCDD	JBQ	0.0334	5.30	PQL	ng/Kg	J (all detects)
	1,2,3,7,8-PECDD	JBQ	0.117	5.30	PQL	ng/Kg	
	1,2,3,7,8-PECDF	JB	0.139	5.30	PQL	ng/Kg	
	2,3,4,7,8-PECDF	JBQ	0.107	5.30	PQL	ng/Kg	
	2,3,7,8-TCDF	JQ	0.0531	1.06	PQL	ng/Kg	
	OCDD	JB	1.93	10.6	PQL	ng/Kg	
	OCDF	JBQ	0.132	10.6	PQL	ng/Kg	
SL-611-SA8-TR-0.5	1,2,3,4,6,7,8-HPCDD	JB	2.98	5.34	PQL	ng/Kg	
	1,2,3,4,6,7,8-HPCDF	JBQ	0.792	5.34	PQL	ng/Kg	
	1,2,3,4,7,8,9-HPCDF	JBQ	0.122	5.34	PQL	ng/Kg	
	1,2,3,4,7,8-HxCDD	JQ	0.0787	5.34	PQL	ng/Kg	
	1,2,3,4,7,8-HXCDF	JB	0.416	5.34	PQL	ng/Kg	
	1,2,3,6,7,8-HXCDD	JBQ	0.214	5.34	PQL	ng/Kg	J (all detects)
	1,2,3,6,7,8-HXCDF	JB	1.16	5.34	PQL	ng/Kg	
	1,2,3,7,8,9-HXCDD	JBQ	0.182	5.34	PQL	ng/Kg	
	2,3,4,6,7,8-HXCDF	JB	0.415	5.34	PQL	ng/Kg	
	2,3,4,7,8-PECDF	JBQ	0.958	5.34	PQL	ng/Kg	
	OCDF	JBQ	1.51	10.7	PQL	ng/Kg	
SL-611-SA8-TR-10.5	1,2,3,4,6,7,8-HPCDD	JBQ	0.377	5.39	PQL	ng/Kg	
	1,2,3,4,6,7,8-HPCDF	JB	0.157	5.39	PQL	ng/Kg	
	1,2,3,4,7,8,9-HPCDF	JBQ	0.0432	5.39	PQL	ng/Kg	
	1,2,3,4,7,8-HxCDD	J	0.100	5.39	PQL	ng/Kg	
	1,2,3,4,7,8-HXCDF	JBQ	0.151	5.39	PQL	ng/Kg	
	1,2,3,6,7,8-HXCDD	JBQ	0.0832	5.39	PQL	ng/Kg	
	1,2,3,6,7,8-HXCDF	JBQ	0.227	5.39	PQL	ng/Kg	
	1,2,3,7,8,9-HXCDD	JBQ	0.0692	5.39	PQL	ng/Kg	
	1,2,3,7,8,9-HXCDF	JBQ	0.0685	5.39	PQL	ng/Kg	J (all detects)
	1,2,3,7,8-PECDD	JBQ	0.249	5.39	PQL	ng/Kg	
	1,2,3,7,8-PECDF	JB	1.95	5.39	PQL	ng/Kg	
	2,3,4,6,7,8-HXCDF	JB	0.0789	5.39	PQL	ng/Kg	
	2,3,4,7,8-PECDF	JB	0.237	5.39	PQL	ng/Kg	
	2,3,7,8-TCDD	JQ	0.0778	1.08	PQL	ng/Kg	
	2,3,7,8-TCDF	J	0.232	1.08	PQL	ng/Kg	
	OCDD	JB	4.16	10.8	PQL	ng/Kg	
	OCDF	JB	0.440	10.8	PQL	ng/Kg	
SL-611-SA8-TR-5.0	1,2,3,4,6,7,8-HPCDD	JBQ	0.188	5.33	PQL	ng/Kg	
	1,2,3,4,6,7,8-HPCDF	JB	0.0443	5.33	PQL	ng/Kg	
	1,2,3,6,7,8-HXCDF	JBQ	0.0718	5.33	PQL	ng/Kg	
	1,2,3,7,8,9-HXCDD	JB	0.0432	5.33	PQL	ng/Kg	
	1,2,3,7,8,9-HXCDF	JBQ	0.0558	5.33	PQL	ng/Kg	
	1,2,3,7,8-PECDD	JBQ	0.0680	5.33	PQL	ng/Kg	J (all detects)
	1,2,3,7,8-PECDF	JBQ	0.241	5.33	PQL	ng/Kg	
	2,3,4,6,7,8-HXCDF	JBQ	0.0521	5.33	PQL	ng/Kg	
	2,3,4,7,8-PECDF	JB	0.0352	5.33	PQL	ng/Kg	
	2,3,7,8-TCDD	JQ	0.0883	1.07	PQL	ng/Kg	
	OCDD	JB	0.976	10.7	PQL	ng/Kg	
	OCDF	JB	0.215	10.7	PQL	ng/Kg	

Reporting Limit Outliers

Lab Reporting Batch ID: PH189 **Laboratory: LL**

EDD Filename: PH189_v3. **eQAPP Name: CDM_SSFL_140617_Lan**

Method: 6010C

Matrix: SO

SampleID	Analyte	Lab Qual	Result	Reporting Limit	RL Type	Units	Flag
SL-569-SA6-TR-0.5	ARSENIC	J	2.20	4.10	PQL	mg/Kg	
	BERYLLIUM	J	0.474	1.02	PQL	mg/Kg	
	BORON	J	7.06	10.2	PQL	mg/Kg	J (all detects)
	SODIUM	J	89.4	102	PQL	mg/Kg	
	TIN	J	3.22	10.2	PQL	mg/Kg	
	Zirconium	J	1.89	5.12	PQL	mg/Kg	
SL-569-SA6-TR-2.5	ARSENIC	J	2.83	4.11	PQL	mg/Kg	
	BERYLLIUM	J	0.817	1.03	PQL	mg/Kg	
	BORON	J	7.65	10.3	PQL	mg/Kg	
	MOLYBDENUM	J	0.467	2.05	PQL	mg/Kg	J (all detects)
	SODIUM	J	90.7	103	PQL	mg/Kg	
	TIN	J	3.36	10.3	PQL	mg/Kg	
	Zirconium	J	2.75	5.13	PQL	mg/Kg	
SL-570-SA6-TR-0.5	ARSENIC	J	2.22	4.13	PQL	mg/Kg	
	BERYLLIUM	J	0.571	1.03	PQL	mg/Kg	
	BORON	J	8.14	10.3	PQL	mg/Kg	
	MOLYBDENUM	J	0.243	2.06	PQL	mg/Kg	J (all detects)
	SODIUM	J	78.9	103	PQL	mg/Kg	
	TIN	J	3.01	10.3	PQL	mg/Kg	
	Zirconium	J	2.53	5.16	PQL	mg/Kg	
SL-570-SA6-TR-2.0	ARSENIC	J	2.24	4.05	PQL	mg/Kg	
	BERYLLIUM	J	0.628	1.01	PQL	mg/Kg	
	BORON	J	8.13	10.1	PQL	mg/Kg	
	MOLYBDENUM	J	0.447	2.03	PQL	mg/Kg	J (all detects)
	SODIUM	J	79.9	101	PQL	mg/Kg	
	TIN	J	3.07	10.1	PQL	mg/Kg	
	Zirconium	J	3.15	5.07	PQL	mg/Kg	
SL-570-SA6-TR-6.0	ARSENIC	J	3.03	4.23	PQL	mg/Kg	
	BERYLLIUM	J	0.887	1.06	PQL	mg/Kg	
	BORON	J	8.53	10.6	PQL	mg/Kg	J (all detects)
	MOLYBDENUM	J	0.322	2.11	PQL	mg/Kg	
	TIN	J	3.64	10.6	PQL	mg/Kg	
	Zirconium	J	3.41	5.28	PQL	mg/Kg	
SL-611-SA8-TR-0.5	ARSENIC	J	3.28	4.21	PQL	mg/Kg	
	BERYLLIUM	J	0.714	1.05	PQL	mg/Kg	J (all detects)
	TIN	J	3.09	10.5	PQL	mg/Kg	
SL-611-SA8-TR-10.5	ARSENIC	J	2.45	4.39	PQL	mg/Kg	
	BERYLLIUM	J	0.878	1.10	PQL	mg/Kg	J (all detects)
	TIN	J	3.33	11.0	PQL	mg/Kg	
SL-611-SA8-TR-5.0	ARSENIC	J	1.96	4.22	PQL	mg/Kg	
	BERYLLIUM	J	0.837	1.06	PQL	mg/Kg	
	SODIUM	J	93.4	106	PQL	mg/Kg	J (all detects)
	TIN	J	2.88	10.6	PQL	mg/Kg	

Method: 6020A

Matrix: SO

SampleID	Analyte	Lab Qual	Result	Reporting Limit	RL Type	Units	Flag
SL-569-SA6-TR-0.5	THALLIUM	J	0.196	0.205	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: PH189 **Laboratory: LL**

EDD Filename: PH189_v3. **eQAPP Name: CDM_SSFL_140617_Lan**

Method: 6020A

Matrix: SO

SampleID	Analyte	Lab Qual	Result	Reporting Limit	RL Type	Units	Flag
SL-569-SA6-TR-2.5	SELENIUM SILVER	J J	0.155 0.0509	0.411 0.205	PQL PQL	mg/Kg mg/Kg	J (all detects)
SL-570-SA6-TR-0.5	SELENIUM SILVER	J J	0.154 0.0617	0.413 0.206	PQL PQL	mg/Kg mg/Kg	J (all detects)
SL-570-SA6-TR-2.0	SELENIUM SILVER	J J	0.126 0.0513	0.405 0.203	PQL PQL	mg/Kg mg/Kg	J (all detects)
SL-570-SA6-TR-6.0	SILVER	J	0.0847	0.211	PQL	mg/Kg	J (all detects)
SL-611-SA8-TR-0.5	SELENIUM SILVER	J J	0.287 0.0335	0.421 0.210	PQL PQL	mg/Kg mg/Kg	J (all detects)
SL-611-SA8-TR-10.5	SELENIUM SILVER	J J	0.194 0.0414	0.439 0.220	PQL PQL	mg/Kg mg/Kg	J (all detects)
SL-611-SA8-TR-5.0	SELENIUM SILVER	J J	0.255 0.0429	0.422 0.211	PQL PQL	mg/Kg mg/Kg	J (all detects)

Method: 7471B

Matrix: SO

SampleID	Analyte	Lab Qual	Result	Reporting Limit	RL Type	Units	Flag
SL-569-SA6-TR-2.5	MERCURY	J	0.0159	0.0170	PQL	mg/Kg	J (all detects)
SL-570-SA6-TR-0.5	MERCURY	J	0.0155	0.0166	PQL	mg/Kg	J (all detects)
SL-611-SA8-TR-10.5	MERCURY	J	0.0124	0.0182	PQL	mg/Kg	J (all detects)
SL-611-SA8-TR-5.0	MERCURY	J	0.0120	0.0177	PQL	mg/Kg	J (all detects)

Method: 8082A

Matrix: SO

SampleID	Analyte	Lab Qual	Result	Reporting Limit	RL Type	Units	Flag
SL-611-SA8-TR-10.5	AROCLOR 1254 AROCLOR 1260	J J	11 9.7	19 19	PQL PQL	ug/Kg ug/Kg	J (all detects)

Reporting Limit Outliers

Lab Reporting Batch ID: PH189 **Laboratory: LL**

EDD Filename: PH189_v3. **eQAPP Name: CDM_SSFL_140617_Lan**

Method: **8270D SIM**

Matrix: **SO**

SampleID	*Analyte*	*Lab Qual*	*Result*	*Reporting Limit*	*RL Type*	*Units*	*Flag*
SL-611-SA8-TR-0.5	BENZO(A)ANTHRACENE	J	0.85	1.8	PQL	ug/Kg	
	BENZO(A)PYRENE	J	0.72	1.8	PQL	ug/Kg	
	BENZO(G,H,I)PERYLENE	J	1.3	1.8	PQL	ug/Kg	
	BIS(2-ETHYLHEXYL)PHTHALATE	J	11	19	PQL	ug/Kg	
	FLUORANTHENE	J	1.5	1.8	PQL	ug/Kg	J (all detects)
	INDENO(1,2,3-CD)PYRENE	J	0.90	1.8	PQL	ug/Kg	
	NAPHTHALENE	J	1.0	1.8	PQL	ug/Kg	
	PHENANTHRENE	J	1.3	1.8	PQL	ug/Kg	
	PYRENE	J	1.3	1.8	PQL	ug/Kg	

LDC #: 32030B4

VALIDATION COMPLETENESS WORKSHEET

Date: 06/20/14

SDG #: PH189

ADR

Page: 1 of 1

Laboratory: Eurofins Lancaster Laboratories

7471B

Reviewer: SD

2nd Reviewer: G

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: 05/20/14
II.	ICP/MS Tune	—	
III.	Calibration	N	
IV.	Blanks	SW	
V.	ICP Interference Check Sample (ICS) Analysis	A	
VI.	Matrix Spike Analysis	N	SDG: PH185 (T,S) MS/D
VII.	Duplicate Sample Analysis	N	SDG: PH185 (A)a
VIII.	Laboratory Control Samples (LCS)	N	
IX.	Internal Standard (ICP-MS)	N	
X.	Furnace Atomic Absorption QC	N	
XI.	ICP Serial Dilution	SW	(PH185)
XII.	Sample Result Verification	N	
XIII.	Overall Assessment of Data	N	
XIV.	Field Duplicates	N	
XV	Field Blanks	SW	EB= EB3-052214 (SDG: PH195), 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-611-SA8-TR-0.5	11		21		31	
2	SL-611-SA8-TR-5.0	12		22		32	
3	SL-611-SA8-TR-10.0	13		23		33	
4	SL-570-SA6-TR-6.0	14		24		34	
5	SL-570-SA6-TR-2.0	15		25		35	
6	SL-570-SA6-TR-0.5	16		26		36	
7	SL-569-SA6-TR-2.5	17		27		37	
8	SL-569-SA6-TR-0.5	18		28		38	
9		19		29		39	
10		20		30		40	

Notes: _____

LDC #: 32030B4

VALIDATION FINDINGS WORKSHEET
Sample Specific Element Reference

Reviewer: JD
2nd reviewer: _____

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
Analysis Method		
ICP	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
ICP-MS	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

Comments: Mercury by CVAA if performed

LDC #: 32030B4

VALIDATION FINDINGS WORKSHEET
PB/ICB/CCB QUALIFIED SAMPLES

Reviewer: SD
2nd Reviewer: [illegible]

METHOD: Trace metals (EPA SW 864 Method 6010B/6020/7000) Soil preparation factor applied: 100
Sample Concentration units, unless otherwise noted: _____ Associated Samples: 1-7

					Sample Identification										
Analyte	Maximum PB[a] (mg/Kg)	Maximum PB[a] (ug/l)	Maximum ICB/CCB[a] (ug/l)	Action Level (mg /kg)	2										
As		~~4.4~~	4.4	2.2	1.96										

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 #: 32030B4

VALIDATION FINDINGS WORKSHEET
Field Blanks

Reviewer: JP
2nd Reviewer: Or

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

Blank units: mg/L **Associated sample units:** mg/kg
Sampling date: 05/22/14 Soil factor applied 100
Field blank type: (circle one) Field Blank / Rinsate / Other: EB Associated Samples: All (Reason: F)

Analyte	Blank ID	Sample Identification										
	EB3-052214	Action Limit (mg/kg)	4	5	6	7	8					
Ca	0.150	75										
Mn	0.00090	0.45										
Zr	0.0108	5.4	3.41	3.15	2.53	2.75	1.89					
Sr	0.00046	0.23										

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 #: 32030B4

VALIDATION FINDINGS WORKSHEET
Field Blanks

Reviewer: SD
2nd Reviewer: CL

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

Blank units: mg/L **Associated sample units:** mg/kg
Sampling date: 05/21/14 Soil factor applied 100
Field blank type: (circle one) Field Blank / Rinsate / Other: FB Associated Samples: All (Reason F)

Analyte	Blank ID	Sample Identification										
	FB-052114	Action Limit (mg/kg)	4	5	6	7	8					
Zr	0.0110	5.5	3.41	3.15	2.53	2.75	1.89					

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 9
SERIAL DILUTIONS
SDG No.: PH189
Matrix: SOIL Level (low/med): LOW

Background Lab Sample ID: *70316BKG Serial Dilution Lab Sample ID: *70316L
Batch ID(s): P14337A
Concentration Units: UG/L

Analyte	Mass	Initial Sample Result (I)	C	Serial Dilution Result (S)	C	% Diff.	Q	M
Aluminum		256409.9800		270144.9500		5		P
Antimony		7.4000	U	37.0000	U			P
Arsenic		25.7200	B	42.9000	B	67		P
Barium		1080.8400		1146.4000		6		P
Beryllium		8.8200	B	8.7000	B	1		P
Boron		111.6000		149.0500	B	34		P
Cadmium		0.7600	U	3.8000	U			P
Calcium		159173.4700		166020.4500		4		P
Chromium		312.4000		327.9500		5		P
Cobalt		61.8500		67.1000		8		P
Copper		168.7200		166.9000		1		P
Iron		140641.5800		147083.6000		5		P
Lead		115.7800		122.2000	B	6		P
Lithium		230.7900		234.9500		2		P
Magnesium		62536.3100		64817.3500		4		P
Manganese		2306.5000		2416.7500		5		P
Molybdenum		1.7000	U	9.0000	B	100		P
Nickel		150.5100		169.8000		13	E	P
Phosphorus		2117.2200		2147.1500		1		P
Potassium		24132.0800		24560.4500		2		P
Selenium	78	0.5000	U	2.5000	U			MS
Silver	107	0.2189	B	0.6500	U	100		MS
Sodium		1435.5200		1496.2500	B	4		P
Strontium	88	210.6000		211.6000		0		MS
Thallium	203	1.3950		1.1860	B	15		MS
Tin		29.5000	B	33.0000	B	12		P
Titanium		9025.5500		9004.5500		0		P
Vanadium		544.0400		561.7500		3		P
Zinc		567.8800		580.9000		2		P
Zirconium		53.2700		54.5000	B	2		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.

5/05/A

METHODS:
P = ICP Atomic Emission Spectrometer
MS = ICP Mass Spectrometry

CONCENTRATION QUALIFIERS:
U= Below MDL
B= Below LOQ
FLAGS:
E = Matrix Effects exist as proven by Serial Dilution or Spiked Dilution

Data Validation Report
Santa Susana Field Laboratory

Go Backs, Subgroup Trench

SDG: PH195

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

July 22, 2014

INTRODUCTION

This Data Validation Report (DVR) presents Level III data validation results for samples collected on May 22, 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 utilizing Selective Ion Monitoring (SIM)
Polychlorinated Biphenyls (PCBs) by EPA SW 846 Method 8082A
Metals by EPA SW 846 Method 6010C, 6020A, and 7470A 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 duplicates (DUP), 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 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, 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 metals and dioxins and dibenzofurans. The 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 cobalt. The associated sample results were qualified as detected estimated (J). 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 several LCS/LCSD pairs for VOCs and SVOCs. 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 PH195	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, PCBs, metals, TPH as gasoline, TPH as extractables, and dioxins and dibenzofurans. All RPDs were within QC limits with the exception of metals and dioxins and dibenzofurans. In these duplicate pairs, the associated sample results were qualified as detected estimated (J). 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.

One equipment blank was collected and analyzed for VOCs, SVOCs, PCBs, metals, TPH as gasoline, TPH as extractables, 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, 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
22-May-2014	TB3-052214	7475533	TB	5030B	8015M	III
22-May-2014	SL-730-SA5A-TR-0.5	7475534	N	3050B	6010C	III
22-May-2014	SL-730-SA5A-TR-0.5	7475534	N	3050B	6020A	III
22-May-2014	SL-730-SA5A-TR-0.5	7475534	N	3546	8015M	III
22-May-2014	SL-730-SA5A-TR-0.5	7475534	N	3546	8082A	III
22-May-2014	SL-730-SA5A-TR-0.5	7475534	N	3546	8270D SIM	III
22-May-2014	SL-730-SA5A-TR-0.5	7475534	N	METHOD	1613B	III
22-May-2014	SL-730-SA5A-TR-0.5	7475534	N	METHOD	7471B	III
22-May-2014	SL-730-SA5A-TR-6.0	7475535	N	3050B	6010C	III
22-May-2014	SL-730-SA5A-TR-6.0	7475535	N	3050B	6020A	III
22-May-2014	SL-730-SA5A-TR-6.0	7475535	N	3546	8015M	III
22-May-2014	SL-730-SA5A-TR-6.0	7475535	N	3546	8082A	III
22-May-2014	SL-730-SA5A-TR-6.0	7475535	N	3546	8270D SIM	III
22-May-2014	SL-730-SA5A-TR-6.0	7475535	N	5035A	8015M	III
22-May-2014	SL-730-SA5A-TR-6.0	7475535	N	METHOD	1613B	III
22-May-2014	SL-730-SA5A-TR-6.0	7475535	N	METHOD	7471B	III
22-May-2014	SL-587-SA5A-TR-0.5	7475536	N	3050B	6010C	III
22-May-2014	SL-587-SA5A-TR-0.5	7475536	N	3050B	6020A	III
22-May-2014	SL-587-SA5A-TR-0.5	7475536	N	3546	8015M	III
22-May-2014	SL-587-SA5A-TR-0.5	7475536	N	3546	8082A	III
22-May-2014	SL-587-SA5A-TR-0.5	7475536	N	3546	8270D SIM	III
22-May-2014	SL-587-SA5A-TR-0.5	7475536	N	METHOD	1613B	III
22-May-2014	SL-587-SA5A-TR-0.5	7475536	N	METHOD	7471B	III
22-May-2014	SL-587-SA5A-TR-5.5	7475537	N	3050B	6010C	III
22-May-2014	SL-587-SA5A-TR-5.5	7475537	N	3050B	6020A	III
22-May-2014	SL-587-SA5A-TR-5.5	7475537	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
22-May-2014	SL-587-SA5A-TR-5.5	7475537	N	3546	8082A	III
22-May-2014	SL-587-SA5A-TR-5.5	7475537	N	3546	8270D SIM	III
22-May-2014	SL-587-SA5A-TR-5.5	7475537	N	5035A	8015M	III
22-May-2014	SL-587-SA5A-TR-5.5	7475537	N	METHOD	1613B	III
22-May-2014	SL-587-SA5A-TR-5.5	7475537	N	METHOD	7471B	III
22-May-2014	SL-587-SA5A-TR-5.5MS	7475538	MS	3050B	6010C	III
22-May-2014	SL-587-SA5A-TR-5.5MS	7475538	MS	3050B	6020A	III
22-May-2014	SL-587-SA5A-TR-5.5MS	7475538	MS	3546	8015M	III
22-May-2014	SL-587-SA5A-TR-5.5MS	7475538	MS	3546	8082A	III
22-May-2014	SL-587-SA5A-TR-5.5MS	7475538	MS	3546	8270D SIM	III
22-May-2014	SL-587-SA5A-TR-5.5MS	7475538	MS	5035A	8015M	III
22-May-2014	SL-587-SA5A-TR-5.5MS	7475538	MS	METHOD	1613B	III
22-May-2014	SL-587-SA5A-TR-5.5MS	7475538	MS	METHOD	7471B	III
22-May-2014	SL-587-SA5A-TR-5.5MSD	7475539	MSD	3050B	6010C	III
22-May-2014	SL-587-SA5A-TR-5.5MSD	7475539	MSD	3050B	6020A	III
22-May-2014	SL-587-SA5A-TR-5.5MSD	7475539	MSD	3546	8015M	III
22-May-2014	SL-587-SA5A-TR-5.5MSD	7475539	MSD	3546	8082A	III
22-May-2014	SL-587-SA5A-TR-5.5MSD	7475539	MSD	3546	8270D SIM	III
22-May-2014	SL-587-SA5A-TR-5.5MSD	7475539	MSD	5035A	8015M	III
22-May-2014	SL-587-SA5A-TR-5.5MSD	7475539	MSD	METHOD	1613B	III
22-May-2014	SL-587-SA5A-TR-5.5MSD	7475539	MSD	METHOD	7471B	III
22-May-2014	SL-587-SA5A-TR-5.5DUP	7475540	DUP	3050B	6010C	III
22-May-2014	SL-587-SA5A-TR-5.5DUP	7475540	DUP	3050B	6020A	III
22-May-2014	SL-587-SA5A-TR-5.5DUP	7475540	DUP	METHOD	7471B	III
22-May-2014	SL-887-SA5A-TR-5.5	7475541	FD	3050B	6010C	III
22-May-2014	SL-887-SA5A-TR-5.5	7475541	FD	3050B	6020A	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
22-May-2014	SL-887-SA5A-TR-5.5	7475541	FD	3546	8015M	III
22-May-2014	SL-887-SA5A-TR-5.5	7475541	FD	3546	8082A	III
22-May-2014	SL-887-SA5A-TR-5.5	7475541	FD	3546	8270D SIM	III
22-May-2014	SL-887-SA5A-TR-5.5	7475541	FD	5035A	8015M	III
22-May-2014	SL-887-SA5A-TR-5.5	7475541	FD	METHOD	1613B	III
22-May-2014	SL-887-SA5A-TR-5.5	7475541	FD	METHOD	7471B	III
22-May-2014	EB3-052214	7475542	EB	3005A	6010C	III
22-May-2014	EB3-052214	7475542	EB	3510C	8015M	III
22-May-2014	EB3-052214	7475542	EB	3510C	8082A	III
22-May-2014	EB3-052214	7475542	EB	3510C	8270D SIM	III
22-May-2014	EB3-052214	7475542	EB	5030B	8015M	III
22-May-2014	EB3-052214	7475542	EB	5030B	8260B	III
22-May-2014	EB3-052214	7475542	EB	M3010A	6020A	III
22-May-2014	EB3-052214	7475542	EB	METHOD	1613B	III
22-May-2014	EB3-052214	7475542	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: PH195 **Laboratory: LL**

EDD Filename: PH195_v2 **eQAPP Name: CDM_SSFL_140617_Lan**

Method Category: METALS

Method: 6010C **Matrix: AQ**

Sample ID: EB3-052214 **Collected:** 5/22/2014 3:45:00 **Analysis Type:** RES **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
CALCIUM	0.150	J	0.0334	MDL	0.400	PQL	mg/L	J	Z
Zirconium	0.0108	J	0.0084	MDL	0.100	PQL	mg/L	U	B
MANGANESE	0.00090	J	0.00083	MDL	0.0100	PQL	mg/L	J	Z

Method Category: METALS

Method: 6010C **Matrix: SO**

Sample ID: SL-587-SA5A-TR-0.5 **Collected:** 5/22/2014 12:14:00 **Analysis Type:** REA **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
ALUMINUM	16700		7.23	MDL	40.1	PQL	mg/Kg	J	Q
ARSENIC	3.34	J	0.702	MDL	4.01	PQL	mg/Kg	J	Z
BERYLLIUM	0.725	J	0.0672	MDL	1.00	PQL	mg/Kg	J	Z
BORON	6.50	J	0.842	MDL	10.0	PQL	mg/Kg	U	B
CADMIUM	0.264	J	0.0762	MDL	1.00	PQL	mg/Kg	J	Z
CALCIUM	2540		3.35	MDL	20.1	PQL	mg/Kg	J	Q
COBALT	4.96		0.0993	MDL	1.00	PQL	mg/Kg	J	E
IRON	22200		3.63	MDL	40.1	PQL	mg/Kg	J	Q
MAGNESIUM	4120		1.67	MDL	10.0	PQL	mg/Kg	J	Q
MANGANESE	298		0.0832	MDL	1.00	PQL	mg/Kg	J	Q
MOLYBDENUM	0.347	J	0.171	MDL	2.01	PQL	mg/Kg	J	Z
TIN	2.85	J	0.221	MDL	10.0	PQL	mg/Kg	U	B
ZINC	210		0.201	MDL	4.01	PQL	mg/Kg	J	E
Zirconium	3.89	J	0.842	MDL	5.01	PQL	mg/Kg	U	F, F

Sample ID: SL-587-SA5A-TR-0.5 **Collected:** 5/22/2014 12:14:00 **Analysis Type:** REA2 **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
TITANIUM	1190		0.171	MDL	1.00	PQL	mg/Kg	J	Q

Sample ID: SL-587-SA5A-TR-5.5 **Collected:** 5/22/2014 1:03:00 **Analysis Type:** REA **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
ALUMINUM	19600		7.79	MDL	43.2	PQL	mg/Kg	J	Q
BERYLLIUM	0.836	J	0.0724	MDL	1.08	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: PH195 **Laboratory: LL**

EDD Filename: PH195_v2 **eQAPP Name: CDM_SSFL_140617_Lan**

Method Category: METALS

Method: 6010C **Matrix: SO**

Sample ID: **SL-587-SA5A-TR-5.5** ***Collected:*** **5/22/2014 1:03:00** ***Analysis Type:*** **REA** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
BORON	6.66	J	0.907	MDL	10.8	PQL	mg/Kg	U	B
CADMIUM	0.193	J	0.0821	MDL	1.08	PQL	mg/Kg	J	Z
CALCIUM	2560		3.61	MDL	21.6	PQL	mg/Kg	J	Q
COBALT	4.69		0.107	MDL	1.08	PQL	mg/Kg	J	E
IRON	22900		3.91	MDL	43.2	PQL	mg/Kg	J	Q
MAGNESIUM	4210		1.80	MDL	10.8	PQL	mg/Kg	J	Q
MANGANESE	261		0.0896	MDL	1.08	PQL	mg/Kg	J	Q
MOLYBDENUM	0.599	J	0.184	MDL	2.16	PQL	mg/Kg	J	Z
TIN	3.03	J	0.238	MDL	10.8	PQL	mg/Kg	U	B
ZINC	45.8		0.216	MDL	4.32	PQL	mg/Kg	J	E
Zirconium	4.42	J	0.907	MDL	5.40	PQL	mg/Kg	U	F, F

Sample ID: **SL-587-SA5A-TR-5.5** ***Collected:*** **5/22/2014 1:03:00** ***Analysis Type:*** **REA2** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
TITANIUM	1140		0.184	MDL	1.08	PQL	mg/Kg	J	Q

Sample ID: **SL-730-SA5A-TR-0.5** ***Collected:*** **5/22/2014 9:56:00** ***Analysis Type:*** **REA** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
ALUMINUM	13700		7.24	MDL	40.2	PQL	mg/Kg	J	Q
ARSENIC	3.09	J	0.703	MDL	4.02	PQL	mg/Kg	J	Z
BERYLLIUM	0.628	J	0.0673	MDL	1.00	PQL	mg/Kg	J	Z
BORON	5.72	J	0.844	MDL	10.0	PQL	mg/Kg	U	B
CADMIUM	0.697	J	0.0763	MDL	1.00	PQL	mg/Kg	J	Z
CALCIUM	2600		3.36	MDL	20.1	PQL	mg/Kg	J	Q
COBALT	4.73		0.0994	MDL	1.00	PQL	mg/Kg	J	E
IRON	18700		3.64	MDL	40.2	PQL	mg/Kg	J	Q
MAGNESIUM	4100		1.68	MDL	10.0	PQL	mg/Kg	J	Q
MANGANESE	295		0.0834	MDL	1.00	PQL	mg/Kg	J	Q
MOLYBDENUM	0.455	J	0.171	MDL	2.01	PQL	mg/Kg	J	Z
SODIUM	83.0	J	16.8	MDL	100	PQL	mg/Kg	J	Z
TIN	2.89	J	0.221	MDL	10.0	PQL	mg/Kg	U	B
ZINC	123		0.201	MDL	4.02	PQL	mg/Kg	J	E
Zirconium	3.39	J	0.844	MDL	5.02	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: PH195 **Laboratory: LL**

EDD Filename: PH195_v2 **eQAPP Name: CDM_SSFL_140617_Lan**

Method Category: **METALS**

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

Sample ID: **SL-730-SA5A-TR-0.5** ***Collected:*** **5/22/2014 9:56:00** ***Analysis Type:*** **REA2** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
TITANIUM	1130		0.171	MDL	1.00	PQL	mg/Kg	J	Q

Sample ID: **SL-730-SA5A-TR-6.0** ***Collected:*** **5/22/2014 10:09:00** ***Analysis Type:*** **REA** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
ALUMINUM	21500		7.73	MDL	42.9	PQL	mg/Kg	J	Q
BERYLLIUM	1.03	J	0.0719	MDL	1.07	PQL	mg/Kg	J	Z
BORON	5.74	J	0.901	MDL	10.7	PQL	mg/Kg	U	B
CALCIUM	2390		3.58	MDL	21.5	PQL	mg/Kg	J	Q
COBALT	5.57		0.106	MDL	1.07	PQL	mg/Kg	J	E
IRON	25000		3.88	MDL	42.9	PQL	mg/Kg	J	Q
MAGNESIUM	4940		1.79	MDL	10.7	PQL	mg/Kg	J	Q
MANGANESE	195		0.0890	MDL	1.07	PQL	mg/Kg	J	Q
MOLYBDENUM	0.516	J	0.182	MDL	2.15	PQL	mg/Kg	J	Z
TIN	3.29	J	0.236	MDL	10.7	PQL	mg/Kg	U	B
ZINC	42.3		0.215	MDL	4.29	PQL	mg/Kg	J	E
Zirconium	4.65	J	0.901	MDL	5.36	PQL	mg/Kg	U	F, F

Sample ID: **SL-730-SA5A-TR-6.0** ***Collected:*** **5/22/2014 10:09:00** ***Analysis Type:*** **REA2** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
TITANIUM	1410		0.182	MDL	1.07	PQL	mg/Kg	J	Q

Sample ID: **SL-887-SA5A-TR-5.5** ***Collected:*** **5/22/2014 1:08:00** ***Analysis Type:*** **REA** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
ALUMINUM	22000		7.87	MDL	43.6	PQL	mg/Kg	J	Q
BERYLLIUM	0.948	J	0.0731	MDL	1.09	PQL	mg/Kg	J	Z
BORON	6.87	J	0.916	MDL	10.9	PQL	mg/Kg	U	B
CADMIUM	0.262	J	0.0829	MDL	1.09	PQL	mg/Kg	J	Z
CALCIUM	2810		3.64	MDL	21.8	PQL	mg/Kg	J	Q
COBALT	4.60		0.108	MDL	1.09	PQL	mg/Kg	J	E
IRON	23500		3.95	MDL	43.6	PQL	mg/Kg	J	Q
MAGNESIUM	4300		1.82	MDL	10.9	PQL	mg/Kg	J	Q
MANGANESE	228		0.0905	MDL	1.09	PQL	mg/Kg	J	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: PH195 **Laboratory: LL**

EDD Filename: PH195_v2 **eQAPP Name: CDM_SSFL_140617_Lan**

Method Category: METALS

Method: 6010C **Matrix: SO**

Sample ID: **SL-887-SA5A-TR-5.5** *Collected:* **5/22/2014 1:08:00** *Analysis Type:* **REA** *Dilution:* **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
MOLYBDENUM	0.472	J	0.185	MDL	2.18	PQL	mg/Kg	J	Z
TIN	3.08	J	0.240	MDL	10.9	PQL	mg/Kg	U	B
ZINC	46.4		0.218	MDL	4.36	PQL	mg/Kg	J	E
Zirconium	4.28	J	0.916	MDL	5.45	PQL	mg/Kg	U	F, F

Sample ID: **SL-887-SA5A-TR-5.5** *Collected:* **5/22/2014 1:08:00** *Analysis Type:* **REA2** *Dilution:* **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
TITANIUM	1180		0.185	MDL	1.09	PQL	mg/Kg	J	Q

Method Category: METALS

Method: 6020A **Matrix: AQ**

Sample ID: **EB3-052214** *Collected:* **5/22/2014 3:45:00** *Analysis Type:* **RES** *Dilution:* **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
STRONTIUM	0.00046	J	0.00034	MDL	0.0020	PQL	mg/L	J	Z

Method Category: METALS

Method: 6020A **Matrix: SO**

Sample ID: **SL-587-SA5A-TR-0.5** *Collected:* **5/22/2014 12:14:00** *Analysis Type:* **REA2** *Dilution:* **2**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
SILVER	0.0415	J	0.0261	MDL	0.201	PQL	mg/Kg	J	Z

Sample ID: **SL-587-SA5A-TR-0.5** *Collected:* **5/22/2014 12:14:00** *Analysis Type:* **REA3** *Dilution:* **2**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
SELENIUM	0.219	J	0.100	MDL	0.401	PQL	mg/Kg	J	Z

Sample ID: **SL-587-SA5A-TR-5.5** *Collected:* **5/22/2014 1:03:00** *Analysis Type:* **REA2** *Dilution:* **2**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
SILVER	0.0419	J	0.0281	MDL	0.216	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: PH195 **Laboratory: LL**

EDD Filename: PH195_v2 **eQAPP Name: CDM_SSFL_140617_Lan**

Method Category: METALS

Method: 6020A **Matrix: SO**

Sample ID: SL-587-SA5A-TR-5.5 **Collected: 5/22/2014 1:03:00** **Analysis Type: REA3** **Dilution: 2**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
SELENIUM	0.209	J	0.108	MDL	0.432	PQL	mg/Kg	J	Z

Sample ID: SL-730-SA5A-TR-0.5 **Collected: 5/22/2014 9:56:00** **Analysis Type: REA3** **Dilution: 2**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
SELENIUM	0.237	J	0.100	MDL	0.402	PQL	mg/Kg	J	Z

Sample ID: SL-730-SA5A-TR-6.0 **Collected: 5/22/2014 10:09:00** **Analysis Type: REA2** **Dilution: 2**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
SILVER	0.0418	J	0.0279	MDL	0.215	PQL	mg/Kg	J	Z

Sample ID: SL-730-SA5A-TR-6.0 **Collected: 5/22/2014 10:09:00** **Analysis Type: REA3** **Dilution: 2**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
SELENIUM	0.313	J	0.107	MDL	0.429	PQL	mg/Kg	J	Z

Sample ID: SL-887-SA5A-TR-5.5 **Collected: 5/22/2014 1:08:00** **Analysis Type: REA2** **Dilution: 2**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
SILVER	0.0434	J	0.0284	MDL	0.218	PQL	mg/Kg	J	Z

Sample ID: SL-887-SA5A-TR-5.5 **Collected: 5/22/2014 1:08:00** **Analysis Type: REA3** **Dilution: 2**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
SELENIUM	0.238	J	0.109	MDL	0.436	PQL	mg/Kg	J	Z

Method Category: METALS

Method: 7471B **Matrix: SO**

Sample ID: SL-587-SA5A-TR-0.5 **Collected: 5/22/2014 12:14:00** **Analysis Type: RES** **Dilution: 1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
MERCURY	0.0161	J	0.0101	MDL	0.0169	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: PH195 **Laboratory: LL**

EDD Filename: PH195_v2 **eQAPP Name: CDM_SSFL_140617_Lan**

Method Category: METALS

Method: 7471B **Matrix: SO**

Sample ID: **SL-587-SA5A-TR-5.5** *Collected:* **5/22/2014 1:03:00** *Analysis Type:* **RES** *Dilution:* **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
MERCURY	0.0123	J	0.0109	MDL	0.0182	PQL	mg/Kg	J	Z, FD

Sample ID: **SL-887-SA5A-TR-5.5** *Collected:* **5/22/2014 1:08:00** *Analysis Type:* **RES** *Dilution:* **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
MERCURY	0.0230		0.0108	MDL	0.0180	PQL	mg/Kg	J	FD

Method Category: SVOA

Method: 1613B **Matrix: AQ**

Sample ID: **EB3-052214** *Collected:* **5/22/2014 3:45:00** *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	0.865	JBQ	0.199	MDL	9.56	PQL	pg/L	U	B
1,2,3,4,6,7,8-HPCDF	0.177	JBQ	0.0723	MDL	9.56	PQL	pg/L	U	B
1,2,3,4,7,8,9-HPCDF	0.106	JBQ	0.0909	MDL	9.56	PQL	pg/L	U	B
1,2,3,7,8-PECDF	0.289	JBQ	0.127	MDL	9.56	PQL	pg/L	U	B
2,3,4,6,7,8-HXCDF	0.192	JBQ	0.101	MDL	9.56	PQL	pg/L	U	B
2,3,7,8-TCDF	0.203	JQ	0.178	MDL	1.91	PQL	pg/L	J	Z
OCDD	9.68	JBQ	0.445	MDL	19.1	PQL	pg/L	U	B
OCDF	1.11	JBQ	0.269	MDL	19.1	PQL	pg/L	U	B

Method Category: SVOA

Method: 1613B **Matrix: SO**

Sample ID: **SL-587-SA5A-TR-0.5** *Collected:* **5/22/2014 12:14:00** *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-HPCDF	1.03	JB	0.0276	MDL	5.02	PQL	ng/Kg	J	Z
1,2,3,4,7,8,9-HPCDF	0.230	JB	0.0338	MDL	5.02	PQL	ng/Kg	U	B
1,2,3,4,7,8-HxCDD	0.105	JBQ	0.0432	MDL	5.02	PQL	ng/Kg	U	B
1,2,3,4,7,8-HXCDF	0.147	JB	0.0350	MDL	5.02	PQL	ng/Kg	U	B
1,2,3,6,7,8-HXCDD	0.431	JB	0.0445	MDL	5.02	PQL	ng/Kg	J	Z
1,2,3,6,7,8-HXCDF	0.198	JB	0.0332	MDL	5.02	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: PH195 **Laboratory: LL**

EDD Filename: PH195_v2 **eQAPP Name: CDM_SSFL_140617_Lan**

Method Category: SVOA

Method: 1613B **Matrix: SO**

Sample ID: SL-587-SA5A-TR-0.5 **Collected: 5/22/2014 12:14:00** **Analysis Type: RES** **Dilution: 1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
1,2,3,7,8,9-HXCDD	0.488	JBQ	0.0423	MDL	5.02	PQL	ng/Kg	J	Z
1,2,3,7,8,9-HXCDF	0.311	JBQ	0.0356	MDL	5.02	PQL	ng/Kg	U	B
1,2,3,7,8-PECDD	0.229	JB	0.0449	MDL	5.02	PQL	ng/Kg	U	B
1,2,3,7,8-PECDF	0.350	JB	0.0284	MDL	5.02	PQL	ng/Kg	U	B
2,3,4,6,7,8-HXCDF	0.198	JB	0.0343	MDL	5.02	PQL	ng/Kg	U	B
2,3,4,7,8-PECDF	0.330	JB	0.0257	MDL	5.02	PQL	ng/Kg	U	B
2,3,7,8-TCDD	0.0660	JBQ	0.0590	MDL	1.00	PQL	ng/Kg	U	B
2,3,7,8-TCDF	0.0843	JBQ	0.0591	MDL	1.00	PQL	ng/Kg	U	B
OCDF	2.24	JB	0.0572	MDL	10.0	PQL	ng/Kg	J	Z

Sample ID: SL-587-SA5A-TR-5.5 **Collected: 5/22/2014 1:03:00** **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	17.4	B	0.0659	MDL	5.40	PQL	ng/Kg	J	FD
1,2,3,4,6,7,8-HPCDF	3.75	JB	0.0184	MDL	5.40	PQL	ng/Kg	J	Z
1,2,3,4,7,8,9-HPCDF	0.592	JB	0.0376	MDL	5.40	PQL	ng/Kg	J	Z
1,2,3,4,7,8-HxCDD	0.0783	JBQ	0.0369	MDL	5.40	PQL	ng/Kg	U	B
1,2,3,4,7,8-HXCDF	0.397	JBQ	0.0462	MDL	5.40	PQL	ng/Kg	J	Z, FD
1,2,3,6,7,8-HXCDD	0.420	JBQ	0.0388	MDL	5.40	PQL	ng/Kg	J	Z
1,2,3,6,7,8-HXCDF	0.255	JB	0.0374	MDL	5.40	PQL	ng/Kg	J	Z
1,2,3,7,8,9-HXCDD	0.203	JBQ	0.0360	MDL	5.40	PQL	ng/Kg	U	B
1,2,3,7,8,9-HXCDF	0.298	JB	0.0499	MDL	5.40	PQL	ng/Kg	U	B
1,2,3,7,8-PECDD	0.0362	JB	0.0296	MDL	5.40	PQL	ng/Kg	U	B
1,2,3,7,8-PECDF	0.179	JBQ	0.0189	MDL	5.40	PQL	ng/Kg	U	B
2,3,4,6,7,8-HXCDF	0.331	JB	0.0427	MDL	5.40	PQL	ng/Kg	J	Z
2,3,4,7,8-PECDF	0.0773	JBQ	0.0200	MDL	5.40	PQL	ng/Kg	U	B
OCDD	301	B	0.0490	MDL	10.8	PQL	ng/Kg	J	Q, FD
OCDF	8.04	JB	0.0492	MDL	10.8	PQL	ng/Kg	J	Z

Sample ID: SL-730-SA5A-TR-0.5 **Collected: 5/22/2014 9:56:00** **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	2.29	JB	0.0430	MDL	5.08	PQL	ng/Kg	J	Z
1,2,3,4,7,8-HxCDD	1.21	JB	0.0422	MDL	5.08	PQL	ng/Kg	J	Z
1,2,3,4,7,8-HXCDF	1.34	JB	0.0521	MDL	5.08	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: PH195 **Laboratory: LL**

EDD Filename: PH195_v2 **eQAPP Name: CDM_SSFL_140617_Lan**

Method Category: SVOA

Method: 1613B **Matrix: SO**

Sample ID: SL-730-SA5A-TR-0.5 **Collected: 5/22/2014 9:56:00** **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	3.68	JB	0.0435	MDL	5.08	PQL	ng/Kg	J	Z
1,2,3,6,7,8-HXCDF	1.55	JB	0.0467	MDL	5.08	PQL	ng/Kg	J	Z
1,2,3,7,8,9-HXCDD	2.33	JB	0.0397	MDL	5.08	PQL	ng/Kg	J	Z
1,2,3,7,8,9-HXCDF	0.692	JB	0.0551	MDL	5.08	PQL	ng/Kg	J	Z
1,2,3,7,8-PECDD	0.885	JB	0.0472	MDL	5.08	PQL	ng/Kg	J	Z
1,2,3,7,8-PECDF	1.95	JBQ	0.0412	MDL	5.08	PQL	ng/Kg	J	Z
2,3,4,6,7,8-HXCDF	1.63	JB	0.0499	MDL	5.08	PQL	ng/Kg	J	Z
2,3,4,7,8-PECDF	1.37	JB	0.0408	MDL	5.08	PQL	ng/Kg	J	Z
2,3,7,8-TCDF	0.863	JB	0.100	MDL	1.02	PQL	ng/Kg	J	Z

Sample ID: SL-730-SA5A-TR-6.0 **Collected: 5/22/2014 10:09:00** **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	0.538	JB	0.0268	MDL	5.35	PQL	ng/Kg	J	Z
1,2,3,4,6,7,8-HPCDF	0.178	JBQ	0.0110	MDL	5.35	PQL	ng/Kg	U	B
1,2,3,4,7,8,9-HPCDF	0.0847	JBQ	0.0213	MDL	5.35	PQL	ng/Kg	U	B
1,2,3,4,7,8-HxCDD	0.0855	JBQ	0.0236	MDL	5.35	PQL	ng/Kg	U	B
1,2,3,4,7,8-HXCDF	0.0382	JBQ	0.0238	MDL	5.35	PQL	ng/Kg	U	B
1,2,3,6,7,8-HXCDD	0.0705	JBQ	0.0236	MDL	5.35	PQL	ng/Kg	U	B
1,2,3,6,7,8-HXCDF	0.0850	JBQ	0.0194	MDL	5.35	PQL	ng/Kg	U	B
1,2,3,7,8,9-HXCDD	0.0816	JBQ	0.0223	MDL	5.35	PQL	ng/Kg	U	B
1,2,3,7,8,9-HXCDF	0.0950	JBQ	0.0280	MDL	5.35	PQL	ng/Kg	U	B
1,2,3,7,8-PECDD	0.0399	JBQ	0.0317	MDL	5.35	PQL	ng/Kg	U	B
1,2,3,7,8-PECDF	0.108	JBQ	0.0167	MDL	5.35	PQL	ng/Kg	U	B
2,3,4,6,7,8-HXCDF	0.0681	JBQ	0.0216	MDL	5.35	PQL	ng/Kg	U	B
2,3,4,7,8-PECDF	0.0459	JBQ	0.0172	MDL	5.35	PQL	ng/Kg	U	B
2,3,7,8-TCDD	0.0781	JBQ	0.0515	MDL	1.07	PQL	ng/Kg	U	B
OCDD	4.80	JB	0.0201	MDL	10.7	PQL	ng/Kg	J	Z
OCDF	0.573	JB	0.0324	MDL	10.7	PQL	ng/Kg	U	B

Sample ID: SL-887-SA5A-TR-5.5 **Collected: 5/22/2014 1:08:00** **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	10.3	B	0.0704	MDL	5.53	PQL	ng/Kg	J	FD
1,2,3,4,6,7,8-HPCDF	2.45	JB	0.0235	MDL	5.53	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: PH195 **Laboratory: LL**

EDD Filename: PH195_v2 **eQAPP Name: CDM_SSFL_140617_Lan**

Method Category: SVOA

Method: 1613B **Matrix: SO**

Sample ID: **SL-887-SA5A-TR-5.5** *Collected:* **5/22/2014 1:08:00** *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	0.400	JB	0.0479	MDL	5.53	PQL	ng/Kg	J	Z
1,2,3,4,7,8-HxCDD	0.0729	JBQ	0.0493	MDL	5.53	PQL	ng/Kg	U	B
1,2,3,4,7,8-HXCDF	0.197	JBQ	0.0466	MDL	5.53	PQL	ng/Kg	UJ	B, FD
1,2,3,6,7,8-HXCDD	0.341	JBQ	0.0522	MDL	5.53	PQL	ng/Kg	J	Z
1,2,3,6,7,8-HXCDF	0.249	JBQ	0.0405	MDL	5.53	PQL	ng/Kg	J	Z
1,2,3,7,8,9-HXCDD	0.245	JBQ	0.0493	MDL	5.53	PQL	ng/Kg	U	B
1,2,3,7,8,9-HXCDF	0.286	JB	0.0555	MDL	5.53	PQL	ng/Kg	U	B
1,2,3,7,8-PECDD	0.0544	JBQ	0.0476	MDL	5.53	PQL	ng/Kg	U	B
1,2,3,7,8-PECDF	0.198	JB	0.0272	MDL	5.53	PQL	ng/Kg	U	B
2,3,4,6,7,8-HXCDF	0.251	JB	0.0433	MDL	5.53	PQL	ng/Kg	U	B
2,3,4,7,8-PECDF	0.104	JB	0.0287	MDL	5.53	PQL	ng/Kg	U	B
OCDD	175	B	0.0807	MDL	11.1	PQL	ng/Kg	J	FD
OCDF	5.35	JB	0.107	MDL	11.1	PQL	ng/Kg	J	Z

Method Category: SVOA

Method: 8015M **Matrix: SO**

Sample ID: **SL-730-SA5A-TR-0.5** *Collected:* **5/22/2014 9:56:00** *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) SG	2.1	J	2.0	MDL	5.1	PQL	mg/Kg	J	Z

Method Category: SVOA

Method: 8082A **Matrix: SO**

Sample ID: **SL-587-SA5A-TR-0.5** *Collected:* **5/22/2014 12:14:00** *Analysis Type:* **RES** *Dilution:* **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
AROCLOR 1260	7.3	J	4.0	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: PH195 **Laboratory: LL**

EDD Filename: PH195_v2 **eQAPP Name: CDM_SSFL_140617_Lan**

Method Category: SVOA

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

Sample ID: **EB3-052214** *Collected:* **5/22/2014 3:45:00** *Analysis Type:* **RES-BASE/NEUTRAL** *Dilution:* **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
1-METHYLNAPHTHALENE	0.051	U	0.010	MDL	0.051	PQL	ug/L	UJ	L
BIS(2-ETHYLHEXYL)PHTHALATE	0.097	J	0.051	MDL	1.0	PQL	ug/L	UJ	L, E, B
Diethylphthalate	0.097	J	0.051	MDL	1.0	PQL	ug/L	J	Z
Di-n-butylphthalate	0.10	J	0.051	MDL	1.0	PQL	ug/L	J	Z

Method Category: SVOA

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

Sample ID: **SL-587-SA5A-TR-0.5** *Collected:* **5/22/2014 12:14:00** *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(A)ANTHRACENE	0.85	J	0.69	MDL	1.7	PQL	ug/Kg	J	Z
BENZO(A)PYRENE	0.77	J	0.69	MDL	1.7	PQL	ug/Kg	J	Z
BENZO(E)PYRENE	18	U	3.4	MDL	18	PQL	ug/Kg	UJ	L
DIBENZO(A,H)ANTHRACENE	0.75	J	0.69	MDL	1.7	PQL	ug/Kg	J	Z
FLUORANTHENE	0.70	J	0.69	MDL	1.7	PQL	ug/Kg	J	Z
INDENO(1,2,3-CD)PYRENE	0.77	J	0.69	MDL	1.7	PQL	ug/Kg	J	Z
PYRENE	0.99	J	0.69	MDL	1.7	PQL	ug/Kg	J	Z

Sample ID: **SL-587-SA5A-TR-5.5** *Collected:* **5/22/2014 1:03:00** *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	19	U	3.7	MDL	19	PQL	ug/Kg	UJ	L

Sample ID: **SL-730-SA5A-TR-0.5** *Collected:* **5/22/2014 9:56:00** *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	0.55	J	0.34	MDL	1.7	PQL	ug/Kg	J	Z
BENZO(A)PYRENE	1.0	J	0.68	MDL	1.7	PQL	ug/Kg	J	Z
BENZO(E)PYRENE	17	U	3.4	MDL	17	PQL	ug/Kg	UJ	L
BENZO(G,H,I)PERYLENE	1.4	J	0.68	MDL	1.7	PQL	ug/Kg	J	Z
BENZO(K)FLUORANTHENE	1.1	J	0.68	MDL	1.7	PQL	ug/Kg	J	Z
BIS(2-ETHYLHEXYL)PHTHALATE	16	J	6.1	MDL	18	PQL	ug/Kg	J	Z
Di-n-butylphthalate	6.2	J	6.1	MDL	18	PQL	ug/Kg	J	Z
INDENO(1,2,3-CD)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: PH195 **Laboratory: LL**

EDD Filename: PH195_v2 **eQAPP Name: CDM_SSFL_140617_Lan**

Method Category: SVOA

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

Sample ID: **SL-730-SA5A-TR-6.0** *Collected:* **5/22/2014 10:09:00** *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-887-SA5A-TR-5.5** *Collected:* **5/22/2014 1:08:00** *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	19	U	3.7	MDL	19	PQL	ug/Kg	UJ	L

Method Category: VOA

Method: 8260B **Matrix: AQ**

Sample ID: **EB3-052214** *Collected:* **5/22/2014 3:45:00** *Analysis Type:* **RES** *Dilution:* **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
Chlorotrifluoroethylene	5	U	2	MDL	5	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: PH195 **Laboratory: LL**

EDD Filename: PH195_v2 **eQAPP Name: CDM_SSFL_140617_Lan**

Reason Code Legend

Reason Code	*Description*
B	Method Blank Contamination
E	Laboratory Control Precision
E	Laboratory Duplicate Precision
E	Matrix Spike Precision
F	Equipment Blank Contamination
F	Field Blank Contamination
FD	Field Duplicate Precision
L	Laboratory Control Precision
L	Laboratory Control Spike Lower Estimation
L	Laboratory Control Spike Upper Estimation
Q	Laboratory Duplicate Precision
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

PH195

Method Blank Outlier Report

Lab Reporting Batch ID: PH195 **Laboratory: LL**

EDD Filename: PH195_v2 **eQAPP Name: CDM_SSFL_140617_Lan**

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

Method Blank Sample ID	Analysis Date	Analyte	Result	Associated Samples
BLK1480B370404	5/31/2014 4:04:00 AM	1,2,3,4,6,7,8-HPCDD	0.923 pg/L	EB3-052214
		1,2,3,4,6,7,8-HPCDF	0.283 pg/L	
		1,2,3,4,7,8,9-HPCDF	0.365 pg/L	
		1,2,3,4,7,8-HxCDD	0.213 pg/L	
		1,2,3,4,7,8-HXCDF	0.316 pg/L	
		1,2,3,6,7,8-HXCDD	0.251 pg/L	
		1,2,3,7,8,9-HXCDD	0.159 pg/L	
		1,2,3,7,8-PECDF	0.603 pg/L	
		2,3,4,6,7,8-HXCDF	0.178 pg/L	
		OCDD	7.17 pg/L	
		OCDF	0.452 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
EB3-052214(RES)	1,2,3,4,6,7,8-HPCDD	0.865 pg/L	0.865U pg/L
EB3-052214(RES)	1,2,3,4,6,7,8-HPCDF	0.177 pg/L	0.177U pg/L
EB3-052214(RES)	1,2,3,4,7,8,9-HPCDF	0.106 pg/L	0.106U pg/L
EB3-052214(RES)	1,2,3,7,8-PECDF	0.289 pg/L	0.289U pg/L
EB3-052214(RES)	2,3,4,6,7,8-HXCDF	0.192 pg/L	0.192U pg/L
EB3-052214(RES)	OCDD	9.68 pg/L	9.68U pg/L
EB3-052214(RES)	OCDF	1.11 pg/L	1.11U pg/L

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

Method Blank Sample ID	Analysis Date	Analyte	Result	Associated Samples
BLK1530B370625	6/5/2014 6:25:00 AM	1,2,3,4,6,7,8-HPCDD	0.0893 ng/Kg	SL-587-SA5A-TR-0.5
		1,2,3,4,6,7,8-HPCDF	0.0727 ng/Kg	SL-587-SA5A-TR-5.5
		1,2,3,4,7,8,9-HPCDF	0.0705 ng/Kg	SL-730-SA5A-TR-0.5
		1,2,3,4,7,8-HxCDD	0.0830 ng/Kg	SL-730-SA5A-TR-6.0
		1,2,3,4,7,8-HXCDF	0.0629 ng/Kg	SL-887-SA5A-TR-5.5
		1,2,3,6,7,8-HXCDD	0.0643 ng/Kg	
		1,2,3,6,7,8-HXCDF	0.0439 ng/Kg	
		1,2,3,7,8,9-HXCDD	0.0684 ng/Kg	
		1,2,3,7,8,9-HXCDF	0.0800 ng/Kg	
		1,2,3,7,8-PECDD	0.0540 ng/Kg	
		1,2,3,7,8-PECDF	0.103 ng/Kg	
		2,3,4,6,7,8-HXCDF	0.0522 ng/Kg	
		2,3,4,7,8-PECDF	0.105 ng/Kg	
		2,3,7,8-TCDD	0.0448 ng/Kg	
		2,3,7,8-TCDF	0.0491 ng/Kg	
		OCDD	0.452 ng/Kg	
		OCDF	0.182 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-587-SA5A-TR-0.5(RES)	1,2,3,4,7,8,9-HPCDF	0.230 ng/Kg	0.230U ng/Kg
SL-587-SA5A-TR-0.5(RES)	1,2,3,4,7,8-HxCDD	0.105 ng/Kg	0.105U ng/Kg
SL-587-SA5A-TR-0.5(RES)	1,2,3,4,7,8-HXCDF	0.147 ng/Kg	0.147U ng/Kg
SL-587-SA5A-TR-0.5(RES)	1,2,3,6,7,8-HXCDF	0.198 ng/Kg	0.198U ng/Kg

Method Blank Outlier Report

Lab Reporting Batch ID: PH195 **Laboratory: LL**

EDD Filename: PH195_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-587-SA5A-TR-0.5(RES)	1,2,3,7,8,9-HXCDF	0.311 ng/Kg	0.311U ng/Kg
SL-587-SA5A-TR-0.5(RES)	1,2,3,7,8-PECDD	0.229 ng/Kg	0.229U ng/Kg
SL-587-SA5A-TR-0.5(RES)	1,2,3,7,8-PECDF	0.350 ng/Kg	0.350U ng/Kg
SL-587-SA5A-TR-0.5(RES)	2,3,4,6,7,8-HXCDF	0.198 ng/Kg	0.198U ng/Kg
SL-587-SA5A-TR-0.5(RES)	2,3,4,7,8-PECDF	0.330 ng/Kg	0.330U ng/Kg
SL-587-SA5A-TR-0.5(RES)	2,3,7,8-TCDD	0.0660 ng/Kg	0.0660U ng/Kg
SL-587-SA5A-TR-0.5(RES)	2,3,7,8-TCDF	0.0843 ng/Kg	0.0843U ng/Kg
SL-587-SA5A-TR-5.5(RES)	1,2,3,4,7,8-HxCDD	0.0783 ng/Kg	0.0783U ng/Kg
SL-587-SA5A-TR-5.5(RES)	1,2,3,7,8,9-HXCDD	0.203 ng/Kg	0.203U ng/Kg
SL-587-SA5A-TR-5.5(RES)	1,2,3,7,8,9-HXCDF	0.298 ng/Kg	0.298U ng/Kg
SL-587-SA5A-TR-5.5(RES)	1,2,3,7,8-PECDD	0.0362 ng/Kg	0.0362U ng/Kg
SL-587-SA5A-TR-5.5(RES)	1,2,3,7,8-PECDF	0.179 ng/Kg	0.179U ng/Kg
SL-587-SA5A-TR-5.5(RES)	2,3,4,7,8-PECDF	0.0773 ng/Kg	0.0773U ng/Kg
SL-730-SA5A-TR-6.0(RES)	1,2,3,4,6,7,8-HPCDF	0.178 ng/Kg	0.178U ng/Kg
SL-730-SA5A-TR-6.0(RES)	1,2,3,4,7,8,9-HPCDF	0.0847 ng/Kg	0.0847U ng/Kg
SL-730-SA5A-TR-6.0(RES)	1,2,3,4,7,8-HxCDD	0.0855 ng/Kg	0.0855U ng/Kg
SL-730-SA5A-TR-6.0(RES)	1,2,3,4,7,8-HXCDF	0.0382 ng/Kg	0.0382U ng/Kg
SL-730-SA5A-TR-6.0(RES)	1,2,3,6,7,8-HXCDD	0.0705 ng/Kg	0.0705U ng/Kg
SL-730-SA5A-TR-6.0(RES)	1,2,3,6,7,8-HXCDF	0.0850 ng/Kg	0.0850U ng/Kg
SL-730-SA5A-TR-6.0(RES)	1,2,3,7,8,9-HXCDD	0.0816 ng/Kg	0.0816U ng/Kg
SL-730-SA5A-TR-6.0(RES)	1,2,3,7,8,9-HXCDF	0.0950 ng/Kg	0.0950U ng/Kg
SL-730-SA5A-TR-6.0(RES)	1,2,3,7,8-PECDD	0.0399 ng/Kg	0.0399U ng/Kg
SL-730-SA5A-TR-6.0(RES)	1,2,3,7,8-PECDF	0.108 ng/Kg	0.108U ng/Kg
SL-730-SA5A-TR-6.0(RES)	2,3,4,6,7,8-HXCDF	0.0681 ng/Kg	0.0681U ng/Kg
SL-730-SA5A-TR-6.0(RES)	2,3,4,7,8-PECDF	0.0459 ng/Kg	0.0459U ng/Kg
SL-730-SA5A-TR-6.0(RES)	2,3,7,8-TCDD	0.0781 ng/Kg	0.0781U ng/Kg
SL-730-SA5A-TR-6.0(RES)	OCDF	0.573 ng/Kg	0.573U ng/Kg
SL-887-SA5A-TR-5.5(RES)	1,2,3,4,7,8-HxCDD	0.0729 ng/Kg	0.0729U ng/Kg
SL-887-SA5A-TR-5.5(RES)	1,2,3,4,7,8-HXCDF	0.197 ng/Kg	0.197U ng/Kg
SL-887-SA5A-TR-5.5(RES)	1,2,3,7,8,9-HXCDD	0.245 ng/Kg	0.245U ng/Kg
SL-887-SA5A-TR-5.5(RES)	1,2,3,7,8,9-HXCDF	0.286 ng/Kg	0.286U ng/Kg
SL-887-SA5A-TR-5.5(RES)	1,2,3,7,8-PECDD	0.0544 ng/Kg	0.0544U ng/Kg
SL-887-SA5A-TR-5.5(RES)	1,2,3,7,8-PECDF	0.198 ng/Kg	0.198U ng/Kg
SL-887-SA5A-TR-5.5(RES)	2,3,4,6,7,8-HXCDF	0.251 ng/Kg	0.251U ng/Kg
SL-887-SA5A-TR-5.5(RES)	2,3,4,7,8-PECDF	0.104 ng/Kg	0.104U ng/Kg

Method Blank Outlier Report

Lab Reporting Batch ID: PH195 **Laboratory: LL**

EDD Filename: PH195_v2 **eQAPP Name: CDM_SSFL_140617_Lan**

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

Method Blank Sample ID	Analysis Date	Analyte	Result	Associated Samples
P14835BB221845	5/29/2014 6:45:00 PM	Zirconium	0.0110 mg/L	EB3-052214

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
EB3-052214(RES)	Zirconium	0.0108 mg/L	0.0108U mg/L

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

Method Blank Sample ID	Analysis Date	Analyte	Result	Associated Samples
P14937AB220850	6/2/2014 8:50:00 AM	ALUMINUM	7.59 mg/Kg	SL-587-SA5A-TR-0.5
		BERYLLIUM	0.0890 mg/Kg	SL-587-SA5A-TR-5.5
		BORON	1.60 mg/Kg	SL-730-SA5A-TR-0.5
		CALCIUM	21.3 mg/Kg	SL-730-SA5A-TR-6.0
		TIN	1.59 mg/Kg	SL-887-SA5A-TR-5.5

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
SL-587-SA5A-TR-0.5(REA)	BORON	6.50 mg/Kg	6.50U mg/Kg
SL-587-SA5A-TR-0.5(REA)	TIN	2.85 mg/Kg	2.85U mg/Kg
SL-587-SA5A-TR-5.5(REA)	BORON	6.66 mg/Kg	6.66U mg/Kg
SL-587-SA5A-TR-5.5(REA)	TIN	3.03 mg/Kg	3.03U mg/Kg
SL-730-SA5A-TR-0.5(REA)	BORON	5.72 mg/Kg	5.72U mg/Kg
SL-730-SA5A-TR-0.5(REA)	TIN	2.89 mg/Kg	2.89U mg/Kg
SL-730-SA5A-TR-6.0(REA)	BORON	5.74 mg/Kg	5.74U mg/Kg
SL-730-SA5A-TR-6.0(REA)	TIN	3.29 mg/Kg	3.29U mg/Kg
SL-887-SA5A-TR-5.5(REA)	BORON	6.87 mg/Kg	6.87U mg/Kg
SL-887-SA5A-TR-5.5(REA)	TIN	3.08 mg/Kg	3.08U mg/Kg

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

Method Blank Sample ID	Analysis Date	Analyte	Result	Associated Samples
P14937AB221403A	6/2/2014 2:03:00 PM	STRONTIUM	0.103 mg/Kg	SL-587-SA5A-TR-0.5 SL-587-SA5A-TR-5.5 SL-730-SA5A-TR-0.5 SL-730-SA5A-TR-6.0 SL-887-SA5A-TR-5.5

Method Blank Outlier Report

Lab Reporting Batch ID: PH195 **Laboratory: LL**

EDD Filename: PH195_v2 **eQAPP Name: CDM_SSFL_140617_Lan**

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

Method Blank Sample ID	Analysis Date	Analyte	Result	Associated Samples
PLKWN14B260205	6/3/2014 2:05:00 AM	BIS(2-ETHYLHEXYL)PHTHALATE	0.056 ug/L	EB3-052214

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
EB3-052214(RES)	BIS(2-ETHYLHEXYL)PHTHALATE	0.097 ug/L	1.0U ug/L

Field Blank Outlier Report

Lab Reporting Batch ID: PH195 **Laboratory: LL**

EDD Filename: PH195_v2 **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-587-SA5A-TR-0.5 SL-587-SA5A-TR-5.5 SL-730-SA5A-TR-0.5 SL-730-SA5A-TR-6.0 SL-887-SA5A-TR-5.5

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
SL-587-SA5A-TR-0.5(REA)	Zirconium	3.89 mg/Kg	3.89U mg/Kg
SL-587-SA5A-TR-5.5(REA)	Zirconium	4.42 mg/Kg	4.42U mg/Kg
SL-730-SA5A-TR-0.5(REA)	Zirconium	3.39 mg/Kg	3.39U mg/Kg
SL-730-SA5A-TR-6.0(REA)	Zirconium	4.65 mg/Kg	4.65U mg/Kg
SL-887-SA5A-TR-5.5(REA)	Zirconium	4.28 mg/Kg	4.28U mg/Kg

Equipment Rinsate Blank Outlier Report

Lab Reporting Batch ID: PH195 **Laboratory: LL**

EDD Filename: PH195_v2 **eQAPP Name: CDM_SSFL_140617_Lan**

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

Equipment Blank Sample ID	Collected Date	Analyte	Result	Associated Samples
EB3-052214(RES)	5/22/2014 3:45:00 PM	CALCIUM MANGANESE Zirconium	0.15 mg/L 0.0009 mg/L 0.0108 mg/L	SL-587-SA5A-TR-0.5 SL-587-SA5A-TR-5.5 SL-730-SA5A-TR-0.5 SL-730-SA5A-TR-6.0 SL-887-SA5A-TR-5.5

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
SL-587-SA5A-TR-0.5(REA)	Zirconium	3.89 mg/Kg	3.89U mg/Kg
SL-587-SA5A-TR-5.5(REA)	Zirconium	4.42 mg/Kg	4.42U mg/Kg
SL-730-SA5A-TR-0.5(REA)	Zirconium	3.39 mg/Kg	3.39U mg/Kg
SL-730-SA5A-TR-6.0(REA)	Zirconium	4.65 mg/Kg	4.65U mg/Kg
SL-887-SA5A-TR-5.5(REA)	Zirconium	4.28 mg/Kg	4.28U mg/Kg

Matrix Spike/Matrix Spike Duplicate Outlier Report

Lab Reporting Batch ID: PH195 **Laboratory: LL**

EDD Filename: PH195_v2 **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
SL-587-SA5A-TR-5.5MS SL-587-SA5A-TR-5.5MSD (SL-587-SA5A-TR-5.5)	OCDD	-15	-4	40.00-135.00	-	OCDD	J (all detects) R (all non-detects)

Method: 6010C
Matrix: SO

QC Sample ID (Associated Samples)	Compound	MS %R	MSD %R	%R Limits	RPD (Limits)	Affected Compounds	Flag
SL-587-SA5A-TR-5.5MS (TOT) SL-587-SA5A-TR-5.5MSD (TOT) (SL-587-SA5A-TR-0.5 SL -587-SA5A-TR-5.5 SL -730-SA5A-TR-0.5 SL -730-SA5A-TR-6.0 SL -887-SA5A-TR-5.5)	ALUMINUM CALCIUM COPPER IRON MAGNESIUM MANGANESE PHOSPHORUS POTASSIUM TITANIUM	2418 163 - 672 299 129 - 139 297	2734 192 137 1158 377 134 159 128 399	75.00-125.00 75.00-125.00 75.00-125.00 75.00-125.00 75.00-125.00 75.00-125.00 75.00-125.00 75.00-125.00 75.00-125.00	- - - - - - - - -	ALUMINUM CALCIUM COPPER IRON MAGNESIUM MANGANESE PHOSPHORUS POTASSIUM TITANIUM	J(all detects) Cu, P, K, No Qual, >4x
SL-587-SA5A-TR-5.5MSD (TOT) (SL-587-SA5A-TR-0.5 SL -587-SA5A-TR-5.5 SL -730-SA5A-TR-0.5 SL -730-SA5A-TR-6.0 SL -887-SA5A-TR-5.5)	ZINC	-	142	75.00-125.00	21 (20.00)	ZINC	J(all detects) UJ(all non-detects) No Qual %R, >4x

Method: 6020A
Matrix: SO

QC Sample ID (Associated Samples)	Compound	MS %R	MSD %R	%R Limits	RPD (Limits)	Affected Compounds	Flag
SL-587-SA5A-TR-5.5MS (TOT) (SL-587-SA5A-TR-0.5 SL -587-SA5A-TR-5.5 SL -730-SA5A-TR-0.5 SL -730-SA5A-TR-6.0 SL -887-SA5A-TR-5.5)	STRONTIUM	128	-	75.00-125.00	-	STRONTIUM	No Qual, >4x

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

Lab Duplicate Outlier Report

Lab Reporting Batch ID: PH195 **Laboratory: LL**

EDD Filename: PH195_v2 **eQAPP Name: CDM_SSFL_140617_Lan**

Method: 6010C
Matrix: SO

QC Sample ID (Associated Sample ID)	*Analyte*	*Sample RPD*	*eQAPP RPD*	*Flag*
SL-587-SA5A-TR-5.5DUP (TOT)	CADMIUM	32	20.00	
(SL-587-SA5A-TR-0.5	COBALT	69	20.00	J (all detects)
SL -587-SA5A-TR-5.5	MOLYBDENUM	33	20.00	UJ (all non-detects)
SL -730-SA5A-TR-0.5				Cd, Mo, No Qual,
SL -730-SA5A-TR-6.0				OK by Difference
SL -887-SA5A-TR-5.5)				

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: PH195 **Laboratory: LL**

EDD Filename: PH195_v2. **eQAPP Name: CDM_SSFL_140617_Lan**

Method: 8270D SIM
Matrix: AQ

QC Sample ID (Associated Samples)	Compound	LCS %R	LCSD %R	%R Limits	RPD (Limits)	Affected Compounds	Flag
P4WNLCSQ260235 **P4WNLCSY260304** (EB3-052214)	1-METHYLNAPHTHALENE BIS(2-ETHYLHEXYL)PHTHALAT	84 160	- -	86.00-130.00 70.00-143.00	- 77 (30.00)	1-METHYLNAPHTHALENE BIS(2-ETHYLHEXYL)PHTHALA	J (all detects) UJ (all non-detects)

Method: 8260B
Matrix: AQ

QC Sample ID (Associated Samples)	Compound	LCS %R	LCSD %R	%R Limits	RPD (Limits)	Affected Compounds	Flag
LCSY18Q211044A (EB3-052214)	Chlorotrifluoroethylene	46	-	47.00-120.00	-	Chlorotrifluoroethylene	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
P5LALCSQ260113 (SL-587-SA5A-TR-0.5 SL-587-SA5A-TR-5.5 SL-730-SA5A-TR-0.5 SL-730-SA5A-TR-6.0 SL-887-SA5A-TR-5.5)	BENZO(E)PYRENE	80	-	81.00-110.00	-	BENZO(E)PYRENE	J(all detects) UJ(all non-detects)

Field Duplicate RPD Report

Lab Reporting Batch ID: PH195 **Laboratory: LL**

EDD Filename: PH195_v2 **eQAPP Name: CDM_SSFL_140617_Lan**

Method: 160.3M
Matrix: SO

Analyte	Concentration (%)		Sample RPD	eQAPP RPD	Flag
	SL-587-SA5A-TR-5.5	SL-887-SA5A-TR-5.5			
MOISTURE	10.1	11.0	9		No Qualifiers Applied

Method: 1613B
Matrix: SO

Analyte	Concentration (ng/Kg)		Sample RPD	eQAPP RPD	Flag
	SL-587-SA5A-TR-5.5	SL-887-SA5A-TR-5.5			
1,2,3,4,6,7,8-HPCDF	3.75	2.45	42	50.00	
1,2,3,4,7,8,9-HPCDF	0.592	0.400	39	50.00	
1,2,3,4,7,8-HxCDD	0.0783	0.0729	7	50.00	
1,2,3,6,7,8-HXCDD	0.420	0.341	21	50.00	
1,2,3,6,7,8-HXCDF	0.255	0.249	2	50.00	
1,2,3,7,8,9-HXCDD	0.203	0.245	19	50.00	
1,2,3,7,8,9-HXCDF	0.298	0.286	4	50.00	No Qualifiers Applied
1,2,3,7,8-PECDD	0.0362	0.0544	40	50.00	
1,2,3,7,8-PECDF	0.179	0.198	10	50.00	
2,3,4,6,7,8-HXCDF	0.331	0.251	27	50.00	
2,3,4,7,8-PECDF	0.0773	0.104	29	50.00	
OCDF	8.04	5.35	40	50.00	
			45		
1,2,3,4,6,7,8-HPCDD	17.4	10.3	51	50.00	J(all detects)
1,2,3,4,7,8-HXCDF	0.397	0.197	67	50.00	
OCDD	301	175	53	50.00	

Method: 6010C
Matrix: SO

Analyte	Concentration (mg/Kg)		Sample RPD	eQAPP RPD	Flag
	SL-587-SA5A-TR-5.5 (TOT)	SL-887-SA5A-TR-5.5 (TOT)			
ALUMINUM	19600	22000	12	50.00	
ARSENIC	4.32	5.26	20	50.00	
BARIUM	94.0	98.0	4	50.00	
BERYLLIUM	0.836	0.948	13	50.00	
BORON	6.66	6.87	3	50.00	
CADMIUM	0.193	0.262	30	50.00	
CALCIUM	2560	2810	9	50.00	
CHROMIUM	20.0	23.0	14	50.00	
COBALT	4.69	4.60	2	50.00	
COPPER	7.98	9.48	17	50.00	
IRON	22900	23500	3	50.00	
LEAD	5.45	6.55	18	50.00	
LITHIUM	26.3	28.1	7	50.00	No Qualifiers Applied
MAGNESIUM	4210	4300	2	50.00	
MANGANESE	261	228	13	50.00	
MOLYBDENUM	0.599	0.472	24	50.00	
NICKEL	10.7	11.7	9	50.00	
PHOSPHORUS	226	258	13	50.00	
POTASSIUM	2190	2240	2	50.00	
SODIUM	147	159	8	50.00	
TIN	3.03	3.08	2	50.00	
TITANIUM	1140	1180	3	50.00	
VANADIUM	39.9	44.1	10	50.00	
ZINC	45.8	46.4	1	50.00	
Zirconium	4.42	4.28	3	50.00	

Field Duplicate RPD Report

Lab Reporting Batch ID: PH195 **Laboratory: LL**

EDD Filename: PH195_v2 **eQAPP Name: CDM_SSFL_140617_Lan**

Method: 6020A
Matrix: SO

Analyte	*Concentration (mg/Kg)*		*Sample RPD*	*eQAPP RPD*	*Flag*
	SL-587-SA5A-TR-5.5 (TOT)	SL-887-SA5A-TR-5.5 (TOT)			
SELENIUM	0.209	0.238	13	50.00	No Qualifiers Applied
SILVER	0.0419	0.0434	4	50.00	
STRONTIUM	21.4	21.9	2	50.00	
THALLIUM	0.242	0.240	1	50.00	

Method: 7471B
Matrix: SO

Analyte	*Concentration (mg/Kg)*		*Sample RPD*	*eQAPP RPD*	*Flag*
	SL-587-SA5A-TR-5.5 (TOT)	SL-887-SA5A-TR-5.5 (TOT)			
MERCURY	0.0123	0.0230	61	50.00	J(all detects)

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

Reporting Limit Outliers

Lab Reporting Batch ID: PH195 **Laboratory: LL**

EDD Filename: PH195_v2 **eQAPP Name: CDM_SSFL_140617_Lan**

Method: 1613B

Matrix: AQ

SampleID	Analyte	Lab Qual	Result	Reporting Limit	RL Type	Units	Flag
EB3-052214	1,2,3,4,6,7,8-HPCDD	JBQ	0.865	9.56	PQL	pg/L	J (all detects)
	1,2,3,4,6,7,8-HPCDF	JBQ	0.177	9.56	PQL	pg/L	
	1,2,3,4,7,8,9-HPCDF	JBQ	0.106	9.56	PQL	pg/L	
	1,2,3,7,8-PECDF	JBQ	0.289	9.56	PQL	pg/L	
	2,3,4,6,7,8-HXCDF	JBQ	0.192	9.56	PQL	pg/L	
	2,3,7,8-TCDF	JQ	0.203	1.91	PQL	pg/L	
	OCDD	JBQ	9.68	19.1	PQL	pg/L	
	OCDF	JBQ	1.11	19.1	PQL	pg/L	

Method: 6010C

Matrix: AQ

SampleID	Analyte	Lab Qual	Result	Reporting Limit	RL Type	Units	Flag
EB3-052214	CALCIUM	J	0.150	0.400	PQL	mg/L	J (all detects)
	MANGANESE	J	0.00090	0.0100	PQL	mg/L	
	Zirconium	J	0.0108	0.100	PQL	mg/L	

Method: 6020A

Matrix: AQ

SampleID	Analyte	Lab Qual	Result	Reporting Limit	RL Type	Units	Flag
EB3-052214	STRONTIUM	J	0.00046	0.0020	PQL	mg/L	J (all detects)

Method: 8270D SIM

Matrix: AQ

SampleID	Analyte	Lab Qual	Result	Reporting Limit	RL Type	Units	Flag
EB3-052214	BIS(2-ETHYLHEXYL)PHTHALATE	J	0.097	1.0	PQL	ug/L	J (all detects)
	Diethylphthalate	J	0.097	1.0	PQL	ug/L	
	Di-n-butylphthalate	J	0.10	1.0	PQL	ug/L	

Reporting Limit Outliers

Lab Reporting Batch ID: PH195 **Laboratory: LL**

EDD Filename: PH195_v2 **eQAPP Name: CDM_SSFL_140617_Lan**

Method: **1613B**

Matrix: **SO**

SampleID	Analyte	Lab Qual	Result	Reporting Limit	RL Type	Units	Flag
SL-587-SA5A-TR-0.5	1,2,3,4,6,7,8-HPCDF	JB	1.03	5.02	PQL	ng/Kg	
	1,2,3,4,7,8,9-HPCDF	JB	0.230	5.02	PQL	ng/Kg	
	1,2,3,4,7,8-HxCDD	JBQ	0.105	5.02	PQL	ng/Kg	
	1,2,3,4,7,8-HXCDF	JB	0.147	5.02	PQL	ng/Kg	
	1,2,3,6,7,8-HXCDD	JB	0.431	5.02	PQL	ng/Kg	
	1,2,3,6,7,8-HXCDF	JB	0.198	5.02	PQL	ng/Kg	
	1,2,3,7,8,9-HXCDD	JBQ	0.488	5.02	PQL	ng/Kg	
	1,2,3,7,8,9-HXCDF	JBQ	0.311	5.02	PQL	ng/Kg	J (all detects)
	1,2,3,7,8-PECDD	JB	0.229	5.02	PQL	ng/Kg	
	1,2,3,7,8-PECDF	JB	0.350	5.02	PQL	ng/Kg	
	2,3,4,6,7,8-HXCDF	JB	0.198	5.02	PQL	ng/Kg	
	2,3,4,7,8-PECDF	JB	0.330	5.02	PQL	ng/Kg	
	2,3,7,8-TCDD	JBQ	0.0660	1.00	PQL	ng/Kg	
	2,3,7,8-TCDF	JBQ	0.0843	1.00	PQL	ng/Kg	
	OCDF	JB	2.24	10.0	PQL	ng/Kg	
SL-587-SA5A-TR-5.5	1,2,3,4,6,7,8-HPCDF	JB	3.75	5.40	PQL	ng/Kg	
	1,2,3,4,7,8,9-HPCDF	JB	0.592	5.40	PQL	ng/Kg	
	1,2,3,4,7,8-HxCDD	JBQ	0.0783	5.40	PQL	ng/Kg	
	1,2,3,4,7,8-HXCDF	JBQ	0.397	5.40	PQL	ng/Kg	
	1,2,3,6,7,8-HXCDD	JBQ	0.420	5.40	PQL	ng/Kg	
	1,2,3,6,7,8-HXCDF	JB	0.255	5.40	PQL	ng/Kg	
	1,2,3,7,8,9-HXCDD	JBQ	0.203	5.40	PQL	ng/Kg	J (all detects)
	1,2,3,7,8,9-HXCDF	JB	0.298	5.40	PQL	ng/Kg	
	1,2,3,7,8-PECDD	JB	0.0362	5.40	PQL	ng/Kg	
	1,2,3,7,8-PECDF	JBQ	0.179	5.40	PQL	ng/Kg	
	2,3,4,6,7,8-HXCDF	JB	0.331	5.40	PQL	ng/Kg	
	2,3,4,7,8-PECDF	JBQ	0.0773	5.40	PQL	ng/Kg	
	OCDF	JB	8.04	10.8	PQL	ng/Kg	
SL-730-SA5A-TR-0.5	1,2,3,4,7,8,9-HPCDF	JB	2.29	5.08	PQL	ng/Kg	
	1,2,3,4,7,8-HxCDD	JB	1.21	5.08	PQL	ng/Kg	
	1,2,3,4,7,8-HXCDF	JB	1.34	5.08	PQL	ng/Kg	
	1,2,3,6,7,8-HXCDD	JB	3.68	5.08	PQL	ng/Kg	
	1,2,3,6,7,8-HXCDF	JB	1.55	5.08	PQL	ng/Kg	
	1,2,3,7,8,9-HXCDD	JB	2.33	5.08	PQL	ng/Kg	J (all detects)
	1,2,3,7,8,9-HXCDF	JB	0.692	5.08	PQL	ng/Kg	
	1,2,3,7,8-PECDD	JB	0.885	5.08	PQL	ng/Kg	
	1,2,3,7,8-PECDF	JBQ	1.95	5.08	PQL	ng/Kg	
	2,3,4,6,7,8-HXCDF	JB	1.63	5.08	PQL	ng/Kg	
	2,3,4,7,8-PECDF	JB	1.37	5.08	PQL	ng/Kg	
	2,3,7,8-TCDF	JB	0.863	1.02	PQL	ng/Kg	
SL-730-SA5A-TR-6.0	1,2,3,4,6,7,8-HPCDD	JB	0.538	5.35	PQL	ng/Kg	
	1,2,3,4,6,7,8-HPCDF	JBQ	0.178	5.35	PQL	ng/Kg	
	1,2,3,4,7,8,9-HPCDF	JBQ	0.0847	5.35	PQL	ng/Kg	
	1,2,3,4,7,8-HxCDD	JBQ	0.0855	5.35	PQL	ng/Kg	
	1,2,3,4,7,8-HXCDF	JBQ	0.0382	5.35	PQL	ng/Kg	
	1,2,3,6,7,8-HXCDD	JBQ	0.0705	5.35	PQL	ng/Kg	
	1,2,3,6,7,8-HXCDF	JBQ	0.0850	5.35	PQL	ng/Kg	
	1,2,3,7,8,9-HXCDD	JBQ	0.0816	5.35	PQL	ng/Kg	
	1,2,3,7,8,9-HXCDF	JBQ	0.0950	5.35	PQL	ng/Kg	J (all detects)
	1,2,3,7,8-PECDD	JBQ	0.0399	5.35	PQL	ng/Kg	
	1,2,3,7,8-PECDF	JBQ	0.108	5.35	PQL	ng/Kg	
	2,3,4,6,7,8-HXCDF	JBQ	0.0681	5.35	PQL	ng/Kg	
	2,3,4,7,8-PECDF	JBQ	0.0459	5.35	PQL	ng/Kg	
	2,3,7,8-TCDD	JBQ	0.0781	1.07	PQL	ng/Kg	
	OCDD	JB	4.80	10.7	PQL	ng/Kg	
	OCDF	JB	0.573	10.7	PQL	ng/Kg	

Reporting Limit Outliers

Lab Reporting Batch ID: PH195 **Laboratory: LL**

EDD Filename: PH195_v2 **eQAPP Name: CDM_SSFL_140617_Lan**

Method: 1613B

Matrix: SO

SampleID	Analyte	Lab Qual	Result	Reporting Limit	RL Type	Units	Flag
SL-887-SA5A-TR-5.5	1,2,3,4,6,7,8-HPCDF	JB	2.45	5.53	PQL	ng/Kg	
	1,2,3,4,7,8,9-HPCDF	JB	0.400	5.53	PQL	ng/Kg	
	1,2,3,4,7,8-HxCDD	JBQ	0.0729	5.53	PQL	ng/Kg	
	1,2,3,4,7,8-HXCDF	JBQ	0.197	5.53	PQL	ng/Kg	
	1,2,3,6,7,8-HXCDD	JBQ	0.341	5.53	PQL	ng/Kg	
	1,2,3,6,7,8-HXCDF	JBQ	0.249	5.53	PQL	ng/Kg	
	1,2,3,7,8,9-HXCDD	JBQ	0.245	5.53	PQL	ng/Kg	J (all detects)
	1,2,3,7,8,9-HXCDF	JB	0.286	5.53	PQL	ng/Kg	
	1,2,3,7,8-PECDD	JBQ	0.0544	5.53	PQL	ng/Kg	
	1,2,3,7,8-PECDF	JB	0.198	5.53	PQL	ng/Kg	
	2,3,4,6,7,8-HXCDF	JB	0.251	5.53	PQL	ng/Kg	
	2,3,4,7,8-PECDF	JB	0.104	5.53	PQL	ng/Kg	
	OCDF	JB	5.35	11.1	PQL	ng/Kg	

Method: 6010C

Matrix: SO

SampleID	Analyte	Lab Qual	Result	Reporting Limit	RL Type	Units	Flag
SL-587-SA5A-TR-0.5	ARSENIC	J	3.34	4.01	PQL	mg/Kg	
	BERYLLIUM	J	0.725	1.00	PQL	mg/Kg	
	BORON	J	6.50	10.0	PQL	mg/Kg	
	CADMIUM	J	0.264	1.00	PQL	mg/Kg	J (all detects)
	MOLYBDENUM	J	0.347	2.01	PQL	mg/Kg	
	TIN	J	2.85	10.0	PQL	mg/Kg	
	Zirconium	J	3.89	5.01	PQL	mg/Kg	
SL-587-SA5A-TR-5.5	BERYLLIUM	J	0.836	1.08	PQL	mg/Kg	
	BORON	J	6.66	10.8	PQL	mg/Kg	
	CADMIUM	J	0.193	1.08	PQL	mg/Kg	J (all detects)
	MOLYBDENUM	J	0.599	2.16	PQL	mg/Kg	
	TIN	J	3.03	10.8	PQL	mg/Kg	
	Zirconium	J	4.42	5.40	PQL	mg/Kg	
SL-730-SA5A-TR-0.5	ARSENIC	J	3.09	4.02	PQL	mg/Kg	
	BERYLLIUM	J	0.628	1.00	PQL	mg/Kg	
	BORON	J	5.72	10.0	PQL	mg/Kg	
	CADMIUM	J	0.697	1.00	PQL	mg/Kg	J (all detects)
	MOLYBDENUM	J	0.455	2.01	PQL	mg/Kg	
	SODIUM	J	83.0	100	PQL	mg/Kg	
	TIN	J	2.89	10.0	PQL	mg/Kg	
	Zirconium	J	3.39	5.02	PQL	mg/Kg	
SL-730-SA5A-TR-6.0	BERYLLIUM	J	1.03	1.07	PQL	mg/Kg	
	BORON	J	5.74	10.7	PQL	mg/Kg	
	MOLYBDENUM	J	0.516	2.15	PQL	mg/Kg	J (all detects)
	TIN	J	3.29	10.7	PQL	mg/Kg	
	Zirconium	J	4.65	5.36	PQL	mg/Kg	
SL-887-SA5A-TR-5.5	BERYLLIUM	J	0.948	1.09	PQL	mg/Kg	
	BORON	J	6.87	10.9	PQL	mg/Kg	
	CADMIUM	J	0.262	1.09	PQL	mg/Kg	J (all detects)
	MOLYBDENUM	J	0.472	2.18	PQL	mg/Kg	
	TIN	J	3.08	10.9	PQL	mg/Kg	
	Zirconium	J	4.28	5.45	PQL	mg/Kg	

Reporting Limit Outliers

Lab Reporting Batch ID: PH195 **Laboratory: LL**

EDD Filename: PH195_v2 **eQAPP Name: CDM_SSFL_140617_Lan**

Method: 6020A

Matrix: SO

SampleID	Analyte	Lab Qual	Result	Reporting Limit	RL Type	Units	Flag
SL-587-SA5A-TR-0.5	SELENIUM	J	0.219	0.401	PQL	mg/Kg	J (all detects)
	SILVER	J	0.0415	0.201	PQL	mg/Kg	
SL-587-SA5A-TR-5.5	SELENIUM	J	0.209	0.432	PQL	mg/Kg	J (all detects)
	SILVER	J	0.0419	0.216	PQL	mg/Kg	
SL-730-SA5A-TR-0.5	SELENIUM	J	0.237	0.402	PQL	mg/Kg	J (all detects)
SL-730-SA5A-TR-6.0	SELENIUM	J	0.313	0.429	PQL	mg/Kg	J (all detects)
	SILVER	J	0.0418	0.215	PQL	mg/Kg	
SL-887-SA5A-TR-5.5	SELENIUM	J	0.238	0.436	PQL	mg/Kg	J (all detects)
	SILVER	J	0.0434	0.218	PQL	mg/Kg	

Method: 7471B

Matrix: SO

SampleID	Analyte	Lab Qual	Result	Reporting Limit	RL Type	Units	Flag
SL-587-SA5A-TR-0.5	MERCURY	J	0.0161	0.0169	PQL	mg/Kg	J (all detects)
SL-587-SA5A-TR-5.5	MERCURY	J	0.0123	0.0182	PQL	mg/Kg	J (all detects)

Method: 8015M

Matrix: SO

SampleID	Analyte	Lab Qual	Result	Reporting Limit	RL Type	Units	Flag
SL-730-SA5A-TR-0.5	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
SL-587-SA5A-TR-0.5	AROCLOR 1260	J	7.3	17	PQL	ug/Kg	J (all detects)

Method: 8270D SIM

Matrix: SO

SampleID	Analyte	Lab Qual	Result	Reporting Limit	RL Type	Units	Flag
SL-587-SA5A-TR-0.5	BENZO(A)ANTHRACENE	J	0.85	1.7	PQL	ug/Kg	J (all detects)
	BENZO(A)PYRENE	J	0.77	1.7	PQL	ug/Kg	
	DIBENZO(A,H)ANTHRACENE	J	0.75	1.7	PQL	ug/Kg	
	FLUORANTHENE	J	0.70	1.7	PQL	ug/Kg	
	INDENO(1,2,3-CD)PYRENE	J	0.77	1.7	PQL	ug/Kg	
	PYRENE	J	0.99	1.7	PQL	ug/Kg	

Reporting Limit Outliers

Lab Reporting Batch ID: PH195 **Laboratory: LL**

EDD Filename: PH195_v2 **eQAPP Name: CDM_SSFL_140617_Lan**

Method: **8270D SIM**

Matrix: **SO**

SampleID	*Analyte*	*Lab Qual*	*Result*	*Reporting Limit*	*RL Type*	*Units*	*Flag*
SL-730-SA5A-TR-0.5	ANTHRACENE	J	0.55	1.7	PQL	ug/Kg	
	BENZO(A)PYRENE	J	1.0	1.7	PQL	ug/Kg	
	BENZO(G,H,I)PERYLENE	J	1.4	1.7	PQL	ug/Kg	
	BENZO(K)FLUORANTHENE	J	1.1	1.7	PQL	ug/Kg	J (all detects)
	BIS(2-ETHYLHEXYL)PHTHALATE	J	16	18	PQL	ug/Kg	
	Di-n-butylphthalate	J	6.2	18	PQL	ug/Kg	
	INDENO(1,2,3-CD)PYRENE	J	1.0	1.7	PQL	ug/Kg	

LDC #: 32030C4

VALIDATION COMPLETENESS WORKSHEET

ADR

Date: 06/26/14

SDG #: PH195

Page: 1 of 1

Laboratory: Eurofins Lancaster Laboratories

Reviewer: SD

2nd Reviewer: a

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

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: 05/22/14
II.	ICP/MS Tune	—	
III.	Calibration	—	
IV.	Blanks	A	
V.	ICP Interference Check Sample (ICS) Analysis	A	
VI.	Matrix Spike Analysis	N	MS/D (7,8)
VII.	Duplicate Sample Analysis	N	Dup (9)
VIII.	Laboratory Control Samples (LCS)	N	
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	~~A~~ SW	FD = 4,5
XV	Field Blanks	SW	EB=(6), 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: Soils / Water

1	SL-730-SA5A-TR-0.5	11		21		31	
2	SL-730-SA5A-TR-6.0	12		22		32	
3	SL-587-SA5A-TR-0.5	13		23		33	
4	SL-587-SA5A-TR-5.5	14		24		34	
5	SL-887-SA5A-TR-5.5	15		25		35	
6	EB3-052214 Water	16		26		36	
7	SL-587-SA5A-TR-5.5MS	17		27		37	
8	SL-587-SA5A-TR-5.5MSD	18		28		38	
9	SL-587-SA5A-TR-5.5DUP	19		29		39	
10		20		30		40	

Notes:

LDC #: 32030C4

VALIDATION FINDINGS WORKSHEET
Sample Specific Element Reference

Reviewer: JD
2nd reviewer: a

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
6	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
QC-79	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
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 #: 32030C4

VALIDATION FINDINGS WORKSHEET
PB/ICB/CCB QUALIFIED SAMPLES

Reviewer: JO
2nd Reviewer: QL

METHOD: Trace metals (EPA SW 864 Method 6010C/602A/7471B) Soil preparation factor applied: ____
Sample Concentration units, unless otherwise noted: mg/L Associated Samples: 6

					Sample Identification										
Analyte	Maximum PB[a] (mg/Kg)	Maximum PB[a] (ug/L)	Maximum ICB/CCB[a] (ug/L)	Action Level (mg/L)	6										
Zr		11.5 SW	~~11.5~~	0.0575	0.0108										

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 #: 32030C4

VALIDATION FINDINGS WORKSHEET
Field Blanks

Reviewer: JD
2nd Reviewer: 9

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

Blank units: mg/L **Associated sample units:** mg/kg
Sampling date: 05/21/14 Soil factor applied 100
Field blank type: (circle one) Field Blank / Rinsate / Other: FB Associated Samples: 1-5 (Reason F)

Analyte	Blank ID	Sample Identification										
	FB-052114	Action Limit (mg/kg)	1	2	3	4	5					
Zr	0.0110	5.5	3.39	4.65	3.89	4.42	4.28					

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 #: 32030C4

VALIDATION FINDINGS WORKSHEET
Field Blanks

Reviewer: SO
2nd Reviewer: CL

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

Blank units: mg/L **Associated sample units:** mg/kg
Sampling date: 05/22/14 Soil factor applied 100
Field blank type: (circle one) Field Blank / Rinsate / Other: EB Associated Samples: 1-5(Reason: F)

Analyte	Blank ID	Sample Identification											
	EB3-052214	Action Limit (mg/kg)	1	2	3	4	5						
Ca	0.150	75											
Mn	0.00090	0.45											
Zr	0.0108	5.4	3.39	4.65	3.89	4.42	4.28						
Sr	0.00046	0.23											

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.: PH195
Matrix: SOIL Level (low/med): LOW

Background Lab Sample ID: 7475537BKG Matrix Spike Lab Sample ID: 7475538MS Matrix Spike Duplicate Lab Sample ID: 7475539MSD
Batch Id(s): P14937A, P14838B

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		17657.5068		22353.0107		22965.4408		194.1748	194.1748	MG/KG	2418		2734		3			20	P
Antimony		0.7184	U	37.5650		38.8748		48.5437	48.5437	MG/KG	77		80		3		75 - 125	20	P
Arsenic		3.8864		18.6447		18.8214		14.5631	14.5631	MG/KG	101		103		1		75 - 125	20	P
Barium		84.5010		284.3845		284.4408		194.1748	194.1748	MG/KG	103		103		0		75 - 125	20	P
Beryllium		0.7515	B	5.7243		5.6748		4.8544	4.8544	MG/KG	102		101		1		75 - 125	20	P
Boron		5.9874	B	195.5330		195.7485		194.1748	194.1748	MG/KG	98		98		0		75 - 125	20	P
Cadmium		0.1738	B	4.8359		4.9243		4.8544	4.8544	MG/KG	96		98		2		75 - 125	20	P
Calcium		2299.7408		2933.5806		3046.6553		388.3495	388.3495	MG/KG	163		192		4			20	P
Chromium		17.9485		39.7359		42.0029		19.4175	19.4175	MG/KG	112		124		6		75 - 125	20	P
Cobalt		4.2204		50.9573		50.3146		48.5437	48.5437	MG/KG	96		95		1		75 - 125	20	P
Copper		7.1748		33.1146		40.4738		24.2718	24.2718	MG/KG	107		137	N	20		75 - 125	20	P
Iron		20598.7845		21250.8612		21723.0748		97.0874	97.0874	MG/KG	672		1158		2			20	P
Lead		4.9039		18.9806		20.7544		14.5631	14.5631	MG/KG	97		109		9		75 - 125	20	P
Lithium		23.6524		126.9583		124.7583		97.0874	97.0874	MG/KG	106		104		2		75 - 125	20	P
Magnesium		3781.9816		4363.3524		4514.3223		194.1748	194.1748	MG/KG	299		377		3			20	P
Manganese		234.3767		296.9854		299.6136		48.5437	48.5437	MG/KG	129		134		1			20	P
Mercury		0.0111	B	0.1577		0.1608		0.1605	0.1630	MG/KG	91		92		2		65 - 135	20	CV
Molybdenum		0.5388	B	186.3874		185.2476		194.1748	194.1748	MG/KG	96		95		1		75 - 125	20	P
Nickel		9.6204		58.5320		57.9447		48.5437	48.5437	MG/KG	101		100		1		75 - 125	20	P
Phosphorus		203.4369		304.4214		358.2146		97.0874	97.0874	MG/KG	104		159	N	16		75 - 125	20	P
Potassium		1969.3194		3323.0282		3211.1320		970.8738	970.8738	MG/KG	139	N	128	N	3		75 - 125	20	P
Selenium	78	0.1880	B	2.1755		2.1660		1.9417	1.9417	MG/KG	102		102		0		75 - 125	20	MS
Silver	107	0.0377	B	10.0802		10.0206		9.7087	9.7087	MG/KG	103		103		1		75 - 125	20	MS
Sodium		132.2563		1152.8340		1110.9476		970.8738	970.8738	MG/KG	105		101		4		75 - 125	20	P
Strontium	88	19.2019		29.1351		28.3567		7.7670	7.7670	MG/KG	128	N	118		3		75 - 125	20	MS
Thallium	203	0.2173		0.6066		0.6202		0.3883	0.3883	MG/KG	100		104		2		75 - 125	20	MS
Tin		2.7214	B	361.5845		356.6932		388.3495	388.3495	MG/KG	92		91		1		75 - 125	20	P
Titanium		1023.2194		1311.2903		1410.7709		97.0874	97.0874	MG/KG	297		399		7			20	P
Vanadium		35.8796		88.8019		91.3126		48.5437	48.5437	MG/KG	109		114		3		75 - 125	20	P
Zinc		41.1621		89.5136		110.2806		48.5437	48.5437	MG/KG	100		142	N	21	*	75 - 125	20	P
Zirconium		3.9738	B	98.1971		98.3243		97.0874	97.0874	MG/KG	97		97		0		75 - 125	20	P

Cu, P, K, Sr = 3dat/A Zn = 3lus/A

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

Al, Ca, Fe, Mg, Mn, Ti > 4x

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QUALITY ASSURANCE SUMMARY
FORM 6
DUPLICATES
SDG No.: PH195
Matrix: SOIL Level (low/med): LOW

Background Lab Sample ID: 7475537BKG Duplicate Lab Sample ID: 7475540DUP
Batch ID(s): P14937A, P14838B
Concentration Units: MG/KG

Analyte	Mass	Control Limit	Samples (S)	C	Duplicate (D)	C	RPD	Q	M
Aluminum			17657.5068		17805.7883		1		P
Antimony			0.7184	U	0.7184	U			P
Arsenic		3.9	3.8864		4.1330		6		P
Barium			84.5010		86.4951		2		P
Beryllium			0.7515	B	0.7757	B	3		P
Boron			5.9874	B	6.2883	B	5		P
Cadmium			0.1738	B	0.1262	B	32		P
Calcium			2299.7408		2376.1165		3		P
Chromium			17.9485		18.1515		1		P
Cobalt		1.0	4.2204		8.6544		69	*	P
Copper		1.9	7.1748		7.4786		4		P
Iron			20598.7845		20033.2583		3		P
Lead		2.9	4.9039		5.2641		7		P
Lithium			23.6524		23.6592		0		P
Magnesium			3781.9816		3909.7942		3		P
Manganese			234.3767		272.7223		15		P
Mercury			0.0111	B	0.0105	B	6		CV
Molybdenum			0.5388	B	0.3845	B	33		P
Nickel		1.9	9.6204		9.9126		3		P
Phosphorus			203.4369		211.9553		4		P
Potassium			1969.3194		2029.5126		3		P
Selenium	78		0.1880	B	0.1839	B	2		MS
Silver	107		0.0377	B	0.0369	B	2		MS
Sodium		97.1	132.2563		138.3650		5		P
Strontium	88		19.2019		19.3592		1		MS
Thallium	203	0.2	0.2173		0.2128		2		MS
Tin			2.7214	B	2.8476	B	5		P
Titanium			1023.2194		1026.3505		0		P
Vanadium			35.8796		36.0738		1		P
Zinc			41.1621		41.7660		1		P
Zirconium			3.9738	B	4.7971	B	19		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.

Co= J|UJ|A

Mo, Cd, Ni = ok by difference

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

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

July 28, 2014

SUBJECT: Santa Susana Field Laboratory, FDG Block 1, Data Validation

Dear Mrs. Zakowski,

Enclosed are the final validation reports for the fractions listed below. These SDGs were received on June 24, 2014. Attachment 1 is a summary of the samples that were reviewed for each analysis.

LDC Project #32031:

SDG #	Fraction
PH175, PH176 PH177	Volatiles, Semivolatiles, Polychlorinated Biphenyls, Metals, Total Petroleum Hydrocarbons as Gasoline, Total Petroleum Hydrocarbons as Extractables, Dioxins and Dibenzofurans, Perchlorate

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

155 pages-CD

Attachment 1

90/10 ADR/IV

LDC #32031 (CDM Federal Programs-Chantilly VA / Santa Susana Field Laboratory, FDG Block 1)

LDC	SDG#	DATE REC'D	(4) DATE DUE	VOA (8260B)		SVOA (8270D -SIM)		PCBs (8082A)		Metals & Hg (SW846)		TPH-G (8015M)		TPH-E (8015M)		Dioxins (1613B)		CLO_4 (6850)																					
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	PH175	06/24/14	07/23/14	-	-	0	2	0	2	0	2	-	-	-	-	0	2	0	2																			
B	PH176	06/24/14	07/23/14	1	0	1	3	1	3	1	3	2	2	2	4	1	0	1	1																			
C	PH177	06/24/14	07/23/14	-	-	2	8	2	8	2	8	2	3	4	10	2	8	2	3																			
Total	T/SM					3	13	3	13	3	13	4	5	6	14	3	10	3	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	99

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 1

SDG: PH175

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

July 25, 2014

INTRODUCTION

This Data Validation Report (DVR) presents Level III data validation results for samples collected on May 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)
Polychlorinated Biphenyls (PCBs) by EPA SW 846 Method 8082A
Metals by EPA SW 846 Method 6010C, 6020A, and 7471B
Dioxins and Dibenzofurans by EPA Method 1613B
Perchlorate by EPA Method 6850

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), laboratory control sample/laboratory control sample duplicates (LCS/LCSD), 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, 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

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.

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 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 PH175	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 blanks were identified in this SDG.

One equipment blank (from SDG PH177) was collected and analyzed for SVOCs, PCBs, metals, dioxins and dibenzofurans and perchlorate. The equipment blank had detections for SVOCs, metals, dioxins and dibenzofurans and perchlorate. 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 PH176) was collected and analyzed for SVOCs, PCBs, metals, dioxins and dibenzofurans and perchlorate. The field blank had detections for SVOCs, metals and dioxins and dibenzofurans The associated sample results were not detected or were significantly greater than the concentrations found in the field blank, therefore no data were qualified.

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
12-May-2014	FDG-SL-748-SA5C-SB-0.0-0.	7461254	N	3050B	6010C	III
12-May-2014	FDG-SL-748-SA5C-SB-0.0-0.	7461254	N	3050B	6020A	III
12-May-2014	FDG-SL-748-SA5C-SB-0.0-0.	7461254	N	3546	8082A	III
12-May-2014	FDG-SL-748-SA5C-SB-0.0-0.	7461254	N	3546	8270D SIM	III
12-May-2014	FDG-SL-748-SA5C-SB-0.0-0.	7461254	N	METHOD	1613B	III
12-May-2014	FDG-SL-748-SA5C-SB-0.0-0.	7461254	N	METHOD	6850	III
12-May-2014	FDG-SL-748-SA5C-SB-0.0-0.	7461254	N	METHOD	7471B	III
12-May-2014	FDG-SL-748-SA5C-SB-4.0-5.	7461255	N	3050B	6010C	III
12-May-2014	FDG-SL-748-SA5C-SB-4.0-5.	7461255	N	3050B	6020A	III
12-May-2014	FDG-SL-748-SA5C-SB-4.0-5.	7461255	N	3546	8082A	III
12-May-2014	FDG-SL-748-SA5C-SB-4.0-5.	7461255	N	3546	8270D SIM	III
12-May-2014	FDG-SL-748-SA5C-SB-4.0-5.	7461255	N	METHOD	1613B	III
12-May-2014	FDG-SL-748-SA5C-SB-4.0-5.	7461255	N	METHOD	6850	III
12-May-2014	FDG-SL-748-SA5C-SB-4.0-5.	7461255	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: PH175 **Laboratory: LL**

EDD Filename: PH175_v1 **eQAPP Name: CDM_SSFL_140617_Lan**

Method Category: METALS

Method: 6010C **Matrix: SO**

Sample ID: FDG-SL-748-SA5C-SB-0.0-0.5 *Collected:* 5/12/2014 8:32:00 *Analysis Type:* RES *Dilution:* 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
BERYLLIUM	0.888	J	0.0717	MDL	1.07	PQL	mg/Kg	J	Z
BORON	6.28	J	0.899	MDL	10.7	PQL	mg/Kg	J	Z
CADMIUM	0.305	J	0.0814	MDL	1.07	PQL	mg/Kg	J	Z
TIN	3.18	J	0.236	MDL	10.7	PQL	mg/Kg	U	B

Sample ID: FDG-SL-748-SA5C-SB-4.0-5.0 *Collected:* 5/12/2014 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
BERYLLIUM	0.633	J	0.0717	MDL	1.07	PQL	mg/Kg	J	Z
BORON	1.40	J	0.898	MDL	10.7	PQL	mg/Kg	U	B, F
SODIUM	84.9	J	17.9	MDL	107	PQL	mg/Kg	J	Z
TIN	3.12	J	0.235	MDL	10.7	PQL	mg/Kg	U	B
Zirconium	3.13	J	0.898	MDL	5.35	PQL	mg/Kg	J	Z

Method Category: METALS

Method: 6020A **Matrix: SO**

Sample ID: FDG-SL-748-SA5C-SB-0.0-0.5 *Collected:* 5/12/2014 8:32:00 *Analysis Type:* REA *Dilution:* 2

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
SELENIUM	0.351	J	0.107	MDL	0.428	PQL	mg/Kg	J	Z

Sample ID: FDG-SL-748-SA5C-SB-0.0-0.5 *Collected:* 5/12/2014 8:32:00 *Analysis Type:* RES *Dilution:* 2

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
SILVER	0.200	J	0.0278	MDL	0.214	PQL	mg/Kg	J	Z

Sample ID: FDG-SL-748-SA5C-SB-4.0-5.0 *Collected:* 5/12/2014 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	0.193	J	0.107	MDL	0.428	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: PH175 **Laboratory: LL**

EDD Filename: PH175_v1 **eQAPP Name: CDM_SSFL_140617_Lan**

Method Category: METALS

Method: 6020A **Matrix: SO**

Sample ID: FDG-SL-748-SA5C-SB-4.0-5.0 *Collected:* 5/12/2014 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	0.187	J	0.0278	MDL	0.214	PQL	mg/Kg	J	Z

Method Category: METALS

Method: 7471B **Matrix: SO**

Sample ID: FDG-SL-748-SA5C-SB-4.0-5.0 *Collected:* 5/12/2014 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	0.0169	J	0.0106	MDL	0.0177	PQL	mg/Kg	J	Z

Method Category: SVOA

Method: 1613B **Matrix: SO**

Sample ID: FDG-SL-748-SA5C-SB-0.0-0.5 *Collected:* 5/12/2014 8:32:00 *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	0.581	JBQ	0.0614	MDL	5.28	PQL	ng/Kg	J	Z
1,2,3,4,7,8-HxCDD	1.03	JB	0.135	MDL	5.28	PQL	ng/Kg	J	Z
1,2,3,4,7,8-HXCDF	0.591	JB	0.0941	MDL	5.28	PQL	ng/Kg	J	Z
1,2,3,6,7,8-HXCDD	2.44	J	0.137	MDL	5.28	PQL	ng/Kg	J	Z
1,2,3,6,7,8-HXCDF	0.684	JB	0.0928	MDL	5.28	PQL	ng/Kg	J	Z
1,2,3,7,8,9-HXCDD	2.31	JB	0.136	MDL	5.28	PQL	ng/Kg	J	Z
1,2,3,7,8,9-HXCDF	0.320	JBQ	0.0976	MDL	5.28	PQL	ng/Kg	J	Z
1,2,3,7,8-PECDD	0.708	JBQ	0.127	MDL	5.28	PQL	ng/Kg	J	Z
1,2,3,7,8-PECDF	0.873	JB	0.0643	MDL	5.28	PQL	ng/Kg	J	Z
2,3,4,6,7,8-HXCDF	0.451	JBQ	0.0935	MDL	5.28	PQL	ng/Kg	J	Z
2,3,4,7,8-PECDF	0.439	JB	0.0581	MDL	5.28	PQL	ng/Kg	J	Z
2,3,7,8-TCDD	0.193	JQ	0.0946	MDL	1.06	PQL	ng/Kg	J	Z
2,3,7,8-TCDF	0.801	J	0.109	MDL	1.06	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: PH175 **Laboratory: LL**

EDD Filename: PH175_v1 **eQAPP Name: CDM_SSFL_140617_Lan**

Method Category: SVOA

Method: 1613B **Matrix: SO**

Sample ID: FDG-SL-748-SA5C-SB-4.0-5.0 *Collected:* 5/12/2014 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
1,2,3,4,6,7,8-HPCDD	0.715	JB	0.0633	MDL	5.15	PQL	ng/Kg	J	Z
1,2,3,4,6,7,8-HPCDF	0.0357	JBQ	0.0190	MDL	5.15	PQL	ng/Kg	U	B
1,2,3,4,7,8,9-HPCDF	0.0302	JBQ	0.0290	MDL	5.15	PQL	ng/Kg	U	B
1,2,3,6,7,8-HXCDD	0.0501	J	0.0374	MDL	5.15	PQL	ng/Kg	J	Z
OCDD	6.71	JB	0.0468	MDL	10.3	PQL	ng/Kg	J	Z
OCDF	0.193	JBQ	0.0842	MDL	10.3	PQL	ng/Kg	U	B

Method Category: SVOA

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

Sample ID: FDG-SL-748-SA5C-SB-0.0-0.5 *Collected:* 5/12/2014 8:32:00 *Analysis Type:* RES *Dilution:* 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
1-METHYLNAPHTHALENE	1.2	J	0.71	MDL	1.8	PQL	ug/Kg	J	Z

Sample ID: FDG-SL-748-SA5C-SB-0.0-0.5 *Collected:* 5/12/2014 8:32:00 *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	1.7	J	0.71	MDL	1.8	PQL	ug/Kg	J	Z
ANTHRACENE	0.85	J	0.36	MDL	1.8	PQL	ug/Kg	J	Z
BENZO(E)PYRENE	3.8	J	3.6	MDL	18	PQL	ug/Kg	J	Z
BIS(2-ETHYLHEXYL)PHTHALATE	13	J	6.4	MDL	19	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: PH175 **Laboratory: LL**

EDD Filename: PH175_v1 **eQAPP Name: CDM_SSFL_140617_Lan**

Reason Code Legend

Reason Code	*Description*
B	Method Blank Contamination
F	Equipment Blank Contamination
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

PH175

Method Blank Outlier Report

Lab Reporting Batch ID: PH175 **Laboratory: LL**

EDD Filename: PH175_v1 **eQAPP Name: CDM_SSFL_140617_Lan**

Method: 1613B
Matrix: SO

Method Blank Sample ID	Analysis Date	Analyte	Result	Associated Samples
BLK1360B372053	5/19/2014 8:53:00 PM	1,2,3,4,6,7,8-HPCDD	0.0887 ng/Kg	FDG-SL-748-SA5C-SB-0.0-0.5
		1,2,3,4,6,7,8-HPCDF	0.0135 ng/Kg	FDG-SL-748-SA5C-SB-4.0-5.0
		1,2,3,4,7,8,9-HPCDF	0.0284 ng/Kg	
		1,2,3,4,7,8-HxCDD	0.0321 ng/Kg	
		1,2,3,4,7,8-HXCDF	0.0576 ng/Kg	
		1,2,3,6,7,8-HXCDF	0.0280 ng/Kg	
		1,2,3,7,8,9-HXCDD	0.0241 ng/Kg	
		1,2,3,7,8,9-HXCDF	0.0367 ng/Kg	
		1,2,3,7,8-PECDD	0.0427 ng/Kg	
		1,2,3,7,8-PECDF	0.0581 ng/Kg	
		2,3,4,6,7,8-HXCDF	0.0471 ng/Kg	
		2,3,4,7,8-PECDF	0.0414 ng/Kg	
		OCDD	0.355 ng/Kg	
		OCDF	0.165 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
FDG-SL-748-SA5C-SB-4.0-5.0(RES)	1,2,3,4,6,7,8-HPCDF	0.0357 ng/Kg	0.0357U ng/Kg
FDG-SL-748-SA5C-SB-4.0-5.0(RES)	1,2,3,4,7,8,9-HPCDF	0.0302 ng/Kg	0.0302U ng/Kg
FDG-SL-748-SA5C-SB-4.0-5.0(RES)	OCDF	0.193 ng/Kg	0.193U ng/Kg

Method: 6010C
Matrix: SO

Method Blank Sample ID	Analysis Date	Analyte	Result	Associated Samples
P13437DB222025	5/15/2014 8:25:00 PM	BORON	1.15 mg/Kg	FDG-SL-748-SA5C-SB-0.0-0.5
		CALCIUM	13.6 mg/Kg	FDG-SL-748-SA5C-SB-4.0-5.0
		TIN	1.35 mg/Kg	
		ZINC	0.568 mg/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
FDG-SL-748-SA5C-SB-0.0-0.5(RES)	TIN	3.18 mg/Kg	3.18U mg/Kg
FDG-SL-748-SA5C-SB-4.0-5.0(RES)	BORON	1.40 mg/Kg	1.40U mg/Kg
FDG-SL-748-SA5C-SB-4.0-5.0(RES)	TIN	3.12 mg/Kg	3.12U mg/Kg

Method: 6020A
Matrix: SO

Method Blank Sample ID	Analysis Date	Analyte	Result	Associated Samples
P13437DB220455A	5/16/2014 4:55:00 AM	STRONTIUM	0.0750 mg/Kg	FDG-SL-748-SA5C-SB-0.0-0.5
				FDG-SL-748-SA5C-SB-4.0-5.0

Equipment Rinsate Blank Outlier Report

Lab Reporting Batch ID: PH175 **Laboratory: LL**

EDD Filename: PH175_v1 **eQAPP Name: CDM_SSFL_140617_Lan**

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

Equipment Blank Sample ID	Collected Date	Analyte	Result	Associated Samples
EB1-051414(REA3)	5/14/2014 3:00:00 PM	BARIUM BORON MOLYBDENUM	0.00034 mg/L 0.0106 mg/L 0.0029 mg/L	FDG-SL-748-SA5C-SB-0.0-0.5 FDG-SL-748-SA5C-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
FDG-SL-748-SA5C-SB-4.0-5.0(RES)	BORON	1.40 mg/Kg	1.40U mg/Kg

Reporting Limit Outliers

Lab Reporting Batch ID: PH175 **Laboratory: LL**

EDD Filename: PH175_v1 **eQAPP Name: CDM_SSFL_140617_Lan**

Method: 1613B

Matrix: SO

SampleID	Analyte	Lab Qual	Result	Reporting Limit	RL Type	Units	Flag
FDG-SL-748-SA5C-SB-0.0-0.5	1,2,3,4,7,8,9-HPCDF	JBQ	0.581	5.28	PQL	ng/Kg	J (all detects)
	1,2,3,4,7,8-HxCDD	JB	1.03	5.28	PQL	ng/Kg	
	1,2,3,4,7,8-HXCDF	JB	0.591	5.28	PQL	ng/Kg	
	1,2,3,6,7,8-HXCDD	J	2.44	5.28	PQL	ng/Kg	
	1,2,3,6,7,8-HXCDF	JB	0.684	5.28	PQL	ng/Kg	
	1,2,3,7,8,9-HXCDD	JB	2.31	5.28	PQL	ng/Kg	
	1,2,3,7,8,9-HXCDF	JBQ	0.320	5.28	PQL	ng/Kg	
	1,2,3,7,8-PECDD	JBQ	0.708	5.28	PQL	ng/Kg	
	1,2,3,7,8-PECDF	JB	0.873	5.28	PQL	ng/Kg	
	2,3,4,6,7,8-HXCDF	JBQ	0.451	5.28	PQL	ng/Kg	
	2,3,4,7,8-PECDF	JB	0.439	5.28	PQL	ng/Kg	
	2,3,7,8-TCDD	JQ	0.193	1.06	PQL	ng/Kg	
	2,3,7,8-TCDF	J	0.801	1.06	PQL	ng/Kg	
FDG-SL-748-SA5C-SB-4.0-5.0	1,2,3,4,6,7,8-HPCDD	JB	0.715	5.15	PQL	ng/Kg	J (all detects)
	1,2,3,4,6,7,8-HPCDF	JBQ	0.0357	5.15	PQL	ng/Kg	
	1,2,3,4,7,8,9-HPCDF	JBQ	0.0302	5.15	PQL	ng/Kg	
	1,2,3,6,7,8-HXCDD	J	0.0501	5.15	PQL	ng/Kg	
	OCDD	JB	6.71	10.3	PQL	ng/Kg	
	OCDF	JBQ	0.193	10.3	PQL	ng/Kg	

Method: 6010C

Matrix: SO

SampleID	Analyte	Lab Qual	Result	Reporting Limit	RL Type	Units	Flag
FDG-SL-748-SA5C-SB-0.0-0.5	BERYLLIUM	J	0.888	1.07	PQL	mg/Kg	J (all detects)
	BORON	J	6.28	10.7	PQL	mg/Kg	
	CADMIUM	J	0.305	1.07	PQL	mg/Kg	
	TIN	J	3.18	10.7	PQL	mg/Kg	
FDG-SL-748-SA5C-SB-4.0-5.0	BERYLLIUM	J	0.633	1.07	PQL	mg/Kg	J (all detects)
	BORON	J	1.40	10.7	PQL	mg/Kg	
	SODIUM	J	84.9	107	PQL	mg/Kg	
	TIN	J	3.12	10.7	PQL	mg/Kg	
	Zirconium	J	3.13	5.35	PQL	mg/Kg	

Method: 6020A

Matrix: SO

SampleID	Analyte	Lab Qual	Result	Reporting Limit	RL Type	Units	Flag
FDG-SL-748-SA5C-SB-0.0-0.5	SELENIUM	J	0.351	0.428	PQL	mg/Kg	J (all detects)
	SILVER	J	0.200	0.214	PQL	mg/Kg	
FDG-SL-748-SA5C-SB-4.0-5.0	SELENIUM	J	0.193	0.428	PQL	mg/Kg	J (all detects)
	SILVER	J	0.187	0.214	PQL	mg/Kg	

Reporting Limit Outliers

Lab Reporting Batch ID: PH175 **Laboratory: LL**

EDD Filename: PH175_v1 **eQAPP Name: CDM_SSFL_140617_Lan**

Method: 7471B

Matrix: SO

SampleID	Analyte	Lab Qual	Result	Reporting Limit	RL Type	Units	Flag
FDG-SL-748-SA5C-SB-4.0-5.0	MERCURY	J	0.0169	0.0177	PQL	mg/Kg	J (all detects)

Method: 8270D SIM

Matrix: SO

SampleID	Analyte	Lab Qual	Result	Reporting Limit	RL Type	Units	Flag
FDG-SL-748-SA5C-SB-0.0-0.5	1-METHYLNAPHTHALENE	J	1.2	1.8	PQL	ug/Kg	J (all detects)
	2-METHYLNAPHTHALENE	J	1.7	1.8	PQL	ug/Kg	
	ANTHRACENE	J	0.85	1.8	PQL	ug/Kg	
	BENZO(E)PYRENE	J	3.8	18	PQL	ug/Kg	
	BIS(2-ETHYLHEXYL)PHTHALATE	J	13	19	PQL	ug/Kg	

LDC #: 32031A4 **VALIDATION COMPLETENESS WORKSHEET** Date: 6/26/14
SDG #: PH175 ADR Page: 1 of 1
Laboratory: Eurofins Lancaster Laboratories Reviewer: KK
2nd Reviewer: [illegible]

METHOD: Metals (EPA SW 846 Method 6010C/6020A/~~7600~~ 7471B)

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: 5/12/14
II.	ICP/MS Tune	A	
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	N	
XII.	Sample Result Verification	N	
XIII.	Overall Assessment of Data	N	
XIV.	Field Duplicates	N	
XV	Field Blanks	SW	EB = EB1-051414 SDG# PH177 FB = FB-051314 SDG#PH176

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	FDG-SL-748-SA5C-SB-0.0-0.5	11		21		31	
2	FDG-SL-748-SA5C-SB-4.0-5.0	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 #: 32031 A4

VALIDATION FINDINGS WORKSHEET
Sample Specific Element Reference

Reviewer: VK
2nd reviewer: 02

All circled elements are applicable to each sample.

Sample ID	Matrix	Target Analyte List (TAL)
1-2	Soil	Al, Sb, As, Ba, Be, B, Cd, 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 #: 32031A4

VALIDATION FINDINGS WORKSHEET
Field Blanks

Reviewer: KK
2nd Reviewer: 02

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

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

Analyte	Blank ID	Blank ID	Sample Identification								
	FB-051314 SDG #PH176	EB1-051414 SDG #PH177	Action Limit	2							
Ba		0.34	0.17								
B		10.6	5.30	1.40							
Mo		2.90	1.45								
Mn	0.0012 mg/L		0.60								
Zn	0.003mg/L		1.50								

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 1

SDG: PH176

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

July 25, 2014

INTRODUCTION

This Data Validation Report (DVR) presents Level III data validation results for samples collected on May 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), 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 utilizing Selective Ion Monitoring (SIM)
Polychlorinated Biphenyls (PCBs) by EPA SW 846 Method 8082A
Metals by EPA SW 846 Method 6010C, 6020A, 7470A 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
Perchlorate by EPA Method 6850

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 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) 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.

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 SVOCs. 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 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
PH176/ 6010C	ICB/CCB	Arsenic	5.3 ug/L	All samples in SDG PH176

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
PH176/ 6010C	FDB-SL-836-SA5B-SB-19.0-20.0	Arsenic	2.31 mg/kg	2.31U 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 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.

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/LCSD pairs for VOCs, 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.

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 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 PH176	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 contaminants were found in the trip blank.

One equipment blank (from SDG PH177) was collected and analyzed for SVOCs, PCBs, TPH as gasoline, TPH as extractables with and without silica gel clean up, metals, dioxins and dibenzofurans and perchlorate. The equipment blank had detections for SVOCs, metals, dioxins and dibenzofurans and perchlorate. 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 was collected and analyzed for SVOCs, PCBs, TPH as gasoline, TPH as extractables with and without silica gel clean up, metals, dioxins and dibenzofurans and perchlorate. The field blank had detections for SVOCs, metals, and dioxins and dibenzofurans. The associated sample results were not detected or were significantly greater than the concentrations found in the field blank, therefore no data were qualified.

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
13-May-2014	TB1-051314	7462588	TB	5030B	8015M	III
13-May-2014	FDG-SL-756-SA5C-SB-15.0-1	7462589	N	3050B	6010C	III
13-May-2014	FDG-SL-756-SA5C-SB-15.0-1	7462589	N	3050B	6020A	III
13-May-2014	FDG-SL-756-SA5C-SB-15.0-1	7462589	N	3546	8082A	III
13-May-2014	FDG-SL-756-SA5C-SB-15.0-1	7462589	N	3546	8270D SIM	III
13-May-2014	FDG-SL-756-SA5C-SB-15.0-1	7462589	N	METHOD	6850	III
13-May-2014	FDG-SL-756-SA5C-SB-15.0-1	7462589	N	METHOD	7471B	III
13-May-2014	FDG-SL-836-SA5B-SB-15.0-1	7462590	N	3050B	6010C	III
13-May-2014	FDG-SL-836-SA5B-SB-15.0-1	7462590	N	3050B	6020A	III
13-May-2014	FDG-SL-836-SA5B-SB-15.0-1	7462590	N	3546	8015M	III
13-May-2014	FDG-SL-836-SA5B-SB-15.0-1	7462590	N	3546	8082A	III
13-May-2014	FDG-SL-836-SA5B-SB-15.0-1	7462590	N	3546	8270D SIM	III
13-May-2014	FDG-SL-836-SA5B-SB-15.0-1	7462590	N	5035A	8015M	III
13-May-2014	FDG-SL-836-SA5B-SB-15.0-1	7462590	N	METHOD	7471B	III
13-May-2014	FDG-SL-836-SA5B-SB-19.0-2	7462591	N	3050B	6010C	III
13-May-2014	FDG-SL-836-SA5B-SB-19.0-2	7462591	N	3050B	6020A	III
13-May-2014	FDG-SL-836-SA5B-SB-19.0-2	7462591	N	3546	8015M	III
13-May-2014	FDG-SL-836-SA5B-SB-19.0-2	7462591	N	3546	8082A	III
13-May-2014	FDG-SL-836-SA5B-SB-19.0-2	7462591	N	3546	8270D SIM	III
13-May-2014	FDG-SL-836-SA5B-SB-19.0-2	7462591	N	5035A	8015M	III
13-May-2014	FDG-SL-836-SA5B-SB-19.0-2	7462591	N	METHOD	7471B	III
13-May-2014	FB-051314	7462597	FB	3005A	6010C	III
13-May-2014	FB-051314	7462597	FB	3510C	8015M	III
13-May-2014	FB-051314	7462597	FB	3510C	8082A	III
13-May-2014	FB-051314	7462597	FB	3510C	8270D SIM	III
13-May-2014	FB-051314	7462597	FB	5030B	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
13-May-2014	FB-051314	7462597	FB	5030B	8260B	III
13-May-2014	FB-051314	7462597	FB	Gen Prep	6850	III
13-May-2014	FB-051314	7462597	FB	M3010A	6020A	III
13-May-2014	FB-051314	7462597	FB	METHOD	1613B	III
13-May-2014	FB-051314	7462597	FB	METHOD	7470A	III
13-May-2014	FB-051314MSD	P462597M241722A	MSD	Gen Prep	6850	III
13-May-2014	FB-051314MS	P462597R241709A	MS	Gen Prep	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*

Attachment 2
Overall Data Qualification Summary

Data Qualifier Summary

Lab Reporting Batch ID: PH176 **Laboratory: LL**

EDD Filename: PrepPH176 **eQAPP Name: CDM_SSFL_140617_Lan**

Method Category: METALS

Method: 6010C **Matrix: AQ**

Sample ID: FB-051314 **Collected: 5/13/2014 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
ZINC	0.0030	J	0.0020	MDL	0.0400	PQL	mg/L	U	B
MANGANESE	0.0012	J	0.00083	MDL	0.0100	PQL	mg/L	U	B

Method Category: METALS

Method: 6010C **Matrix: SO**

Sample ID: FDG-SL-756-SA5C-SB-15.0-16.0 **Collected: 5/13/2014 9:20:00** **Analysis Type: RES** **Dilution: 1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
BERYLLIUM	0.762	J	0.0720	MDL	1.07	PQL	mg/Kg	J	Z
MOLYBDENUM	0.455	J	0.183	MDL	2.15	PQL	mg/Kg	J	Z
TIN	3.15	J	0.236	MDL	10.7	PQL	mg/Kg	U	B
Zirconium	3.05	J	0.902	MDL	5.37	PQL	mg/Kg	J	Z

Sample ID: FDG-SL-836-SA5B-SB-15.0-16.0 **Collected: 5/13/2014 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
BERYLLIUM	1.00	J	0.0751	MDL	1.12	PQL	mg/Kg	J	Z
BORON	4.77	J	0.941	MDL	11.2	PQL	mg/Kg	U	B
TIN	3.64	J	0.246	MDL	11.2	PQL	mg/Kg	U	B

Sample ID: FDG-SL-836-SA5B-SB-19.0-20.0 **Collected: 5/13/2014 11:20:00** **Analysis Type: RES** **Dilution: 1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
ARSENIC	2.31	J	0.704	MDL	4.02	PQL	mg/Kg	U	B
BERYLLIUM	0.482	J	0.0674	MDL	1.01	PQL	mg/Kg	J	Z
BORON	1.35	J	0.845	MDL	10.1	PQL	mg/Kg	U	B
MOLYBDENUM	0.775	J	0.171	MDL	2.01	PQL	mg/Kg	J	Z
TIN	2.99	J	0.221	MDL	10.1	PQL	mg/Kg	U	B
Zirconium	2.46	J	0.845	MDL	5.03	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: PH176 **Laboratory: LL**

EDD Filename: PrepPH176 **eQAPP Name: CDM_SSFL_140617_Lan**

Method Category: METALS

Method: 6020A **Matrix: SO**

Sample ID: **FDG-SL-756-SA5C-SB-15.0-16.0** *Collected:* **5/13/2014 9:20:00** *Analysis Type:* **REA** *Dilution:* **2**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
SELENIUM	0.221	J	0.107	MDL	0.430	PQL	mg/Kg	J	Z

Sample ID: **FDG-SL-756-SA5C-SB-15.0-16.0** *Collected:* **5/13/2014 9:20:00** *Analysis Type:* **RES** *Dilution:* **2**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
SILVER	0.0374	J	0.0279	MDL	0.215	PQL	mg/Kg	J	Z

Sample ID: **FDG-SL-836-SA5B-SB-15.0-16.0** *Collected:* **5/13/2014 11:00:00** *Analysis Type:* **REA** *Dilution:* **2**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
SELENIUM	0.268	J	0.112	MDL	0.448	PQL	mg/Kg	J	Z

Sample ID: **FDG-SL-836-SA5B-SB-15.0-16.0** *Collected:* **5/13/2014 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	0.0598	J	0.0291	MDL	0.224	PQL	mg/Kg	J	Z

Sample ID: **FDG-SL-836-SA5B-SB-19.0-20.0** *Collected:* **5/13/2014 11:20:00** *Analysis Type:* **REA** *Dilution:* **2**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
SELENIUM	0.157	J	0.101	MDL	0.402	PQL	mg/Kg	J	Z

Method Category: METALS

Method: 7471B **Matrix: SO**

Sample ID: **FDG-SL-756-SA5C-SB-15.0-16.0** *Collected:* **5/13/2014 9:20:00** *Analysis Type:* **RES** *Dilution:* **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
MERCURY	0.0136	J	0.0105	MDL	0.0176	PQL	mg/Kg	J	Z

Sample ID: **FDG-SL-836-SA5B-SB-15.0-16.0** *Collected:* **5/13/2014 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
MERCURY	0.0128	J	0.0114	MDL	0.0190	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: PH176 **Laboratory: LL**

EDD Filename: PrepPH176 **eQAPP Name: CDM_SSFL_140617_Lan**

Method Category: METALS

Method: 7471B **Matrix: SO**

Sample ID: FDG-SL-836-SA5B-SB-19.0-20.0 *Collected:* 5/13/2014 11:20:00 *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	0.0102	MDL	0.0170	PQL	mg/Kg	J	Z

Method Category: SVOA

Method: 1613B **Matrix: AQ**

Sample ID: FB-051314 *Collected:* 5/13/2014 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	0.611	JBQ	0.134	MDL	9.90	PQL	pg/L	U	B
1,2,3,4,6,7,8-HPCDF	0.265	JBQ	0.0474	MDL	9.90	PQL	pg/L	U	B
1,2,3,4,7,8,9-HPCDF	0.160	JBQ	0.0519	MDL	9.90	PQL	pg/L	U	B
1,2,3,4,7,8-HXCDF	0.195	JBQ	0.0797	MDL	9.90	PQL	pg/L	U	B
1,2,3,6,7,8-HXCDF	0.163	JBQ	0.0746	MDL	9.90	PQL	pg/L	U	B
1,2,3,7,8-PECDF	0.272	JBQ	0.0933	MDL	9.90	PQL	pg/L	U	B
2,3,4,6,7,8-HXCDF	0.0816	JBQ	0.0717	MDL	9.90	PQL	pg/L	U	B
OCDD	4.37	JBQ	0.191	MDL	19.8	PQL	pg/L	U	B
OCDF	0.794	JBQ	0.154	MDL	19.8	PQL	pg/L	U	B

Method Category: SVOA

Method: 8015M **Matrix: AQ**

Sample ID: FB-051314 *Collected:* 5/13/2014 3:00:00 *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	0.098	U	0.049	MDL	0.098	PQL	mg/L	UJ	L
EFH (C21-C30) SG	0.098	U	0.049	MDL	0.098	PQL	mg/L	UJ	L
EFH (C8-C11) SG	0.098	U	0.049	MDL	0.098	PQL	mg/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: PH176 **Laboratory: LL**

EDD Filename: PrepPH176 **eQAPP Name: CDM_SSFL_140617_Lan**

Method Category: SVOA

Method: 8015M **Matrix: SO**

Sample ID: **FDG-SL-836-SA5B-SB-15.0-16.0** *Collected:* **5/13/2014 11:00:00** *Analysis Type:* **REA** *Dilution:* **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
EFH (C21-C30)	3.4	J	2.4	MDL	5.9	PQL	mg/Kg	J	Z

Sample ID: **FDG-SL-836-SA5B-SB-15.0-16.0** *Collected:* **5/13/2014 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	5.9	U	2.4	MDL	5.9	PQL	mg/Kg	UJ	L, S
EFH (C15-C20) SG	5.9	U	2.4	MDL	5.9	PQL	mg/Kg	UJ	L, S
EFH (C21-C30) SG	5.9	U	2.4	MDL	5.9	PQL	mg/Kg	UJ	L, S
EFH (C30-C40) SG	12	U	4.7	MDL	12	PQL	mg/Kg	UJ	S
EFH (C8-C11) SG	5.9	U	2.4	MDL	5.9	PQL	mg/Kg	UJ	L, S

Sample ID: **FDG-SL-836-SA5B-SB-19.0-20.0** *Collected:* **5/13/2014 11:20:00** *Analysis Type:* **REA** *Dilution:* **2**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
EFH (C12-C14) SG	11	U	4.2	MDL	11	PQL	mg/Kg	UJ	L
EFH (C15-C20) SG	15		4.2	MDL	11	PQL	mg/Kg	J	L
EFH (C21-C30) SG	94		4.2	MDL	11	PQL	mg/Kg	J	L
EFH (C8-C11) SG	11	U	4.2	MDL	11	PQL	mg/Kg	UJ	L

Method Category: SVOA

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

Sample ID: **FB-051314** *Collected:* **5/13/2014 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	0.048	U	0.0097	MDL	0.048	PQL	ug/L	UJ	H
2-METHYLNAPHTHALENE	0.048	U	0.0097	MDL	0.048	PQL	ug/L	UJ	H
ACENAPHTHENE	0.048	U	0.0097	MDL	0.048	PQL	ug/L	UJ	H
ACENAPHTHYLENE	0.048	U	0.0097	MDL	0.048	PQL	ug/L	UJ	H
ANTHRACENE	0.048	U	0.0097	MDL	0.048	PQL	ug/L	UJ	H
BENZO(A)ANTHRACENE	0.048	U	0.0097	MDL	0.048	PQL	ug/L	UJ	H
BENZO(A)PYRENE	0.048	U	0.0097	MDL	0.048	PQL	ug/L	UJ	H
BENZO(B)FLUORANTHENE	0.048	U	0.0097	MDL	0.048	PQL	ug/L	UJ	H
BENZO(E)PYRENE	0.048	U	0.0097	MDL	0.048	PQL	ug/L	UJ	H
BENZO(G,H,I)PERYLENE	0.048	U	0.0097	MDL	0.048	PQL	ug/L	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: PH176 **Laboratory: LL**

EDD Filename: PrepPH176 **eQAPP Name: CDM_SSFL_140617_Lan**

Method Category: SVOA

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

Sample ID: FB-051314 **Collected: 5/13/2014 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
BENZO(K)FLUORANTHENE	0.048	U	0.0097	MDL	0.048	PQL	ug/L	UJ	H
BIS(2-ETHYLHEXYL)PHTHALATE	0.25	J	0.048	MDL	0.97	PQL	ug/L	UJ	B, H
Butylbenzylphthalate	0.97	U	0.048	MDL	0.97	PQL	ug/L	UJ	H
CHRYSENE	0.048	U	0.0097	MDL	0.048	PQL	ug/L	UJ	H
DIBENZO(A,H)ANTHRACENE	0.048	U	0.0097	MDL	0.048	PQL	ug/L	UJ	H
Diethylphthalate	0.47	J	0.048	MDL	0.97	PQL	ug/L	J	Z, H
Dimethylphthalate	0.97	U	0.048	MDL	0.97	PQL	ug/L	UJ	H
Di-n-butylphthalate	0.22	J	0.048	MDL	0.97	PQL	ug/L	J	Z, H
Di-n-octylphthalate	0.97	U	0.048	MDL	0.97	PQL	ug/L	UJ	H
FLUORANTHENE	0.048	U	0.0097	MDL	0.048	PQL	ug/L	UJ	H
FLUORENE	0.048	U	0.0097	MDL	0.048	PQL	ug/L	UJ	H
INDENO(1,2,3-CD)PYRENE	0.048	U	0.0097	MDL	0.048	PQL	ug/L	UJ	H
NAPHTHALENE	0.048	U	0.029	MDL	0.048	PQL	ug/L	UJ	H
N-NITROSODIMETHYLAMINE	0.048	U	0.0097	MDL	0.048	PQL	ug/L	UJ	H
PHENANTHRENE	0.048	U	0.029	MDL	0.048	PQL	ug/L	UJ	H
PYRENE	0.048	U	0.0097	MDL	0.048	PQL	ug/L	UJ	H

Method Category: SVOA

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

Sample ID: FDG-SL-756-SA5C-SB-15.0-16.0 **Collected: 5/13/2014 9:20:00** **Analysis Type: RES-BASE/NEUTRAL** **Dilution: 1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
BIS(2-ETHYLHEXYL)PHTHALATE	14	J	6.4	MDL	19	PQL	ug/Kg	J	Z
FLUORANTHENE	0.88	J	0.72	MDL	1.8	PQL	ug/Kg	J	Z
PHENANTHRENE	1.1	J	0.72	MDL	1.8	PQL	ug/Kg	J	Z
PYRENE	0.94	J	0.72	MDL	1.8	PQL	ug/Kg	J	Z

Sample ID: FDG-SL-836-SA5B-SB-15.0-16.0 **Collected: 5/13/2014 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
1-METHYLNAPHTHALENE	1.8	J	0.78	MDL	2.0	PQL	ug/Kg	J	Z
BIS(2-ETHYLHEXYL)PHTHALATE	10	J	7.1	MDL	21	PQL	ug/Kg	J	Z
PHENANTHRENE	0.94	J	0.78	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: PH176 **Laboratory: LL**

EDD Filename: PrepPH176 **eQAPP Name: CDM_SSFL_140617_Lan**

Method Category: SVOA

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

Sample ID: FDG-SL-836-SA5B-SB-19.0-20.0 **Collected: 5/13/2014 11:20:00** **Analysis Type: RES-BASE/NEUTRAL** **Dilution: 1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
ACENAPHTHYLENE	0.35	J	0.35	MDL	1.8	PQL	ug/Kg	J	Z
BENZO(E)PYRENE	5.6	J	3.5	MDL	18	PQL	ug/Kg	J	Z
BENZO(G,H,I)PERYLENE	1.7	J	0.70	MDL	1.8	PQL	ug/Kg	J	Z
BIS(2-ETHYLHEXYL)PHTHALATE	12	J	6.3	MDL	19	PQL	ug/Kg	J	Z
Butylbenzylphthalate	6.4	J	6.3	MDL	19	PQL	ug/Kg	J	Z
DIBENZO(A,H)ANTHRACENE	0.99	J	0.70	MDL	1.8	PQL	ug/Kg	J	Z
INDENO(1,2,3-CD)PYRENE	0.95	J	0.70	MDL	1.8	PQL	ug/Kg	J	Z

Method Category: VOA

Method: 8260B **Matrix: AQ**

Sample ID: FB-051314 **Collected: 5/13/2014 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
Chlorotrifluoroethylene	5	U	2	MDL	5	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: PH176 **Laboratory: LL**

EDD Filename: PrepPH176 **eQAPP Name: CDM_SSFL_140617_Lan**

Reason Code Legend

Reason Code	*Description*
B	Calibration Blank Contamination
B	Method Blank Contamination
H	Sampling to Extraction Estimation
L	Laboratory Control Spike Lower Estimation
L	Laboratory Control 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

PH176

QC Outlier Report: HoldingTimes

Lab Reporting Batch ID: PH176 **Laboratory: LL**
EDD Filename: PH176_v3 **eQAPP Name: CDM_SSFL_140617_Lan**

Method: 8270D SIM **Preparation Method: 3510C**
Matrix: AQ

Sample ID	*Type*	*Actual*	*Criteria*	*Units*	*Flag*
FB-051314 (RES)	Sampling To Extraction	9.00	7.00	DAYS	J (all detects) UJ (all non-detects)

Method Blank Outlier Report

Lab Reporting Batch ID: PH176 **Laboratory: LL**

EDD Filename: PH176_v3 **eQAPP Name: CDM_SSFL_140617_Lan**

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

Method Blank Sample ID	Analysis Date	Analyte	Result	Associated Samples
BLK1360B371810	5/20/2014 6:10:00 PM	1,2,3,4,6,7,8-HPCDD	1.08 pg/L	FB-051314
		1,2,3,4,6,7,8-HPCDF	0.515 pg/L	
		1,2,3,4,7,8,9-HPCDF	0.574 pg/L	
		1,2,3,4,7,8-HxCDD	0.303 pg/L	
		1,2,3,4,7,8-HXCDF	0.418 pg/L	
		1,2,3,6,7,8-HXCDD	0.312 pg/L	
		1,2,3,6,7,8-HXCDF	0.243 pg/L	
		1,2,3,7,8,9-HXCDD	0.356 pg/L	
		1,2,3,7,8,9-HXCDF	0.445 pg/L	
		1,2,3,7,8-PECDD	0.307 pg/L	
		1,2,3,7,8-PECDF	0.466 pg/L	
		2,3,4,6,7,8-HXCDF	0.153 pg/L	
		2,3,4,7,8-PECDF	0.402 pg/L	
		2,3,7,8-TCDD	0.258 pg/L	
		OCDD	5.19 pg/L	
		OCDF	1.10 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
FB-051314(RES)	1,2,3,4,6,7,8-HPCDD	0.611 pg/L	0.611U pg/L
FB-051314(RES)	1,2,3,4,6,7,8-HPCDF	0.265 pg/L	0.265U pg/L
FB-051314(RES)	1,2,3,4,7,8,9-HPCDF	0.160 pg/L	0.160U pg/L
FB-051314(RES)	1,2,3,4,7,8-HXCDF	0.195 pg/L	0.195U pg/L
FB-051314(RES)	1,2,3,6,7,8-HXCDF	0.163 pg/L	0.163U pg/L
FB-051314(RES)	1,2,3,7,8-PECDF	0.272 pg/L	0.272U pg/L
FB-051314(RES)	2,3,4,6,7,8-HXCDF	0.0816 pg/L	0.0816U pg/L
FB-051314(RES)	OCDD	4.37 pg/L	4.37U pg/L
FB-051314(RES)	OCDF	0.794 pg/L	0.794U pg/L

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

Method Blank Sample ID	Analysis Date	Analyte	Result	Associated Samples
P13535AB221726	5/16/2014 5:26:00 PM	MANGANESE	0.0016 mg/L	FB-051314
		ZINC	0.0038 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
FB-051314(REA2)	MANGANESE	0.0012 mg/L	0.0012U mg/L
FB-051314(REA2)	ZINC	0.0030 mg/L	0.0030U mg/L

Method Blank Outlier Report

Lab Reporting Batch ID: PH176 **Laboratory: LL**

EDD Filename: PH176_v3 **eQAPP Name: CDM_SSFL_140617_Lan**

Method: 6010C
Matrix: SO

Method Blank Sample ID	Analysis Date	Analyte	Result	Associated Samples
P13437DB222025	5/15/2014 8:25:00 PM	BORON CALCIUM TIN ZINC	1.15 mg/Kg 13.6 mg/Kg 1.35 mg/Kg 0.568 mg/Kg	FDG-SL-756-SA5C-SB-15.0-16.0 FDG-SL-836-SA5B-SB-15.0-16.0 FDG-SL-836-SA5B-SB-19.0-20.0

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
FDG-SL-756-SA5C-SB-15.0-16.0(RES)	TIN	3.15 mg/Kg	3.15U mg/Kg
FDG-SL-836-SA5B-SB-15.0-16.0(RES)	BORON	4.77 mg/Kg	4.77U mg/Kg
FDG-SL-836-SA5B-SB-15.0-16.0(RES)	TIN	3.64 mg/Kg	3.64U mg/Kg
FDG-SL-836-SA5B-SB-19.0-20.0(RES)	BORON	1.35 mg/Kg	1.35U mg/Kg
FDG-SL-836-SA5B-SB-19.0-20.0(RES)	TIN	2.99 mg/Kg	2.99U mg/Kg

Method: 6020A
Matrix: SO

Method Blank Sample ID	Analysis Date	Analyte	Result	Associated Samples
P13437DB220455A	5/16/2014 4:55:00 AM	STRONTIUM	0.0750 mg/Kg	FDG-SL-756-SA5C-SB-15.0-16.0 FDG-SL-836-SA5B-SB-15.0-16.0 FDG-SL-836-SA5B-SB-19.0-20.0

Method: 8270D SIM
Matrix: AQ

Method Blank Sample ID	Analysis Date	Analyte	Result	Associated Samples
PLKWE14B260901	5/26/2014 9:01:00 AM	BIS(2-ETHYLHEXYL)PHTHALATE	0.24 ug/L	FB-051314

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
FB-051314(RES)	BIS(2-ETHYLHEXYL)PHTHALATE	0.25 ug/L	0.97U ug/L

Surrogate Outlier Report

Lab Reporting Batch ID: PH176 **Laboratory: LL**

EDD Filename: PH176_v3 **eQAPP Name: CDM_SSFL_140617_Lan**

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

Sample ID (Analysis Type)	*Surrogate*	*Sample % Recovery*	*% Recovery Limits*	*Affected Compounds*	*Flag*
FDG-SL-836-SA5B-SB-15.0-16.0 (REA2)	O-TERPHENYL	65	66.00-123.00	All Target Analytes	J (all detects) UJ (all non-detects)

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: PH176 **Laboratory: LL**

EDD Filename: PrepPH176 **eQAPP Name: CDM_SSFL_140617_Lan**

Method: 6020A
Matrix: AQ

QC Sample ID (Associated Samples)	Compound	LCS %R	LCSD %R	%R Limits	RPD (Limits)	Affected Compounds	Flag
P13539AY221932B (TOT) (FB-051314)	SELENIUM	-	133	80.00-120.00	-	SELENIUM	J (all detects)

Method: 8015M
Matrix: AQ

QC Sample ID (Associated Samples)	Compound	LCS %R	LCSD %R	%R Limits	RPD (Limits)	Affected Compounds	Flag
P41395AQ321725A P41395AY321747A (FB-051314)	EFH (C12-C14) SG EFH (C21-C30) SG EFH (C8-C11) SG	- 74 49	65 72 44	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: 8260B
Matrix: AQ

QC Sample ID (Associated Samples)	Compound	LCS %R	LCSD %R	%R Limits	RPD (Limits)	Affected Compounds	Flag
LCSY99Q212135A LCSY99Y212156A (FB-051314)	Chlorotrifluoroethylene	42	42	47.00-120.00	-	Chlorotrifluoroethylene	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
P41416AQ321722A (FDG-SL-836-SA5B-SB-15.0-16.0 FDG -SL-836-SA5B-SB-19.0-20.0)	EFH (C12-C14)	117	-	76.00-115.00	-	EFH (C12-C14)	J(all detects)
P41417AQ321743A (FDG-SL-836-SA5B-SB-15.0-16.0 FDG -SL-836-SA5B-SB-19.0-20.0)	EFH (C12-C14) SG EFH (C15-C20) SG EFH (C21-C30) SG EFH (C8-C11) SG	71 74 73 57	- - - -	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: PH176 **Laboratory: LL**

EDD Filename: PrepPH176 **eQAPP Name: CDM_SSFL_140617_Lan**

Method: 1613B

Matrix: AQ

SampleID	Analyte	Lab Qual	Result	Reporting Limit	RL Type	Units	Flag
FB-051314	1,2,3,4,6,7,8-HPCDD	JBQ	0.611	9.90	PQL	pg/L	J (all detects)
	1,2,3,4,6,7,8-HPCDF	JBQ	0.265	9.90	PQL	pg/L	
	1,2,3,4,7,8,9-HPCDF	JBQ	0.160	9.90	PQL	pg/L	
	1,2,3,4,7,8-HXCDF	JBQ	0.195	9.90	PQL	pg/L	
	1,2,3,6,7,8-HXCDF	JBQ	0.163	9.90	PQL	pg/L	
	1,2,3,7,8-PECDF	JBQ	0.272	9.90	PQL	pg/L	
	2,3,4,6,7,8-HXCDF	JBQ	0.0816	9.90	PQL	pg/L	
	OCDD	JBQ	4.37	19.8	PQL	pg/L	
	OCDF	JBQ	0.794	19.8	PQL	pg/L	

Method: 6010C

Matrix: AQ

SampleID	Analyte	Lab Qual	Result	Reporting Limit	RL Type	Units	Flag
FB-051314	MANGANESE	J	0.0012	0.0100	PQL	mg/L	J (all detects)
	ZINC	J	0.0030	0.0400	PQL	mg/L	

Method: 8270D SIM

Matrix: AQ

SampleID	Analyte	Lab Qual	Result	Reporting Limit	RL Type	Units	Flag
FB-051314	BIS(2-ETHYLHEXYL)PHTHALATE	J	0.25	0.97	PQL	ug/L	J (all detects)
	Diethylphthalate	J	0.47	0.97	PQL	ug/L	
	Di-n-butylphthalate	J	0.22	0.97	PQL	ug/L	

Method: 6010C

Matrix: SO

SampleID	Analyte	Lab Qual	Result	Reporting Limit	RL Type	Units	Flag
FDG-SL-756-SA5C-SB-15.0-16.0	BERYLLIUM	J	0.762	1.07	PQL	mg/Kg	J (all detects)
	MOLYBDENUM	J	0.455	2.15	PQL	mg/Kg	
	TIN	J	3.15	10.7	PQL	mg/Kg	
	Zirconium	J	3.05	5.37	PQL	mg/Kg	
FDG-SL-836-SA5B-SB-15.0-16.0	BERYLLIUM	J	1.00	1.12	PQL	mg/Kg	J (all detects)
	BORON	J	4.77	11.2	PQL	mg/Kg	
	TIN	J	3.64	11.2	PQL	mg/Kg	
FDG-SL-836-SA5B-SB-19.0-20.0	ARSENIC	J	2.31	4.02	PQL	mg/Kg	J (all detects)
	BERYLLIUM	J	0.482	1.01	PQL	mg/Kg	
	BORON	J	1.35	10.1	PQL	mg/Kg	
	MOLYBDENUM	J	0.775	2.01	PQL	mg/Kg	
	TIN	J	2.99	10.1	PQL	mg/Kg	
	Zirconium	J	2.46	5.03	PQL	mg/Kg	

Reporting Limit Outliers

Lab Reporting Batch ID: PH176 **Laboratory: LL**

EDD Filename: PrepPH176 **eQAPP Name: CDM_SSFL_140617_Lan**

Method: 6020A

Matrix: SO

SampleID	Analyte	Lab Qual	Result	Reporting Limit	RL Type	Units	Flag
FDG-SL-756-SA5C-SB-15.0-16.0	SELENIUM	J	0.221	0.430	PQL	mg/Kg	J (all detects)
	SILVER	J	0.0374	0.215	PQL	mg/Kg	
FDG-SL-836-SA5B-SB-15.0-16.0	SELENIUM	J	0.268	0.448	PQL	mg/Kg	J (all detects)
	SILVER	J	0.0598	0.224	PQL	mg/Kg	
FDG-SL-836-SA5B-SB-19.0-20.0	SELENIUM	J	0.157	0.402	PQL	mg/Kg	J (all detects)

Method: 7471B

Matrix: SO

SampleID	Analyte	Lab Qual	Result	Reporting Limit	RL Type	Units	Flag
FDG-SL-756-SA5C-SB-15.0-16.0	MERCURY	J	0.0136	0.0176	PQL	mg/Kg	J (all detects)
FDG-SL-836-SA5B-SB-15.0-16.0	MERCURY	J	0.0128	0.0190	PQL	mg/Kg	J (all detects)
FDG-SL-836-SA5B-SB-19.0-20.0	MERCURY	J	0.0122	0.0170	PQL	mg/Kg	J (all detects)

Method: 8015M

Matrix: SO

SampleID	Analyte	Lab Qual	Result	Reporting Limit	RL Type	Units	Flag
FDG-SL-836-SA5B-SB-15.0-16.0	EFH (C21-C30)	J	3.4	5.9	PQL	mg/Kg	J (all detects)

Method: 8270D SIM

Matrix: SO

SampleID	Analyte	Lab Qual	Result	Reporting Limit	RL Type	Units	Flag
FDG-SL-756-SA5C-SB-15.0-16.0	BIS(2-ETHYLHEXYL)PHTHALATE	J	14	19	PQL	ug/Kg	J (all detects)
	FLUORANTHENE	J	0.88	1.8	PQL	ug/Kg	
	PHENANTHRENE	J	1.1	1.8	PQL	ug/Kg	
	PYRENE	J	0.94	1.8	PQL	ug/Kg	
FDG-SL-836-SA5B-SB-15.0-16.0	1-METHYLNAPHTHALENE	J	1.8	2.0	PQL	ug/Kg	J (all detects)
	BIS(2-ETHYLHEXYL)PHTHALATE	J	10	21	PQL	ug/Kg	
	PHENANTHRENE	J	0.94	2.0	PQL	ug/Kg	
FDG-SL-836-SA5B-SB-19.0-20.0	ACENAPHTHYLENE	J	0.35	1.8	PQL	ug/Kg	J (all detects)
	BENZO(E)PYRENE	J	5.6	18	PQL	ug/Kg	
	BENZO(G,H,I)PERYLENE	J	1.7	1.8	PQL	ug/Kg	
	BIS(2-ETHYLHEXYL)PHTHALATE	J	12	19	PQL	ug/Kg	
	Butylbenzylphthalate	J	6.4	19	PQL	ug/Kg	
	DIBENZO(A,H)ANTHRACENE	J	0.99	1.8	PQL	ug/Kg	
	INDENO(1,2,3-CD)PYRENE	J	0.95	1.8	PQL	ug/Kg	

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

LDC #: 32031B4 **VALIDATION COMPLETENESS WORKSHEET** Date: 6/26/14

SDG #: PH176 ADR Page: 1 of 1

Laboratory: Eurofins Lancaster Laboratories Reviewer: KK

2nd Reviewer: CR

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

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: 5/13/14
II.	ICP/MS Tune	A	
III.	Calibration	—	
IV.	Blanks	SW	N
V.	ICP Interference Check Sample (ICS) Analysis	—	
VI.	Matrix Spike Analysis	N	CS
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	N	
XII.	Sample Result Verification	N	
XIII.	Overall Assessment of Data	N	
XIV.	Field Duplicates	N	
XV	Field Blanks	SW	EB = EB-051414 SDG# PH177 FB = FB-051314 SDG# PH176

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	FDG-SL-756-SA5C-SB-15.0-16.0	11		21		31	
2	FDG-SL-836-SA5B-SB-15.0-16.0	12		22		32	
3	FDG-SL-836-SA5B-SB-19.0-20.0	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 #: 3203184

VALIDATION FINDINGS WORKSHEET
Sample Specific Element Reference

Reviewer: KK
2nd reviewer: OR

All circled elements are applicable to each sample.

Sample ID	Matrix	Target Analyte List (TAL)
1-3	Soil	Al, Sb, As, Ba, Be, B, Cd, 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 #: 32031B4

VALIDATION FINDINGS WORKSHEET
PB/ICB/CCB QUALIFIED SAMPLES

Reviewer: KP
2nd Reviewer: OK

METHOD: Trace metals (EPA SW 864 Method 6010C/6020A/7471B) 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] (ug/L)	Maximum ICB/CCB[a] (ug/L)	Action Level (mg/Kg)	3										
As			5.3	2.65	2.31										

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 #: 32031B4

VALIDATION FINDINGS WORKSHEET
Field Blanks

Reviewer: tk
2nd Reviewer: ar

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

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

Analyte	Blank ID	Blank ID	Sample Identification						
	FB-051314 SDG#PH176	EB2-051414 SDG#PH177	Action Limit	No quals					
K		114	57						
Mn	0.0012mg/L		0.60						
Zn	0.003mg/L		1.50						

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 1

SDG: PH177

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

July 25, 2014

INTRODUCTION

This Data Validation Report (DVR) presents Level III data validation results for samples collected on May 14, 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)
Polychlorinated Biphenyls (PCBs) by EPA SW 846 Method 8082A
Metals by EPA SW 846 Method 6010C, 6020A, 7470A 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
Perchlorate by EPA Method 6850

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), 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) 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.

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 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 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

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 several LCS/LCSD pairs for SVOCs and 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.

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 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 PH177	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 contaminants were found in the trip blank.

Two equipment blanks were collected and analyzed for SVOCs, PCBs, TPH as gasoline, TPH as extractables with and without silica gel clean up, metals, dioxins and dibenzofurans and perchlorate. The equipment blanks had detections for SVOCs, metals TPH as extractables, dioxins and dibenzofurans and perchlorate. 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 PH176) was collected and analyzed for SVOCs, PCBs, TPH as gasoline, TPH as extractables with and without silica gel clean up, metals, dioxins and dibenzofurans and perchlorate. The field blank had detections for SVOCs, metals, and dioxins and dibenzofurans. The associated sample results were not detected or were significantly greater than the concentrations found in the field blank, therefore no data were qualified.

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
14-May-2014	TB1-051414	7465090	TB	5030B	8015M	III
14-May-2014	FDG-SL-841-SA5B-SB-0.0-0.	7465091	N	3050B	6010C	III
14-May-2014	FDG-SL-841-SA5B-SB-0.0-0.	7465091	N	3050B	6020A	III
14-May-2014	FDG-SL-841-SA5B-SB-0.0-0.	7465091	N	3546	8015M	III
14-May-2014	FDG-SL-841-SA5B-SB-0.0-0.	7465091	N	3546	8082A	III
14-May-2014	FDG-SL-841-SA5B-SB-0.0-0.	7465091	N	3546	8270D SIM	III
14-May-2014	FDG-SL-841-SA5B-SB-0.0-0.	7465091	N	METHOD	1613B	III
14-May-2014	FDG-SL-841-SA5B-SB-0.0-0.	7465091	N	METHOD	7471B	III
14-May-2014	FDG-SL-841-SA5B-SB-4.0-5.	7465092	N	3050B	6010C	III
14-May-2014	FDG-SL-841-SA5B-SB-4.0-5.	7465092	N	3050B	6020A	III
14-May-2014	FDG-SL-841-SA5B-SB-4.0-5.	7465092	N	3546	8015M	III
14-May-2014	FDG-SL-841-SA5B-SB-4.0-5.	7465092	N	3546	8082A	III
14-May-2014	FDG-SL-841-SA5B-SB-4.0-5.	7465092	N	3546	8270D SIM	III
14-May-2014	FDG-SL-841-SA5B-SB-4.0-5.	7465092	N	5035A	8015M	III
14-May-2014	FDG-SL-841-SA5B-SB-4.0-5.	7465092	N	METHOD	1613B	III
14-May-2014	FDG-SL-841-SA5B-SB-4.0-5.	7465092	N	METHOD	7471B	III
14-May-2014	FDG-SL-841-SA5B-SB-9.0-10	7465093	N	3050B	6010C	III
14-May-2014	FDG-SL-841-SA5B-SB-9.0-10	7465093	N	3050B	6020A	III
14-May-2014	FDG-SL-841-SA5B-SB-9.0-10	7465093	N	3546	8015M	III
14-May-2014	FDG-SL-841-SA5B-SB-9.0-10	7465093	N	3546	8082A	III
14-May-2014	FDG-SL-841-SA5B-SB-9.0-10	7465093	N	3546	8270D SIM	III
14-May-2014	FDG-SL-841-SA5B-SB-9.0-10	7465093	N	5035A	8015M	III
14-May-2014	FDG-SL-841-SA5B-SB-9.0-10	7465093	N	METHOD	1613B	III
14-May-2014	FDG-SL-841-SA5B-SB-9.0-10	7465093	N	METHOD	7471B	III
14-May-2014	FDG-SL-757-SA5C-SB-0.0-0.	7465094	N	3050B	6010C	III
14-May-2014	FDG-SL-757-SA5C-SB-0.0-0.	7465094	N	3050B	6020A	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
14-May-2014	FDG-SL-757-SA5C-SB-0.0-0.	7465094	N	3546	8082A	III
14-May-2014	FDG-SL-757-SA5C-SB-0.0-0.	7465094	N	3546	8270D SIM	III
14-May-2014	FDG-SL-757-SA5C-SB-0.0-0.	7465094	N	METHOD	1613B	III
14-May-2014	FDG-SL-757-SA5C-SB-0.0-0.	7465094	N	METHOD	6850	III
14-May-2014	FDG-SL-757-SA5C-SB-0.0-0.	7465094	N	METHOD	7471B	III
14-May-2014	FDG-SL-757-SA5C-SB-4.0-5.	7465095	N	3050B	6010C	III
14-May-2014	FDG-SL-757-SA5C-SB-4.0-5.	7465095	N	3050B	6020A	III
14-May-2014	FDG-SL-757-SA5C-SB-4.0-5.	7465095	N	3546	8082A	III
14-May-2014	FDG-SL-757-SA5C-SB-4.0-5.	7465095	N	3546	8270D SIM	III
14-May-2014	FDG-SL-757-SA5C-SB-4.0-5.	7465095	N	METHOD	1613B	III
14-May-2014	FDG-SL-757-SA5C-SB-4.0-5.	7465095	N	METHOD	6850	III
14-May-2014	FDG-SL-757-SA5C-SB-4.0-5.	7465095	N	METHOD	7471B	III
14-May-2014	FDG-SL-757-SA5C-SB-8.0-9.	7465096	N	3050B	6010C	III
14-May-2014	FDG-SL-757-SA5C-SB-8.0-9.	7465096	N	3050B	6020A	III
14-May-2014	FDG-SL-757-SA5C-SB-8.0-9.	7465096	N	3546	8082A	III
14-May-2014	FDG-SL-757-SA5C-SB-8.0-9.	7465096	N	3546	8270D SIM	III
14-May-2014	FDG-SL-757-SA5C-SB-8.0-9.	7465096	N	METHOD	1613B	III
14-May-2014	FDG-SL-757-SA5C-SB-8.0-9.	7465096	N	METHOD	6850	III
14-May-2014	FDG-SL-757-SA5C-SB-8.0-9.	7465096	N	METHOD	7471B	III
14-May-2014	FDG-SL-842-SA5B-SB-0.0-0.	7465097	N	3050B	6010C	III
14-May-2014	FDG-SL-842-SA5B-SB-0.0-0.	7465097	N	3050B	6020A	III
14-May-2014	FDG-SL-842-SA5B-SB-0.0-0.	7465097	N	3546	8015M	III
14-May-2014	FDG-SL-842-SA5B-SB-0.0-0.	7465097	N	3546	8082A	III
14-May-2014	FDG-SL-842-SA5B-SB-0.0-0.	7465097	N	3546	8270D SIM	III
14-May-2014	FDG-SL-842-SA5B-SB-0.0-0.	7465097	N	METHOD	1613B	III
14-May-2014	FDG-SL-842-SA5B-SB-0.0-0.	7465097	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*

Sample Cross Reference

Date Collected	Field Sample ID	Lab Sample ID	Sample Type	Prep Method	Analytical Method	Review Level
14-May-2014	FDG-SL-842-SA5B-SB-4.0-5.	7465098	N	3050B	6010C	III
14-May-2014	FDG-SL-842-SA5B-SB-4.0-5.	7465098	N	3050B	6020A	III
14-May-2014	FDG-SL-842-SA5B-SB-4.0-5.	7465098	N	3546	8015M	III
14-May-2014	FDG-SL-842-SA5B-SB-4.0-5.	7465098	N	3546	8082A	III
14-May-2014	FDG-SL-842-SA5B-SB-4.0-5.	7465098	N	3546	8270D SIM	III
14-May-2014	FDG-SL-842-SA5B-SB-4.0-5.	7465098	N	5035A	8015M	III
14-May-2014	FDG-SL-842-SA5B-SB-4.0-5.	7465098	N	METHOD	1613B	III
14-May-2014	FDG-SL-842-SA5B-SB-4.0-5.	7465098	N	METHOD	7471B	III
14-May-2014	EB1-051414	7465088	EB	3005A	6010C	III
14-May-2014	EB1-051414	7465088	EB	3510C	8015M	III
14-May-2014	EB1-051414	7465088	EB	3510C	8082A	III
14-May-2014	EB1-051414	7465088	EB	3510C	8270D SIM	III
14-May-2014	EB1-051414	7465088	EB	Gen Prep	6850	III
14-May-2014	EB1-051414	7465088	EB	M3010A	6020A	III
14-May-2014	EB1-051414	7465088	EB	METHOD	1613B	III
14-May-2014	EB1-051414	7465088	EB	METHOD	7470A	III
14-May-2014	EB2-051414	7465089	EB	3005A	6010C	III
14-May-2014	EB2-051414	7465089	EB	3510C	8015M	III
14-May-2014	EB2-051414	7465089	EB	3510C	8082A	III
14-May-2014	EB2-051414	7465089	EB	3510C	8270D SIM	III
14-May-2014	EB2-051414	7465089	EB	5030B	8015M	III
14-May-2014	EB2-051414	7465089	EB	Gen Prep	6850	III
14-May-2014	EB2-051414	7465089	EB	M3010A	6020A	III
14-May-2014	EB2-051414	7465089	EB	METHOD	1613B	III
14-May-2014	EB2-051414	7465089	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: PH177 **Laboratory: LL**

EDD Filename: PrepPH177 **eQAPP Name: CDM_SSFL_140617_Lan**

Method Category: METALS

Method: 6010C **Matrix: AQ**

Sample ID: **EB1-051414** *Collected:* **5/14/2014 3:00:00** *Analysis Type:* **REA3** *Dilution:* **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
BARIUM	0.00034	J	0.00033	MDL	0.0100	PQL	mg/L	J	Z
BORON	0.0106	J	0.0084	MDL	0.100	PQL	mg/L	J	Z
MOLYBDENUM	0.0029	J	0.0017	MDL	0.0200	PQL	mg/L	J	Z

Sample ID: **EB2-051414** *Collected:* **5/14/2014 3:30:00** *Analysis Type:* **REA3** *Dilution:* **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
POTASSIUM	0.114	J	0.0980	MDL	1.00	PQL	mg/L	J	Z

Method Category: METALS

Method: 6010C **Matrix: SO**

Sample ID: **FDG-SL-757-SA5C-SB-0.0-0.5** *Collected:* **5/14/2014 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
ARSENIC	0.941	J	0.697	MDL	3.99	PQL	mg/Kg	J	Z
BERYLLIUM	0.542	J	0.0668	MDL	0.996	PQL	mg/Kg	J	Z
BORON	0.845	J	0.837	MDL	9.96	PQL	mg/Kg	U	B, F
MOLYBDENUM	0.524	J	0.169	MDL	1.99	PQL	mg/Kg	U	F
TIN	3.39	J	0.219	MDL	9.96	PQL	mg/Kg	U	B
Zirconium	3.41	J	0.837	MDL	4.98	PQL	mg/Kg	J	Z

Sample ID: **FDG-SL-757-SA5C-SB-4.0-5.0** *Collected:* **5/14/2014 11:50:00** *Analysis Type:* **RES** *Dilution:* **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
ARSENIC	1.24	J	0.751	MDL	4.29	PQL	mg/Kg	J	Z
BERYLLIUM	0.552	J	0.0719	MDL	1.07	PQL	mg/Kg	J	Z
MOLYBDENUM	0.686	J	0.182	MDL	2.15	PQL	mg/Kg	J	Z
TIN	3.68	J	0.236	MDL	10.7	PQL	mg/Kg	U	B
Zirconium	2.94	J	0.901	MDL	5.36	PQL	mg/Kg	J	Z

Sample ID: **FDG-SL-757-SA5C-SB-8.0-9.0** *Collected:* **5/14/2014 12:00:00** *Analysis Type:* **RES** *Dilution:* **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
ARSENIC	2.61	J	0.718	MDL	4.10	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: PH177 **Laboratory: LL**

EDD Filename: PrepPH177 **eQAPP Name: CDM_SSFL_140617_Lan**

Method Category: METALS

Method: 6010C **Matrix: SO**

Sample ID: FDG-SL-757-SA5C-SB-8.0-9.0 **Collected: 5/14/2014 12:00:00** **Analysis Type: RES** **Dilution: 1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
BERYLLIUM	0.415	J	0.0687	MDL	1.03	PQL	mg/Kg	J	Z
SODIUM	89.9	J	17.1	MDL	103	PQL	mg/Kg	J	Z
TIN	2.93	J	0.226	MDL	10.3	PQL	mg/Kg	U	B
Zirconium	3.14	J	0.861	MDL	5.13	PQL	mg/Kg	J	Z

Sample ID: FDG-SL-841-SA5B-SB-0.0-0.5 **Collected: 5/14/2014 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
ARSENIC	3.04	J	0.701	MDL	4.00	PQL	mg/Kg	J	Z
BERYLLIUM	0.692	J	0.0671	MDL	1.00	PQL	mg/Kg	J	Z
MOLYBDENUM	0.446	J	0.170	MDL	2.00	PQL	mg/Kg	U	F
TIN	3.69	J	0.220	MDL	10.0	PQL	mg/Kg	U	B
Zirconium	3.31	J	0.841	MDL	5.00	PQL	mg/Kg	J	Z

Sample ID: FDG-SL-841-SA5B-SB-4.0-5.0 **Collected: 5/14/2014 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
ARSENIC	2.99	J	0.752	MDL	4.30	PQL	mg/Kg	J	Z
BERYLLIUM	0.645	J	0.0720	MDL	1.07	PQL	mg/Kg	J	Z
BORON	0.976	J	0.902	MDL	10.7	PQL	mg/Kg	U	B
MOLYBDENUM	0.412	J	0.183	MDL	2.15	PQL	mg/Kg	J	Z
TIN	3.35	J	0.236	MDL	10.7	PQL	mg/Kg	U	B
Zirconium	3.52	J	0.902	MDL	5.37	PQL	mg/Kg	J	Z

Sample ID: FDG-SL-841-SA5B-SB-9.0-10.0 **Collected: 5/14/2014 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
ARSENIC	4.07	J	0.744	MDL	4.25	PQL	mg/Kg	J	Z
MOLYBDENUM	0.295	J	0.181	MDL	2.12	PQL	mg/Kg	J	Z
TIN	6.02	J	0.234	MDL	10.6	PQL	mg/Kg	U	B
Zirconium	4.51	J	0.892	MDL	5.31	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: PH177 **Laboratory: LL**

EDD Filename: PrepPH177 **eQAPP Name: CDM_SSFL_140617_Lan**

Method Category: METALS

Method: 6010C **Matrix: SO**

Sample ID: **FDG-SL-842-SA5B-SB-0.0-0.5** *Collected:* **5/14/2014 1:55:00** *Analysis Type:* **RES** *Dilution:* **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
BERYLLIUM	0.649	J	0.0684	MDL	1.02	PQL	mg/Kg	J	Z
BORON	1.03	J	0.857	MDL	10.2	PQL	mg/Kg	U	B, F
MOLYBDENUM	0.491	J	0.174	MDL	2.04	PQL	mg/Kg	U	F
SODIUM	87.1	J	17.0	MDL	102	PQL	mg/Kg	J	Z
TIN	3.22	J	0.225	MDL	10.2	PQL	mg/Kg	U	B
Zirconium	3.48	J	0.857	MDL	5.10	PQL	mg/Kg	J	Z

Sample ID: **FDG-SL-842-SA5B-SB-4.0-5.0** *Collected:* **5/14/2014 2:25:00** *Analysis Type:* **RES** *Dilution:* **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
BERYLLIUM	0.880	J	0.0692	MDL	1.03	PQL	mg/Kg	J	Z
MOLYBDENUM	0.877	J	0.176	MDL	2.07	PQL	mg/Kg	J	Z
TIN	3.77	J	0.227	MDL	10.3	PQL	mg/Kg	U	B
Zirconium	3.63	J	0.868	MDL	5.17	PQL	mg/Kg	J	Z

Method Category: METALS

Method: 6020A **Matrix: SO**

Sample ID: **FDG-SL-757-SA5C-SB-0.0-0.5** *Collected:* **5/14/2014 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	0.100	J	0.0996	MDL	0.399	PQL	mg/Kg	J	Z

Sample ID: **FDG-SL-757-SA5C-SB-0.0-0.5** *Collected:* **5/14/2014 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	0.0508	J	0.0259	MDL	0.199	PQL	mg/Kg	J	Z

Sample ID: **FDG-SL-757-SA5C-SB-4.0-5.0** *Collected:* **5/14/2014 11:50:00** *Analysis Type:* **RES** *Dilution:* **2**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
SILVER	0.0618	J	0.0279	MDL	0.215	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: PH177 **Laboratory: LL**

EDD Filename: PrepPH177 **eQAPP Name: CDM_SSFL_140617_Lan**

Method Category: METALS

Method: 6020A **Matrix: SO**

Sample ID: FDG-SL-757-SA5C-SB-8.0-9.0 *Collected:* 5/14/2014 12:00:00 *Analysis Type:* RES *Dilution:* 2

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
SILVER	0.0594	J	0.0267	MDL	0.205	PQL	mg/Kg	J	Z

Sample ID: FDG-SL-841-SA5B-SB-0.0-0.5 *Collected:* 5/14/2014 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	0.0309	J	0.0260	MDL	0.200	PQL	mg/Kg	J	Z

Sample ID: FDG-SL-841-SA5B-SB-4.0-5.0 *Collected:* 5/14/2014 9:25:00 *Analysis Type:* RES *Dilution:* 2

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
SILVER	0.0287	J	0.0279	MDL	0.215	PQL	mg/Kg	J	Z

Sample ID: FDG-SL-841-SA5B-SB-9.0-10.0 *Collected:* 5/14/2014 9:35:00 *Analysis Type:* REA *Dilution:* 2

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
SELENIUM	0.174	J	0.106	MDL	0.425	PQL	mg/Kg	J	Z

Sample ID: FDG-SL-841-SA5B-SB-9.0-10.0 *Collected:* 5/14/2014 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	0.202	J	0.0276	MDL	0.212	PQL	mg/Kg	J	Z

Method Category: METALS

Method: 7471B **Matrix: SO**

Sample ID: FDG-SL-842-SA5B-SB-0.0-0.5 *Collected:* 5/14/2014 1:55:00 *Analysis Type:* RES *Dilution:* 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
MERCURY	0.0128	J	0.010	MDL	0.0167	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: PH177 **Laboratory: LL**

EDD Filename: PrepPH177 **eQAPP Name: CDM_SSFL_140617_Lan**

Method Category: SVOA

Method: 1613B **Matrix: AQ**

Sample ID: **EB1-051414** *Collected:* **5/14/2014 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	0.259	JB	0.0986	MDL	10.3	PQL	pg/L	U	B
1,2,3,4,6,7,8-HPCDF	0.328	JBQ	0.0397	MDL	10.3	PQL	pg/L	U	B
1,2,3,4,7,8,9-HPCDF	0.217	JB	0.0437	MDL	10.3	PQL	pg/L	U	B
1,2,3,4,7,8-HxCDD	0.237	JBQ	0.126	MDL	10.3	PQL	pg/L	U	B
1,2,3,4,7,8-HXCDF	0.184	JBQ	0.0756	MDL	10.3	PQL	pg/L	U	B
1,2,3,6,7,8-HXCDF	0.0756	JBQ	0.0738	MDL	10.3	PQL	pg/L	U	B
1,2,3,7,8,9-HXCDD	0.308	JBQ	0.130	MDL	10.3	PQL	pg/L	U	B
1,2,3,7,8,9-HXCDF	0.209	JBQ	0.0819	MDL	10.3	PQL	pg/L	U	B
2,3,4,6,7,8-HXCDF	0.123	JBQ	0.0750	MDL	10.3	PQL	pg/L	U	B
2,3,4,7,8-PECDF	0.156	JBQ	0.0708	MDL	10.3	PQL	pg/L	U	B
2,3,7,8-TCDD	0.210	JB	0.200	MDL	2.06	PQL	pg/L	U	B
2,3,7,8-TCDF	0.156	JQ	0.0981	MDL	2.06	PQL	pg/L	J	Z
OCDD	5.72	JBQ	0.201	MDL	20.6	PQL	pg/L	U	B
OCDF	0.700	JBQ	0.140	MDL	20.6	PQL	pg/L	U	B

Sample ID: **EB2-051414** *Collected:* **5/14/2014 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	0.945	JB	0.157	MDL	11.2	PQL	pg/L	U	B
1,2,3,4,6,7,8-HPCDF	0.349	JBQ	0.0558	MDL	11.2	PQL	pg/L	U	B
1,2,3,4,7,8,9-HPCDF	0.206	JB	0.0631	MDL	11.2	PQL	pg/L	U	B
1,2,3,4,7,8-HxCDD	0.185	JBQ	0.144	MDL	11.2	PQL	pg/L	U	B
1,2,3,6,7,8-HXCDF	0.275	JBQ	0.0811	MDL	11.2	PQL	pg/L	U	B
1,2,3,7,8,9-HXCDD	0.316	JBQ	0.149	MDL	11.2	PQL	pg/L	U	B
1,2,3,7,8,9-HXCDF	0.260	JB	0.0739	MDL	11.2	PQL	pg/L	U	B
1,2,3,7,8-PECDD	0.412	JBQ	0.229	MDL	11.2	PQL	pg/L	U	B
1,2,3,7,8-PECDF	0.405	JBQ	0.100	MDL	11.2	PQL	pg/L	U	B
2,3,4,6,7,8-HXCDF	0.237	JBQ	0.0794	MDL	11.2	PQL	pg/L	U	B
2,3,4,7,8-PECDF	0.122	JBQ	0.0986	MDL	11.2	PQL	pg/L	U	B
OCDD	1.42	JBQ	0.209	MDL	22.4	PQL	pg/L	U	B
OCDF	1.09	JB	0.172	MDL	22.4	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: PH177 **Laboratory: LL**

EDD Filename: PrepPH177 **eQAPP Name: CDM_SSFL_140617_Lan**

Method Category: SVOA

Method: 1613B **Matrix: SO**

***Sample ID:* FDG-SL-757-SA5C-SB-0.0-0.5** ***Collected:* 5/14/2014 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
1,2,3,4,7,8,9-HPCDF	1.21	J	0.0882	MDL	5.05	PQL	ng/Kg	J	Z
1,2,3,4,7,8-HxCDD	1.24	J	0.0900	MDL	5.05	PQL	ng/Kg	J	Z
1,2,3,4,7,8-HXCDF	0.768	J	0.0882	MDL	5.05	PQL	ng/Kg	J	Z
1,2,3,6,7,8-HXCDD	3.76	J	0.0945	MDL	5.05	PQL	ng/Kg	J	Z
1,2,3,6,7,8-HXCDF	0.635	J	0.0891	MDL	5.05	PQL	ng/Kg	J	Z
1,2,3,7,8,9-HXCDD	2.26	J	0.0940	MDL	5.05	PQL	ng/Kg	J	Z
1,2,3,7,8,9-HXCDF	0.376	J	0.0816	MDL	5.05	PQL	ng/Kg	J	Z
1,2,3,7,8-PECDD	0.716	J	0.0674	MDL	5.05	PQL	ng/Kg	J	Z
1,2,3,7,8-PECDF	0.315	JB	0.0463	MDL	5.05	PQL	ng/Kg	J	Z
2,3,4,6,7,8-HXCDF	0.867	J	0.0858	MDL	5.05	PQL	ng/Kg	J	Z
2,3,4,7,8-PECDF	0.397	J	0.0426	MDL	5.05	PQL	ng/Kg	J	Z
2,3,7,8-TCDD	0.108	JQ	0.0712	MDL	1.01	PQL	ng/Kg	J	Z

***Sample ID:* FDG-SL-757-SA5C-SB-4.0-5.0** ***Collected:* 5/14/2014 11:50:00** ***Analysis Type:* RES** ***Dilution:* 1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
1,2,3,4,7,8,9-HPCDF	0.694	JQ	0.0674	MDL	5.46	PQL	ng/Kg	J	Z
1,2,3,4,7,8-HxCDD	0.485	J	0.104	MDL	5.46	PQL	ng/Kg	J	Z
1,2,3,4,7,8-HXCDF	0.430	J	0.0751	MDL	5.46	PQL	ng/Kg	J	Z
1,2,3,6,7,8-HXCDD	2.19	J	0.107	MDL	5.46	PQL	ng/Kg	J	Z
1,2,3,6,7,8-HXCDF	0.321	J	0.0747	MDL	5.46	PQL	ng/Kg	J	Z
1,2,3,7,8,9-HXCDD	1.25	J	0.0979	MDL	5.46	PQL	ng/Kg	J	Z
1,2,3,7,8,9-HXCDF	0.122	J	0.0762	MDL	5.46	PQL	ng/Kg	J	Z
1,2,3,7,8-PECDD	0.364	JQ	0.0614	MDL	5.46	PQL	ng/Kg	J	Z
1,2,3,7,8-PECDF	0.176	JBQ	0.0410	MDL	5.46	PQL	ng/Kg	U	B
2,3,4,6,7,8-HXCDF	0.516	JQ	0.0735	MDL	5.46	PQL	ng/Kg	J	Z
2,3,4,7,8-PECDF	0.0922	JQ	0.0370	MDL	5.46	PQL	ng/Kg	J	Z
2,3,7,8-TCDF	0.0666	J	0.0510	MDL	1.09	PQL	ng/Kg	J	Z

***Sample ID:* FDG-SL-757-SA5C-SB-8.0-9.0** ***Collected:* 5/14/2014 12:00:00** ***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	0.426	JB	0.0371	MDL	5.27	PQL	ng/Kg	U	B
1,2,3,4,6,7,8-HPCDF	0.0999	JBQ	0.0132	MDL	5.27	PQL	ng/Kg	U	B
1,2,3,4,7,8-HxCDD	0.0420	JQ	0.0223	MDL	5.27	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: PH177 **Laboratory: LL**

EDD Filename: PrepPH177 **eQAPP Name: CDM_SSFL_140617_Lan**

Method Category: SVOA

Method: 1613B **Matrix: SO**

Sample ID: **FDG-SL-757-SA5C-SB-8.0-9.0** ***Collected:*** **5/14/2014 12:00:00** ***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	0.0237	J	0.0202	MDL	5.27	PQL	ng/Kg	J	Z
1,2,3,6,7,8-HXCDD	0.0248	JQ	0.0218	MDL	5.27	PQL	ng/Kg	J	Z
1,2,3,6,7,8-HXCDF	0.0175	JQ	0.0174	MDL	5.27	PQL	ng/Kg	J	Z
1,2,3,7,8-PECDF	0.0502	JBQ	0.0201	MDL	5.27	PQL	ng/Kg	U	B
2,3,4,6,7,8-HXCDF	0.0223	JQ	0.0192	MDL	5.27	PQL	ng/Kg	J	Z
OCDD	10.1	JB	0.0367	MDL	10.5	PQL	ng/Kg	J	Z
OCDF	0.287	JB	0.0534	MDL	10.5	PQL	ng/Kg	U	B

Sample ID: **FDG-SL-841-SA5B-SB-0.0-0.5** ***Collected:*** **5/14/2014 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	0.938	JB	0.0534	MDL	4.99	PQL	ng/Kg	J	Z
1,2,3,4,6,7,8-HPCDF	0.330	JB	0.0281	MDL	4.99	PQL	ng/Kg	J	Z
1,2,3,4,7,8,9-HPCDF	0.0876	JQ	0.0426	MDL	4.99	PQL	ng/Kg	J	Z
1,2,3,4,7,8-HXCDF	0.132	JQ	0.0417	MDL	4.99	PQL	ng/Kg	J	Z
1,2,3,6,7,8-HXCDD	0.0953	JQ	0.0371	MDL	4.99	PQL	ng/Kg	J	Z
1,2,3,6,7,8-HXCDF	0.0375	JQ	0.0364	MDL	4.99	PQL	ng/Kg	J	Z
1,2,3,7,8,9-HXCDD	0.170	JQ	0.0367	MDL	4.99	PQL	ng/Kg	J	Z
1,2,3,7,8,9-HXCDF	0.104	J	0.0387	MDL	4.99	PQL	ng/Kg	J	Z
1,2,3,7,8-PECDF	2.47	JB	0.0380	MDL	4.99	PQL	ng/Kg	J	Z
2,3,4,6,7,8-HXCDF	0.0626	JQ	0.0372	MDL	4.99	PQL	ng/Kg	J	Z
2,3,4,7,8-PECDF	0.110	JQ	0.0369	MDL	4.99	PQL	ng/Kg	J	Z
2,3,7,8-TCDF	0.0638	JQ	0.0483	MDL	0.999	PQL	ng/Kg	J	Z
OCDF	0.878	JBQ	0.0570	MDL	9.99	PQL	ng/Kg	J	Z

Sample ID: **FDG-SL-841-SA5B-SB-4.0-5.0** ***Collected:*** **5/14/2014 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-HPCDD	0.212	JBQ	0.0411	MDL	5.34	PQL	ng/Kg	U	B
1,2,3,4,6,7,8-HPCDF	0.115	JBQ	0.0147	MDL	5.34	PQL	ng/Kg	U	B
1,2,3,4,7,8,9-HPCDF	0.0517	JQ	0.0261	MDL	5.34	PQL	ng/Kg	J	Z
1,2,3,4,7,8-HxCDD	0.0809	JQ	0.0466	MDL	5.34	PQL	ng/Kg	J	Z
1,2,3,4,7,8-HXCDF	0.164	JQ	0.0345	MDL	5.34	PQL	ng/Kg	J	Z
1,2,3,6,7,8-HXCDD	0.341	J	0.0459	MDL	5.34	PQL	ng/Kg	J	Z
1,2,3,6,7,8-HXCDF	0.158	J	0.0303	MDL	5.34	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: PH177 **Laboratory: LL**

EDD Filename: PrepPH177 **eQAPP Name: CDM_SSFL_140617_Lan**

Method Category: SVOA

Method: 1613B **Matrix: SO**

Sample ID: FDG-SL-841-SA5B-SB-4.0-5.0 **Collected: 5/14/2014 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
1,2,3,7,8,9-HXCDD	0.541	J	0.0445	MDL	5.34	PQL	ng/Kg	J	Z
1,2,3,7,8,9-HXCDF	0.337	J	0.0351	MDL	5.34	PQL	ng/Kg	J	Z
1,2,3,7,8-PECDD	0.210	JQ	0.0550	MDL	5.34	PQL	ng/Kg	J	Z
1,2,3,7,8-PECDF	0.465	JBQ	0.0324	MDL	5.34	PQL	ng/Kg	J	Z
2,3,4,6,7,8-HXCDF	0.0989	JQ	0.0336	MDL	5.34	PQL	ng/Kg	J	Z
2,3,4,7,8-PECDF	0.265	J	0.0329	MDL	5.34	PQL	ng/Kg	J	Z
2,3,7,8-TCDD	0.123	JQ	0.0807	MDL	1.07	PQL	ng/Kg	J	Z
2,3,7,8-TCDF	0.156	J	0.0553	MDL	1.07	PQL	ng/Kg	J	Z
OCDD	1.69	JB	0.0349	MDL	10.7	PQL	ng/Kg	J	Z
OCDF	0.281	JBQ	0.0675	MDL	10.7	PQL	ng/Kg	U	B

Sample ID: FDG-SL-841-SA5B-SB-9.0-10.0 **Collected: 5/14/2014 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
1,2,3,4,6,7,8-HPCDD	0.182	JBQ	0.0435	MDL	5.32	PQL	ng/Kg	U	B
1,2,3,4,6,7,8-HPCDF	0.0286	JBQ	0.0143	MDL	5.32	PQL	ng/Kg	U	B
1,2,3,4,7,8,9-HPCDF	0.0495	J	0.0233	MDL	5.32	PQL	ng/Kg	J	Z
1,2,3,4,7,8-HXCDF	0.100	JQ	0.0305	MDL	5.32	PQL	ng/Kg	J	Z
1,2,3,6,7,8-HXCDD	0.0701	J	0.0470	MDL	5.32	PQL	ng/Kg	J	Z
1,2,3,6,7,8-HXCDF	0.0727	JQ	0.0268	MDL	5.32	PQL	ng/Kg	J	Z
1,2,3,7,8,9-HXCDD	0.124	JQ	0.0480	MDL	5.32	PQL	ng/Kg	J	Z
1,2,3,7,8,9-HXCDF	0.0302	JQ	0.0256	MDL	5.32	PQL	ng/Kg	J	Z
1,2,3,7,8-PECDD	0.207	J	0.0618	MDL	5.32	PQL	ng/Kg	J	Z
1,2,3,7,8-PECDF	0.215	JBQ	0.0337	MDL	5.32	PQL	ng/Kg	U	B
2,3,4,6,7,8-HXCDF	0.0534	JQ	0.0282	MDL	5.32	PQL	ng/Kg	J	Z
2,3,4,7,8-PECDF	0.132	JQ	0.0328	MDL	5.32	PQL	ng/Kg	J	Z
2,3,7,8-TCDD	0.131	JQ	0.0894	MDL	1.06	PQL	ng/Kg	J	Z
2,3,7,8-TCDF	0.0488	JQ	0.0476	MDL	1.06	PQL	ng/Kg	J	Z
OCDD	0.684	JBQ	0.0351	MDL	10.6	PQL	ng/Kg	U	B
OCDF	0.135	JBQ	0.0547	MDL	10.6	PQL	ng/Kg	U	B

Sample ID: FDG-SL-842-SA5B-SB-0.0-0.5 **Collected: 5/14/2014 1:55:00** **Analysis Type: RES** **Dilution: 1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
1,2,3,4,7,8,9-HPCDF	2.80	J	0.112	MDL	4.99	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: PH177 **Laboratory: LL**

EDD Filename: PrepPH177 **eQAPP Name: CDM_SSFL_140617_Lan**

Method Category: SVOA

Method: 1613B **Matrix: SO**

Sample ID: FDG-SL-842-SA5B-SB-0.0-0.5 **Collected: 5/14/2014 1:55:00** **Analysis Type: RES** **Dilution: 1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
1,2,3,4,7,8-HxCDD	1.67	J	0.0867	MDL	4.99	PQL	ng/Kg	J	Z
1,2,3,4,7,8-HXCDF	1.26	J	0.113	MDL	4.99	PQL	ng/Kg	J	Z
1,2,3,6,7,8-HXCDD	3.04	J	0.0879	MDL	4.99	PQL	ng/Kg	J	Z
1,2,3,6,7,8-HXCDF	2.43	J	0.0948	MDL	4.99	PQL	ng/Kg	J	Z
1,2,3,7,8,9-HXCDD	3.56	J	0.0902	MDL	4.99	PQL	ng/Kg	J	Z
1,2,3,7,8,9-HXCDF	0.253	JQ	0.120	MDL	4.99	PQL	ng/Kg	J	Z
1,2,3,7,8-PECDD	0.657	J	0.0630	MDL	4.99	PQL	ng/Kg	J	Z
1,2,3,7,8-PECDF	0.169	JBQ	0.0475	MDL	4.99	PQL	ng/Kg	U	B
2,3,4,6,7,8-HXCDF	2.18	J	0.104	MDL	4.99	PQL	ng/Kg	J	Z
2,3,4,7,8-PECDF	0.167	JQ	0.0510	MDL	4.99	PQL	ng/Kg	J	Z
2,3,7,8-TCDF	0.0880	JQ	0.0669	MDL	0.998	PQL	ng/Kg	J	Z

Sample ID: FDG-SL-842-SA5B-SB-4.0-5.0 **Collected: 5/14/2014 2:25:00** **Analysis Type: RES** **Dilution: 1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
1,2,3,4,7,8,9-HPCDF	2.60	J	0.140	MDL	5.24	PQL	ng/Kg	J	Z
1,2,3,4,7,8-HxCDD	2.01	J	0.138	MDL	5.24	PQL	ng/Kg	J	Z
1,2,3,4,7,8-HXCDF	1.26	J	0.155	MDL	5.24	PQL	ng/Kg	J	Z
1,2,3,6,7,8-HXCDD	3.31	J	0.138	MDL	5.24	PQL	ng/Kg	J	Z
1,2,3,6,7,8-HXCDF	2.11	J	0.134	MDL	5.24	PQL	ng/Kg	J	Z
1,2,3,7,8,9-HXCDD	4.09	J	0.141	MDL	5.24	PQL	ng/Kg	J	Z
1,2,3,7,8,9-HXCDF	0.260	JQ	0.178	MDL	5.24	PQL	ng/Kg	J	Z
1,2,3,7,8-PECDD	0.888	JQ	0.0793	MDL	5.24	PQL	ng/Kg	J	Z
1,2,3,7,8-PECDF	0.165	JBQ	0.0614	MDL	5.24	PQL	ng/Kg	U	B
2,3,4,6,7,8-HXCDF	2.17	J	0.148	MDL	5.24	PQL	ng/Kg	J	Z
2,3,4,7,8-PECDF	0.170	JQ	0.0633	MDL	5.24	PQL	ng/Kg	J	Z
2,3,7,8-TCDD	0.101	JQ	0.0775	MDL	1.05	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: PH177 **Laboratory: LL**

EDD Filename: PrepPH177 **eQAPP Name: CDM_SSFL_140617_Lan**

Method Category: SVOA

Method: 6850 **Matrix: AQ**

Sample ID: **EB2-051414** *Collected:* **5/14/2014 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
PERCHLORATE	0.40	J	0.20	MDL	1.0	PQL	ug/L	J	Z

Method Category: SVOA

Method: 8015M **Matrix: AQ**

Sample ID: **EB1-051414** *Collected:* **5/14/2014 3:00:00** *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	0.098	U	0.049	MDL	0.098	PQL	mg/L	UJ	L
EFH (C21-C30) SG	0.098	U	0.049	MDL	0.098	PQL	mg/L	UJ	L
EFH (C8-C11) SG	0.098	U	0.049	MDL	0.098	PQL	mg/L	UJ	L

Sample ID: **EB2-051414** *Collected:* **5/14/2014 3:30:00** *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	0.097	U	0.049	MDL	0.097	PQL	mg/L	UJ	L
EFH (C21-C30) SG	0.097	U	0.049	MDL	0.097	PQL	mg/L	UJ	L
EFH (C8-C11) SG	0.097	U	0.049	MDL	0.097	PQL	mg/L	UJ	L

Method Category: SVOA

Method: 8015M **Matrix: SO**

Sample ID: **FDG-SL-841-SA5B-SB-0.0-0.5** *Collected:* **5/14/2014 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	5.2	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

Sample ID: **FDG-SL-841-SA5B-SB-4.0-5.0** *Collected:* **5/14/2014 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 (C21-C30)	3.7	J	2.2	MDL	5.5	PQL	mg/Kg	J	Z
EFH (C30-C40)	9.3	J	4.4	MDL	11	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: PH177 **Laboratory: LL**

EDD Filename: PrepPH177 **eQAPP Name: CDM_SSFL_140617_Lan**

Method Category: SVOA

Method: 8015M **Matrix: SO**

Sample ID: **FDG-SL-841-SA5B-SB-4.0-5.0** ***Collected:*** **5/14/2014 9:25:00** ***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	5.5	U	2.2	MDL	5.5	PQL	mg/Kg	UJ	L
EFH (C8-C11) SG	5.5	U	2.2	MDL	5.5	PQL	mg/Kg	UJ	L

Sample ID: **FDG-SL-841-SA5B-SB-9.0-10.0** ***Collected:*** **5/14/2014 9:35:00** ***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	5.5	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	5.5	U	2.2	MDL	5.5	PQL	mg/Kg	UJ	L
EFH (C8-C11) SG	5.5	U	2.2	MDL	5.5	PQL	mg/Kg	UJ	L

Sample ID: **FDG-SL-842-SA5B-SB-0.0-0.5** ***Collected:*** **5/14/2014 1:55:00** ***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	2.3	J	2.1	MDL	5.2	PQL	mg/Kg	J	Z, L
EFH (C8-C11) SG	5.2	U	2.1	MDL	5.2	PQL	mg/Kg	UJ	L

Sample ID: **FDG-SL-842-SA5B-SB-0.0-0.5** ***Collected:*** **5/14/2014 1:55:00** ***Analysis Type:*** **RES** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
EFH (C21-C30)	4.9	J	2.1	MDL	5.2	PQL	mg/Kg	J	Z
EFH (C30-C40)	9.8	J	4.1	MDL	10	PQL	mg/Kg	J	Z

Sample ID: **FDG-SL-842-SA5B-SB-4.0-5.0** ***Collected:*** **5/14/2014 2:25:00** ***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	4.2	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: PH177 **Laboratory: LL**

EDD Filename: PrepPH177 **eQAPP Name: CDM_SSFL_140617_Lan**

Method Category: SVOA
Method: 8015M **Matrix: SO**

Method Category: SVOA
Method: 8082A **Matrix: SO**

Sample ID: FDG-SL-757-SA5C-SB-4.0-5.0 *Collected:* 5/14/2014 11:50:00 *Analysis Type:* RES *Dilution:* 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
AROCLOR 1254	11	J	4.8	MDL	19	PQL	ug/Kg	J	Z

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

Sample ID: EB1-051414 *Collected:* 5/14/2014 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
BIS(2-ETHYLHEXYL)PHTHALATE	0.49	J	0.057	MDL	1.1	PQL	ug/L	UJ	L, B
DIBENZO(A,H)ANTHRACENE	0.057	U	0.011	MDL	0.057	PQL	ug/L	UJ	L
Diethylphthalate	0.082	J	0.057	MDL	1.1	PQL	ug/L	U	B
Di-n-butylphthalate	0.27	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

Sample ID: EB2-051414 *Collected:* 5/14/2014 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
BIS(2-ETHYLHEXYL)PHTHALATE	0.11	J	0.053	MDL	1.1	PQL	ug/L	UJ	L, B
DIBENZO(A,H)ANTHRACENE	0.053	U	0.011	MDL	0.053	PQL	ug/L	UJ	L
Diethylphthalate	0.084	J	0.053	MDL	1.1	PQL	ug/L	U	B
Di-n-butylphthalate	0.26	J	0.053	MDL	1.1	PQL	ug/L	U	B
Di-n-octylphthalate	1.1	U	0.053	MDL	1.1	PQL	ug/L	UJ	L

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

Sample ID: FDG-SL-757-SA5C-SB-0.0-0.5 *Collected:* 5/14/2014 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
ANTHRACENE	0.35	J	0.34	MDL	1.7	PQL	ug/Kg	J	Z
BENZO(A)ANTHRACENE	1.2	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: PH177 **Laboratory: LL**

EDD Filename: PrepPH177 **eQAPP Name: CDM_SSFL_140617_Lan**

Method Category: SVOA

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

Sample ID: FDG-SL-757-SA5C-SB-0.0-0.5 **Collected: 5/14/2014 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
BENZO(E)PYRENE	11	J	3.4	MDL	17	PQL	ug/Kg	J	Z
BIS(2-ETHYLHEXYL)PHTHALATE	14	J	6.1	MDL	18	PQL	ug/Kg	J	Z
Butylbenzylphthalate	12	J	6.1	MDL	18	PQL	ug/Kg	J	Z
INDENO(1,2,3-CD)PYRENE	1.3	J	0.68	MDL	1.7	PQL	ug/Kg	J	Z
PHENANTHRENE	1.4	J	0.68	MDL	1.7	PQL	ug/Kg	J	Z

Sample ID: FDG-SL-757-SA5C-SB-4.0-5.0 **Collected: 5/14/2014 11:50:00** **Analysis Type: RES-BASE/NEUTRAL** **Dilution: 1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
ANTHRACENE	0.54	J	0.37	MDL	1.8	PQL	ug/Kg	J	Z
BENZO(E)PYRENE	5.2	J	3.7	MDL	19	PQL	ug/Kg	J	Z
BIS(2-ETHYLHEXYL)PHTHALATE	12	J	6.6	MDL	20	PQL	ug/Kg	J	Z
DIBENZO(A,H)ANTHRACENE	0.81	J	0.74	MDL	1.8	PQL	ug/Kg	J	Z
INDENO(1,2,3-CD)PYRENE	1.3	J	0.74	MDL	1.8	PQL	ug/Kg	J	Z

Sample ID: FDG-SL-757-SA5C-SB-8.0-9.0 **Collected: 5/14/2014 12:00:00** **Analysis Type: RES-BASE/NEUTRAL** **Dilution: 1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
BIS(2-ETHYLHEXYL)PHTHALATE	8.2	J	6.4	MDL	19	PQL	ug/Kg	J	Z

Sample ID: FDG-SL-841-SA5B-SB-0.0-0.5 **Collected: 5/14/2014 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
BIS(2-ETHYLHEXYL)PHTHALATE	9.7	J	6.2	MDL	19	PQL	ug/Kg	J	Z

Sample ID: FDG-SL-841-SA5B-SB-4.0-5.0 **Collected: 5/14/2014 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
BIS(2-ETHYLHEXYL)PHTHALATE	8.2	J	6.6	MDL	20	PQL	ug/Kg	J	Z
CHRYSENE	0.52	J	0.37	MDL	1.8	PQL	ug/Kg	J	Z
NAPHTHALENE	1.0	J	0.74	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: PH177 **Laboratory: LL**

EDD Filename: PrepPH177 **eQAPP Name: CDM_SSFL_140617_Lan**

Method Category: SVOA

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

Sample ID: **FDG-SL-841-SA5B-SB-9.0-10.0** *Collected:* **5/14/2014 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
BENZO(B)FLUORANTHENE	0.85	J	0.74	MDL	1.8	PQL	ug/Kg	J	Z
BIS(2-ETHYLHEXYL)PHTHALATE	8.4	J	6.6	MDL	20	PQL	ug/Kg	J	Z
PHENANTHRENE	0.78	J	0.74	MDL	1.8	PQL	ug/Kg	J	Z

Sample ID: **FDG-SL-842-SA5B-SB-0.0-0.5** *Collected:* **5/14/2014 1:55:00** *Analysis Type:* **RES-BASE/NEUTRAL** *Dilution:* **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
BIS(2-ETHYLHEXYL)PHTHALATE	9.4	J	6.2	MDL	19	PQL	ug/Kg	J	Z
CHRYSENE	0.66	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

Sample ID: **FDG-SL-842-SA5B-SB-4.0-5.0** *Collected:* **5/14/2014 2:25:00** *Analysis Type:* **RES-BASE/NEUTRAL** *Dilution:* **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
2-METHYLNAPHTHALENE	0.87	J	0.70	MDL	1.8	PQL	ug/Kg	J	Z
BIS(2-ETHYLHEXYL)PHTHALATE	9.4	J	6.3	MDL	19	PQL	ug/Kg	J	Z
CHRYSENE	0.65	J	0.35	MDL	1.8	PQL	ug/Kg	J	Z
FLUORANTHENE	0.95	J	0.70	MDL	1.8	PQL	ug/Kg	J	Z
PHENANTHRENE	0.71	J	0.70	MDL	1.8	PQL	ug/Kg	J	Z
PYRENE	0.81	J	0.70	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: PH177 **Laboratory: LL**

EDD Filename: PrepPH177 **eQAPP Name: CDM_SSFL_140617_Lan**

Reason Code Legend

Reason Code	*Description*
B	Method Blank Contamination
F	Equipment Blank Contamination
L	Laboratory Control Spike Lower Estimation
L	Laboratory Control 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

PH177

Method Blank Outlier Report

Lab Reporting Batch ID: PH177 **Laboratory: LL**

EDD Filename: PH177_v2 **eQAPP Name: CDM_SSFL_140617_Lan**

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

Method Blank Sample ID	Analysis Date	Analyte	Result	Associated Samples
BLK1360B371810	5/20/2014 6:10:00 PM	1,2,3,4,6,7,8-HPCDD	1.08 pg/L	EB1-051414
		1,2,3,4,6,7,8-HPCDF	0.515 pg/L	EB2-051414
		1,2,3,4,7,8,9-HPCDF	0.574 pg/L	
		1,2,3,4,7,8-HxCDD	0.303 pg/L	
		1,2,3,4,7,8-HXCDF	0.418 pg/L	
		1,2,3,6,7,8-HXCDD	0.312 pg/L	
		1,2,3,6,7,8-HXCDF	0.243 pg/L	
		1,2,3,7,8,9-HXCDD	0.356 pg/L	
		1,2,3,7,8,9-HXCDF	0.445 pg/L	
		1,2,3,7,8-PECDD	0.307 pg/L	
		1,2,3,7,8-PECDF	0.466 pg/L	
		2,3,4,6,7,8-HXCDF	0.153 pg/L	
		2,3,4,7,8-PECDF	0.402 pg/L	
		2,3,7,8-TCDD	0.258 pg/L	
		OCDD	5.19 pg/L	
		OCDF	1.10 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
EB1-051414(RES)	1,2,3,4,6,7,8-HPCDD	0.259 pg/L	0.259U pg/L
EB1-051414(RES)	1,2,3,4,6,7,8-HPCDF	0.328 pg/L	0.328U pg/L
EB1-051414(RES)	1,2,3,4,7,8,9-HPCDF	0.217 pg/L	0.217U pg/L
EB1-051414(RES)	1,2,3,4,7,8-HxCDD	0.237 pg/L	0.237U pg/L
EB1-051414(RES)	1,2,3,4,7,8-HXCDF	0.184 pg/L	0.184U pg/L
EB1-051414(RES)	1,2,3,6,7,8-HXCDF	0.0756 pg/L	0.0756U pg/L
EB1-051414(RES)	1,2,3,7,8,9-HXCDD	0.308 pg/L	0.308U pg/L
EB1-051414(RES)	1,2,3,7,8,9-HXCDF	0.209 pg/L	0.209U pg/L
EB1-051414(RES)	2,3,4,6,7,8-HXCDF	0.123 pg/L	0.123U pg/L
EB1-051414(RES)	2,3,4,7,8-PECDF	0.156 pg/L	0.156U pg/L
EB1-051414(RES)	2,3,7,8-TCDD	0.210 pg/L	0.210U pg/L
EB1-051414(RES)	OCDD	5.72 pg/L	5.72U pg/L
EB1-051414(RES)	OCDF	0.700 pg/L	0.700U pg/L
EB2-051414(RES)	1,2,3,4,6,7,8-HPCDD	0.945 pg/L	0.945U pg/L
EB2-051414(RES)	1,2,3,4,6,7,8-HPCDF	0.349 pg/L	0.349U pg/L
EB2-051414(RES)	1,2,3,4,7,8,9-HPCDF	0.206 pg/L	0.206U pg/L
EB2-051414(RES)	1,2,3,4,7,8-HxCDD	0.185 pg/L	0.185U pg/L
EB2-051414(RES)	1,2,3,6,7,8-HXCDF	0.275 pg/L	0.275U pg/L
EB2-051414(RES)	1,2,3,7,8,9-HXCDD	0.316 pg/L	0.316U pg/L
EB2-051414(RES)	1,2,3,7,8,9-HXCDF	0.260 pg/L	0.260U pg/L
EB2-051414(RES)	1,2,3,7,8-PECDD	0.412 pg/L	0.412U pg/L
EB2-051414(RES)	1,2,3,7,8-PECDF	0.405 pg/L	0.405U pg/L
EB2-051414(RES)	2,3,4,6,7,8-HXCDF	0.237 pg/L	0.237U pg/L
EB2-051414(RES)	2,3,4,7,8-PECDF	0.122 pg/L	0.122U pg/L
EB2-051414(RES)	OCDD	1.42 pg/L	1.42U pg/L
EB2-051414(RES)	OCDF	1.09 pg/L	1.09U pg/L

Method Blank Outlier Report

Lab Reporting Batch ID: PH177 **Laboratory: LL**

EDD Filename: PH177_v2 **eQAPP Name: CDM_SSFL_140617_Lan**

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

Method Blank Sample ID	Analysis Date	Analyte	Result	Associated Samples
BLK1400B371613	5/22/2014 4:13:00 PM	1,2,3,4,6,7,8-HPCDD 1,2,3,4,6,7,8-HPCDF 1,2,3,7,8-PECDF OCDD OCDF	0.0895 ng/Kg 0.0247 ng/Kg 0.0521 ng/Kg 0.182 ng/Kg 0.137 ng/Kg	FDG-SL-757-SA5C-SB-0.0-0.5 FDG-SL-757-SA5C-SB-4.0-5.0 FDG-SL-757-SA5C-SB-8.0-9.0 FDG-SL-841-SA5B-SB-0.0-0.5 FDG-SL-841-SA5B-SB-4.0-5.0 FDG-SL-841-SA5B-SB-9.0-10.0 FDG-SL-842-SA5B-SB-0.0-0.5 FDG-SL-842-SA5B-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
FDG-SL-757-SA5C-SB-4.0-5.0(RES)	1,2,3,7,8-PECDF	0.176 ng/Kg	0.176U ng/Kg
FDG-SL-757-SA5C-SB-8.0-9.0(RES)	1,2,3,4,6,7,8-HPCDD	0.426 ng/Kg	0.426U ng/Kg
FDG-SL-757-SA5C-SB-8.0-9.0(RES)	1,2,3,4,6,7,8-HPCDF	0.0999 ng/Kg	0.0999U ng/Kg
FDG-SL-757-SA5C-SB-8.0-9.0(RES)	1,2,3,7,8-PECDF	0.0502 ng/Kg	0.0502U ng/Kg
FDG-SL-757-SA5C-SB-8.0-9.0(RES)	OCDF	0.287 ng/Kg	0.287U ng/Kg
FDG-SL-841-SA5B-SB-4.0-5.0(RES)	1,2,3,4,6,7,8-HPCDD	0.212 ng/Kg	0.212U ng/Kg
FDG-SL-841-SA5B-SB-4.0-5.0(RES)	1,2,3,4,6,7,8-HPCDF	0.115 ng/Kg	0.115U ng/Kg
FDG-SL-841-SA5B-SB-4.0-5.0(RES)	OCDF	0.281 ng/Kg	0.281U ng/Kg
FDG-SL-841-SA5B-SB-9.0-10.0(RES)	1,2,3,4,6,7,8-HPCDD	0.182 ng/Kg	0.182U ng/Kg
FDG-SL-841-SA5B-SB-9.0-10.0(RES)	1,2,3,4,6,7,8-HPCDF	0.0286 ng/Kg	0.0286U ng/Kg
FDG-SL-841-SA5B-SB-9.0-10.0(RES)	1,2,3,7,8-PECDF	0.215 ng/Kg	0.215U ng/Kg
FDG-SL-841-SA5B-SB-9.0-10.0(RES)	OCDD	0.684 ng/Kg	0.684U ng/Kg
FDG-SL-841-SA5B-SB-9.0-10.0(RES)	OCDF	0.135 ng/Kg	0.135U ng/Kg
FDG-SL-842-SA5B-SB-0.0-0.5(RES)	1,2,3,7,8-PECDF	0.169 ng/Kg	0.169U ng/Kg
FDG-SL-842-SA5B-SB-4.0-5.0(RES)	1,2,3,7,8-PECDF	0.165 ng/Kg	0.165U ng/Kg

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

Method Blank Sample ID	Analysis Date	Analyte	Result	Associated Samples
P13637AB220940	5/21/2014 9:40:00 AM	BORON CALCIUM TIN	2.41 mg/Kg 15.4 mg/Kg 1.42 mg/Kg	FDG-SL-757-SA5C-SB-0.0-0.5 FDG-SL-757-SA5C-SB-4.0-5.0 FDG-SL-757-SA5C-SB-8.0-9.0 FDG-SL-841-SA5B-SB-0.0-0.5 FDG-SL-841-SA5B-SB-4.0-5.0 FDG-SL-841-SA5B-SB-9.0-10.0 FDG-SL-842-SA5B-SB-0.0-0.5 FDG-SL-842-SA5B-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
FDG-SL-757-SA5C-SB-0.0-0.5(RES)	BORON	0.845 mg/Kg	0.845U mg/Kg
FDG-SL-757-SA5C-SB-0.0-0.5(RES)	TIN	3.39 mg/Kg	3.39U mg/Kg
FDG-SL-757-SA5C-SB-4.0-5.0(RES)	TIN	3.68 mg/Kg	3.68U mg/Kg
FDG-SL-757-SA5C-SB-8.0-9.0(RES)	TIN	2.93 mg/Kg	2.93U mg/Kg

Method Blank Outlier Report

Lab Reporting Batch ID: PH177 **Laboratory: LL**

EDD Filename: PH177_v2 **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
FDG-SL-841-SA5B-SB-0.0-0.5(RES)	TIN	3.69 mg/Kg	3.69U mg/Kg
FDG-SL-841-SA5B-SB-4.0-5.0(RES)	BORON	0.976 mg/Kg	0.976U mg/Kg
FDG-SL-841-SA5B-SB-4.0-5.0(RES)	TIN	3.35 mg/Kg	3.35U mg/Kg
FDG-SL-841-SA5B-SB-9.0-10.0(RES)	TIN	6.02 mg/Kg	6.02U mg/Kg
FDG-SL-842-SA5B-SB-0.0-0.5(RES)	BORON	1.03 mg/Kg	1.03U mg/Kg
FDG-SL-842-SA5B-SB-0.0-0.5(RES)	TIN	3.22 mg/Kg	3.22U mg/Kg
FDG-SL-842-SA5B-SB-4.0-5.0(RES)	TIN	3.77 mg/Kg	3.77U mg/Kg

Method: 6020A
Matrix: SO

Method Blank Sample ID	Analysis Date	Analyte	Result	Associated Samples
P13637AB220441A	5/22/2014 4:41:00 AM	STRONTIUM	0.105 mg/Kg	FDG-SL-757-SA5C-SB-0.0-0.5 FDG-SL-757-SA5C-SB-4.0-5.0 FDG-SL-757-SA5C-SB-8.0-9.0 FDG-SL-841-SA5B-SB-0.0-0.5 FDG-SL-841-SA5B-SB-4.0-5.0 FDG-SL-841-SA5B-SB-9.0-10.0 FDG-SL-842-SA5B-SB-0.0-0.5 FDG-SL-842-SA5B-SB-4.0-5.0

Method: 8270D SIM
Matrix: AQ

Method Blank Sample ID	Analysis Date	Analyte	Result	Associated Samples
PLKWB14B261357	5/23/2014 1:57:00 PM	BIS(2-ETHYLHEXYL)PHTHALATE Diethylphthalate Di-n-butylphthalate	0.12 ug/L 0.10 ug/L 0.18 ug/L	EB1-051414 EB2-051414

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
EB1-051414(RES)	BIS(2-ETHYLHEXYL)PHTHALATE	0.49 ug/L	1.1U ug/L
EB1-051414(RES)	Diethylphthalate	0.082 ug/L	1.1U ug/L
EB1-051414(RES)	Di-n-butylphthalate	0.27 ug/L	1.1U ug/L
EB2-051414(RES)	BIS(2-ETHYLHEXYL)PHTHALATE	0.11 ug/L	1.1U ug/L
EB2-051414(RES)	Diethylphthalate	0.084 ug/L	1.1U ug/L
EB2-051414(RES)	Di-n-butylphthalate	0.26 ug/L	1.1U ug/L

Surrogate Outlier Report

Lab Reporting Batch ID: PH177 **Laboratory: LL**

EDD Filename: PH177_v2 **eQAPP Name: CDM_SSFL_140617_Lan**

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

Sample ID (Analysis Type)	*Surrogate*	*Sample % Recovery*	*% Recovery Limits*	*Affected Compounds*	*Flag*
FDG-SL-842-SA5B -SB-4.0-5.0 (REA2)	O-TERPHENYL	64	66.00-123.00	All Target Analytes	J (all detects) UJ (all non-detects)

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: PH177 **Laboratory: LL**

EDD Filename: PrepPH177 **eQAPP Name: CDM_SSFL_140617_Lan**

Method: 8270D SIM
Matrix: AQ

QC Sample ID (Associated Samples)	Compound	LCS %R	LCSD %R	%R Limits	RPD (Limits)	Affected Compounds	Flag
P0WBLCSQ261427 **P0WBLCSY261456** (EB1-051414 EB2 -051414)	BIS(2-ETHYLHEXYL)PHTHALAT DIBENZO(A,H)ANTHRACENE Di-n-octylphthalate	52 59 39	46 - 36	70.00-143.00 66.00-133.00 57.00-145.00	- - -	BIS(2-ETHYLHEXYL)PHTHALA DIBENZO(A,H)ANTHRACENE Di-n-octylphthalate	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
P41395AQ321725A **P41395AY321747A** (EB1-051414 EB2 -051414)	EFH (C12-C14) SG EFH (C21-C30) SG EFH (C8-C11) SG	- 74 49	65 72 44	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: 8015M
Matrix: SO

QC Sample ID (Associated Samples)	Compound	LCS %R	LCSD %R	%R Limits	RPD (Limits)	Affected Compounds	Flag
P41416AQ321722A (FDG-SL-841-SA5B-SB-0.0-0.5 FDG -SL-841-SA5B-SB-4.0-5.0 FDG -SL-841-SA5B-SB-9.0-10.0 FDG -SL-842-SA5B-SB-0.0-0.5 FDG -SL-842-SA5B-SB-4.0-5.0)	EFH (C12-C14)	117	-	76.00-115.00	-	EFH (C12-C14)	J(all detects)
P41417AQ321743A (FDG-SL-841-SA5B-SB-0.0-0.5 FDG -SL-841-SA5B-SB-4.0-5.0 FDG -SL-841-SA5B-SB-9.0-10.0 FDG -SL-842-SA5B-SB-0.0-0.5 FDG -SL-842-SA5B-SB-4.0-5.0)	EFH (C12-C14) SG EFH (C15-C20) SG EFH (C21-C30) SG EFH (C8-C11) SG	71 74 73 57	- - - -	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: PH177 **Laboratory: LL**

EDD Filename: PrepPH177 **eQAPP Name: CDM_SSFL_140617_Lan**

Method: 1613B

Matrix: AQ

SampleID	Analyte	Lab Qual	Result	Reporting Limit	RL Type	Units	Flag
EB1-051414	1,2,3,4,6,7,8-HPCDD	JB	0.259	10.3	PQL	pg/L	J (all detects)
	1,2,3,4,6,7,8-HPCDF	JBQ	0.328	10.3	PQL	pg/L	
	1,2,3,4,7,8,9-HPCDF	JB	0.217	10.3	PQL	pg/L	
	1,2,3,4,7,8-HxCDD	JBQ	0.237	10.3	PQL	pg/L	
	1,2,3,4,7,8-HXCDF	JBQ	0.184	10.3	PQL	pg/L	
	1,2,3,6,7,8-HXCDF	JBQ	0.0756	10.3	PQL	pg/L	
	1,2,3,7,8,9-HXCDD	JBQ	0.308	10.3	PQL	pg/L	
	1,2,3,7,8,9-HXCDF	JBQ	0.209	10.3	PQL	pg/L	
	2,3,4,6,7,8-HXCDF	JBQ	0.123	10.3	PQL	pg/L	
	2,3,4,7,8-PECDF	JBQ	0.156	10.3	PQL	pg/L	
	2,3,7,8-TCDD	JB	0.210	2.06	PQL	pg/L	
	2,3,7,8-TCDF	JQ	0.156	2.06	PQL	pg/L	
	OCDD	JBQ	5.72	20.6	PQL	pg/L	
	OCDF	JBQ	0.700	20.6	PQL	pg/L	
EB2-051414	1,2,3,4,6,7,8-HPCDD	JB	0.945	11.2	PQL	pg/L	J (all detects)
	1,2,3,4,6,7,8-HPCDF	JBQ	0.349	11.2	PQL	pg/L	
	1,2,3,4,7,8,9-HPCDF	JB	0.206	11.2	PQL	pg/L	
	1,2,3,4,7,8-HxCDD	JBQ	0.185	11.2	PQL	pg/L	
	1,2,3,6,7,8-HXCDF	JBQ	0.275	11.2	PQL	pg/L	
	1,2,3,7,8,9-HXCDD	JBQ	0.316	11.2	PQL	pg/L	
	1,2,3,7,8,9-HXCDF	JB	0.260	11.2	PQL	pg/L	
	1,2,3,7,8-PECDD	JBQ	0.412	11.2	PQL	pg/L	
	1,2,3,7,8-PECDF	JBQ	0.405	11.2	PQL	pg/L	
	2,3,4,6,7,8-HXCDF	JBQ	0.237	11.2	PQL	pg/L	
	2,3,4,7,8-PECDF	JBQ	0.122	11.2	PQL	pg/L	
	OCDD	JBQ	1.42	22.4	PQL	pg/L	
	OCDF	JB	1.09	22.4	PQL	pg/L	

Method: 6010C

Matrix: AQ

SampleID	Analyte	Lab Qual	Result	Reporting Limit	RL Type	Units	Flag
EB1-051414	BARIUM	J	0.00034	0.0100	PQL	mg/L	J (all detects)
	BORON	J	0.0106	0.100	PQL	mg/L	
	MOLYBDENUM	J	0.0029	0.0200	PQL	mg/L	
EB2-051414	POTASSIUM	J	0.114	1.00	PQL	mg/L	J (all detects)

Method: 6850

Matrix: AQ

SampleID	Analyte	Lab Qual	Result	Reporting Limit	RL Type	Units	Flag
EB2-051414	PERCHLORATE	J	0.40	1.0	PQL	ug/L	J (all detects)

Reporting Limit Outliers

Lab Reporting Batch ID: PH177 **Laboratory: LL**

EDD Filename: PrepPH177 **eQAPP Name: CDM_SSFL_140617_Lan**

Method: 8270D SIM

Matrix: AQ

SampleID	Analyte	Lab Qual	Result	Reporting Limit	RL Type	Units	Flag
EB1-051414	BIS(2-ETHYLHEXYL)PHTHALATE	J	0.49	1.1	PQL	ug/L	
	Diethylphthalate	J	0.082	1.1	PQL	ug/L	J (all detects)
	Di-n-butylphthalate	J	0.27	1.1	PQL	ug/L	
EB2-051414	BIS(2-ETHYLHEXYL)PHTHALATE	J	0.11	1.1	PQL	ug/L	
	Diethylphthalate	J	0.084	1.1	PQL	ug/L	J (all detects)
	Di-n-butylphthalate	J	0.26	1.1	PQL	ug/L	

Method: 1613B

Matrix: SO

SampleID	Analyte	Lab Qual	Result	Reporting Limit	RL Type	Units	Flag
FDG-SL-757-SA5C-SB-0.0-0.5	1,2,3,4,7,8,9-HPCDF	J	1.21	5.05	PQL	ng/Kg	
	1,2,3,4,7,8-HxCDD	J	1.24	5.05	PQL	ng/Kg	
	1,2,3,4,7,8-HXCDF	J	0.768	5.05	PQL	ng/Kg	
	1,2,3,6,7,8-HXCDD	J	3.76	5.05	PQL	ng/Kg	
	1,2,3,6,7,8-HXCDF	J	0.635	5.05	PQL	ng/Kg	
	1,2,3,7,8,9-HXCDD	J	2.26	5.05	PQL	ng/Kg	J (all detects)
	1,2,3,7,8,9-HXCDF	J	0.376	5.05	PQL	ng/Kg	
	1,2,3,7,8-PECDD	J	0.716	5.05	PQL	ng/Kg	
	1,2,3,7,8-PECDF	JB	0.315	5.05	PQL	ng/Kg	
	2,3,4,6,7,8-HXCDF	J	0.867	5.05	PQL	ng/Kg	
	2,3,4,7,8-PECDF	J	0.397	5.05	PQL	ng/Kg	
	2,3,7,8-TCDD	JQ	0.108	1.01	PQL	ng/Kg	
FDG-SL-757-SA5C-SB-4.0-5.0	1,2,3,4,7,8,9-HPCDF	JQ	0.694	5.46	PQL	ng/Kg	
	1,2,3,4,7,8-HxCDD	J	0.485	5.46	PQL	ng/Kg	
	1,2,3,4,7,8-HXCDF	J	0.430	5.46	PQL	ng/Kg	
	1,2,3,6,7,8-HXCDD	J	2.19	5.46	PQL	ng/Kg	
	1,2,3,6,7,8-HXCDF	J	0.321	5.46	PQL	ng/Kg	
	1,2,3,7,8,9-HXCDD	J	1.25	5.46	PQL	ng/Kg	J (all detects)
	1,2,3,7,8,9-HXCDF	J	0.122	5.46	PQL	ng/Kg	
	1,2,3,7,8-PECDD	JQ	0.364	5.46	PQL	ng/Kg	
	1,2,3,7,8-PECDF	JBQ	0.176	5.46	PQL	ng/Kg	
	2,3,4,6,7,8-HXCDF	JQ	0.516	5.46	PQL	ng/Kg	
	2,3,4,7,8-PECDF	JQ	0.0922	5.46	PQL	ng/Kg	
	2,3,7,8-TCDF	J	0.0666	1.09	PQL	ng/Kg	
FDG-SL-757-SA5C-SB-8.0-9.0	1,2,3,4,6,7,8-HPCDD	JB	0.426	5.27	PQL	ng/Kg	
	1,2,3,4,6,7,8-HPCDF	JBQ	0.0999	5.27	PQL	ng/Kg	
	1,2,3,4,7,8-HxCDD	JQ	0.0420	5.27	PQL	ng/Kg	
	1,2,3,4,7,8-HXCDF	J	0.0237	5.27	PQL	ng/Kg	
	1,2,3,6,7,8-HXCDD	JQ	0.0248	5.27	PQL	ng/Kg	J (all detects)
	1,2,3,6,7,8-HXCDF	JQ	0.0175	5.27	PQL	ng/Kg	
	1,2,3,7,8-PECDF	JBQ	0.0502	5.27	PQL	ng/Kg	
	2,3,4,6,7,8-HXCDF	JQ	0.0223	5.27	PQL	ng/Kg	
	OCDD	JB	10.1	10.5	PQL	ng/Kg	
	OCDF	JB	0.287	10.5	PQL	ng/Kg	

Reporting Limit Outliers

Lab Reporting Batch ID: PH177 **Laboratory: LL**

EDD Filename: PrepPH177 **eQAPP Name: CDM_SSFL_140617_Lan**

Method: **1613B**

Matrix: **SO**

SampleID	Analyte	Lab Qual	Result	Reporting Limit	RL Type	Units	Flag
FDG-SL-841-SA5B-SB-0.0-0.5	1,2,3,4,6,7,8-HPCDD	JB	0.938	4.99	PQL	ng/Kg	
	1,2,3,4,6,7,8-HPCDF	JB	0.330	4.99	PQL	ng/Kg	
	1,2,3,4,7,8,9-HPCDF	JQ	0.0876	4.99	PQL	ng/Kg	
	1,2,3,4,7,8-HXCDF	JQ	0.132	4.99	PQL	ng/Kg	
	1,2,3,6,7,8-HXCDD	JQ	0.0953	4.99	PQL	ng/Kg	
	1,2,3,6,7,8-HXCDF	JQ	0.0375	4.99	PQL	ng/Kg	
	1,2,3,7,8,9-HXCDD	JQ	0.170	4.99	PQL	ng/Kg	J (all detects)
	1,2,3,7,8,9-HXCDF	J	0.104	4.99	PQL	ng/Kg	
	1,2,3,7,8-PECDF	JB	2.47	4.99	PQL	ng/Kg	
	2,3,4,6,7,8-HXCDF	JQ	0.0626	4.99	PQL	ng/Kg	
	2,3,4,7,8-PECDF	JQ	0.110	4.99	PQL	ng/Kg	
	2,3,7,8-TCDF	JQ	0.0638	0.999	PQL	ng/Kg	
	OCDF	JBQ	0.878	9.99	PQL	ng/Kg	
FDG-SL-841-SA5B-SB-4.0-5.0	1,2,3,4,6,7,8-HPCDD	JBQ	0.212	5.34	PQL	ng/Kg	
	1,2,3,4,6,7,8-HPCDF	JBQ	0.115	5.34	PQL	ng/Kg	
	1,2,3,4,7,8,9-HPCDF	JQ	0.0517	5.34	PQL	ng/Kg	
	1,2,3,4,7,8-HxCDD	JQ	0.0809	5.34	PQL	ng/Kg	
	1,2,3,4,7,8-HXCDF	JQ	0.164	5.34	PQL	ng/Kg	
	1,2,3,6,7,8-HXCDD	J	0.341	5.34	PQL	ng/Kg	
	1,2,3,6,7,8-HXCDF	J	0.158	5.34	PQL	ng/Kg	
	1,2,3,7,8,9-HXCDD	J	0.541	5.34	PQL	ng/Kg	
	1,2,3,7,8,9-HXCDF	J	0.337	5.34	PQL	ng/Kg	J (all detects)
	1,2,3,7,8-PECDD	JQ	0.210	5.34	PQL	ng/Kg	
	1,2,3,7,8-PECDF	JBQ	0.465	5.34	PQL	ng/Kg	
	2,3,4,6,7,8-HXCDF	JQ	0.0989	5.34	PQL	ng/Kg	
	2,3,4,7,8-PECDF	J	0.265	5.34	PQL	ng/Kg	
	2,3,7,8-TCDD	JQ	0.123	1.07	PQL	ng/Kg	
	2,3,7,8-TCDF	J	0.156	1.07	PQL	ng/Kg	
	OCDD	JB	1.69	10.7	PQL	ng/Kg	
	OCDF	JBQ	0.281	10.7	PQL	ng/Kg	
FDG-SL-841-SA5B-SB-9.0-10.0	1,2,3,4,6,7,8-HPCDD	JBQ	0.182	5.32	PQL	ng/Kg	
	1,2,3,4,6,7,8-HPCDF	JBQ	0.0286	5.32	PQL	ng/Kg	
	1,2,3,4,7,8,9-HPCDF	J	0.0495	5.32	PQL	ng/Kg	
	1,2,3,4,7,8-HXCDF	JQ	0.100	5.32	PQL	ng/Kg	
	1,2,3,6,7,8-HXCDD	J	0.0701	5.32	PQL	ng/Kg	
	1,2,3,6,7,8-HXCDF	JQ	0.0727	5.32	PQL	ng/Kg	
	1,2,3,7,8,9-HXCDD	JQ	0.124	5.32	PQL	ng/Kg	
	1,2,3,7,8,9-HXCDF	JQ	0.0302	5.32	PQL	ng/Kg	J (all detects)
	1,2,3,7,8-PECDD	J	0.207	5.32	PQL	ng/Kg	
	1,2,3,7,8-PECDF	JBQ	0.215	5.32	PQL	ng/Kg	
	2,3,4,6,7,8-HXCDF	JQ	0.0534	5.32	PQL	ng/Kg	
	2,3,4,7,8-PECDF	JQ	0.132	5.32	PQL	ng/Kg	
	2,3,7,8-TCDD	JQ	0.131	1.06	PQL	ng/Kg	
	2,3,7,8-TCDF	JQ	0.0488	1.06	PQL	ng/Kg	
	OCDD	JBQ	0.684	10.6	PQL	ng/Kg	
	OCDF	JBQ	0.135	10.6	PQL	ng/Kg	
FDG-SL-842-SA5B-SB-0.0-0.5	1,2,3,4,7,8,9-HPCDF	J	2.80	4.99	PQL	ng/Kg	
	1,2,3,4,7,8-HxCDD	J	1.67	4.99	PQL	ng/Kg	
	1,2,3,4,7,8-HXCDF	J	1.26	4.99	PQL	ng/Kg	
	1,2,3,6,7,8-HXCDD	J	3.04	4.99	PQL	ng/Kg	
	1,2,3,6,7,8-HXCDF	J	2.43	4.99	PQL	ng/Kg	
	1,2,3,7,8,9-HXCDD	J	3.56	4.99	PQL	ng/Kg	
	1,2,3,7,8,9-HXCDF	JQ	0.253	4.99	PQL	ng/Kg	J (all detects)
	1,2,3,7,8-PECDD	J	0.657	4.99	PQL	ng/Kg	
	1,2,3,7,8-PECDF	JBQ	0.169	4.99	PQL	ng/Kg	
	2,3,4,6,7,8-HXCDF	J	2.18	4.99	PQL	ng/Kg	
	2,3,4,7,8-PECDF	JQ	0.167	4.99	PQL	ng/Kg	
	2,3,7,8-TCDF	JQ	0.0880	0.998	PQL	ng/Kg	

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

Reporting Limit Outliers

Lab Reporting Batch ID: PH177 **Laboratory: LL**

EDD Filename: PrepPH177 **eQAPP Name: CDM_SSFL_140617_Lan**

Method: 1613B

Matrix: SO

SampleID	Analyte	Lab Qual	Result	Reporting Limit	RL Type	Units	Flag
FDG-SL-842-SA5B-SB-4.0-5.0	1,2,3,4,7,8,9-HPCDF	J	2.60	5.24	PQL	ng/Kg	J (all detects)
	1,2,3,4,7,8-HxCDD	J	2.01	5.24	PQL	ng/Kg	
	1,2,3,4,7,8-HXCDF	J	1.26	5.24	PQL	ng/Kg	
	1,2,3,6,7,8-HXCDD	J	3.31	5.24	PQL	ng/Kg	
	1,2,3,6,7,8-HXCDF	J	2.11	5.24	PQL	ng/Kg	
	1,2,3,7,8,9-HXCDD	J	4.09	5.24	PQL	ng/Kg	
	1,2,3,7,8,9-HXCDF	JQ	0.260	5.24	PQL	ng/Kg	
	1,2,3,7,8-PECDD	JQ	0.888	5.24	PQL	ng/Kg	
	1,2,3,7,8-PECDF	JBQ	0.165	5.24	PQL	ng/Kg	
	2,3,4,6,7,8-HXCDF	J	2.17	5.24	PQL	ng/Kg	
	2,3,4,7,8-PECDF	JQ	0.170	5.24	PQL	ng/Kg	
	2,3,7,8-TCDD	JQ	0.101	1.05	PQL	ng/Kg	

Method: 6010C

Matrix: SO

SampleID	Analyte	Lab Qual	Result	Reporting Limit	RL Type	Units	Flag
FDG-SL-757-SA5C-SB-0.0-0.5	ARSENIC	J	0.941	3.99	PQL	mg/Kg	J (all detects)
	BERYLLIUM	J	0.542	0.996	PQL	mg/Kg	
	BORON	J	0.845	9.96	PQL	mg/Kg	
	MOLYBDENUM	J	0.524	1.99	PQL	mg/Kg	
	TIN	J	3.39	9.96	PQL	mg/Kg	
	Zirconium	J	3.41	4.98	PQL	mg/Kg	
FDG-SL-757-SA5C-SB-4.0-5.0	ARSENIC	J	1.24	4.29	PQL	mg/Kg	J (all detects)
	BERYLLIUM	J	0.552	1.07	PQL	mg/Kg	
	MOLYBDENUM	J	0.686	2.15	PQL	mg/Kg	
	TIN	J	3.68	10.7	PQL	mg/Kg	
	Zirconium	J	2.94	5.36	PQL	mg/Kg	
FDG-SL-757-SA5C-SB-8.0-9.0	ARSENIC	J	2.61	4.10	PQL	mg/Kg	J (all detects)
	BERYLLIUM	J	0.415	1.03	PQL	mg/Kg	
	SODIUM	J	89.9	103	PQL	mg/Kg	
	TIN	J	2.93	10.3	PQL	mg/Kg	
	Zirconium	J	3.14	5.13	PQL	mg/Kg	
FDG-SL-841-SA5B-SB-0.0-0.5	ARSENIC	J	3.04	4.00	PQL	mg/Kg	J (all detects)
	BERYLLIUM	J	0.692	1.00	PQL	mg/Kg	
	MOLYBDENUM	J	0.446	2.00	PQL	mg/Kg	
	TIN	J	3.69	10.0	PQL	mg/Kg	
	Zirconium	J	3.31	5.00	PQL	mg/Kg	
FDG-SL-841-SA5B-SB-4.0-5.0	ARSENIC	J	2.99	4.30	PQL	mg/Kg	J (all detects)
	BERYLLIUM	J	0.645	1.07	PQL	mg/Kg	
	BORON	J	0.976	10.7	PQL	mg/Kg	
	MOLYBDENUM	J	0.412	2.15	PQL	mg/Kg	
	TIN	J	3.35	10.7	PQL	mg/Kg	
	Zirconium	J	3.52	5.37	PQL	mg/Kg	
FDG-SL-841-SA5B-SB-9.0-10.0	ARSENIC	J	4.07	4.25	PQL	mg/Kg	J (all detects)
	MOLYBDENUM	J	0.295	2.12	PQL	mg/Kg	
	TIN	J	6.02	10.6	PQL	mg/Kg	
	Zirconium	J	4.51	5.31	PQL	mg/Kg	
FDG-SL-842-SA5B-SB-0.0-0.5	BERYLLIUM	J	0.649	1.02	PQL	mg/Kg	J (all detects)
	BORON	J	1.03	10.2	PQL	mg/Kg	
	MOLYBDENUM	J	0.491	2.04	PQL	mg/Kg	
	SODIUM	J	87.1	102	PQL	mg/Kg	
	TIN	J	3.22	10.2	PQL	mg/Kg	
	Zirconium	J	3.48	5.10	PQL	mg/Kg	

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

Reporting Limit Outliers

Lab Reporting Batch ID: PH177 **Laboratory: LL**

EDD Filename: PrepPH177 **eQAPP Name: CDM_SSFL_140617_Lan**

Method: 6010C

Matrix: SO

SampleID	Analyte	Lab Qual	Result	Reporting Limit	RL Type	Units	Flag
FDG-SL-842-SA5B-SB-4.0-5.0	BERYLLIUM	J	0.880	1.03	PQL	mg/Kg	J (all detects)
	MOLYBDENUM	J	0.877	2.07	PQL	mg/Kg	
	TIN	J	3.77	10.3	PQL	mg/Kg	
	Zirconium	J	3.63	5.17	PQL	mg/Kg	

Method: 6020A

Matrix: SO

SampleID	Analyte	Lab Qual	Result	Reporting Limit	RL Type	Units	Flag
FDG-SL-757-SA5C-SB-0.0-0.5	SELENIUM	J	0.100	0.399	PQL	mg/Kg	J (all detects)
	SILVER	J	0.0508	0.199	PQL	mg/Kg	
FDG-SL-757-SA5C-SB-4.0-5.0	SILVER	J	0.0618	0.215	PQL	mg/Kg	J (all detects)
FDG-SL-757-SA5C-SB-8.0-9.0	SILVER	J	0.0594	0.205	PQL	mg/Kg	J (all detects)
FDG-SL-841-SA5B-SB-0.0-0.5	SILVER	J	0.0309	0.200	PQL	mg/Kg	J (all detects)
FDG-SL-841-SA5B-SB-4.0-5.0	SILVER	J	0.0287	0.215	PQL	mg/Kg	J (all detects)
FDG-SL-841-SA5B-SB-9.0-10.0	SELENIUM	J	0.174	0.425	PQL	mg/Kg	J (all detects)
	SILVER	J	0.202	0.212	PQL	mg/Kg	

Method: 7471B

Matrix: SO

SampleID	Analyte	Lab Qual	Result	Reporting Limit	RL Type	Units	Flag
FDG-SL-842-SA5B-SB-0.0-0.5	MERCURY	J	0.0128	0.0167	PQL	mg/Kg	J (all detects)

Method: 8015M

Matrix: SO

SampleID	Analyte	Lab Qual	Result	Reporting Limit	RL Type	Units	Flag
FDG-SL-841-SA5B-SB-4.0-5.0	EFH (C21-C30)	J	3.7	5.5	PQL	mg/Kg	J (all detects)
	EFH (C30-C40)	J	9.3	11	PQL	mg/Kg	
FDG-SL-842-SA5B-SB-0.0-0.5	EFH (C21-C30) SG	J	2.3	5.2	PQL	mg/Kg	J (all detects)
	EFH (C21-C30)	J	4.9	5.2	PQL	mg/Kg	
	EFH (C30-C40)	J	9.8	10	PQL	mg/Kg	

Method: 8082A

Matrix: SO

SampleID	Analyte	Lab Qual	Result	Reporting Limit	RL Type	Units	Flag
FDG-SL-757-SA5C-SB-4.0-5.0	AROCLOR 1254	J	11	19	PQL	ug/Kg	J (all detects)

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

Reporting Limit Outliers

Lab Reporting Batch ID: PH177 **Laboratory: LL**

EDD Filename: PrepPH177 **eQAPP Name: CDM_SSFL_140617_Lan**

Method: **8270D SIM**

Matrix: **SO**

SampleID	Analyte	Lab Qual	Result	Reporting Limit	RL Type	Units	Flag
FDG-SL-757-SA5C-SB-0.0-0.5	ANTHRACENE	J	0.35	1.7	PQL	ug/Kg	
	BENZO(A)ANTHRACENE	J	1.2	1.7	PQL	ug/Kg	
	BENZO(E)PYRENE	J	11	17	PQL	ug/Kg	
	BIS(2-ETHYLHEXYL)PHTHALATE	J	14	18	PQL	ug/Kg	J (all detects)
	Butylbenzylphthalate	J	12	18	PQL	ug/Kg	
	INDENO(1,2,3-CD)PYRENE	J	1.3	1.7	PQL	ug/Kg	
	PHENANTHRENE	J	1.4	1.7	PQL	ug/Kg	
FDG-SL-757-SA5C-SB-4.0-5.0	ANTHRACENE	J	0.54	1.8	PQL	ug/Kg	
	BENZO(E)PYRENE	J	5.2	19	PQL	ug/Kg	
	BIS(2-ETHYLHEXYL)PHTHALATE	J	12	20	PQL	ug/Kg	J (all detects)
	DIBENZO(A,H)ANTHRACENE	J	0.81	1.8	PQL	ug/Kg	
	INDENO(1,2,3-CD)PYRENE	J	1.3	1.8	PQL	ug/Kg	
FDG-SL-757-SA5C-SB-8.0-9.0	BIS(2-ETHYLHEXYL)PHTHALATE	J	8.2	19	PQL	ug/Kg	J (all detects)
FDG-SL-841-SA5B-SB-0.0-0.5	BIS(2-ETHYLHEXYL)PHTHALATE	J	9.7	19	PQL	ug/Kg	J (all detects)
FDG-SL-841-SA5B-SB-4.0-5.0	BIS(2-ETHYLHEXYL)PHTHALATE	J	8.2	20	PQL	ug/Kg	
	CHRYSENE	J	0.52	1.8	PQL	ug/Kg	J (all detects)
	NAPHTHALENE	J	1.0	1.8	PQL	ug/Kg	
FDG-SL-841-SA5B-SB-9.0-10.0	BENZO(B)FLUORANTHENE	J	0.85	1.8	PQL	ug/Kg	
	BIS(2-ETHYLHEXYL)PHTHALATE	J	8.4	20	PQL	ug/Kg	J (all detects)
	PHENANTHRENE	J	0.78	1.8	PQL	ug/Kg	
FDG-SL-842-SA5B-SB-0.0-0.5	BIS(2-ETHYLHEXYL)PHTHALATE	J	9.4	19	PQL	ug/Kg	
	CHRYSENE	J	0.66	1.7	PQL	ug/Kg	J (all detects)
	FLUORANTHENE	J	0.85	1.7	PQL	ug/Kg	
FDG-SL-842-SA5B-SB-4.0-5.0	2-METHYLNAPHTHALENE	J	0.87	1.8	PQL	ug/Kg	
	BIS(2-ETHYLHEXYL)PHTHALATE	J	9.4	19	PQL	ug/Kg	
	CHRYSENE	J	0.65	1.8	PQL	ug/Kg	
	FLUORANTHENE	J	0.95	1.8	PQL	ug/Kg	J (all detects)
	PHENANTHRENE	J	0.71	1.8	PQL	ug/Kg	
	PYRENE	J	0.81	1.8	PQL	ug/Kg	

LDC #: 32031C4 **VALIDATION COMPLETENESS WORKSHEET** Date: 6/26/14

SDG #: PH177 ADR Page: 1 of 1

Laboratory: Eurofins Lancaster Laboratories 7471 7471B Reviewer: KK

2nd Reviewer: CN

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: 5/14/14
II.	ICP/MS Tune	A	
III.	Calibration	—	
IV.	Blanks	SW	No qualifying hits, ICB/CCB
V.	ICP Interference Check Sample (ICS) Analysis	—	
VI.	Matrix Spike Analysis	N	
VII.	Duplicate Sample Analysis	N	
VIII.	Laboratory Control Samples (LCS)	N	LCS/D
IX.	Internal Standard (ICP-MS)	N	
X.	Furnace Atomic Absorption QC	N	
XI.	ICP Serial Dilution	N	
XII.	Sample Result Verification	N	
XIII.	Overall Assessment of Data	N	
XIV.	Field Duplicates	N	
XV	Field Blanks	SW	EB= 1,2 FB= FB-051314 SDG# PH176

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	EB1-051414 Water	11		21		31	~~EB~~
2	EB2-051414 ↓	12		22		32	
3	FDG-SL-841-SA5B-SB-0.0-0.5	13		23		33	
4	FDG-SL-841-SA5B-SB-4.0-5.0	14		24		34	
5	FDG-SL-841-SA5B-SB-9.0-10.0	15		25		35	
6	FDG-SL-757-SA5C-SB-0.0-0.5	16		26		36	
7	FDG-SL-757-SA5C-SB-4.0-5.0	17		27		37	
8	FDG-SL-757-SA5C-SB-8.0-9.0	18		28		38	
9	FDG-SL-842-SA5B-SB-0.0-0.5	19		29		39	
10	FDG-SL-842-SA5B-SB-4.0-5.0	20		30		40	

Notes: _____

LDC #: 32031C4

VALIDATION FINDINGS WORKSHEET
Sample Specific Element Reference

Reviewer: KK
2nd reviewer: cr

All circled elements are applicable to each sample.

Sample ID	Matrix	Target Analyte List (TAL)
B-10	Soil	Al, Sb, As, Ba, Be, B, Cd, 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
1-2	Water	Al, Sb, As, Ba, Be, B, Cd, 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 #: 32031C4

VALIDATION FINDINGS WORKSHEET
Field Blanks

Reviewer: KR
2nd Reviewer: CA

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

Blank units: ug/L **Associated sample units:** mg/kg
Sampling date: 5/14/14 Soil factor applied 100
Field blank type: (circle one) Field Blank / Rinsate / Other: (EB) Associated Samples: 3, 6, 9

Analyte	Blank ID	Sample Identification											
	1	Action Limit	3	6	9								
Ba	0.34	0.17											
B	10.6	5.30		0.845	~~1.00~~ 1.03								
Mo	2.90	1.45	~~0.45~~ 0.446	0.524	0.491								

APL 7/23/14

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

Blank units: ug/L **Associated sample units:** mg/kg
Sampling date: 5/14/14 Soil factor applied 100
Field blank type: (circle one) Field Blank / Rinsate / Other: (EB) Associated Samples: 4-5, 7-8, 10

Analyte	Blank ID	Sample Identification											
	2	Action Limit	No quals										
K	114	57.0											

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

Blank units: mg/L **Associated sample units:** mg/kg
Sampling date: 5/14/14 Soil factor applied 100
Field blank type: (circle one) ~~Field Blank~~ / Rinsate / Other: Associated Samples: 3-10

Analyte	Blank ID	Sample Identification											
	FB-051314 SDG#PH176	Action Limit	No quals										
Mn	0.0012	0.60											
Zn	0.003	1.50											

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

July 25, 2014

SUBJECT: Santa Susana Field Laboratory, SVL, Data Validation

Dear Mrs. Zakowski,

Enclosed are the final validation reports for the fraction listed below. These SDGs were received on June 24, 2014. Attachment 1 is a summary of the samples that were reviewed for each analysis.

LDC Project #32032:

SDG #	Fraction
PH180, PH181, PH183 PH186, PH190, PH194 PH200, PH203, PH206 PH211, PH214	Volatiles

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
- 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

1,037 pages-CD

Attachment 1

90/10 ADR/IV

LDC #32032 (CDM Federal Programs-Chantilly VA / Santa Susana Field Laboratory, SVL)

LDC	SDG#	DATE REC'D	(4) DATE DUE	VOA (8260B)																																	
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	PH180	06/24/14	07/23/14	1	2																																
B	PH181	06/24/14	07/23/14	1	2																																
C	PH183	06/24/14	07/23/14	1	6																																
D	PH186	06/24/14	07/23/14	1	4																																
E	PH190	06/24/14	07/23/14	2	2																																
F	PH194	06/24/14	07/23/14	1	2																																
G	PH200	06/24/14	07/23/14	1	3																																
H	PH203	06/24/14	07/23/14	1	3																																
I	PH206	06/24/14	07/23/14	2	2																																
J	PH211	06/24/14	07/23/14	1	4																																
K	PH214	06/24/14	07/23/14	1	7																																
Total	T/SM			13	37	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	50

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 SVL

SDG: PH180

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

July 22, 2014

INTRODUCTION

This Data Validation Report (DVR) presents Level III data validation results for samples collected on May 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:

Volatiles (VOCs) by Environmental Protection Agency (EPA) SW 846 Method 8260B

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, 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). 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

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 pair for several VOCs. No data were qualified for due to high %Rs since the associated results were non-detected.

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 pair for chlorotrifluoroethylene. The associated sample results were qualified as non-detected estimated (UJ). 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 PH180	All compounds reported as detected below the RL.	J (all detects)	A

XI. Field Duplicate Samples

One field duplicate pair was collected and analyzed for VOCs. No VOCs were detected in the field duplicates.

XII. Field Blank Samples

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

One equipment blank (from SDG PH178) was collected and analyzed for VOCs. No contaminant concentrations were found in the equipment blank.

One field blank (from SDG PH176) was collected and analyzed for VOCs. 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

Attachment 2
Overall Data Qualification Summary

Data Qualifier Summary

Lab Reporting Batch ID: PH180 **Laboratory: LL**

EDD Filename: PH180_v1 **eQAPP Name: CDM_SSFL_140113_Lan**

Method Category: **VOA**

Method: **8260B** ***Matrix:*** **AQ**

Sample ID: **TB2-051314** ***Collected:*** **5/13/2014 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*
Chlorotrifluoroethylene	5	U	2	MDL	5	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: PH180 **Laboratory: LL**

EDD Filename: PH180_v1 **eQAPP Name: CDM_SSFL_140113_Lan**

Reason Code Legend

Reason Code	*Description*
L	Laboratory Control Spike Lower Estimation
Q	Matrix Spike Upper Estimation

* 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)

Sample Cross Reference

Date Collected	Field Sample ID	Lab Sample ID	Sample Type	Prep Method	Analytical Method	Review Level
13-May-2014	TB2-051314	7466838	TB	5030B	8260B	III
13-May-2014	SVL-532-SA5B-SB-4.0-5.0	7466839	N	5035A	8260B	III
13-May-2014	SVL-532-SA5B-SB-4.0-5.0MS	7466840	MS	M5035A	8260B	III
13-May-2014	SVL-532-SA5B-SB-4.0-5.0MD	7466841	MSD	M5035A	8260B	III
13-May-2014	SVL-832-SA5B-SB-4.0-5.0	7466842	FD	5035A	8260B	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

Quality Control
Outlier Reports

PH180

Matrix Spike/Matrix Spike Duplicate Outlier Report

Lab Reporting Batch ID: PH180 **Laboratory: LL**

EDD Filename: PH180_v1 **eQAPP Name: CDM_SSFL_140113_Lan**

Method: 8260B
Matrix: SO

QC Sample ID (Associated Samples)	Compound	MS %R	MSD %R	%R Limits	RPD (Limits)	Affected Compounds	Flag
SVL-532-SA5B-SB-4.0-5.0 MS	1,2-DICHLOROETHANE	149	-	54.00-143.00	-	1,2-DICHLOROETHANE	J (all detects)
SVL-532-SA5B-SB-4.0-5.0 MSD (SVL-532-SA5B-SB-4.0-5.0)	CHLOROFORM	144	-	61.00-142.00	-	CHLOROFORM	
	DIBROMOCHLOROMETHANE	129	-	51.00-128.00	-	DIBROMOCHLOROMETHANE	
	IODOMETHANE	148	-	52.00-139.00	-	IODOMETHANE	
	METHYLENE CHLORIDE	188	238	60.00-149.00	-	METHYLENE CHLORIDE	
	TETRACHLOROETHENE	151	-	42.00-149.00	-	TETRACHLOROETHENE	

Lab Control Spike/Lab Control Spike Duplicate Outlier Report

Lab Reporting Batch ID: PH180 **Laboratory: LL**

EDD Filename: PH180_v1 **eQAPP Name: CDM_SSFL_140113_Lan**

Method: **8260B**
Matrix: **AQ**

QC Sample ID (Associated Samples)	*Compound*	*LCS %R*	*LCSD %R*	*%R Limits*	*RPD (Limits)*	*Affected Compounds*	*Flag*
LCSY99Q212135A **LCSY99Y212156A** (TB2-051314)	Chlorotrifluoroethylene	42	42	47.00-120.00	-	Chlorotrifluoroethylene	J (all detects) UJ (all non-detects)

Data Validation Report
Santa Susana Field Laboratory

Go Backs, Subgroup SVL

SDG: PH181

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

July 22, 2014

INTRODUCTION

This Data Validation Report (DVR) presents Level III data validation results for samples collected on May 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). 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

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 pair for chlorotrifluoroethylene. The associated sample results were qualified as non-detected estimated (UJ). 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 PH181	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 VOCs. No contaminant concentrations were found in the trip blank.

One equipment blank (from SDG PH178) was collected and analyzed for VOCs. No contaminant concentrations were found in the equipment blank.

One field blank (from SDG PH176) was collected and analyzed for VOCs. 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
16-May-2014	TB-051614	7467784	TB	5030B	8260B	III
16-May-2014	SVL-504-SA8-SB-2.0-2.5	7467785	N	5035A	8260B	III
16-May-2014	SVL-519-SA8-SB-7.5-8.0	7467786	N	5035A	8260B	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: PH181 **Laboratory: LL**

EDD Filename: PH181_v1 **eQAPP Name: CDM_SSFL_140113_Lan**

Method Category: **VOA**

Method: **8260B** ***Matrix:*** **AQ**

Sample ID: **TB-051614** ***Collected:*** **5/16/2014 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*
Chlorotrifluoroethylene	5	U	2	MDL	5	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: PH181 **Laboratory: LL**

EDD Filename: PH181_v1 **eQAPP Name: CDM_SSFL_140113_Lan**

Reason Code Legend

Reason Code	*Description*
L	Laboratory Control Spike Lower Estimation

* 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

PH181

Lab Control Spike/Lab Control Spike Duplicate Outlier Report

Lab Reporting Batch ID: PH181 **Laboratory: LL**

EDD Filename: PH181_v1 **eQAPP Name: CDM_SSFL_140113_Lan**

Method: **8260B**
Matrix: **AQ**

QC Sample ID (Associated Samples)	*Compound*	*LCS %R*	*LCSD %R*	*%R Limits*	*RPD (Limits)*	*Affected Compounds*	*Flag*
LCSY99Q212135A **LCSY99Y212156A** (TB-051614)	Chlorotrifluoroethylene	42	42	47.00-120.00	-	Chlorotrifluoroethylene	J (all detects) UJ (all non-detects)

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

Data Validation Report
Santa Susana Field Laboratory

Go Backs, Subgroup SVL

SDG: PH183

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

July 23, 2014

INTRODUCTION

This Data Validation Report (DVR) presents Level III data validation results for samples collected on May 19, 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:

Volatiles (VOCs) by Environmental Protection Agency (EPA) SW 846 Method 8260B

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 pair for chlorotrifluoroethylene. The associated sample results were qualified as non-detected estimated (UJ). 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 PH183	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 VOCs. No contaminant concentrations were found in the trip blank.

One equipment blank (from SDG PH190) was collected and analyzed for VOCs. No contaminant concentrations were found in the equipment blank.

One field blank (from SDG PH176) was collected and analyzed for VOCs. 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
19-May-2014	TB1-051914	7470166	TB	5030B	8260B	III
19-May-2014	SVL-517-SA8-SB-5.0-6.0	7470160	N	5035A	8260B	III
19-May-2014	SVL-517-SA8-SB-10.0-11.0	7470161	N	5035A	8260B	III
19-May-2014	SVL-517-SA8-SB-15.5-16.5	7470162	N	5035A	8260B	III
19-May-2014	SVL-524-SA8-SB-4.5-5.5	7470163	N	5035A	8260B	III
19-May-2014	SVL-528-SA8-SB-5.0-6.0	7470164	N	5035A	8260B	III
19-May-2014	SVL-528-SA8-SB-11.0-12.0	7470165	N	5035A	8260B	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: PH183 **Laboratory: LL**

EDD Filename: PH183_v1 **eQAPP Name: CDM_SSFL_140113_Lan**

Method Category: **VOA**

Method: **8260B** ***Matrix:*** **AQ**

Sample ID: **TB1-051914** ***Collected:*** **5/19/2014 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*
Chlorotrifluoroethylene	5	U	2	MDL	5	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: PH183 **Laboratory: LL**

EDD Filename: PH183_v1 **eQAPP Name: CDM_SSFL_140113_Lan**

Reason Code Legend

Reason Code	*Description*
L	Laboratory Control Spike Lower Estimation

* 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

PH183

Lab Control Spike/Lab Control Spike Duplicate Outlier Report

Lab Reporting Batch ID: PH183 **Laboratory: LL**

EDD Filename: PH183_v1 **eQAPP Name: CDM_SSFL_140113_Lan**

***Method:* 8260B**
***Matrix:* AQ**

QC Sample ID (Associated Samples)	*Compound*	*LCS %R*	*LCSD %R*	*%R Limits*	*RPD (Limits)*	*Affected Compounds*	*Flag*
LCSY18Q211044A (TB1-051914)	Chlorotrifluoroethylene	46	-	47.00-120.00	-	Chlorotrifluoroethylene	J (all detects) UJ (all non-detects)

Data Validation Report
Santa Susana Field Laboratory

Go Backs, Subgroup SVL

SDG: PH186

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

July 23, 2014

INTRODUCTION

This Data Validation Report (DVR) presents Level III data validation results for samples collected on May 20, 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:

Volatiles (VOCs) by Environmental Protection Agency (EPA) SW 846 Method 8260B

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 pair for chlorotrifluoroethylene. The associated sample results were qualified as non-detected estimated (UJ). 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 PH186	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 VOCs. No contaminant concentrations were found in the trip blank.

One equipment blank (from SDG PH190) was collected and analyzed for VOCs. No contaminant concentrations were found in the equipment blank.

One field blank (from SDG PH176) was collected and analyzed for VOCs. 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
20-May-2014	TB2-052014	7471511	TB	5030B	8260B	III
20-May-2014	SVL-525-SA5C-SB-5.0-6.0	7471515	N	5035A	8260B	III
20-May-2014	SVL-525-SA5C-SB-10.0-11.0	7471512	N	5035A	8260B	III
20-May-2014	SVL-525-SA5C-SB-15.0-16.0	7471513	N	5035A	8260B	III
20-May-2014	SVL-531-SA5C-SB-2.5-2.9	7471514	N	5035A	8260B	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: PH186 **Laboratory: LL**

EDD Filename: PH186_v1 **eQAPP Name: CDM_SSFL_140113_Lan**

Method Category: VOA

Method: 8260B **Matrix: AQ**

Sample ID: TB2-052014 *Collected:* 5/20/2014 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
Chlorotrifluoroethylene	5	U	2	MDL	5	PQL	ug/L	UJ	L

Method Category: VOA

Method: 8260B **Matrix: SO**

Sample ID: SVL-525-SA5C-SB-5.0-6.0 *Collected:* 5/20/2014 11:44:00 *Analysis Type:* RES *Dilution:* 0.81

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
2-BUTANONE (MEK)	4	J	4	MDL	9	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: PH186 **Laboratory: LL**

EDD Filename: PH186_v1 **eQAPP Name: CDM_SSFL_140113_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

(Including Manual Review Outliers)

Quality Control
Outlier Reports

PH186

Lab Control Spike/Lab Control Spike Duplicate Outlier Report

Lab Reporting Batch ID: PH186 **Laboratory: LL**

EDD Filename: PH186_v1 **eQAPP Name: CDM_SSFL_140113_Lan**

***Method:* 8260B**
***Matrix:* AQ**

QC Sample ID (Associated Samples)	*Compound*	*LCS %R*	*LCSD %R*	*%R Limits*	*RPD (Limits)*	*Affected Compounds*	*Flag*
LCSY18Q211044A (TB2-052014)	Chlorotrifluoroethylene	46	-	47.00-120.00	-	Chlorotrifluoroethylene	J (all detects) UJ (all non-detects)

Reporting Limit Outliers

Lab Reporting Batch ID: PH186 **Laboratory: LL**

EDD Filename: PH186_v1 **eQAPP Name: CDM_SSFL_140113_Lan**

Method: **8260B**

Matrix: **SO**

SampleID	*Analyte*	*Lab Qual*	*Result*	*Reporting Limit*	*RL Type*	*Units*	*Flag*
SVL-525-SA5C-SB-5.0-6.0	2-BUTANONE (MEK)	J	4	9	PQL	ug/Kg	J (all detects)

Data Validation Report
Santa Susana Field Laboratory

Go Backs, Subgroup SVL

SDG: PH190

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

July 23, 2014

INTRODUCTION

This Data Validation Report (DVR) presents Level III data validation results for samples collected on May 21, 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:

Volatiles (VOCs) by Environmental Protection Agency (EPA) SW 846 Method 8260B

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 pair for chlorotrifluoroethylene. The associated sample results were qualified as non-detected estimated (UJ). 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 PH190	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 VOCs. No contaminant concentrations were found in the trip blank.

One equipment blank was collected and analyzed for VOCs. No contaminant concentrations were found in the equipment blank.

One field blank (from SDG PH176) was collected and analyzed for VOCs. 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
21-May-2014	TB2-052114	7473394	TB	5030B	8260B	III
21-May-2014	SVL-512-SA5D-SB-5.0-6.0	7473395	N	5035A	8260B	III
21-May-2014	EB-052114	7473397	EB	5030B	8260B	III
21-May-2014	SVL-515-SA5D-SB-5.0-6.0	7473396	N	5035A	8260B	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: PH190 **Laboratory: LL**

EDD Filename: PH190_v1 **eQAPP Name: CDM_SSFL_140113_Lan**

Method Category: VOA

Method: 8260B **Matrix: AQ**

Sample ID: **EB-052114** *Collected:* **5/21/2014 2:10:00** *Analysis Type:* **RES** *Dilution:* **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
Chlorotrifluoroethylene	5	U	2	MDL	5	PQL	ug/L	UJ	L

Sample ID: **TB2-052114** *Collected:* **5/21/2014 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
Chlorotrifluoroethylene	5	U	2	MDL	5	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: PH190 **Laboratory: LL**

EDD Filename: PH190_v1 **eQAPP Name: CDM_SSFL_140113_Lan**

Reason Code Legend

Reason Code	*Description*
L	Laboratory Control Spike Lower Estimation

* 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

PH190

Lab Control Spike/Lab Control Spike Duplicate Outlier Report

Lab Reporting Batch ID: PH190 **Laboratory: LL**

EDD Filename: PH190_v1 **eQAPP Name: CDM_SSFL_140113_Lan**

Method: **8260B**
Matrix: **AQ**

QC Sample ID (Associated Samples)	*Compound*	*LCS %R*	*LCSD %R*	*%R Limits*	*RPD (Limits)*	*Affected Compounds*	*Flag*
LCSY18Q211044A (EB-052114 TB2-052114)	Chlorotrifluoroethylene	46	-	47.00-120.00	-	Chlorotrifluoroethylene	J (all detects) UJ (all non-detects)

Data Validation Report
Santa Susana Field Laboratory

Go Backs, Subgroup SVL

SDG: PH194

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

July 23, 2014

INTRODUCTION

This Data Validation Report (DVR) presents Level III data validation results for samples collected on May 22, 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:

Volatiles (VOCs) by Environmental Protection Agency (EPA) SW 846 Method 8260B

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, 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). 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

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 several VOCs. No data were qualified for due to RPDs outside of QC limits since the associated results were non-detected.

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 pair for chlorotrifluoroethylene. The associated sample results were qualified as non-detected estimated (UJ). 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 PH194	All compounds reported as detected below the RL.	J (all detects)	A

XI. Field Duplicate Samples

One field duplicate pair was collected and analyzed for VOCs. No VOCs were detected in the field duplicates.

XII. Field Blank Samples

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

One equipment blank (from SDG PH190) was collected and analyzed for VOCs. No contaminant concentrations were found in the equipment blank.

One field blank (from SDG PH176) was collected and analyzed for VOCs. 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
22-May-2014	TB2-052214	7475236	TB	5030B	8260B	III
22-May-2014	SVL-511-SA5D-4.5-5.5	7475237	N	5035A	8260B	III
22-May-2014	SVL-511-SA5D-4.5-5.5MS	7475238	MS	5035A	8260B	III
22-May-2014	SVL-511-SA5D-4.5-5.5MSD	7475239	MSD	5035A	8260B	III
22-May-2014	SVL-811-SA5D-4.5-5.5	7475240	FD	5035A	8260B	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: PH194 **Laboratory: LL**

EDD Filename: PH194_v1 **eQAPP Name: CDM_SSFL_140113_Lan**

Method Category: **VOA**

Method: **8260B** ***Matrix:*** **AQ**

Sample ID: **TB2-052214** ***Collected:*** **5/22/2014 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*
Chlorotrifluoroethylene	5	U	2	MDL	5	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: PH194 **Laboratory: LL**

EDD Filename: PH194_v1 **eQAPP Name: CDM_SSFL_140113_Lan**

Reason Code Legend

Reason Code	*Description*
E	Matrix Spike Precision
L	Laboratory Control Spike Lower Estimation
Q	Matrix Spike Precision

* 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

PH194

Matrix Spike/Matrix Spike Duplicate Outlier Report

Lab Reporting Batch ID: PH194 **Laboratory: LL**

EDD Filename: PH194_v1 **eQAPP Name: CDM_SSFL_140113_Lan**

***Method:* 8260B**
***Matrix:* SO**

QC Sample ID (Associated Samples)	*Compound*	*MS %R*	*MSD %R*	*%R Limits*	*RPD (Limits)*	*Affected Compounds*	*Flag*
SVL-511-SA5D-4.5-5.5MSD (SVL-511-SA5D-4.5-5.5)	1,2,3-TRICHLOROBENZENE	-	-	10.00-140.00	33 (30.00)	1,2,3-TRICHLOROBENZENE	J (all detects)
	1,2,4-TRICHLOROBENZENE	-	-	10.00-136.00	33 (30.00)	1,2,4-TRICHLOROBENZENE	
	HEXACHLOROBUTADIENE	-	-	10.00-155.00	53 (30.00)	HEXACHLOROBUTADIENE	
	N-BUTYLBENZENE	-	-	40.00-140.00	42 (30.00)	N-BUTYLBENZENE	

Lab Control Spike/Lab Control Spike Duplicate Outlier Report

Lab Reporting Batch ID: PH194 **Laboratory: LL**

EDD Filename: PH194_v1 **eQAPP Name: CDM_SSFL_140113_Lan**

***Method:* 8260B**
***Matrix:* AQ**

QC Sample ID (Associated Samples)	*Compound*	*LCS %R*	*LCSD %R*	*%R Limits*	*RPD (Limits)*	*Affected Compounds*	*Flag*
LCSY18Q211044A (TB2-052214)	Chlorotrifluoroethylene	46	-	47.00-120.00	-	Chlorotrifluoroethylene	J (all detects) UJ (all non-detects)

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

Data Validation Report
Santa Susana Field Laboratory

Go Backs, Subgroup SVL

SDG: PH200

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

July 23, 2014

INTRODUCTION

This Data Validation Report (DVR) presents Level IV data validation results for samples collected on May 27, 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:

Volatiles (VOCs) by Environmental Protection Agency (EPA) SW 846 Method 8260B

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. 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 IV data validation, which comprises an evaluation of quality control (QC) summary results for sample holding times, initial and continuing calibrations, surrogates, internal standards, 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 and internal standards, which were reviewed 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

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.

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.

IX. Internal Standards

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

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 PH200	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 VOCs. No contaminant concentrations were found in the trip blank.

One equipment blank (from SDG PH206) was collected and analyzed for VOCs. No contaminant concentrations were found in the equipment blank.

One field blank (from SDG PH176) was collected and analyzed for VOCs. No contaminant concentrations were found in the field blank.

XIII. 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. All data are deemed useable for the intended use.

Attachment 1

Sample Cross Reference

Sample Cross Reference

Date Collected	Field Sample ID	Lab Sample ID	Sample Type	Prep Method	Analytical Method	Review Level
27-May-2014	TB2-052714	7479338	TB	5030B	8260B	IV
27-May-2014	SVL-550-SA5D-SB-5.0-6.0	7479337	N	5035A	8260B	IV
27-May-2014	SVL-546-SA5D-SB-5.0-6.0	7479336	N	5035A	8260B	IV
27-May-2014	SVL-532-SA5D-SB-4.0-4.5	7479339	N	5035A	8260B	IV

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: PH200 **Laboratory: LL**

EDD Filename: PH200_v1 **eQAPP Name: CDM_SSFL_140113_Lan**

No Data Review Qualifiers Applied.

Enclosure I

Level III ADR Outliers

(Including Manual Review Outliers)

Quality Control Outlier Reports

PH200

(No Outliers)

Enclosure II

Level IV Data Validation Reports

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: Santa Susana Field Laboratory

Collection Date: May 27, 2014

LDC Report Date: July 2, 2014

Matrix: Soil/Water

Parameters: Volatiles

Validation Level: Level IV

Laboratory: Eurofins

Sample Delivery Group (SDG): PH200

Sample Identification

SVL-546-SA5D-SB-5.0-6.0
SVL-550-SA5D-SB-5.0-6.0
TB2-052714
SVL-532-SA5D-SB-4.0-4.5

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 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.

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.

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 volatile contaminants were found in the method blanks.

Sample TB2-052714 was identified as a trip blank. No volatile contaminants were found.

Sample EB2-052914 (from SDG PH206) was identified as an equipment blank. No volatile contaminants were found.

Sample FB-051314 (from SDG PH176) was identified as a field blank. No volatile 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. 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 PH200	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
Volatiles - Data Qualification Summary - SDG PH200

SDG	Sample	Compound	Flag	A or P	Reason (Code)
PH200	SVL-546-SA5D-SB-5.0-6.0 SVL-550-SA5D-SB-5.0-6.0 TB2-052714 SVL-532-SA5D-SB-4.0-4.5	All compounds reported below the RL.	J (all detects)	A	Compound quantitation (Z)

Santa Susana Field Laboratory
Volatiles - Laboratory Blank Data Qualification Summary - SDG PH200

No Sample Data Qualified in this SDG

Santa Susana Field Laboratory
Volatiles - Field Blank Data Qualification Summary - SDG PH200

No Sample Data Qualified in this SDG

LDC #: 32032G1a **VALIDATION COMPLETENESS WORKSHEET** Date: 6/30/14
SDG #: PH200 Level IV Page: 1 of 1
Laboratory: Eurofins Lancaster Laboratories 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: 5/27/14
II.	GC/MS Instrument performance check	A	
III.	Initial calibration	A	RSD ≤ 30%, r²
IV.	Continuing calibration/ICV	A ~~SW~~	for |CCV| ≤ 25%
V.	Blanks	A	
VI.	Surrogate spikes	A	
VII.	Matrix spike/Matrix spike duplicates	N	Client spec.
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	N	
XVII.	Field blanks	ND	TB = 3 EB = EB2-052914 (SDG# PH200) FB = FB-051314 (SDG #171)

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	SVL-546-SA5D-SB-5.0-6.0	11		21		31	VBLK577
2	SVL-550-SA5D-SB-5.0-6.0	12		22		32	VBLKY36
3	TB2-052714 W	13		23		33	
4	SVL-532-SA5D-SB-4.0-4.5	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 #: 32032G1a

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 ≥ 0.990?	✓			
Were all percent relative standard deviations (%RSD) ≤ 30%/~~15%~~ 25% 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) ≤ ~~30%~~ 25% and relative response factors (RRF) ≥ 0.05?	✓			
V. Blanks				
Was a method blank associated with every sample in this SDG?	✓			
Was a method blank analyzed at least once every 12 hours for each matrix and concentration?	✓			
Was there contamination in the method blanks? If yes, please see the Blanks validation completeness worksheet.		✓		
VI. Surrogate spikes				
Were all surrogate %R within QC limits?	✓			
If the percent recovery (%R) for one or more surrogates was out of QC limits, was a reanalysis performed to confirm samples with %R outside of criteria?			✓	
VII. Matrix spike/Matrix spike duplicates				
Were a matrix spike (MS) and matrix spike duplicate (MSD) analyzed for each matrix in this SDG? If no, indicate which matrix does not have an associated MS/MSD. Soil / Water.		✓		
Was a MS/MSD analyzed every 20 samples of each matrix?			✓	
Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?			✓	
VIII. Laboratory control samples				
Was an LCS analyzed for this SDG?	✓			

LDC #: 32032G1a

VALIDATION FINDINGS CHECKLIST

Reviewer: BR
2nd Reviewer: GW

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 # 32032G1a

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:

$RRF = (A_x)(C_{is})/(A_{is})(C_x)$

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 (50 std)	Recalculated RRF (50 std)	Reported Average RRF (Initial)	Recalculated Average RRF (Initial)	Reported %RSD	Recalculated %RSD
1	ICAL HP09953	6/3/2014	tert-Butyl alcohol (IS1)	1.0694	1.0694	1.1390	1.1390	10	10
			Trichloroethene (IS2)	0.2701	0.2701	0.2659	0.2659	6	6
			Tetrachloroethene (IS3)	0.4433	0.4433	0.4293	0.4294	6	6.5
			1,1,2,2-Tetrachloroethane (IS4)	0.6798	0.6798	0.6837	0.6837	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 # 32032G1a

VALIDATION FINDINGS WORKSHEET

Initial Calibration Results Verification

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 (300 std)	Recalculated RRF (300 std)	Reported Average RRF (Initial)	Recalculated Average RRF (Initial)	Reported %RSD	Recalculated %RSD
1	ICAL HP09953	6/4/2014	Vinyl acetate (IS1)	0.2664	0.2664	0.2607	0.2607	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 # 32032G1a

VALIDATION FINDINGS WORKSHEET

Initial Calibration Results Verification

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:

$RRF = (A_x)(C_{is})/(A_{is})(C_x)$

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	5/19/2014	tert-Butyl alcohol (IS1)	1.4155	1.4155	1.4269	1.4269	4	4
	HP09935		Trichloroethene (IS2)	0.3206	0.3206	0.3112	0.3112	8	8
			Tetrachloroethene (IS3)	0.4916	0.4916	0.4899	0.4900	9	9
			1,1,2,2-Tetrachloroethane (IS4)	1.3664	1.3664	1.3609	1.3609	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 # 32032G1a

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 HP09953	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#: 32032G1a

VALIDATION FINDINGS WORKSHEET
Continuing Calibration Calculation Verification

Reviewer: BR
2nd Reviewer:

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	bu05c10a	6/5/2014	tert-Butyl alcohol (IS1)	1.1390	1.1797	1.1797	4	4
			Trichloroethene (IS2)	0.2659	0.2780	0.2780	5	5
			Tetrachloroethene (IS3)	0.4293	0.4379	0.4379	2	2
			1,1,2,2-Tetrachloroethane (IS4)	0.6837	0.7227	0.7227	6	6
2	bu05c11	6/5/2014	Vinyl acetate (IS1)	0.2607	0.2349	0.2349	10	10

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#: 32032G1a

VALIDATION FINDINGS WORKSHEET
Continuing Calibration Calculation Verification

Reviewer: BR
2nd Reviewer:

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	yu04c01	6/4/2014	tert-Butyl alcohol (IS1)	1.4269	1.3499	1.3499	5	5
			Trichloroethene (IS2)	0.3112	0.2945	0.2945	5	5
			Tetrachloroethene (IS3)	0.4899	0.4739	0.4739	3	3
			1,1,2,2-Tetrachloroethane (IS4)	1.3609	1.1901	1.1901	13	13
2	yu04c02	6/4/2014	Vinyl acetate (IS1)	0.6990	0.7498	0.7498	7	7

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 #: 32032G1k

VALIDATION FINDINGS WORKSHEET
Surrogate Results Verification

Page: 1 of 1
Reviewer: BR
2nd reviewer: CM

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	50.00	53.227	106	106	0
1,2-Dichloroethane-d4	↓	53.201	106	106	0
Toluene-d8		49.344	99	99	0
Bromofluorobenzene		46.558	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					

Sample ID:

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

LDC #: 32832G 1a

VALIDATION FINDINGS WORKSHEET
Laboratory Control Sample Results Verification

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

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: LCS434 / LCD434

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	21.5	21.71	108	108	109	109	1	1
Trichloroethene	↓	↓	19.55	19.85	98	98	99	99	1	1.5
Benzene			18.64	19.06	93	93	95	95	2	2
Toluene			18.78	19.04	94	94	95	95	1	1
Chlorobenzene			18.91	19.2	95	95	98	96	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 #: 320326 1A

VALIDATION FINDINGS WORKSHEET
Sample Calculation Verification

Reviewer: BR
2nd reviewer: SM

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. A11 , ND :

LCSB77 S = 20.68ug/kg

Conc. = $\frac{(116263)(50)(5)}{(1057247)(0.2659)(5)}$

= 20.67839041 ug/kg

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

Data Validation Report
Santa Susana Field Laboratory

Go Backs, Subgroup SVL

SDG: PH203

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

July 23, 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). 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

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.

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 PH203	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 VOCs. No contaminant concentrations were found in the trip blank.

One equipment blank (from SDG PH206) was collected and analyzed for VOCs. No contaminant concentrations were found in the equipment blank.

One field blank (from SDG PH176) was collected and analyzed for VOCs. No contaminant concentrations were found in the field blank.

XIII. 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. All data are deemed useable for the intended use.

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	TB2-052814	7480324	TB	5030B	8260B	III
28-May-2014	SVL-507-SA5C-SB-5.0-6.0	7480323	N	5035	8260B	III
28-May-2014	SVL-545-SA5C-SB-3.0-3.5	7480326	N	5035	8260B	III
28-May-2014	SVL-551-SA5C-SB-2.0-2.8	7480325	N	5035	8260B	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: PH203 **Laboratory: LL**

EDD Filename: PH203_v1 **eQAPP Name: CDM_SSFL_140113_Lan**

No Data Review Qualifiers Applied.

Enclosure I

Level III ADR Outliers

(Including Manual Review Outliers)

Quality Control Outlier Reports

PH203

(No Outliers)

Data Validation Report
Santa Susana Field Laboratory

Go Backs, Subgroup SVL

SDG: PH206

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

July 23, 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). 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

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.

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 PH206	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 VOCs. No contaminant concentrations were found in the trip blank.

One equipment blank was collected and analyzed for VOCs. No contaminant concentrations were found in the equipment blank.

One field blank (from SDG PH176) was collected and analyzed for VOCs. No contaminant concentrations were found in the field blank.

XIII. 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. All data are deemed useable for the intended use.

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	TB2-052914	7482077	TB	5030B	8260B	III
29-May-2014	EB2-052914	7482079	EB	5030B	8260B	III
29-May-2014	SVL-557-SA5C-SB-3.0-3.5	7482076	N	5035	8260B	III
29-May-2014	SVL-559-SA5C-SB-2.5-3.0	7482078	N	5035	8260B	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: PH206 **Laboratory: LL**

EDD Filename: PH206_v1 **eQAPP Name: CDM_SSFL_140113_Lan**

No Data Review Qualifiers Applied.

Enclosure I

Level III ADR Outliers

(Including Manual Review Outliers)

Quality Control Outlier Reports

PH206

(No Outliers)

Data Validation Report
Santa Susana Field Laboratory

Go Backs, Subgroup SVL

SDG: PH211

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

July 23, 2014

INTRODUCTION

This Data Validation Report (DVR) presents Level III 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). 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

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.

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 PH211	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 VOCs. No contaminant concentrations were found in the trip blank.

Two equipment blanks (from SDG PH216) were collected and analyzed for VOCs. No contaminant concentrations were found in the equipment blank.

One field blank (from SDG PH176) was collected and analyzed for VOCs. No contaminant concentrations were found in the field blank.

XIII. 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. All data are deemed useable for the intended use.

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	TB3-060214	7484901	TB	5030B	8260B	III
02-Jun-2014	SVL-563-SA5C-SB-1.0-1.5	7484900	N	5035A	8260B	III
02-Jun-2014	SVL-518-SA5C-SB-5.5-6.0	7484903	N	5035A	8260B	III
02-Jun-2014	SVL-518-SA5C-SB-11.0-11.5	7484902	N	5035A	8260B	III
02-Jun-2014	SVL-576-SA5B-SB-4.0-4.3	7484904	N	5035A	8260B	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: PH211 **Laboratory: LL**

EDD Filename: PH211_v1 **eQAPP Name: CDM_SSFL_140113_Lan**

No Data Review Qualifiers Applied.

Enclosure I

Level III ADR Outliers

(Including Manual Review Outliers)

Quality Control Outlier Reports

PH211

(No Outliers)

Data Validation Report
Santa Susana Field Laboratory

Go Backs, Subgroup SVL

SDG: PH214

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

July 23, 2014

INTRODUCTION

This Data Validation Report (DVR) presents Level III data validation results for samples collected on June 3, 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:

Volatiles (VOCs) by Environmental Protection Agency (EPA) SW 846 Method 8260B

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.

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 PH214	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 VOCs. No contaminant concentrations were found in the trip blank.

One equipment blank (from SDG PH216) was collected and analyzed for VOCs. No contaminant concentrations were found in the equipment blank.

One field blank (from SDG PH176) was collected and analyzed for VOCs. No contaminant concentrations were found in the field blank.

XIII. 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. All data are deemed useable for the intended use.

Attachment 1

Sample Cross Reference

Sample Cross Reference

Date Collected	Field Sample ID	Lab Sample ID	Sample Type	Prep Method	Analytical Method	Review Level
03-Jun-2014	TB1-060314	7486861	TB	5030B	8260B	III
03-Jun-2014	SVL-602-SA5B-SB-4.5-5.0	7486854	N	5035A	8260B	III
03-Jun-2014	SVL-553-SA5D-SB-4.5-5.5	7486855	N	5035A	8260B	III
03-Jun-2014	SVL-553-SA5D-SB-9.0-10.0	7486856	N	5035A	8260B	III
03-Jun-2014	SVL-553-SA5D-SB-14.0-15.0	7486857	N	5035A	8260B	III
03-Jun-2014	SVL-553-SA5D-SB-19.0-20.0	7486858	N	5035A	8260B	III
03-Jun-2014	SVL-556-SA5D-SB-4.5-5.5	7486859	N	5035A	8260B	III
03-Jun-2014	SVL-556-SA5D-SB-10.0-11.0	7486860	N	5035A	8260B	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: PH214 **Laboratory: LL**

EDD Filename: PH214_v1 **eQAPP Name: CDM_SSFL_140113_Lan**

No Data Review Qualifiers Applied.

Enclosure I

Level III ADR Outliers

(Including Manual Review Outliers)

Quality Control Outlier Reports

PH214

(No Outliers)

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

July 29, 2014

SUBJECT: Santa Susana Field Laboratory, FDG Block 2, Data Validation

Dear Mrs. Zakowski,

Enclosed is the final validation report for the fractions listed below. This SDG was received on June 27, 2014. Attachment 1 is a summary of the samples that were reviewed for each analysis.

LDC Project #32094:

SDG #	Fraction
PH196	Volatiles, Semivolatiles, Chlorinated Pesticides, Polychlorinated Biphenyls, Metals, Formaldehyde, Total Petroleum Hydrocarbons as Gasolines, Total Petroleum Hydrocarbons as Extractables, Dioxins and Dibenzofurans

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

73 pages-CD

Attachment 1

90/10 ADR/IV

LDC #32094 (CDM Federal Programs-Chantilly VA / Santa Susana Field Laboratory, FDG Block 2)

LDC	SDG#	DATE REC'D	(4) DATE DUE	VOA (8260B)		SVOA (8270D -SIM)		Pest. (8081B)		PCBs (8082A)		Metals & Hg (SW846)		TPH-G (8015M)		TPH-E (8015M)		Dioxins (1613B)		Formal dehyde (8315A)															
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
A	PH196	06/27/14	07/28/14	1	0	2	5	1	0	2	5	2	7	3	6	4	18	1	0	1	0												
Total	T/SM			1	0	2	5	1	0	2	5	2	7	3	6	4	18	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	58

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: PH196

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

July 29, 2014

INTRODUCTION

This Data Validation Report (DVR) presents Level III data validation results for samples collected on May 22, 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 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.
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
Formaldehyde by EPA Method 8315A

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), 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) 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.

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 with the exception of one cooler. All non-detected VOC and TPH as gasoline results for samples EB1-052214 and EB2-052214 were qualified as rejected (R) due to temperatures grossly outside of QC limits (>15°C). The remainder of 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.

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 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
PH196/ 6010C	ICB/CCB	Zirconium	11.5 ug/L	EB1-052214 EB2-052214

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
PH196/ 6010C	EB1-052214	Zirconium	0.0109 mg/L	0.0109U mg/L
PH196/ 6010C	EB2-052214	Zirconium	0.0108 mg/L	0.0108U 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

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 several LCS/LCSD pairs for VOCs and SVOCs. 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 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 PH196	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.

Two equipment blanks were collected and analyzed for VOCs, 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 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, TPH as gasoline, TPH as extractables with and without silica gel clean up, dioxins and dibenzofurans and formaldehyde. The field blank had detections for SVOCs, metals and dioxins and dibenzofurans. The associated sample results were not detected or were significantly greater than the concentrations found in the field blank, therefore no data were qualified.

XV. Overall Assessment of Data

Several VOC and TPH as gasoline results in two samples were rejected due to temperature exceeding 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
22-May-2014	TB1-052214	7475819	TB	5030B	8015M	III
22-May-2014	FDG2-SL-628-SA8-SB-0.0-0.	7475820	N	3546	8015M	III
22-May-2014	FDG2-SL-628-SA8-SB-4.0-5.	7475821	N	3546	8015M	III
22-May-2014	FDG2-SL-628-SA8-SB-4.0-5.	7475821	N	5035A	8015M	III
22-May-2014	FDG2-SL-628-SA8-SB-9.0-10	7475822	N	3050B	6010C	III
22-May-2014	FDG2-SL-628-SA8-SB-9.0-10	7475822	N	3050B	6020A	III
22-May-2014	FDG2-SL-628-SA8-SB-9.0-10	7475822	N	3546	8015M	III
22-May-2014	FDG2-SL-628-SA8-SB-9.0-10	7475822	N	3546	8082A	III
22-May-2014	FDG2-SL-628-SA8-SB-9.0-10	7475822	N	3546	8270D SIM	III
22-May-2014	FDG2-SL-628-SA8-SB-9.0-10	7475822	N	5035A	8015M	III
22-May-2014	FDG2-SL-628-SA8-SB-9.0-10	7475822	N	METHOD	7471B	III
22-May-2014	FDG2-SL-628-SA8-SB-14.0-1	7475823	N	3050B	6010C	III
22-May-2014	FDG2-SL-628-SA8-SB-14.0-1	7475823	N	3050B	6020A	III
22-May-2014	FDG2-SL-628-SA8-SB-14.0-1	7475823	N	3546	8015M	III
22-May-2014	FDG2-SL-628-SA8-SB-14.0-1	7475823	N	3546	8082A	III
22-May-2014	FDG2-SL-628-SA8-SB-14.0-1	7475823	N	3546	8270D SIM	III
22-May-2014	FDG2-SL-628-SA8-SB-14.0-1	7475823	N	5035A	8015M	III
22-May-2014	FDG2-SL-628-SA8-SB-14.0-1	7475823	N	METHOD	7471B	III
22-May-2014	FDG2-SL-578-NBZ-SB-0.0-0.	7475824	N	3050B	6010C	III
22-May-2014	FDG2-SL-578-NBZ-SB-0.0-0.	7475824	N	3050B	6020A	III
22-May-2014	FDG2-SL-578-NBZ-SB-0.0-0.	7475824	N	3546	8015M	III
22-May-2014	FDG2-SL-578-NBZ-SB-0.0-0.	7475824	N	3546	8082A	III
22-May-2014	FDG2-SL-578-NBZ-SB-0.0-0.	7475824	N	3546	8270D SIM	III
22-May-2014	FDG2-SL-578-NBZ-SB-0.0-0.	7475824	N	METHOD	7471B	III
22-May-2014	FDG2-SL-581-NBZ-SB-0.0-0.	7475825	N	3050B	6010C	III
22-May-2014	FDG2-SL-581-NBZ-SB-0.0-0.	7475825	N	3050B	6020A	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
22-May-2014	FDG2-SL-581-NBZ-SB-0.0-0.	7475825	N	3546	8015M	III
22-May-2014	FDG2-SL-581-NBZ-SB-0.0-0.	7475825	N	METHOD	7471B	III
22-May-2014	FDG2-SL-581-NBZ-SB-4.0-5.	7475826	N	3050B	6010C	III
22-May-2014	FDG2-SL-581-NBZ-SB-4.0-5.	7475826	N	3050B	6020A	III
22-May-2014	FDG2-SL-581-NBZ-SB-4.0-5.	7475826	N	3546	8015M	III
22-May-2014	FDG2-SL-581-NBZ-SB-4.0-5.	7475826	N	5035A	8015M	III
22-May-2014	FDG2-SL-581-NBZ-SB-4.0-5.	7475826	N	METHOD	7471B	III
22-May-2014	FDG2-SL-581-NBZ-SB-9.0-10	7475827	N	3050B	6010C	III
22-May-2014	FDG2-SL-581-NBZ-SB-9.0-10	7475827	N	3050B	6020A	III
22-May-2014	FDG2-SL-581-NBZ-SB-9.0-10	7475827	N	3546	8015M	III
22-May-2014	FDG2-SL-581-NBZ-SB-9.0-10	7475827	N	3546	8082A	III
22-May-2014	FDG2-SL-581-NBZ-SB-9.0-10	7475827	N	3546	8270D SIM	III
22-May-2014	FDG2-SL-581-NBZ-SB-9.0-10	7475827	N	5035A	8015M	III
22-May-2014	FDG2-SL-581-NBZ-SB-9.0-10	7475827	N	METHOD	7471B	III
22-May-2014	FDG2-SL-581-NBZ-SB-13.0-1	7475828	N	3050B	6010C	III
22-May-2014	FDG2-SL-581-NBZ-SB-13.0-1	7475828	N	3050B	6020A	III
22-May-2014	FDG2-SL-581-NBZ-SB-13.0-1	7475828	N	3546	8015M	III
22-May-2014	FDG2-SL-581-NBZ-SB-13.0-1	7475828	N	3546	8082A	III
22-May-2014	FDG2-SL-581-NBZ-SB-13.0-1	7475828	N	3546	8270D SIM	III
22-May-2014	FDG2-SL-581-NBZ-SB-13.0-1	7475828	N	5035A	8015M	III
22-May-2014	FDG2-SL-581-NBZ-SB-13.0-1	7475828	N	METHOD	7471B	III
22-May-2014	EB1-052214	7475817	EB	3005A	6010C	III
22-May-2014	EB1-052214	7475817	EB	3510C	8015M	III
22-May-2014	EB1-052214	7475817	EB	3510C	8082A	III
22-May-2014	EB1-052214	7475817	EB	3510C	8270D SIM	III
22-May-2014	EB1-052214	7475817	EB	5030B	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
22-May-2014	EB1-052214	7475817	EB	5030B	8260B	III
22-May-2014	EB1-052214	7475817	EB	M3010A	6020A	III
22-May-2014	EB1-052214	7475817	EB	METHOD	7470A	III
22-May-2014	EB2-052214	7475818	EB	3005A	6010C	III
22-May-2014	EB2-052214	7475818	EB	3510C	8015M	III
22-May-2014	EB2-052214	7475818	EB	3510C	8081B	III
22-May-2014	EB2-052214	7475818	EB	3510C	8082A	III
22-May-2014	EB2-052214	7475818	EB	3510C	8270D SIM	III
22-May-2014	EB2-052214	7475818	EB	5030B	8015M	III
22-May-2014	EB2-052214	7475818	EB	M3010A	6020A	III
22-May-2014	EB2-052214	7475818	EB	METHOD	1613B	III
22-May-2014	EB2-052214	7475818	EB	METHOD	7470A	III
22-May-2014	EB2-052214	7475818	EB	METHOD	8315A	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: PH196 **Laboratory: LL**

EDD Filename: PrepPH196_v2 **eQAPP Name: CDM_SSFL_140617_Lan**

Method Category: METALS

Method: 6010C **Matrix: AQ**

Sample ID: EB1-052214 **Collected: 5/22/2014 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	0.0109	J	0.0084	MDL	0.100	PQL	mg/L	U	B, B

Sample ID: EB2-052214 **Collected: 5/22/2014 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
Zirconium	0.0108	J	0.0084	MDL	0.100	PQL	mg/L	U	B, B

Method Category: METALS

Method: 6010C **Matrix: SO**

Sample ID: FDG2-SL-578-NBZ-SB-0.0-0.5 **Collected: 5/22/2014 11:26:00** **Analysis Type: REA** **Dilution: 1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
BORON	7.46	J	0.885	MDL	10.5	PQL	mg/Kg	U	B
CADMIUM	0.100	J	0.0800	MDL	1.05	PQL	mg/Kg	J	Z
MOLYBDENUM	0.544	J	0.179	MDL	2.11	PQL	mg/Kg	J	Z
TIN	4.40	J	0.232	MDL	10.5	PQL	mg/Kg	U	B

Sample ID: FDG2-SL-578-NBZ-SB-0.0-0.5 **Collected: 5/22/2014 11:26:00** **Analysis Type: REA2** **Dilution: 1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
Zirconium	4.54	J	0.885	MDL	5.27	PQL	mg/Kg	U	F

Sample ID: FDG2-SL-581-NBZ-SB-0.0-0.5 **Collected: 5/22/2014 1:10:00** **Analysis Type: REA** **Dilution: 1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
CADMIUM	0.166	J	0.0779	MDL	1.03	PQL	mg/Kg	J	Z
MOLYBDENUM	0.318	J	0.174	MDL	2.05	PQL	mg/Kg	J	Z
TIN	4.04	J	0.226	MDL	10.3	PQL	mg/Kg	U	B

Sample ID: FDG2-SL-581-NBZ-SB-13.0-14.0 **Collected: 5/22/2014 1:41:00** **Analysis Type: REA** **Dilution: 1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
CADMIUM	0.178	J	0.0818	MDL	1.08	PQL	mg/Kg	J	Z
MOLYBDENUM	0.320	J	0.183	MDL	2.15	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: PH196 **Laboratory: LL**

EDD Filename: PrepPH196_v2 **eQAPP Name: CDM_SSFL_140617_Lan**

Method Category: METALS

Method: 6010C **Matrix: SO**

Sample ID: FDG2-SL-581-NBZ-SB-13.0-14.0 **Collected: 5/22/2014 1:41:00** **Analysis Type: REA** **Dilution: 1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
TIN	4.54	J	0.237	MDL	10.8	PQL	mg/Kg	U	B

Sample ID: FDG2-SL-581-NBZ-SB-4.0-5.0 **Collected: 5/22/2014 1:20:00** **Analysis Type: REA** **Dilution: 1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
BORON	10.5	J	0.900	MDL	10.7	PQL	mg/Kg	J	Z
CADMIUM	0.261	J	0.0814	MDL	1.07	PQL	mg/Kg	J	Z
MOLYBDENUM	0.437	J	0.182	MDL	2.14	PQL	mg/Kg	J	Z
TIN	4.40	J	0.236	MDL	10.7	PQL	mg/Kg	U	B

Sample ID: FDG2-SL-581-NBZ-SB-9.0-10.0 **Collected: 5/22/2014 1:30:00** **Analysis Type: REA** **Dilution: 1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
MOLYBDENUM	0.457	J	0.191	MDL	2.24	PQL	mg/Kg	J	Z
TIN	4.60	J	0.247	MDL	11.2	PQL	mg/Kg	U	B

Sample ID: FDG2-SL-628-SA8-SB-14.0-15.0 **Collected: 5/22/2014 9:20:00** **Analysis Type: REA** **Dilution: 1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
BERYLLIUM	0.857	J	0.0692	MDL	1.03	PQL	mg/Kg	J	Z
CADMIUM	0.367	J	0.0785	MDL	1.03	PQL	mg/Kg	J	Z
MOLYBDENUM	0.479	J	0.176	MDL	2.07	PQL	mg/Kg	J	Z
TIN	3.06	J	0.227	MDL	10.3	PQL	mg/Kg	U	B
Zirconium	5.15	J	0.868	MDL	5.16	PQL	mg/Kg	U	F

Sample ID: FDG2-SL-628-SA8-SB-9.0-10.0 **Collected: 5/22/2014 8:52:00** **Analysis Type: REA** **Dilution: 1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
BERYLLIUM	0.959	J	0.0707	MDL	1.06	PQL	mg/Kg	J	Z
CADMIUM	0.339	J	0.0802	MDL	1.06	PQL	mg/Kg	J	Z
MOLYBDENUM	0.334	J	0.179	MDL	2.11	PQL	mg/Kg	J	Z
TIN	2.99	J	0.232	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: PH196 **Laboratory: LL**

EDD Filename: PrepPH196_v2 **eQAPP Name: CDM_SSFL_140617_Lan**

Method Category: METALS
Method: 6010C **Matrix: SO**

Sample ID: FDG2-SL-628-SA8-SB-9.0-10.0 *Collected:* 5/22/2014 8:52:00 *Analysis Type:* REA2 *Dilution:* 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
Zirconium	4.90	J	0.887	MDL	5.28	PQL	mg/Kg	U	F

Method Category: METALS
Method: 6020A **Matrix: SO**

Sample ID: FDG2-SL-581-NBZ-SB-0.0-0.5 *Collected:* 5/22/2014 1:10:00 *Analysis Type:* REA2 *Dilution:* 2

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
SILVER	0.128	J	0.0267	MDL	0.205	PQL	mg/Kg	J	Z

Sample ID: FDG2-SL-581-NBZ-SB-13.0-14.0 *Collected:* 5/22/2014 1:41:00 *Analysis Type:* REA2 *Dilution:* 2

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
SILVER	0.191	J	0.0280	MDL	0.215	PQL	mg/Kg	J	Z

Sample ID: FDG2-SL-581-NBZ-SB-4.0-5.0 *Collected:* 5/22/2014 1:20:00 *Analysis Type:* REA2 *Dilution:* 2

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
SILVER	0.0997	J	0.0279	MDL	0.214	PQL	mg/Kg	J	Z

Sample ID: FDG2-SL-581-NBZ-SB-9.0-10.0 *Collected:* 5/22/2014 1:30:00 *Analysis Type:* REA2 *Dilution:* 2

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
SILVER	0.0426	J	0.0292	MDL	0.224	PQL	mg/Kg	J	Z

Sample ID: FDG2-SL-628-SA8-SB-14.0-15.0 *Collected:* 5/22/2014 9:20:00 *Analysis Type:* REA2 *Dilution:* 2

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
SILVER	0.0359	J	0.0269	MDL	0.207	PQL	mg/Kg	J	Z

Sample ID: FDG2-SL-628-SA8-SB-14.0-15.0 *Collected:* 5/22/2014 9:20:00 *Analysis Type:* REA3 *Dilution:* 2

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
SELENIUM	0.273	J	0.103	MDL	0.413	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: PH196 **Laboratory: LL**

EDD Filename: PrepPH196_v2 **eQAPP Name: CDM_SSFL_140617_Lan**

Method Category: METALS

Method: 6020A **Matrix: SO**

Sample ID: FDG2-SL-628-SA8-SB-9.0-10.0 *Collected:* 5/22/2014 8:52:00 *Analysis Type:* REA2 *Dilution:* 2

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
SILVER	0.0277	J	0.0274	MDL	0.211	PQL	mg/Kg	J	Z

Sample ID: FDG2-SL-628-SA8-SB-9.0-10.0 *Collected:* 5/22/2014 8:52:00 *Analysis Type:* REA3 *Dilution:* 2

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
SELENIUM	0.307	J	0.106	MDL	0.422	PQL	mg/Kg	J	Z

Method Category: METALS

Method: 7471B **Matrix: SO**

Sample ID: FDG2-SL-578-NBZ-SB-0.0-0.5 *Collected:* 5/22/2014 11:26:00 *Analysis Type:* RES *Dilution:* 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
MERCURY	0.0117	J	0.0105	MDL	0.0174	PQL	mg/Kg	J	Z

Sample ID: FDG2-SL-581-NBZ-SB-0.0-0.5 *Collected:* 5/22/2014 1:10:00 *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	0.0107	MDL	0.0178	PQL	mg/Kg	J	Z

Sample ID: FDG2-SL-581-NBZ-SB-13.0-14.0 *Collected:* 5/22/2014 1:41:00 *Analysis Type:* RES *Dilution:* 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
MERCURY	0.0173	J	0.0106	MDL	0.0176	PQL	mg/Kg	J	Z

Method Category: SVOA

Method: 1613B **Matrix: AQ**

Sample ID: EB2-052214 *Collected:* 5/22/2014 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	0.709	JBQ	0.111	MDL	9.78	PQL	pg/L	U	B
1,2,3,4,6,7,8-HPCDF	0.704	JBQ	0.0530	MDL	9.78	PQL	pg/L	U	B
1,2,3,4,7,8,9-HPCDF	0.626	JBQ	0.0674	MDL	9.78	PQL	pg/L	U	B
1,2,3,4,7,8-HxCDD	0.438	JB	0.113	MDL	9.78	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: PH196 **Laboratory: LL**

EDD Filename: PrepPH196_v2 **eQAPP Name: CDM_SSFL_140617_Lan**

Method Category: SVOA

Method: 1613B **Matrix: AQ**

Sample ID: EB2-052214 *Collected:* 5/22/2014 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
1,2,3,4,7,8-HXCDF	0.487	JB	0.0936	MDL	9.78	PQL	pg/L	U	B
1,2,3,6,7,8-HXCDD	0.450	JBQ	0.120	MDL	9.78	PQL	pg/L	U	B
1,2,3,6,7,8-HXCDF	0.596	JB	0.0938	MDL	9.78	PQL	pg/L	U	B
1,2,3,7,8,9-HXCDF	0.600	JBQ	0.0824	MDL	9.78	PQL	pg/L	U	B
1,2,3,7,8-PECDD	0.485	JBQ	0.172	MDL	9.78	PQL	pg/L	U	B
1,2,3,7,8-PECDF	0.471	JBQ	0.0806	MDL	9.78	PQL	pg/L	U	B
2,3,4,6,7,8-HXCDF	0.567	JB	0.0853	MDL	9.78	PQL	pg/L	U	B
2,3,4,7,8-PECDF	0.621	JB	0.0727	MDL	9.78	PQL	pg/L	U	B
2,3,7,8-TCDD	0.235	JBQ	0.188	MDL	1.96	PQL	pg/L	U	B
2,3,7,8-TCDF	0.119	JQ	0.116	MDL	1.96	PQL	pg/L	J	Z
OCDD	3.50	JB	0.152	MDL	19.6	PQL	pg/L	U	B
OCDF	1.75	JB	0.102	MDL	19.6	PQL	pg/L	U	B

Method Category: SVOA

Method: 8015M **Matrix: AQ**

Sample ID: EB1-052214 *Collected:* 5/22/2014 3:00:00 *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	0.10	U	0.050	MDL	0.10	PQL	mg/L	UJ	H
EFH (C15-C20) SG	0.10	U	0.050	MDL	0.10	PQL	mg/L	UJ	H
EFH (C21-C30) SG	0.10	U	0.050	MDL	0.10	PQL	mg/L	UJ	H
EFH (C30-C40) SG	0.50	U	0.10	MDL	0.50	PQL	mg/L	UJ	H
EFH (C8-C11) SG	0.10	U	0.050	MDL	0.10	PQL	mg/L	UJ	H

Sample ID: EB1-052214 *Collected:* 5/22/2014 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
GASOLINE RANGE ORGANICS (C5-C12)	50	U	20	MDL	50	PQL	ug/L	R	H

Sample ID: EB1-052214 *Collected:* 5/22/2014 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
EFH (C12-C14)	0.10	U	0.050	MDL	0.10	PQL	mg/L	UJ	H
EFH (C15-C20)	0.10	U	0.050	MDL	0.10	PQL	mg/L	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: PH196 **Laboratory: LL**

EDD Filename: PrepPH196_v2 **eQAPP Name: CDM_SSFL_140617_Lan**

Method Category: SVOA

Method: 8015M **Matrix: AQ**

Sample ID: **EB1-052214** *Collected:* **5/22/2014 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
EFH (C21-C30)	0.10	U	0.050	MDL	0.10	PQL	mg/L	UJ	H
EFH (C30-C40)	0.50	U	0.10	MDL	0.50	PQL	mg/L	UJ	H
EFH (C8-C11)	0.10	U	0.050	MDL	0.10	PQL	mg/L	UJ	H

Sample ID: **EB2-052214** *Collected:* **5/22/2014 3:30:00** *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	0.10	U	0.050	MDL	0.10	PQL	mg/L	UJ	H
EFH (C15-C20) SG	0.10	U	0.050	MDL	0.10	PQL	mg/L	UJ	H
EFH (C21-C30) SG	0.10	U	0.050	MDL	0.10	PQL	mg/L	UJ	H
EFH (C30-C40) SG	0.50	U	0.10	MDL	0.50	PQL	mg/L	UJ	H
EFH (C8-C11) SG	0.10	U	0.050	MDL	0.10	PQL	mg/L	UJ	H

Sample ID: **EB2-052214** *Collected:* **5/22/2014 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
GASOLINE RANGE ORGANICS (C5-C12)	50	U	20	MDL	50	PQL	ug/L	R	H

Sample ID: **EB2-052214** *Collected:* **5/22/2014 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
EFH (C12-C14)	0.10	U	0.050	MDL	0.10	PQL	mg/L	UJ	H
EFH (C15-C20)	0.10	U	0.050	MDL	0.10	PQL	mg/L	UJ	H
EFH (C21-C30)	0.10	U	0.050	MDL	0.10	PQL	mg/L	UJ	H
EFH (C30-C40)	0.50	U	0.10	MDL	0.50	PQL	mg/L	UJ	H
EFH (C8-C11)	0.10	U	0.050	MDL	0.10	PQL	mg/L	UJ	H

Method Category: SVOA

Method: 8015M **Matrix: SO**

Sample ID: **FDG2-SL-581-NBZ-SB-0.0-0.5** *Collected:* **5/22/2014 1:10:00** *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)	2.6	J	2.1	MDL	5.3	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: PH196 **Laboratory: LL**

EDD Filename: PrepPH196_v2 **eQAPP Name: CDM_SSFL_140617_Lan**

Method Category: SVOA

Method: 8015M **Matrix: SO**

Sample ID: **FDG2-SL-581-NBZ-SB-9.0-10.0** *Collected:* **5/22/2014 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	5.6	U	2.2	MDL	5.6	PQL	mg/Kg	UJ	S
EFH (C15-C20) SG	5.6	U	2.2	MDL	5.6	PQL	mg/Kg	UJ	S
EFH (C21-C30) SG	5.6	U	2.2	MDL	5.6	PQL	mg/Kg	UJ	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	S

Sample ID: **FDG2-SL-628-SA8-SB-0.0-0.5** *Collected:* **5/22/2014 8:20:00** *Analysis Type:* **REA** *Dilution:* **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
EFH (C21-C30) SG	3.9	J	2.1	MDL	5.2	PQL	mg/Kg	J	Z
EFH (C30-C40) SG	5.5	J	4.2	MDL	10	PQL	mg/Kg	J	Z

Sample ID: **FDG2-SL-628-SA8-SB-0.0-0.5** *Collected:* **5/22/2014 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
EFH (C15-C20)	4.2	J	2.1	MDL	5.2	PQL	mg/Kg	J	Z

Sample ID: **FDG2-SL-628-SA8-SB-14.0-15.0** *Collected:* **5/22/2014 9:20:00** *Analysis Type:* **REA2** *Dilution:* **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
EFH (C21-C30) SG	2.4	J	2.1	MDL	5.3	PQL	mg/Kg	J	Z

Sample ID: **FDG2-SL-628-SA8-SB-14.0-15.0** *Collected:* **5/22/2014 9:20:00** *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)	4.1	J	2.1	MDL	5.3	PQL	mg/Kg	J	Z

Sample ID: **FDG2-SL-628-SA8-SB-4.0-5.0** *Collected:* **5/22/2014 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 (C21-C30) SG	3.7	J	2.2	MDL	5.6	PQL	mg/Kg	J	Z
EFH (C30-C40) SG	4.6	J	4.4	MDL	11	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: PH196 **Laboratory: LL**

EDD Filename: PrepPH196_v2 **eQAPP Name: CDM_SSFL_140617_Lan**

Method Category: SVOA

Method: 8081B **Matrix: AQ**

Sample ID: **EB2-052214** *Collected:* **5/22/2014 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
4,4'-DDD	0.018	U	0.0046	MDL	0.018	PQL	ug/L	UJ	H
4,4'-DDE	0.018	U	0.0046	MDL	0.018	PQL	ug/L	UJ	H
4,4'-DDT	0.018	U	0.0048	MDL	0.018	PQL	ug/L	UJ	H
ALDRIN	0.0092	U	0.0018	MDL	0.0092	PQL	ug/L	UJ	H
ALPHA-BHC	0.0092	U	0.0028	MDL	0.0092	PQL	ug/L	UJ	H
BETA-BHC	0.0092	U	0.0031	MDL	0.0092	PQL	ug/L	UJ	H
Chlordane	0.46	U	0.15	MDL	0.46	PQL	ug/L	UJ	H
DELTA-BHC	0.0092	U	0.0031	MDL	0.0092	PQL	ug/L	UJ	H
DIELDRIN	0.018	U	0.0049	MDL	0.018	PQL	ug/L	UJ	H
ENDOSULFAN I	0.0092	U	0.0040	MDL	0.0092	PQL	ug/L	UJ	H
ENDOSULFAN II	0.018	U	0.014	MDL	0.018	PQL	ug/L	UJ	H
ENDOSULFAN SULFATE	0.018	U	0.0053	MDL	0.018	PQL	ug/L	UJ	H
ENDRIN	0.018	U	0.0075	MDL	0.018	PQL	ug/L	UJ	H
ENDRIN ALDEHYDE	0.092	U	0.018	MDL	0.092	PQL	ug/L	UJ	H
ENDRIN KETONE	0.018	U	0.0046	MDL	0.018	PQL	ug/L	UJ	H
gamma-BHC (Lindane)	0.0092	U	0.0018	MDL	0.0092	PQL	ug/L	UJ	H
HEPTACHLOR	0.0092	U	0.0018	MDL	0.0092	PQL	ug/L	UJ	H
HEPTACHLOR EPOXIDE	0.0092	U	0.0021	MDL	0.0092	PQL	ug/L	UJ	H
METHOXYCHLOR	0.092	U	0.028	MDL	0.092	PQL	ug/L	UJ	H
MIREX	0.046	U	0.0092	MDL	0.046	PQL	ug/L	UJ	H
TOXAPHENE	0.92	U	0.28	MDL	0.92	PQL	ug/L	UJ	H

Method Category: SVOA

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

Sample ID: **EB1-052214** *Collected:* **5/22/2014 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-METHYLNAPHTHALENE	0.020	J	0.010	MDL	0.051	PQL	ug/L	J	Z, H, L

Sample ID: **EB1-052214** *Collected:* **5/22/2014 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
2-METHYLNAPHTHALENE	0.030	J	0.010	MDL	0.051	PQL	ug/L	J	Z, 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: PH196 **Laboratory: LL**

EDD Filename: PrepPH196_v2 **eQAPP Name: CDM_SSFL_140617_Lan**

Method Category: SVOA

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

Sample ID: **EB1-052214** ***Collected:*** **5/22/2014 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
ACENAPHTHENE	0.051	U	0.010	MDL	0.051	PQL	ug/L	UJ	H
ACENAPHTHYLENE	0.051	U	0.010	MDL	0.051	PQL	ug/L	UJ	H
ANTHRACENE	0.051	U	0.010	MDL	0.051	PQL	ug/L	UJ	H
BENZO(A)ANTHRACENE	0.051	U	0.010	MDL	0.051	PQL	ug/L	UJ	H
BENZO(A)PYRENE	0.051	U	0.010	MDL	0.051	PQL	ug/L	UJ	H
BENZO(B)FLUORANTHENE	0.051	U	0.010	MDL	0.051	PQL	ug/L	UJ	H
BENZO(E)PYRENE	0.051	U	0.010	MDL	0.051	PQL	ug/L	UJ	H
BENZO(G,H,I)PERYLENE	0.051	U	0.010	MDL	0.051	PQL	ug/L	UJ	H
BENZO(K)FLUORANTHENE	0.051	U	0.010	MDL	0.051	PQL	ug/L	UJ	H
BIS(2-ETHYLHEXYL)PHTHALATE	0.20	J	0.051	MDL	1.0	PQL	ug/L	UJ	H, L, E, B
Butylbenzylphthalate	1.0	U	0.051	MDL	1.0	PQL	ug/L	UJ	H
CHRYSENE	0.051	U	0.010	MDL	0.051	PQL	ug/L	UJ	H
DIBENZO(A,H)ANTHRACENE	0.051	U	0.010	MDL	0.051	PQL	ug/L	UJ	H
Diethylphthalate	0.053	J	0.051	MDL	1.0	PQL	ug/L	J	Z, H
Dimethylphthalate	1.0	U	0.051	MDL	1.0	PQL	ug/L	UJ	H
Di-n-butylphthalate	0.090	J	0.051	MDL	1.0	PQL	ug/L	J	Z, H
Di-n-octylphthalate	1.0	U	0.051	MDL	1.0	PQL	ug/L	UJ	H
FLUORANTHENE	0.051	U	0.010	MDL	0.051	PQL	ug/L	UJ	H
FLUORENE	0.051	U	0.010	MDL	0.051	PQL	ug/L	UJ	H
INDENO(1,2,3-CD)PYRENE	0.051	U	0.010	MDL	0.051	PQL	ug/L	UJ	H
NAPHTHALENE	0.11		0.031	MDL	0.051	PQL	ug/L	J	H
N-NITROSODIMETHYLAMINE	0.051	U	0.010	MDL	0.051	PQL	ug/L	UJ	H
PHENANTHRENE	0.051	U	0.031	MDL	0.051	PQL	ug/L	UJ	H
PYRENE	0.051	U	0.010	MDL	0.051	PQL	ug/L	UJ	H

Sample ID: **EB2-052214** ***Collected:*** **5/22/2014 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-METHYLNAPHTHALENE	0.033	J	0.011	MDL	0.054	PQL	ug/L	J	Z, H, L

Sample ID: **EB2-052214** ***Collected:*** **5/22/2014 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
2-METHYLNAPHTHALENE	0.052	J	0.011	MDL	0.054	PQL	ug/L	J	Z, H
ACENAPHTHENE	0.054	U	0.011	MDL	0.054	PQL	ug/L	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: PH196 **Laboratory: LL**

EDD Filename: PrepPH196_v2 **eQAPP Name: CDM_SSFL_140617_Lan**

Method Category: SVOA

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

Sample ID: **EB2-052214** *Collected:* **5/22/2014 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
ACENAPHTHYLENE	0.054	U	0.011	MDL	0.054	PQL	ug/L	UJ	H
ANTHRACENE	0.054	U	0.011	MDL	0.054	PQL	ug/L	UJ	H
BENZO(A)ANTHRACENE	0.054	U	0.011	MDL	0.054	PQL	ug/L	UJ	H
BENZO(A)PYRENE	0.054	U	0.011	MDL	0.054	PQL	ug/L	UJ	H
BENZO(B)FLUORANTHENE	0.054	U	0.011	MDL	0.054	PQL	ug/L	UJ	H
BENZO(E)PYRENE	0.054	U	0.011	MDL	0.054	PQL	ug/L	UJ	H
BENZO(G,H,I)PERYLENE	0.054	U	0.011	MDL	0.054	PQL	ug/L	UJ	H
BENZO(K)FLUORANTHENE	0.054	U	0.011	MDL	0.054	PQL	ug/L	UJ	H
BIS(2-ETHYLHEXYL)PHTHALATE	0.095	J	0.054	MDL	1.1	PQL	ug/L	UJ	H, L, E, B
Butylbenzylphthalate	1.1	U	0.054	MDL	1.1	PQL	ug/L	UJ	H
CHRYSENE	0.054	U	0.011	MDL	0.054	PQL	ug/L	UJ	H
DIBENZO(A,H)ANTHRACENE	0.054	U	0.011	MDL	0.054	PQL	ug/L	UJ	H
Diethylphthalate	1.1	U	0.054	MDL	1.1	PQL	ug/L	UJ	H
Dimethylphthalate	1.1	U	0.054	MDL	1.1	PQL	ug/L	UJ	H
Di-n-butylphthalate	0.10	J	0.054	MDL	1.1	PQL	ug/L	J	Z, H
Di-n-octylphthalate	1.1	U	0.054	MDL	1.1	PQL	ug/L	UJ	H
FLUORANTHENE	0.054	U	0.011	MDL	0.054	PQL	ug/L	UJ	H
FLUORENE	0.054	U	0.011	MDL	0.054	PQL	ug/L	UJ	H
INDENO(1,2,3-CD)PYRENE	0.054	U	0.011	MDL	0.054	PQL	ug/L	UJ	H
NAPHTHALENE	0.15		0.032	MDL	0.054	PQL	ug/L	J	H
N-NITROSODIMETHYLAMINE	0.054	U	0.011	MDL	0.054	PQL	ug/L	UJ	H
PHENANTHRENE	0.054	U	0.032	MDL	0.054	PQL	ug/L	UJ	H
PYRENE	0.054	U	0.011	MDL	0.054	PQL	ug/L	UJ	H

Method Category: SVOA

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

Sample ID: **FDG2-SL-578-NBZ-SB-0.0-0.5** *Collected:* **5/22/2014 11:26:00** *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: PH196 **Laboratory: LL**

EDD Filename: PrepPH196_v2 **eQAPP Name: CDM_SSFL_140617_Lan**

Method Category: SVOA

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

Sample ID: **FDG2-SL-581-NBZ-SB-13.0-14.0** *Collected:* **5/22/2014 1:41:00** *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
CHRYSENE	0.38	J	0.36	MDL	1.8	PQL	ug/Kg	J	Z

Sample ID: **FDG2-SL-581-NBZ-SB-9.0-10.0** *Collected:* **5/22/2014 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
BENZO(E)PYRENE	19	U	3.8	MDL	19	PQL	ug/Kg	UJ	L

Sample ID: **FDG2-SL-628-SA8-SB-14.0-15.0** *Collected:* **5/22/2014 9:20:00** *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	18	U	3.5	MDL	18	PQL	ug/Kg	UJ	L
BIS(2-ETHYLHEXYL)PHTHALATE	14	J	6.4	MDL	19	PQL	ug/Kg	J	Z

Sample ID: **FDG2-SL-628-SA8-SB-9.0-10.0** *Collected:* **5/22/2014 8:52:00** *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
BIS(2-ETHYLHEXYL)PHTHALATE	18	J	6.4	MDL	19	PQL	ug/Kg	J	Z

Method Category: SVOA

Method: 8315A **Matrix: AQ**

Sample ID: **EB2-052214** *Collected:* **5/22/2014 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
FORMALDEHYDE	50	U	30	MDL	50	PQL	ug/L	UJ	H

Method Category: VOA

Method: 8260B **Matrix: AQ**

Sample ID: **EB1-052214** *Collected:* **5/22/2014 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
1,1,1,2-TETRACHLOROETHANE	5	U	0.5	MDL	5	PQL	ug/L	R	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: PH196 **Laboratory: LL**

EDD Filename: PrepPH196_v2 **eQAPP Name: CDM_SSFL_140617_Lan**

Method Category: VOA

Method: 8260B **Matrix: AQ**

Sample ID: **EB1-052214** *Collected:* **5/22/2014 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
1,1,1-TRICHLOROETHANE	5	U	0.5	MDL	5	PQL	ug/L	R	H
1,1,2,2-TETRACHLOROETHANE	5	U	0.5	MDL	5	PQL	ug/L	R	H
1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE	5	U	2	MDL	5	PQL	ug/L	R	H
1,1,2-TRICHLOROETHANE	5	U	0.5	MDL	5	PQL	ug/L	R	H
1,1-DICHLOROETHANE	5	U	0.5	MDL	5	PQL	ug/L	R	H
1,1-DICHLOROETHENE	5	U	0.5	MDL	5	PQL	ug/L	R	H
1,1-DICHLOROPROPENE	5	U	1	MDL	5	PQL	ug/L	R	H
1,2,3-TRICHLOROBENZENE	5	U	1	MDL	5	PQL	ug/L	R	H
1,2,3-TRICHLOROPROPANE	5	U	1	MDL	5	PQL	ug/L	R	H
1,2,4-TRICHLOROBENZENE	5	U	1	MDL	5	PQL	ug/L	R	H
1,2,4-TRIMETHYLBENZENE	5	U	1	MDL	5	PQL	ug/L	R	H
1,2-DIBROMO-3-CHLOROPROPANE	5	U	2	MDL	5	PQL	ug/L	R	H
1,2-Dibromoethane (EDB)	5	U	0.5	MDL	5	PQL	ug/L	R	H
1,2-DICHLOROBENZENE	5	U	1	MDL	5	PQL	ug/L	R	H
1,2-DICHLOROETHANE	5	U	0.5	MDL	5	PQL	ug/L	R	H
1,2-DICHLOROPROPANE	5	U	0.5	MDL	5	PQL	ug/L	R	H
1,3,5-TRIMETHYLBENZENE	5	U	1	MDL	5	PQL	ug/L	R	H
1,3-DICHLOROBENZENE	5	U	1	MDL	5	PQL	ug/L	R	H
1,3-DICHLOROPROPANE	5	U	0.5	MDL	5	PQL	ug/L	R	H
1,4-DICHLOROBENZENE	5	U	1	MDL	5	PQL	ug/L	R	H
1-CHLOROHEXANE	5	U	1	MDL	5	PQL	ug/L	R	H
2,2-DICHLOROPROPANE	5	U	0.5	MDL	5	PQL	ug/L	R	H
2-BUTANONE (MEK)	10	U	3	MDL	10	PQL	ug/L	R	H
2-Chloro-1,1,1-trifluoroethane	5	U	2	MDL	5	PQL	ug/L	R	H
2-CHLOROETHYL VINYL ETHER	10	U	2	MDL	10	PQL	ug/L	R	H
2-CHLOROTOLUENE	5	U	1	MDL	5	PQL	ug/L	R	H
2-HEXANONE	10	U	3	MDL	10	PQL	ug/L	R	H
4-CHLOROTOLUENE	5	U	1	MDL	5	PQL	ug/L	R	H
4-METHYL-2-PENTANONE (MIBK)	10	U	3	MDL	10	PQL	ug/L	R	H
ACETONE	20	U	6	MDL	20	PQL	ug/L	R	H
ACROLEIN	100	U	40	MDL	100	PQL	ug/L	R	H
ACRYLONITRILE	20	U	4	MDL	20	PQL	ug/L	R	H
BENZENE	5	U	0.5	MDL	5	PQL	ug/L	R	H
BROMOBENZENE	5	U	1	MDL	5	PQL	ug/L	R	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: PH196 **Laboratory: LL**

EDD Filename: PrepPH196_v2 **eQAPP Name: CDM_SSFL_140617_Lan**

Method Category: VOA

Method: 8260B **Matrix: AQ**

Sample ID: EB1-052214 *Collected:* 5/22/2014 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
BROMOCHLOROMETHANE	5	U	1	MDL	5	PQL	ug/L	R	H
BROMODICHLOROMETHANE	5	U	0.5	MDL	5	PQL	ug/L	R	H
BROMOFORM	5	U	0.5	MDL	5	PQL	ug/L	R	H
BROMOMETHANE	5	U	0.5	MDL	5	PQL	ug/L	R	H
CARBON DISULFIDE	5	U	1	MDL	5	PQL	ug/L	R	H
CARBON TETRACHLORIDE	5	U	0.5	MDL	5	PQL	ug/L	R	H
CHLOROBENZENE	5	U	0.5	MDL	5	PQL	ug/L	R	H
CHLOROETHANE	5	U	0.5	MDL	5	PQL	ug/L	R	H
CHLOROFORM	0.6	J	0.5	MDL	5	PQL	ug/L	J	Z, H
CHLOROMETHANE	5	U	0.5	MDL	5	PQL	ug/L	R	H
Chlorotrifluoroethylene	5	U	2	MDL	5	PQL	ug/L	R	H
CIS-1,2-DICHLOROETHENE	5	U	0.5	MDL	5	PQL	ug/L	R	H
CIS-1,3-DICHLOROPROPENE	5	U	0.5	MDL	5	PQL	ug/L	R	H
DIBROMOCHLOROMETHANE	5	U	0.5	MDL	5	PQL	ug/L	R	H
DIBROMOMETHANE	5	U	0.5	MDL	5	PQL	ug/L	R	H
DICHLORODIFLUOROMETHANE	5	U	0.5	MDL	5	PQL	ug/L	R	H
Diisopropyl ether	5	U	0.5	MDL	5	PQL	ug/L	R	H
ETHYL TERTIARY BUTYL ETHER (ETBE)	5	U	0.5	MDL	5	PQL	ug/L	R	H
ETHYLBENZENE	5	U	0.5	MDL	5	PQL	ug/L	R	H
HEXACHLOROBUTADIENE	5	U	2	MDL	5	PQL	ug/L	R	H
IODOMETHANE	5	U	0.5	MDL	5	PQL	ug/L	R	H
ISOPROPYLBENZENE	5	U	1	MDL	5	PQL	ug/L	R	H
m,p-Xylene	5	U	0.5	MDL	5	PQL	ug/L	R	H
METHYL TERT-BUTYL ETHER (MTBE)	5	U	0.5	MDL	5	PQL	ug/L	R	H
METHYLENE CHLORIDE	7		2	MDL	5	PQL	ug/L	J	H
N-BUTYLBENZENE	5	U	1	MDL	5	PQL	ug/L	R	H
N-PROPYLBENZENE	5	U	1	MDL	5	PQL	ug/L	R	H
O-XYLENE	5	U	0.5	MDL	5	PQL	ug/L	R	H
P-ISOPROPYLTOLUENE	5	U	1	MDL	5	PQL	ug/L	R	H
SEC-BUTYLBENZENE	5	U	1	MDL	5	PQL	ug/L	R	H
STYRENE	5	U	1	MDL	5	PQL	ug/L	R	H
TERT-BUTYLBENZENE	5	U	1	MDL	5	PQL	ug/L	R	H
TERTIARY AMYL METHYL ETHER (TAME)	5	U	0.5	MDL	5	PQL	ug/L	R	H
Tertiary butyl alcohol	50	U	5	MDL	50	PQL	ug/L	R	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: PH196 **Laboratory: LL**

EDD Filename: PrepPH196_v2 **eQAPP Name: CDM_SSFL_140617_Lan**

Method Category: **VOA**

Method: **8260B** ***Matrix:*** **AQ**

Sample ID: **EB1-052214** ***Collected:*** **5/22/2014 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*
TETRACHLOROETHENE	5	U	0.5	MDL	5	PQL	ug/L	R	H
TOLUENE	5	U	0.5	MDL	5	PQL	ug/L	R	H
TRANS-1,2-DICHLOROETHENE	5	U	0.5	MDL	5	PQL	ug/L	R	H
TRANS-1,3-DICHLOROPROPENE	5	U	0.5	MDL	5	PQL	ug/L	R	H
TRICHLOROETHENE	5	U	0.5	MDL	5	PQL	ug/L	R	H
TRICHLOROFLUOROMETHANE	5	U	0.5	MDL	5	PQL	ug/L	R	H
VINYL ACETATE	10	U	2	MDL	10	PQL	ug/L	R	H
VINYL CHLORIDE	5	U	0.5	MDL	5	PQL	ug/L	R	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: PH196 **Laboratory: LL**

EDD Filename: PrepPH196_v2 **eQAPP Name: CDM_SSFL_140617_Lan**

Reason Code Legend

Reason Code	*Description*
B	Calibration Blank Contamination
B	Method Blank Contamination
E	Laboratory Control Precision
F	Equipment Blank Contamination
H	Temperature Estimation
H	Temperature Rejection
L	Laboratory Control Precision
L	Laboratory Control Spike Lower Estimation
L	Laboratory Control 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

Quality Control Outlier Reports

PH196

Temperature Outliers

Lab Reporting Batch ID: PH196 **Laboratory: LL**

EDD Filename: PrepPH196_v2 **eQAPP Name: CDM_SSFL_140617_Lan**

Method: 8015M
Matrix: AQ

SampleID	Analyte	Temperarture	Criteria	Flag
EB1-052214	All TCLs	15.3 °C	11.00 °C	J (all detects) UJ (all non-detects)
EB2-052214	All TCLs	15.3 °C	11.00 °C	J (all detects) UJ (all non-detects)

Method: 8081B
Matrix: AQ

SampleID	Analyte	Temperarture	Criteria	Flag
EB2-052214	All TCLs	15.3 °C	11.00 °C	J (all detects) UJ (all non-detects)

Method: 8260B
Matrix: AQ

SampleID	Analyte	Temperarture	Criteria	Flag
EB1-052214	All TCLs	15.3 °C	11.00 °C	J (all detects) R (all non-detects)

Method: 8270D SIM
Matrix: AQ

SampleID	Analyte	Temperarture	Criteria	Flag
EB1-052214	All TCLs	15.3 °C	11.00 °C	J (all detects) UJ (all non-detects)
EB2-052214	All TCLs	15.3 °C	11.00 °C	J (all detects) UJ (all non-detects)

Method: 8315A
Matrix: AQ

SampleID	Analyte	Temperarture	Criteria	Flag
EB2-052214	All TCLs	15.3 °C	11.00 °C	J (all detects) UJ (all non-detects)

Method Blank Outlier Report

Lab Reporting Batch ID: PH196 **Laboratory: LL**

EDD Filename: PrepPH196_v2 **eQAPP Name: CDM_SSFL_140617_Lan**

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

Method Blank Sample ID	Analysis Date	Analyte	Result	Associated Samples
BLK1530B370239	6/5/2014 2:39:00 AM	1,2,3,4,6,7,8-HPCDD	1.48 pg/L	EB2-052214
		1,2,3,4,6,7,8-HPCDF	0.896 pg/L	
		1,2,3,4,7,8,9-HPCDF	0.700 pg/L	
		1,2,3,4,7,8-HxCDD	0.447 pg/L	
		1,2,3,4,7,8-HXCDF	0.904 pg/L	
		1,2,3,6,7,8-HXCDD	0.340 pg/L	
		1,2,3,6,7,8-HXCDF	0.611 pg/L	
		1,2,3,7,8,9-HXCDD	0.401 pg/L	
		1,2,3,7,8,9-HXCDF	0.782 pg/L	
		1,2,3,7,8-PECDD	0.681 pg/L	
		1,2,3,7,8-PECDF	0.578 pg/L	
		2,3,4,6,7,8-HXCDF	0.441 pg/L	
		2,3,4,7,8-PECDF	0.774 pg/L	
		2,3,7,8-TCDD	0.380 pg/L	
		OCDD	3.59 pg/L	
		OCDF	2.01 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
EB2-052214(RES)	1,2,3,4,6,7,8-HPCDD	0.709 pg/L	0.709U pg/L
EB2-052214(RES)	1,2,3,4,6,7,8-HPCDF	0.704 pg/L	0.704U pg/L
EB2-052214(RES)	1,2,3,4,7,8,9-HPCDF	0.626 pg/L	0.626U pg/L
EB2-052214(RES)	1,2,3,4,7,8-HxCDD	0.438 pg/L	0.438U pg/L
EB2-052214(RES)	1,2,3,4,7,8-HXCDF	0.487 pg/L	0.487U pg/L
EB2-052214(RES)	1,2,3,6,7,8-HXCDD	0.450 pg/L	0.450U pg/L
EB2-052214(RES)	1,2,3,6,7,8-HXCDF	0.596 pg/L	0.596U pg/L
EB2-052214(RES)	1,2,3,7,8,9-HXCDF	0.600 pg/L	0.600U pg/L
EB2-052214(RES)	1,2,3,7,8-PECDD	0.485 pg/L	0.485U pg/L
EB2-052214(RES)	1,2,3,7,8-PECDF	0.471 pg/L	0.471U pg/L
EB2-052214(RES)	2,3,4,6,7,8-HXCDF	0.567 pg/L	0.567U pg/L
EB2-052214(RES)	2,3,4,7,8-PECDF	0.621 pg/L	0.621U pg/L
EB2-052214(RES)	2,3,7,8-TCDD	0.235 pg/L	0.235U pg/L
EB2-052214(RES)	OCDD	3.50 pg/L	3.50U pg/L
EB2-052214(RES)	OCDF	1.75 pg/L	1.75U pg/L

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

Method Blank Sample ID	Analysis Date	Analyte	Result	Associated Samples
P14835BB221845	5/29/2014 6:45:00 PM	Zirconium	0.0110 mg/L	EB1-052214 EB2-052214

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
EB1-052214(RES)	Zirconium	0.0109 mg/L	0.0109U mg/L
EB2-052214(RES)	Zirconium	0.0108 mg/L	0.0108U mg/L

Method Blank Outlier Report

Lab Reporting Batch ID: PH196 **Laboratory: LL**

EDD Filename: PrepPH196_v2 **eQAPP Name: CDM_SSFL_140617_Lan**

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

Method Blank Sample ID	Analysis Date	Analyte	Result	Associated Samples
P14937AB220850	6/2/2014 8:50:00 AM	ALUMINUM BERYLLIUM BORON CALCIUM TIN	7.59 mg/Kg 0.0890 mg/Kg 1.60 mg/Kg 21.3 mg/Kg 1.59 mg/Kg	FDG2-SL-578-NBZ-SB-0.0-0.5 FDG2-SL-581-NBZ-SB-0.0-0.5 FDG2-SL-581-NBZ-SB-13.0-14.0 FDG2-SL-581-NBZ-SB-4.0-5.0 FDG2-SL-581-NBZ-SB-9.0-10.0 FDG2-SL-628-SA8-SB-14.0-15.0 FDG2-SL-628-SA8-SB-9.0-10.0

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-578-NBZ-SB-0.0-0.5(REA)	BORON	7.46 mg/Kg	7.46U mg/Kg
FDG2-SL-578-NBZ-SB-0.0-0.5(REA)	TIN	4.40 mg/Kg	4.40U mg/Kg
FDG2-SL-581-NBZ-SB-0.0-0.5(REA)	TIN	4.04 mg/Kg	4.04U mg/Kg
FDG2-SL-581-NBZ-SB-13.0-14.0(REA)	TIN	4.54 mg/Kg	4.54U mg/Kg
FDG2-SL-581-NBZ-SB-4.0-5.0(REA)	TIN	4.40 mg/Kg	4.40U mg/Kg
FDG2-SL-581-NBZ-SB-9.0-10.0(REA)	TIN	4.60 mg/Kg	4.60U mg/Kg
FDG2-SL-628-SA8-SB-14.0-15.0(REA)	TIN	3.06 mg/Kg	3.06U mg/Kg
FDG2-SL-628-SA8-SB-9.0-10.0(REA)	TIN	2.99 mg/Kg	2.99U mg/Kg

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

Method Blank Sample ID	Analysis Date	Analyte	Result	Associated Samples
P14937AB221403A	6/2/2014 2:03:00 PM	STRONTIUM	0.103 mg/Kg	FDG2-SL-578-NBZ-SB-0.0-0.5 FDG2-SL-581-NBZ-SB-0.0-0.5 FDG2-SL-581-NBZ-SB-13.0-14.0 FDG2-SL-581-NBZ-SB-4.0-5.0 FDG2-SL-581-NBZ-SB-9.0-10.0 FDG2-SL-628-SA8-SB-14.0-15.0 FDG2-SL-628-SA8-SB-9.0-10.0

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

Method Blank Sample ID	Analysis Date	Analyte	Result	Associated Samples
PLKWN14B260205	6/3/2014 2:05:00 AM	BIS(2-ETHYLHEXYL)PHTHALATE	0.056 ug/L	EB1-052214 EB2-052214

Method Blank Outlier Report

Lab Reporting Batch ID: PH196 **Laboratory: LL**

EDD Filename: PrepPH196_v2 **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
EB1-052214(RES)	BIS(2-ETHYLHEXYL)PHTHALATE	0.20 ug/L	1.0U ug/L
EB2-052214(RES)	BIS(2-ETHYLHEXYL)PHTHALATE	0.095 ug/L	1.1U ug/L

Equipment Rinsate Blank Outlier Report

Lab Reporting Batch ID: PH196 **Laboratory: LL**

EDD Filename: PrepPH196_v2 **eQAPP Name: CDM_SSFL_140617_Lan**

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

Equipment Blank Sample ID	Collected Date	Analyte	Result	Associated Samples
EB2-052214(RES)	5/22/2014 3:30:00 PM	Zirconium	0.0108 mg/L	FDG2-SL-578-NBZ-SB-0.0-0.5 FDG2-SL-581-NBZ-SB-0.0-0.5 FDG2-SL-581-NBZ-SB-13.0-14.0 FDG2-SL-581-NBZ-SB-4.0-5.0 FDG2-SL-581-NBZ-SB-9.0-10.0 FDG2-SL-628-SA8-SB-0.0-0.5 FDG2-SL-628-SA8-SB-14.0-15.0 FDG2-SL-628-SA8-SB-4.0-5.0 FDG2-SL-628-SA8-SB-9.0-10.0

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-578-NBZ-SB-0.0-0.5(REA2)	Zirconium	4.54 mg/Kg	4.54U mg/Kg
FDG2-SL-628-SA8-SB-14.0-15.0(REA)	Zirconium	5.15 mg/Kg	5.15U mg/Kg
FDG2-SL-628-SA8-SB-9.0-10.0(REA2)	Zirconium	4.90 mg/Kg	4.90U mg/Kg

Lab Control Spike/Lab Control Spike Duplicate Outlier Report

Lab Reporting Batch ID: PH196 **Laboratory: LL**

EDD Filename: PrepPH196_v2 **eQAPP Name: CDM_SSFL_140617_Lan**

Method: 8270D SIM
Matrix: AQ

QC Sample ID (Associated Samples)	Compound	LCS %R	LCSD %R	%R Limits	RPD (Limits)	Affected Compounds	Flag
P4WNLCSQ260235 **P4WNLCSY260304** (EB1-052214 EB2-052214)	1-METHYLNAPHTHALENE BIS(2-ETHYLHEXYL)PHTHALAT	84 160	- -	86.00-130.00 70.00-143.00	- 77 (30.00)	1-METHYLNAPHTHALENE BIS(2-ETHYLHEXYL)PHTHALA	J (all detects) UJ (all non-detects)

Method: 8260B
Matrix: AQ

QC Sample ID (Associated Samples)	Compound	LCS %R	LCSD %R	%R Limits	RPD (Limits)	Affected Compounds	Flag
LCSY18Q211044A (EB1-052214)	Chlorotrifluoroethylene	46	-	47.00-120.00	-	Chlorotrifluoroethylene	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
P5LALCSQ260113 (FDG2-SL-578-NBZ-SB-0.0-0.5 FDG2-SL-581-NBZ-SB-13.0-14.0 FDG2-SL-581-NBZ-SB-9.0-10.0 FDG2-SL-628-SA8-SB-14.0-15.0 FDG2-SL-628-SA8-SB-9.0-10.0)	BENZO(E)PYRENE	80	-	81.00-110.00	-	BENZO(E)PYRENE	J(all detects) UJ(all non-detects)

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

Surrogate Outlier Report

Lab Reporting Batch ID: PH196 **Laboratory: LL**

EDD Filename: PrepPH196_v2 **eQAPP Name: CDM_SSFL_140617_Lan**

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

Sample ID (Analysis Type)	*Surrogate*	*Sample % Recovery*	*% Recovery Limits*	*Affected Compounds*	*Flag*
FDG2-SL-581-NBZ-SB-9.0-10.0 (REA2)	O-TERPHENYL	60	66.00-123.00	All Target Analytes	J (all detects) UJ (all non-detects)

Reporting Limit Outliers

Lab Reporting Batch ID: PH196 **Laboratory: LL**

EDD Filename: PrepPH196_v2 **eQAPP Name: CDM_SSFL_140617_Lan**

Method: 1613B

Matrix: AQ

SampleID	Analyte	Lab Qual	Result	Reporting Limit	RL Type	Units	Flag
EB2-052214	1,2,3,4,6,7,8-HPCDD	JBQ	0.709	9.78	PQL	pg/L	J (all detects)
	1,2,3,4,6,7,8-HPCDF	JBQ	0.704	9.78	PQL	pg/L	
	1,2,3,4,7,8,9-HPCDF	JBQ	0.626	9.78	PQL	pg/L	
	1,2,3,4,7,8-HxCDD	JB	0.438	9.78	PQL	pg/L	
	1,2,3,4,7,8-HXCDF	JB	0.487	9.78	PQL	pg/L	
	1,2,3,6,7,8-HXCDD	JBQ	0.450	9.78	PQL	pg/L	
	1,2,3,6,7,8-HXCDF	JB	0.596	9.78	PQL	pg/L	
	1,2,3,7,8,9-HXCDF	JBQ	0.600	9.78	PQL	pg/L	
	1,2,3,7,8-PECDD	JBQ	0.485	9.78	PQL	pg/L	
	1,2,3,7,8-PECDF	JBQ	0.471	9.78	PQL	pg/L	
	2,3,4,6,7,8-HXCDF	JB	0.567	9.78	PQL	pg/L	
	2,3,4,7,8-PECDF	JB	0.621	9.78	PQL	pg/L	
	2,3,7,8-TCDD	JBQ	0.235	1.96	PQL	pg/L	
	2,3,7,8-TCDF	JQ	0.119	1.96	PQL	pg/L	
	OCDD	JB	3.50	19.6	PQL	pg/L	
	OCDF	JB	1.75	19.6	PQL	pg/L	

Method: 6010C

Matrix: AQ

SampleID	Analyte	Lab Qual	Result	Reporting Limit	RL Type	Units	Flag
EB1-052214	Zirconium	J	0.0109	0.100	PQL	mg/L	J (all detects)
EB2-052214	Zirconium	J	0.0108	0.100	PQL	mg/L	J (all detects)

Method: 8260B

Matrix: AQ

SampleID	Analyte	Lab Qual	Result	Reporting Limit	RL Type	Units	Flag
EB1-052214	CHLOROFORM	J	0.6	5	PQL	ug/L	J (all detects)

Method: 8270D SIM

Matrix: AQ

SampleID	Analyte	Lab Qual	Result	Reporting Limit	RL Type	Units	Flag
EB1-052214	1-METHYLNAPHTHALENE	J	0.020	0.051	PQL	ug/L	J (all detects)
	2-METHYLNAPHTHALENE	J	0.030	0.051	PQL	ug/L	
	BIS(2-ETHYLHEXYL)PHTHALATE	J	0.20	1.0	PQL	ug/L	
	Diethylphthalate	J	0.053	1.0	PQL	ug/L	
	Di-n-butylphthalate	J	0.090	1.0	PQL	ug/L	
EB2-052214	1-METHYLNAPHTHALENE	J	0.033	0.054	PQL	ug/L	J (all detects)
	2-METHYLNAPHTHALENE	J	0.052	0.054	PQL	ug/L	
	BIS(2-ETHYLHEXYL)PHTHALATE	J	0.095	1.1	PQL	ug/L	
	Di-n-butylphthalate	J	0.10	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: PH196 **Laboratory: LL**

EDD Filename: PrepPH196_v2 **eQAPP Name: CDM_SSFL_140617_Lan**

Method: 6010C

Matrix: SO

SampleID	Analyte	Lab Qual	Result	Reporting Limit	RL Type	Units	Flag
FDG2-SL-578-NBZ-SB-0.0-0.5	BORON	J	7.46	10.5	PQL	mg/Kg	J (all detects)
	CADMIUM	J	0.100	1.05	PQL	mg/Kg	
	MOLYBDENUM	J	0.544	2.11	PQL	mg/Kg	
	TIN	J	4.40	10.5	PQL	mg/Kg	
	Zirconium	J	4.54	5.27	PQL	mg/Kg	
FDG2-SL-581-NBZ-SB-0.0-0.5	CADMIUM	J	0.166	1.03	PQL	mg/Kg	J (all detects)
	MOLYBDENUM	J	0.318	2.05	PQL	mg/Kg	
	TIN	J	4.04	10.3	PQL	mg/Kg	
FDG2-SL-581-NBZ-SB-13.0-14.0	CADMIUM	J	0.178	1.08	PQL	mg/Kg	J (all detects)
	MOLYBDENUM	J	0.320	2.15	PQL	mg/Kg	
	TIN	J	4.54	10.8	PQL	mg/Kg	
FDG2-SL-581-NBZ-SB-4.0-5.0	BORON	J	10.5	10.7	PQL	mg/Kg	J (all detects)
	CADMIUM	J	0.261	1.07	PQL	mg/Kg	
	MOLYBDENUM	J	0.437	2.14	PQL	mg/Kg	
	TIN	J	4.40	10.7	PQL	mg/Kg	
FDG2-SL-581-NBZ-SB-9.0-10.0	MOLYBDENUM	J	0.457	2.24	PQL	mg/Kg	J (all detects)
	TIN	J	4.60	11.2	PQL	mg/Kg	
FDG2-SL-628-SA8-SB-14.0-15.0	BERYLLIUM	J	0.857	1.03	PQL	mg/Kg	J (all detects)
	CADMIUM	J	0.367	1.03	PQL	mg/Kg	
	MOLYBDENUM	J	0.479	2.07	PQL	mg/Kg	
	TIN	J	3.06	10.3	PQL	mg/Kg	
	Zirconium	J	5.15	5.16	PQL	mg/Kg	
FDG2-SL-628-SA8-SB-9.0-10.0	BERYLLIUM	J	0.959	1.06	PQL	mg/Kg	J (all detects)
	CADMIUM	J	0.339	1.06	PQL	mg/Kg	
	MOLYBDENUM	J	0.334	2.11	PQL	mg/Kg	
	TIN	J	2.99	10.6	PQL	mg/Kg	
	Zirconium	J	4.90	5.28	PQL	mg/Kg	

Method: 6020A

Matrix: SO

SampleID	Analyte	Lab Qual	Result	Reporting Limit	RL Type	Units	Flag
FDG2-SL-581-NBZ-SB-0.0-0.5	SILVER	J	0.128	0.205	PQL	mg/Kg	J (all detects)
FDG2-SL-581-NBZ-SB-13.0-14.0	SILVER	J	0.191	0.215	PQL	mg/Kg	J (all detects)
FDG2-SL-581-NBZ-SB-4.0-5.0	SILVER	J	0.0997	0.214	PQL	mg/Kg	J (all detects)
FDG2-SL-581-NBZ-SB-9.0-10.0	SILVER	J	0.0426	0.224	PQL	mg/Kg	J (all detects)
FDG2-SL-628-SA8-SB-14.0-15.0	SELENIUM	J	0.273	0.413	PQL	mg/Kg	J (all detects)
	SILVER	J	0.0359	0.207	PQL	mg/Kg	
FDG2-SL-628-SA8-SB-9.0-10.0	SELENIUM	J	0.307	0.422	PQL	mg/Kg	J (all detects)
	SILVER	J	0.0277	0.211	PQL	mg/Kg	

Reporting Limit Outliers

Lab Reporting Batch ID: PH196 **Laboratory: LL**

EDD Filename: PrepPH196_v2 **eQAPP Name: CDM_SSFL_140617_Lan**

Method: 7471B

Matrix: SO

SampleID	Analyte	Lab Qual	Result	Reporting Limit	RL Type	Units	Flag
FDG2-SL-578-NBZ-SB-0.0-0.5	MERCURY	J	0.0117	0.0174	PQL	mg/Kg	J (all detects)
FDG2-SL-581-NBZ-SB-0.0-0.5	MERCURY	J	0.0122	0.0178	PQL	mg/Kg	J (all detects)
FDG2-SL-581-NBZ-SB-13.0-14.0	MERCURY	J	0.0173	0.0176	PQL	mg/Kg	J (all detects)

Method: 8015M

Matrix: SO

SampleID	Analyte	Lab Qual	Result	Reporting Limit	RL Type	Units	Flag
FDG2-SL-581-NBZ-SB-0.0-0.5	EFH (C15-C20)	J	2.6	5.3	PQL	mg/Kg	J (all detects)
FDG2-SL-628-SA8-SB-0.0-0.5	EFH (C15-C20) SG EFH (C21-C30) SG EFH (C30-C40) SG	J J J	4.2 3.9 5.5	5.2 5.2 10	PQL PQL PQL	mg/Kg mg/Kg mg/Kg	J (all detects)
FDG2-SL-628-SA8-SB-14.0-15.0	EFH (C21-C30) SG EFH (C21-C30)	J J	2.4 4.1	5.3 5.3	PQL PQL	mg/Kg mg/Kg	J (all detects)
FDG2-SL-628-SA8-SB-4.0-5.0	EFH (C21-C30) SG EFH (C30-C40) SG	J J	3.7 4.6	5.6 11	PQL PQL	mg/Kg mg/Kg	J (all detects)

Method: 8270D SIM

Matrix: SO

SampleID	Analyte	Lab Qual	Result	Reporting Limit	RL Type	Units	Flag
FDG2-SL-581-NBZ-SB-13.0-14.0	CHRYSENE	J	0.38	1.8	PQL	ug/Kg	J (all detects)
FDG2-SL-628-SA8-SB-14.0-15.0	BIS(2-ETHYLHEXYL)PHTHALATE	J	14	19	PQL	ug/Kg	J (all detects)
FDG2-SL-628-SA8-SB-9.0-10.0	BIS(2-ETHYLHEXYL)PHTHALATE	J	18	19	PQL	ug/Kg	J (all detects)

LDC #: 32094A4 **VALIDATION COMPLETENESS WORKSHEET** Date: 7/7/14
SDG #: PH196 ADR Page: 1 of 1
Laboratory: Eurofins Lancaster Laboratories Reviewer: VK
2nd Reviewer: CR

METHOD: Metals (EPA SW 846 Method 6010C/6020A/~~7000~~ 7470A)

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: 5/22/14
II.	ICP/MS Tune	N	
III.	Calibration	—	
IV.	Blanks	SW	~~CCB hits, no quals~~
V.	ICP Interference Check Sample (ICS) Analysis	A	
VI.	Matrix Spike Analysis	N	
VII.	Duplicate Sample Analysis	N	
VIII.	Laboratory Control Samples (LCS)	N	LCS/D
IX.	Internal Standard (ICP-MS)	N	
X.	Furnace Atomic Absorption QC	N	
XI.	ICP Serial Dilution	N	
XII.	Sample Result Verification	N	
XIII.	Overall Assessment of Data	N	
XIV.	Field Duplicates	N	
XV	Field Blanks	SW	EB= 1, 2 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	EB1-052214 Water	11		21		31	
2	EB2-052214 ↓	12		22		32	
3	FDG2-SL-628-SA8-SB-9.0-10.0	13		23		33	
4	FDG2-SL-628-SA8-SB-14.0-15.0	14		24		34	
5	FDG2-SL-578-NBZ-SB-0.0-0.5	15		25		35	
6	FDG2-SL-581-NBZ-SB-0.0-0.5	16		26		36	
7	FDG2-SL-581-NBZ-SB-4.0-5.0	17		27		37	
8	FDG2-SL-581-NBZ-SB-9.0-10.0	18		28		38	
9	FDG2-SL-581-NBZ-SB-13.0-14.0	19		29		39	
10		20		30		40	

Notes: _____

LDC #: 32094A4

VALIDATION FINDINGS WORKSHEET
Sample Specific Element Reference

Reviewer: KY
2nd reviewer: [illegible]

All circled elements are applicable to each sample.

Sample ID	Matrix	Target Analyte List (TAL)
1-2	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
3-9	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
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 #: 32094A4

VALIDATION FINDINGS WORKSHEET
Field Blanks

Reviewer: VL
2nd Reviewer: G

METHOD: Trace Metals (EPA SW846 6010C/6020A/7470A)

Blank units: ug/L **Associated sample units:** mg/kg
Sampling date: 5/22/14 Soil factor applied 100
Field blank type: (circle one) Field Blank / Rinsate / Other: EB Associated Samples: None

Analyte	Blank ID	Sample Identification										
	1	Action Limit										
Zr	10.9	5.45										

METHOD: Trace Metals (EPA SW846 6010C/6020A/7470A)

Blank units: ug/L **Associated sample units:** mg/kg
Sampling date: 5/22/14 Soil factor applied 100
Field blank type: (circle one) Field Blank / Rinsate / Other: EB Associated Samples: ~~All~~ 3-9

Analyte	Blank ID	Sample Identification										
	2	Action Limit	3	4	5							
Zr	10.8	5.40	4.90	5.20	4.5							

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 #: 32094A4

VALIDATION FINDINGS WORKSHEET
PB/ICB/CCB QUALIFIED SAMPLES

Reviewer: KK
2nd Reviewer: SR

METHOD: Trace metals (EPA SW 864 Method 6010C/6020A/7470A)
Soil preparation factor applied: NA
Sample Concentration units, unless otherwise noted: ~~ug/l~~ mg/L
Associated Samples: 1-2

					Sample Identification										
Analyte	Maximum PB[a] (mg/Kg)	Maximum PB[a] (ug/L)	Maximum ICB/CCB[a] (ug/L)	Action Level	1	2									
Zr			11.5	0.0575 ~~57.5~~	0.0109	0.0108									

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.

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

July 30, 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 June 27, 2014. Attachment 1 is a summary of the samples that were reviewed for each analysis.

LDC Project #32095:

SDG #	Fraction
PH192 PH199 PH201	Semivolatiles, Chlorinated Pesticides, Polychlorinated Biphenyls, Metals, Total Petroleum Hydrocarbons as Gasoline, Total Petroleum Hydrocarbons as Extractables, Dioxins and Dibenzofurans

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, CLPNFG, 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

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Attachment 1

90/10 ADR/IV

LDC #32095 (CDM Federal Programs-Chantilly VA / Santa Susana Field Laboratory, Trench)

LDC	SDG#	DATE REC'D	(4) DATE DUE	SVOA (8270D -SIM)		Pest. (8081B)		PCBs (8082A)		Metals & Hg (SW846)		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
A	PH192	06/27/14	07/28/14	0	3	-	-	0	3	0	3	1	2	0	6	0	3																		
B	PH199	06/27/14	07/28/14	0	3	-	-	0	3	0	3	1	2	0	6	0	3																		
C	PH201	06/27/14	07/28/14	0	5	0	5	0	5	0	5	1	3	0	10	0	5																		
Total	T/SM			0	11	0	5	0	11	0	11	3	7	0	22	0	11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	81

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: PH192

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

July 27, 2014

INTRODUCTION

This Data Validation Report (DVR) presents Level III data validation results for samples collected on May 21, 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)
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 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) 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.

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. The associated sample results were qualified as detected estimated (J). 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.

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 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 PH192	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 PH195) 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 equipment blank had detections for SVOCs, metals, and dioxins and dibenzofurans. The associated sample results were not detected or were significantly greater than the concentrations found in the equipment blank, therefore no data were qualified.

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
21-May-2014	TB3-052114	7473410	TB	5030B	8015M	III
21-May-2014	SL-686-SA6-TR-0.5	7473411	N	3050B	6010C	III
21-May-2014	SL-686-SA6-TR-0.5	7473411	N	3050B	6020A	III
21-May-2014	SL-686-SA6-TR-0.5	7473411	N	3546	8015M	III
21-May-2014	SL-686-SA6-TR-0.5	7473411	N	3546	8082A	III
21-May-2014	SL-686-SA6-TR-0.5	7473411	N	3546	8270D SIM	III
21-May-2014	SL-686-SA6-TR-0.5	7473411	N	METHOD	1613B	III
21-May-2014	SL-686-SA6-TR-0.5	7473411	N	METHOD	7471B	III
21-May-2014	SL-686-SA6-TR-0.5MSD	P473411M260629	MSD	3546	8270D SIM	III
21-May-2014	SL-686-SA6-TR-0.5MS	P473411R260557	MS	3546	8270D SIM	III
21-May-2014	SL-686-SA6-TR-5.0	7473412	N	3050B	6010C	III
21-May-2014	SL-686-SA6-TR-5.0	7473412	N	3050B	6020A	III
21-May-2014	SL-686-SA6-TR-5.0	7473412	N	3546	8015M	III
21-May-2014	SL-686-SA6-TR-5.0	7473412	N	3546	8082A	III
21-May-2014	SL-686-SA6-TR-5.0	7473412	N	3546	8270D SIM	III
21-May-2014	SL-686-SA6-TR-5.0	7473412	N	5035A	8015M	III
21-May-2014	SL-686-SA6-TR-5.0	7473412	N	METHOD	1613B	III
21-May-2014	SL-686-SA6-TR-5.0	7473412	N	METHOD	7471B	III
21-May-2014	SL-686-SA6-TR-11.0	7473413	N	3050B	6010C	III
21-May-2014	SL-686-SA6-TR-11.0	7473413	N	3050B	6020A	III
21-May-2014	SL-686-SA6-TR-11.0	7473413	N	3546	8015M	III
21-May-2014	SL-686-SA6-TR-11.0	7473413	N	3546	8082A	III
21-May-2014	SL-686-SA6-TR-11.0	7473413	N	3546	8270D SIM	III
21-May-2014	SL-686-SA6-TR-11.0	7473413	N	5035A	8015M	III
21-May-2014	SL-686-SA6-TR-11.0	7473413	N	METHOD	1613B	III
21-May-2014	SL-686-SA6-TR-11.0	7473413	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: PH192 **Laboratory: LL**

EDD Filename: PrepPH192_v3 **eQAPP Name: CDM_SSFL_140617_Lan**

Method Category: METALS

Method: 6010C **Matrix: SO**

Sample ID: **SL-686-SA6-TR-0.5** *Collected:* **5/21/2014 8:02:00** *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	0.709	MDL	4.05	PQL	mg/Kg	J	Z
BERYLLIUM	0.502	J	0.0679	MDL	1.01	PQL	mg/Kg	J	Z
BORON	5.22	J	0.851	MDL	10.1	PQL	mg/Kg	J	Z
CADMIUM	0.817	J	0.0770	MDL	1.01	PQL	mg/Kg	J	Z
SODIUM	71.2	J	16.9	MDL	101	PQL	mg/Kg	J	Z
TIN	2.50	J	0.223	MDL	10.1	PQL	mg/Kg	U	B
Zirconium	3.10	J	0.851	MDL	5.07	PQL	mg/Kg	U	F
MOLYBDENUM	0.396	J	0.172	MDL	2.03	PQL	mg/Kg	J	Z

Sample ID: **SL-686-SA6-TR-11.0** *Collected:* **5/21/2014 10:58:00** *Analysis Type:* **RES** *Dilution:* **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
ARSENIC	3.76	J	0.719	MDL	4.11	PQL	mg/Kg	J	Z
BERYLLIUM	0.585	J	0.0688	MDL	1.03	PQL	mg/Kg	J	Z
BORON	4.31	J	0.862	MDL	10.3	PQL	mg/Kg	J	Z
CADMIUM	0.433	J	0.0780	MDL	1.03	PQL	mg/Kg	J	Z
TIN	2.71	J	0.226	MDL	10.3	PQL	mg/Kg	U	B
Zirconium	3.33	J	0.862	MDL	5.13	PQL	mg/Kg	U	F

Sample ID: **SL-686-SA6-TR-5.0** *Collected:* **5/21/2014 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
BERYLLIUM	0.911	J	0.0707	MDL	1.06	PQL	mg/Kg	J	Z
BORON	4.95	J	0.887	MDL	10.6	PQL	mg/Kg	J	Z
CADMIUM	0.561	J	0.0803	MDL	1.06	PQL	mg/Kg	J	Z
MOLYBDENUM	0.413	J	0.180	MDL	2.11	PQL	mg/Kg	J	Z
TIN	2.68	J	0.232	MDL	10.6	PQL	mg/Kg	U	B
Zirconium	4.35	J	0.887	MDL	5.28	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: PH192 **Laboratory: LL**

EDD Filename: PrepPH192_v3 **eQAPP Name: CDM_SSFL_140617_Lan**

Method Category: METALS

Method: 6020A **Matrix: SO**

Sample ID: SL-686-SA6-TR-0.5 *Collected:* 5/21/2014 8:02:00 *Analysis Type:* REA *Dilution:* 2

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
SELENIUM	0.157	J	0.101	MDL	0.405	PQL	mg/Kg	J	Z

Sample ID: SL-686-SA6-TR-0.5 *Collected:* 5/21/2014 8:02:00 *Analysis Type:* RES *Dilution:* 2

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
SILVER	0.133	J	0.0263	MDL	0.203	PQL	mg/Kg	J	Z

Sample ID: SL-686-SA6-TR-11.0 *Collected:* 5/21/2014 10:58:00 *Analysis Type:* RES *Dilution:* 2

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
SILVER	0.0462	J	0.0267	MDL	0.205	PQL	mg/Kg	J	Z

Sample ID: SL-686-SA6-TR-5.0 *Collected:* 5/21/2014 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	0.135	J	0.106	MDL	0.422	PQL	mg/Kg	J	Z

Sample ID: SL-686-SA6-TR-5.0 *Collected:* 5/21/2014 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	0.0617	J	0.0275	MDL	0.211	PQL	mg/Kg	J	Z

Method Category: SVOA

Method: 1613B **Matrix: SO**

Sample ID: SL-686-SA6-TR-0.5 *Collected:* 5/21/2014 8:02:00 *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	1.28	JB	0.0471	MDL	4.91	PQL	ng/Kg	J	Z
1,2,3,4,7,8-HXCDF	1.56	JB	0.0571	MDL	4.91	PQL	ng/Kg	J	Z
1,2,3,6,7,8-HXCDF	0.938	J	0.0525	MDL	4.91	PQL	ng/Kg	J	Z
1,2,3,7,8,9-HXCDF	0.698	JB	0.0521	MDL	4.91	PQL	ng/Kg	J	Z
1,2,3,7,8-PECDD	4.34	J	0.0756	MDL	4.91	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: PH192 **Laboratory: LL**

EDD Filename: PrepPH192_v3 **eQAPP Name: CDM_SSFL_140617_Lan**

Method Category: SVOA

Method: 1613B **Matrix: SO**

Sample ID: SL-686-SA6-TR-0.5 *Collected:* 5/21/2014 8:02:00 *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-PECDF	1.77	J	0.0376	MDL	4.91	PQL	ng/Kg	J	Z
2,3,4,6,7,8-HXCDF	1.25	J	0.0536	MDL	4.91	PQL	ng/Kg	J	Z
2,3,4,7,8-PECDF	1.44	JB	0.0359	MDL	4.91	PQL	ng/Kg	J	Z
2,3,7,8-TCDD	0.424	J	0.0515	MDL	0.982	PQL	ng/Kg	J	Z

Sample ID: SL-686-SA6-TR-11.0 *Collected:* 5/21/2014 10:58:00 *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	1.08	JB	0.0318	MDL	5.14	PQL	ng/Kg	J	Z
1,2,3,4,6,7,8-HPCDF	0.129	JBQ	0.0177	MDL	5.14	PQL	ng/Kg	U	B
1,2,3,4,7,8,9-HPCDF	0.0387	JBQ	0.0260	MDL	5.14	PQL	ng/Kg	U	B
1,2,3,4,7,8-HxCDD	0.0507	JQ	0.0242	MDL	5.14	PQL	ng/Kg	J	Z
1,2,3,4,7,8-HXCDF	0.0578	JBQ	0.0163	MDL	5.14	PQL	ng/Kg	U	B
1,2,3,6,7,8-HXCDD	0.0622	JQ	0.0261	MDL	5.14	PQL	ng/Kg	J	Z
1,2,3,6,7,8-HXCDF	0.0371	JQ	0.0146	MDL	5.14	PQL	ng/Kg	J	Z
1,2,3,7,8,9-HXCDD	0.0530	JQ	0.0241	MDL	5.14	PQL	ng/Kg	J	Z
1,2,3,7,8,9-HXCDF	0.0541	JB	0.0175	MDL	5.14	PQL	ng/Kg	U	B
1,2,3,7,8-PECDF	0.0356	JQ	0.0112	MDL	5.14	PQL	ng/Kg	J	Z
2,3,4,6,7,8-HXCDF	0.0215	JQ	0.0147	MDL	5.14	PQL	ng/Kg	J	Z
2,3,4,7,8-PECDF	0.0190	JBQ	0.0113	MDL	5.14	PQL	ng/Kg	U	B
OCDF	0.364	JB	0.0247	MDL	10.3	PQL	ng/Kg	U	B

Sample ID: SL-686-SA6-TR-5.0 *Collected:* 5/21/2014 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	2.42	JBQ	0.0415	MDL	5.09	PQL	ng/Kg	J	Z
1,2,3,4,6,7,8-HPCDF	0.273	JBQ	0.0243	MDL	5.09	PQL	ng/Kg	U	B
1,2,3,4,7,8,9-HPCDF	0.0420	JBQ	0.0356	MDL	5.09	PQL	ng/Kg	U	B
1,2,3,4,7,8-HxCDD	0.0604	JQ	0.0271	MDL	5.09	PQL	ng/Kg	J	Z
1,2,3,4,7,8-HXCDF	0.0947	JB	0.0252	MDL	5.09	PQL	ng/Kg	U	B
1,2,3,6,7,8-HXCDD	0.0889	JQ	0.0293	MDL	5.09	PQL	ng/Kg	J	Z
1,2,3,6,7,8-HXCDF	0.0737	JQ	0.0229	MDL	5.09	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: PH192 **Laboratory: LL**

EDD Filename: PrepPH192_v3 **eQAPP Name: CDM_SSFL_140617_Lan**

Method Category: SVOA

Method: 1613B **Matrix: SO**

Sample ID: SL-686-SA6-TR-5.0 *Collected:* 5/21/2014 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
1,2,3,7,8,9-HXCDD	0.129	J	0.0268	MDL	5.09	PQL	ng/Kg	J	Z
1,2,3,7,8,9-HXCDF	0.0776	JBQ	0.0241	MDL	5.09	PQL	ng/Kg	U	B
1,2,3,7,8-PECDD	0.116	J	0.0359	MDL	5.09	PQL	ng/Kg	J	Z
1,2,3,7,8-PECDF	0.119	JQ	0.0196	MDL	5.09	PQL	ng/Kg	J	Z
2,3,4,6,7,8-HXCDF	0.0398	JQ	0.0242	MDL	5.09	PQL	ng/Kg	J	Z
2,3,4,7,8-PECDF	0.103	JB	0.0186	MDL	5.09	PQL	ng/Kg	U	B
OCDF	0.586	JBQ	0.0376	MDL	10.2	PQL	ng/Kg	U	B

Method Category: SVOA

Method: 8015M **Matrix: SO**

Sample ID: SL-686-SA6-TR-0.5 *Collected:* 5/21/2014 8:02:00 *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)	3.1	J	2.0	MDL	5.1	PQL	mg/Kg	J	Z

Method Category: SVOA

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

Sample ID: SL-686-SA6-TR-0.5 *Collected:* 5/21/2014 8:02:00 *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	1.1	J	0.68	MDL	1.7	PQL	ug/Kg	J	Z, Q
2-METHYLNAPHTHALENE	1.4	J	0.68	MDL	1.7	PQL	ug/Kg	J	Z, Q, Q
ACENAPHTHYLENE	0.64	J	0.34	MDL	1.7	PQL	ug/Kg	J	Z
ANTHRACENE	1.8		0.34	MDL	1.7	PQL	ug/Kg	J	Q, Q
BENZO(A)ANTHRACENE	3.9		0.68	MDL	1.7	PQL	ug/Kg	J	Q, Q
BENZO(A)PYRENE	3.7		0.68	MDL	1.7	PQL	ug/Kg	J	Q, Q
BENZO(B)FLUORANTHENE	13		0.68	MDL	1.7	PQL	ug/Kg	J	Q, Q
BENZO(E)PYRENE	5.5	J	3.4	MDL	17	PQL	ug/Kg	J	Z, Q, Q
BENZO(G,H,I)PERYLENE	3.4		0.68	MDL	1.7	PQL	ug/Kg	J	Q, Q
BENZO(K)FLUORANTHENE	3.9		0.68	MDL	1.7	PQL	ug/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: PH192 **Laboratory: LL**

EDD Filename: PrepPH192_v3 **eQAPP Name: CDM_SSFL_140617_Lan**

Method Category: SVOA

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

Sample ID: SL-686-SA6-TR-0.5 *Collected:* 5/21/2014 8:02:00 *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	14		0.34	MDL	1.7	PQL	ug/Kg	J	Q, Q
DIBENZO(A,H)ANTHRACENE	1.0	J	0.68	MDL	1.7	PQL	ug/Kg	J	Z, Q, Q
Di-n-butylphthalate	7.6	J	6.1	MDL	18	PQL	ug/Kg	J	Z
FLUORANTHENE	16		0.68	MDL	1.7	PQL	ug/Kg	J	Q, Q
FLUORENE	0.88	J	0.68	MDL	1.7	PQL	ug/Kg	J	Z, Q, Q
INDENO(1,2,3-CD)PYRENE	3.0		0.68	MDL	1.7	PQL	ug/Kg	J	Q, Q
NAPHTHALENE	1.0	J	0.68	MDL	1.7	PQL	ug/Kg	J	Z, Q
PHENANTHRENE	7.4		0.68	MDL	1.7	PQL	ug/Kg	J	Q, Q
PYRENE	11		0.68	MDL	1.7	PQL	ug/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: PH192 **Laboratory: LL**

EDD Filename: PrepPH192_v3 **eQAPP Name: CDM_SSFL_140617_Lan**

Reason Code Legend

Reason Code	*Description*
B	Method Blank Contamination
E	Matrix Spike Precision
F	Field Blank Contamination
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

PH192

Method Blank Outlier Report

Lab Reporting Batch ID: PH192 **Laboratory: LL**

EDD Filename: PrepPH192_v3 **eQAPP Name: CDM_SSFL_140617_Lan**

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

Method Blank Sample ID	Analysis Date	Analyte	Result	Associated Samples
BLK1490B370621	5/31/2014 6:21:00 AM	1,2,3,4,6,7,8-HPCDD	0.141 ng/Kg	SL-686-SA6-TR-0.5
		1,2,3,4,6,7,8-HPCDF	0.0566 ng/Kg	SL-686-SA6-TR-11.0
		1,2,3,4,7,8,9-HPCDF	0.0442 ng/Kg	SL-686-SA6-TR-5.0
		1,2,3,4,7,8-HXCDF	0.0521 ng/Kg	
		1,2,3,7,8,9-HXCDF	0.0589 ng/Kg	
		2,3,4,7,8-PECDF	0.0348 ng/Kg	
		OCDD	0.666 ng/Kg	
		OCDF	0.153 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-686-SA6-TR-11.0(RES)	1,2,3,4,6,7,8-HPCDF	0.129 ng/Kg	0.129U ng/Kg
SL-686-SA6-TR-11.0(RES)	1,2,3,4,7,8,9-HPCDF	0.0387 ng/Kg	0.0387U ng/Kg
SL-686-SA6-TR-11.0(RES)	1,2,3,4,7,8-HXCDF	0.0578 ng/Kg	0.0578U ng/Kg
SL-686-SA6-TR-11.0(RES)	1,2,3,7,8,9-HXCDF	0.0541 ng/Kg	0.0541U ng/Kg
SL-686-SA6-TR-11.0(RES)	2,3,4,7,8-PECDF	0.0190 ng/Kg	0.0190U ng/Kg
SL-686-SA6-TR-11.0(RES)	OCDF	0.364 ng/Kg	0.364U ng/Kg
SL-686-SA6-TR-5.0(RES)	1,2,3,4,6,7,8-HPCDF	0.273 ng/Kg	0.273U ng/Kg
SL-686-SA6-TR-5.0(RES)	1,2,3,4,7,8,9-HPCDF	0.0420 ng/Kg	0.0420U ng/Kg
SL-686-SA6-TR-5.0(RES)	1,2,3,4,7,8-HXCDF	0.0947 ng/Kg	0.0947U ng/Kg
SL-686-SA6-TR-5.0(RES)	1,2,3,7,8,9-HXCDF	0.0776 ng/Kg	0.0776U ng/Kg
SL-686-SA6-TR-5.0(RES)	2,3,4,7,8-PECDF	0.103 ng/Kg	0.103U ng/Kg
SL-686-SA6-TR-5.0(RES)	OCDF	0.586 ng/Kg	0.586U ng/Kg

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

Method Blank Sample ID	Analysis Date	Analyte	Result	Associated Samples
P14737BB222033	5/28/2014 8:33:00 PM	ALUMINUM	9.28 mg/Kg	SL-686-SA6-TR-0.5
		BORON	0.858 mg/Kg	SL-686-SA6-TR-11.0
		CALCIUM	12.8 mg/Kg	SL-686-SA6-TR-5.0
		TIN	1.36 mg/Kg	
		ZINC	0.956 mg/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-686-SA6-TR-0.5(RES)	TIN	2.50 mg/Kg	2.50U mg/Kg
SL-686-SA6-TR-11.0(RES)	TIN	2.71 mg/Kg	2.71U mg/Kg
SL-686-SA6-TR-5.0(RES)	TIN	2.68 mg/Kg	2.68U mg/Kg

Field Blank Outlier Report

Lab Reporting Batch ID: PH192 **Laboratory: LL**

EDD Filename: PrepPH192_v3 **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-686-SA6-TR-0.5 SL-686-SA6-TR-11.0 SL-686-SA6-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-686-SA6-TR-0.5(RES)	Zirconium	3.10 mg/Kg	3.10U mg/Kg
SL-686-SA6-TR-11.0(RES)	Zirconium	3.33 mg/Kg	3.33U mg/Kg
SL-686-SA6-TR-5.0(RES)	Zirconium	4.35 mg/Kg	4.35U mg/Kg

Matrix Spike/Matrix Spike Duplicate Outlier Report

Lab Reporting Batch ID: PH192 **Laboratory: LL**

EDD Filename: PrepPH192_v3 **eQAPP Name: CDM_SSFL_140617_Lan**

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

QC Sample ID (Associated Samples)	*Compound*	*MS %R*	*MSD %R*	*%R Limits*	*RPD (Limits)*	*Affected Compounds*	*Flag*
SL-686-SA6-TR-0.5MS	1-METHYLNAPHTHALENE	-	-	59.00-139.00	38 (30.00)	1-METHYLNAPHTHALENE	
SL-686-SA6-TR-0.5MSD	2-METHYLNAPHTHALENE	150	-	46.00-147.00	49 (30.00)	2-METHYLNAPHTHALENE	
(SL-686-SA6-TR-0.5)	ACENAPHTHENE	523	-	48.00-127.00	139 (30.00)	ACENAPHTHENE	
	ANTHRACENE	828	-	52.00-126.00	157 (30.00)	ANTHRACENE	
	BENZO(A)ANTHRACENE	2123	-	44.00-143.00	179 (30.00)	BENZO(A)ANTHRACENE	
	BENZO(A)PYRENE	1356	-	49.00-137.00	173 (30.00)	BENZO(A)PYRENE	
	BENZO(B)FLUORANTHENE	1617	-	26.00-142.00	168 (30.00)	BENZO(B)FLUORANTHENE	
	BENZO(E)PYRENE	731	-	63.00-111.00	154 (30.00)	BENZO(E)PYRENE	
	BENZO(G,H,I)PERYLENE	521	-	33.00-141.00	156 (30.00)	BENZO(G,H,I)PERYLENE	J (all detects)
	BENZO(K)FLUORANTHENE	838	-	49.00-144.00	160 (30.00)	BENZO(K)FLUORANTHENE	
	CHRYSENE	2194	-	43.00-141.00	178 (30.00)	CHRYSENE	
	DIBENZO(A,H)ANTHRACENE	274	-	25.00-145.00	119 (30.00)	DIBENZO(A,H)ANTHRACENE	
	FLUORANTHENE	5514	-	38.00-153.00	189 (30.00)	FLUORANTHENE	
	FLUORENE	371	-	57.00-130.00	126 (30.00)	FLUORENE	
	INDENO(1,2,3-CD)PYRENE	613	-	26.00-139.00	158 (30.00)	INDENO(1,2,3-CD)PYRENE	
	NAPHTHALENE	-	-	52.00-136.00	41 (30.00)	NAPHTHALENE	
	PHENANTHRENE	5273	-	50.00-137.00	191 (30.00)	PHENANTHRENE	
	PYRENE	4103	-	26.00-143.00	188 (30.00)	PYRENE	

Reporting Limit Outliers

Lab Reporting Batch ID: PH192 **Laboratory: LL**

EDD Filename: PrepPH192_v3 **eQAPP Name: CDM_SSFL_140617_Lan**

Method: 1613B

Matrix: SO

SampleID	Analyte	Lab Qual	Result	Reporting Limit	RL Type	Units	Flag
SL-686-SA6-TR-0.5	1,2,3,4,7,8,9-HPCDF	JB	1.28	4.91	PQL	ng/Kg	
	1,2,3,4,7,8-HXCDF	JB	1.56	4.91	PQL	ng/Kg	
	1,2,3,6,7,8-HXCDF	J	0.938	4.91	PQL	ng/Kg	
	1,2,3,7,8,9-HXCDF	JB	0.698	4.91	PQL	ng/Kg	
	1,2,3,7,8-PECDD	J	4.34	4.91	PQL	ng/Kg	J (all detects)
	1,2,3,7,8-PECDF	J	1.77	4.91	PQL	ng/Kg	
	2,3,4,6,7,8-HXCDF	J	1.25	4.91	PQL	ng/Kg	
	2,3,4,7,8-PECDF	JB	1.44	4.91	PQL	ng/Kg	
	2,3,7,8-TCDD	J	0.424	0.982	PQL	ng/Kg	
SL-686-SA6-TR-11.0	1,2,3,4,6,7,8-HPCDD	JB	1.08	5.14	PQL	ng/Kg	
	1,2,3,4,6,7,8-HPCDF	JBQ	0.129	5.14	PQL	ng/Kg	
	1,2,3,4,7,8,9-HPCDF	JBQ	0.0387	5.14	PQL	ng/Kg	
	1,2,3,4,7,8-HxCDD	JQ	0.0507	5.14	PQL	ng/Kg	
	1,2,3,4,7,8-HXCDF	JBQ	0.0578	5.14	PQL	ng/Kg	
	1,2,3,6,7,8-HXCDD	JQ	0.0622	5.14	PQL	ng/Kg	
	1,2,3,6,7,8-HXCDF	JQ	0.0371	5.14	PQL	ng/Kg	J (all detects)
	1,2,3,7,8,9-HXCDD	JQ	0.0530	5.14	PQL	ng/Kg	
	1,2,3,7,8,9-HXCDF	JB	0.0541	5.14	PQL	ng/Kg	
	1,2,3,7,8-PECDF	JQ	0.0356	5.14	PQL	ng/Kg	
	2,3,4,6,7,8-HXCDF	JQ	0.0215	5.14	PQL	ng/Kg	
	2,3,4,7,8-PECDF	JBQ	0.0190	5.14	PQL	ng/Kg	
	OCDF	JB	0.364	10.3	PQL	ng/Kg	
SL-686-SA6-TR-5.0	1,2,3,4,6,7,8-HPCDD	JBQ	2.42	5.09	PQL	ng/Kg	
	1,2,3,4,6,7,8-HPCDF	JBQ	0.273	5.09	PQL	ng/Kg	
	1,2,3,4,7,8,9-HPCDF	JBQ	0.0420	5.09	PQL	ng/Kg	
	1,2,3,4,7,8-HxCDD	JQ	0.0604	5.09	PQL	ng/Kg	
	1,2,3,4,7,8-HXCDF	JB	0.0947	5.09	PQL	ng/Kg	
	1,2,3,6,7,8-HXCDD	JQ	0.0889	5.09	PQL	ng/Kg	
	1,2,3,6,7,8-HXCDF	JQ	0.0737	5.09	PQL	ng/Kg	J (all detects)
	1,2,3,7,8,9-HXCDD	J	0.129	5.09	PQL	ng/Kg	
	1,2,3,7,8,9-HXCDF	JBQ	0.0776	5.09	PQL	ng/Kg	
	1,2,3,7,8-PECDD	J	0.116	5.09	PQL	ng/Kg	
	1,2,3,7,8-PECDF	JQ	0.119	5.09	PQL	ng/Kg	
	2,3,4,6,7,8-HXCDF	JQ	0.0398	5.09	PQL	ng/Kg	
	2,3,4,7,8-PECDF	JB	0.103	5.09	PQL	ng/Kg	
	OCDF	JBQ	0.586	10.2	PQL	ng/Kg	

Method: 6010C

Matrix: SO

SampleID	Analyte	Lab Qual	Result	Reporting Limit	RL Type	Units	Flag
SL-686-SA6-TR-0.5	ARSENIC	J	3.11	4.05	PQL	mg/Kg	
	BERYLLIUM	J	0.502	1.01	PQL	mg/Kg	
	BORON	J	5.22	10.1	PQL	mg/Kg	
	CADMIUM	J	0.817	1.01	PQL	mg/Kg	J (all detects)
	MOLYBDENUM	J	0.396	2.03	PQL	mg/Kg	
	SODIUM	J	71.2	101	PQL	mg/Kg	
	TIN	J	2.50	10.1	PQL	mg/Kg	
	Zirconium	J	3.10	5.07	PQL	mg/Kg	

Reporting Limit Outliers

Lab Reporting Batch ID: PH192 **Laboratory: LL**

EDD Filename: PrepPH192_v3 **eQAPP Name: CDM_SSFL_140617_Lan**

Method: 6010C

Matrix: SO

SampleID	Analyte	Lab Qual	Result	Reporting Limit	RL Type	Units	Flag
SL-686-SA6-TR-11.0	ARSENIC	J	3.76	4.11	PQL	mg/Kg	J (all detects)
	BERYLLIUM	J	0.585	1.03	PQL	mg/Kg	
	BORON	J	4.31	10.3	PQL	mg/Kg	
	CADMIUM	J	0.433	1.03	PQL	mg/Kg	
	TIN	J	2.71	10.3	PQL	mg/Kg	
	Zirconium	J	3.33	5.13	PQL	mg/Kg	
SL-686-SA6-TR-5.0	BERYLLIUM	J	0.911	1.06	PQL	mg/Kg	J (all detects)
	BORON	J	4.95	10.6	PQL	mg/Kg	
	CADMIUM	J	0.561	1.06	PQL	mg/Kg	
	MOLYBDENUM	J	0.413	2.11	PQL	mg/Kg	
	TIN	J	2.68	10.6	PQL	mg/Kg	
	Zirconium	J	4.35	5.28	PQL	mg/Kg	

Method: 6020A

Matrix: SO

SampleID	Analyte	Lab Qual	Result	Reporting Limit	RL Type	Units	Flag
SL-686-SA6-TR-0.5	SELENIUM	J	0.157	0.405	PQL	mg/Kg	J (all detects)
	SILVER	J	0.133	0.203	PQL	mg/Kg	
SL-686-SA6-TR-11.0	SILVER	J	0.0462	0.205	PQL	mg/Kg	J (all detects)
SL-686-SA6-TR-5.0	SELENIUM	J	0.135	0.422	PQL	mg/Kg	J (all detects)
	SILVER	J	0.0617	0.211	PQL	mg/Kg	

Method: 8015M

Matrix: SO

SampleID	Analyte	Lab Qual	Result	Reporting Limit	RL Type	Units	Flag
SL-686-SA6-TR-0.5	EFH (C15-C20)	J	3.1	5.1	PQL	mg/Kg	J (all detects)

Method: 8270D SIM

Matrix: SO

SampleID	Analyte	Lab Qual	Result	Reporting Limit	RL Type	Units	Flag
SL-686-SA6-TR-0.5	1-METHYLNAPHTHALENE	J	1.1	1.7	PQL	ug/Kg	J (all detects)
	2-METHYLNAPHTHALENE	J	1.4	1.7	PQL	ug/Kg	
	ACENAPHTHYLENE	J	0.64	1.7	PQL	ug/Kg	
	BENZO(E)PYRENE	J	5.5	17	PQL	ug/Kg	
	DIBENZO(A,H)ANTHRACENE	J	1.0	1.7	PQL	ug/Kg	
	Di-n-butylphthalate	J	7.6	18	PQL	ug/Kg	
	FLUORENE	J	0.88	1.7	PQL	ug/Kg	
	NAPHTHALENE	J	1.0	1.7	PQL	ug/Kg	

LDC #: 32095A4 **VALIDATION COMPLETENESS WORKSHEET** Date: 7/8/14

SDG #: PH192 ADR Page: 1 of 1

Laboratory: Eurofins Lancaster Laboratories Reviewer: KK

2nd Reviewer: Q

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

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: ~~5/23~~ 5/21/14
II.	ICP/MS Tune	N	
III.	Calibration	~~A~~	
IV.	Blanks	A	~~EQB hits, no quals~~ APL 7/9/14
V.	ICP Interference Check Sample (ICS) Analysis	~~A~~	
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	N	
XII.	Sample Result Verification	N	
XIII.	Overall Assessment of Data	N	
XIV.	Field Duplicates	N	
XV	Field Blanks	SW	EB = EB3-052114 SDG# PH191 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-686-SA6-TR-0.5	11		21		31	
2	SL-686-SA6-TR-5.0	12		22		32	
3	SL-686-SA6-TR-11.0	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 #:32095A4

VALIDATION FINDINGS WORKSHEET
Sample Specific Element Reference

Reviewer: KM
2nd reviewer: SM

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
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 #: 32095A4

VALIDATION FINDINGS WORKSHEET
Field Blanks

Reviewer: KL
2nd Reviewer: a

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

Blank units: mg/L **Associated sample units:** mg/kg
Sampling date: 5/21/14 and 5/22/14 Soil factor applied: 100
Field blank type: (circle one) ~~Field Blank~~ / Rinsate / Other: EB Associated Samples: All

Analyte	EB	FB	Sample Identification								
	EB3-052214 SDG#PH195	FB-052114 SDG#PH191	Action Limit	1	2	3					
Zr		0.0110	5.50	3.10	4.35	3.33					
Mn	0.00090		0.450								
Ca	0.150		75								
Sr	0.00046		0.23								

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: PH199

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

July 27, 2014

INTRODUCTION

This Data Validation Report (DVR) presents Level III data validation results for samples collected on May 23, 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)
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), 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) 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.

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 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

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/LCSD pair for SVOCs. The associated sample results were qualified as non-detected

estimated (UJ). 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 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 PH199	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 PH195) 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 equipment blank had detections for SVOCs, metals, and dioxins and dibenzofurans. The associated sample results were not detected or were significantly greater than the concentrations found in the equipment blank, therefore no data were qualified.

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
23-May-2014	SL-636-SA5A-TR-0.5	7476638	N	3050B	6010C	III
23-May-2014	SL-636-SA5A-TR-0.5	7476638	N	3050B	6020A	III
23-May-2014	SL-636-SA5A-TR-0.5	7476638	N	3546	8015M	III
23-May-2014	SL-636-SA5A-TR-0.5	7476638	N	3546	8082A	III
23-May-2014	SL-636-SA5A-TR-0.5	7476638	N	3546	8270D SIM	III
23-May-2014	SL-636-SA5A-TR-0.5	7476638	N	METHOD	1613B	III
23-May-2014	SL-636-SA5A-TR-0.5	7476638	N	METHOD	7471B	III
23-May-2014	TB3-052314	7476637	TB	5030B	8015M	III
23-May-2014	SL-636-SA5A-TR-7.5	7476640	N	3050B	6010C	III
23-May-2014	SL-636-SA5A-TR-7.5	7476640	N	3050B	6020A	III
23-May-2014	SL-636-SA5A-TR-7.5	7476640	N	3546	8015M	III
23-May-2014	SL-636-SA5A-TR-7.5	7476640	N	3546	8082A	III
23-May-2014	SL-636-SA5A-TR-7.5	7476640	N	3546	8270D SIM	III
23-May-2014	SL-636-SA5A-TR-7.5	7476640	N	5035A	8015M	III
23-May-2014	SL-636-SA5A-TR-7.5	7476640	N	METHOD	1613B	III
23-May-2014	SL-636-SA5A-TR-7.5	7476640	N	METHOD	7471B	III
23-May-2014	SL-636-SA5A-TR-3.5	7476639	N	3050B	6010C	III
23-May-2014	SL-636-SA5A-TR-3.5	7476639	N	3050B	6020A	III
23-May-2014	SL-636-SA5A-TR-3.5	7476639	N	3546	8015M	III
23-May-2014	SL-636-SA5A-TR-3.5	7476639	N	3546	8082A	III
23-May-2014	SL-636-SA5A-TR-3.5	7476639	N	3546	8270D SIM	III
23-May-2014	SL-636-SA5A-TR-3.5	7476639	N	5035A	8015M	III
23-May-2014	SL-636-SA5A-TR-3.5	7476639	N	METHOD	1613B	III
23-May-2014	SL-636-SA5A-TR-3.5	7476639	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: PH199 **Laboratory: LL**

EDD Filename: PrepPH199_v2 **eQAPP Name: CDM_SSFL_140617_Lan**

Method Category: METALS

Method: 6010C **Matrix: SO**

Sample ID: SL-636-SA5A-TR-0.5 *Collected:* 5/23/2014 7:46:00 *Analysis Type:* RES *Dilution:* 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
ARSENIC	2.91	J	0.699	MDL	4.00	PQL	mg/Kg	J	Z
BERYLLIUM	0.380	J	0.0669	MDL	0.999	PQL	mg/Kg	J	Z
BORON	3.55	J	0.839	MDL	9.99	PQL	mg/Kg	U	B
CADMIUM	0.428	J	0.0759	MDL	0.999	PQL	mg/Kg	J	Z
Zirconium	2.36	J	0.839	MDL	4.99	PQL	mg/Kg	U	F
TIN	2.40	J	0.220	MDL	9.99	PQL	mg/Kg	U	B

Sample ID: SL-636-SA5A-TR-3.5 *Collected:* 5/23/2014 8:47:00 *Analysis Type:* RES *Dilution:* 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
ARSENIC	3.49	J	0.723	MDL	4.13	PQL	mg/Kg	J	Z
BERYLLIUM	0.565	J	0.0692	MDL	1.03	PQL	mg/Kg	J	Z
BORON	4.61	J	0.868	MDL	10.3	PQL	mg/Kg	J	Z
CADMIUM	0.590	J	0.0785	MDL	1.03	PQL	mg/Kg	J	Z
MOLYBDENUM	0.329	J	0.176	MDL	2.07	PQL	mg/Kg	J	Z
TIN	2.32	J	0.227	MDL	10.3	PQL	mg/Kg	U	B
Zirconium	3.67	J	0.868	MDL	5.17	PQL	mg/Kg	U	F

Sample ID: SL-636-SA5A-TR-7.5 *Collected:* 5/23/2014 8:41:00 *Analysis Type:* RES *Dilution:* 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
BERYLLIUM	0.915	J	0.0704	MDL	1.05	PQL	mg/Kg	J	Z
BORON	6.78	J	0.883	MDL	10.5	PQL	mg/Kg	J	Z
CADMIUM	0.711	J	0.0799	MDL	1.05	PQL	mg/Kg	J	Z
MOLYBDENUM	0.261	J	0.179	MDL	2.10	PQL	mg/Kg	J	Z
TIN	3.26	J	0.231	MDL	10.5	PQL	mg/Kg	U	B
Zirconium	4.60	J	0.883	MDL	5.26	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: PH199 **Laboratory: LL**

EDD Filename: PrepPH199_v2 **eQAPP Name: CDM_SSFL_140617_Lan**

Method Category: METALS

Method: 6020A **Matrix: SO**

Sample ID: SL-636-SA5A-TR-3.5 *Collected:* 5/23/2014 8:47:00 *Analysis Type:* REA *Dilution:* 2

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
SELENIUM	0.141	J	0.103	MDL	0.413	PQL	mg/Kg	J	Z

Sample ID: SL-636-SA5A-TR-3.5 *Collected:* 5/23/2014 8:47:00 *Analysis Type:* RES *Dilution:* 2

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
SILVER	0.0338	J	0.0269	MDL	0.207	PQL	mg/Kg	J	Z

Sample ID: SL-636-SA5A-TR-7.5 *Collected:* 5/23/2014 8:41:00 *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	0.105	MDL	0.420	PQL	mg/Kg	J	Z

Sample ID: SL-636-SA5A-TR-7.5 *Collected:* 5/23/2014 8:41:00 *Analysis Type:* RES *Dilution:* 2

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
SILVER	0.0811	J	0.0273	MDL	0.210	PQL	mg/Kg	J	Z

Method Category: METALS

Method: 7471B **Matrix: SO**

Sample ID: SL-636-SA5A-TR-0.5 *Collected:* 5/23/2014 7:46:00 *Analysis Type:* RES *Dilution:* 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
MERCURY	0.0143	J	0.0100	MDL	0.0167	PQL	mg/Kg	J	Z

Method Category: SVOA

Method: 1613B **Matrix: SO**

Sample ID: SL-636-SA5A-TR-0.5 *Collected:* 5/23/2014 7:46:00 *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	3.52	JB	0.0373	MDL	4.95	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: PH199 **Laboratory: LL**

EDD Filename: PrepPH199_v2 **eQAPP Name: CDM_SSFL_140617_Lan**

Method Category: SVOA

Method: 1613B **Matrix: SO**

Sample ID: SL-636-SA5A-TR-0.5 *Collected:* 5/23/2014 7:46:00 *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	0.686	JB	0.0173	MDL	4.95	PQL	ng/Kg	J	Z
1,2,3,4,7,8,9-HPCDF	0.0658	JB	0.0240	MDL	4.95	PQL	ng/Kg	U	B
1,2,3,4,7,8-HxCDD	0.0985	JBQ	0.0309	MDL	4.95	PQL	ng/Kg	U	B
1,2,3,4,7,8-HXCDF	0.156	JB	0.0341	MDL	4.95	PQL	ng/Kg	U	B
1,2,3,6,7,8-HXCDD	0.214	JBQ	0.0319	MDL	4.95	PQL	ng/Kg	U	B
1,2,3,6,7,8-HXCDF	0.218	JBQ	0.0290	MDL	4.95	PQL	ng/Kg	U	B
1,2,3,7,8,9-HXCDD	0.171	JB	0.0297	MDL	4.95	PQL	ng/Kg	U	B
1,2,3,7,8,9-HXCDF	0.138	JB	0.0347	MDL	4.95	PQL	ng/Kg	U	B
1,2,3,7,8-PECDD	0.158	JBQ	0.0446	MDL	4.95	PQL	ng/Kg	U	B
1,2,3,7,8-PECDF	3.08	JB	0.0278	MDL	4.95	PQL	ng/Kg	J	Z
2,3,4,6,7,8-HXCDF	0.134	JB	0.0330	MDL	4.95	PQL	ng/Kg	U	B
2,3,4,7,8-PECDF	0.178	JBQ	0.0286	MDL	4.95	PQL	ng/Kg	U	B
OCDF	1.56	JB	0.0425	MDL	9.90	PQL	ng/Kg	J	Z

Sample ID: SL-636-SA5A-TR-3.5 *Collected:* 5/23/2014 8:47:00 *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	0.320	JB	0.0264	MDL	5.09	PQL	ng/Kg	U	B
1,2,3,4,6,7,8-HPCDF	0.128	JBQ	0.0107	MDL	5.09	PQL	ng/Kg	U	B
1,2,3,4,7,8,9-HPCDF	0.0309	JBQ	0.0223	MDL	5.09	PQL	ng/Kg	U	B
1,2,3,4,7,8-HxCDD	0.0278	JBQ	0.0261	MDL	5.09	PQL	ng/Kg	U	B
1,2,3,4,7,8-HXCDF	0.0765	JB	0.0238	MDL	5.09	PQL	ng/Kg	U	B
1,2,3,6,7,8-HXCDD	0.291	JBQ	0.0281	MDL	5.09	PQL	ng/Kg	U	B
1,2,3,7,8,9-HXCDD	0.545	JB	0.0268	MDL	5.09	PQL	ng/Kg	J	Z
1,2,3,7,8,9-HXCDF	0.282	JBQ	0.0289	MDL	5.09	PQL	ng/Kg	U	B
1,2,3,7,8-PECDD	0.134	JB	0.0362	MDL	5.09	PQL	ng/Kg	U	B
1,2,3,7,8-PECDF	0.184	JB	0.0175	MDL	5.09	PQL	ng/Kg	U	B
2,3,4,6,7,8-HXCDF	0.0307	JBQ	0.0227	MDL	5.09	PQL	ng/Kg	U	B
2,3,4,7,8-PECDF	0.0749	JB	0.0194	MDL	5.09	PQL	ng/Kg	U	B
2,3,7,8-TCDD	0.0593	JBQ	0.0461	MDL	1.02	PQL	ng/Kg	U	B
OCDD	3.87	JB	0.0227	MDL	10.2	PQL	ng/Kg	J	Z
OCDF	0.195	JBQ	0.0504	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: PH199 **Laboratory: LL**

EDD Filename: PrepPH199_v2 **eQAPP Name: CDM_SSFL_140617_Lan**

Method Category: SVOA

Method: 1613B **Matrix: SO**

Sample ID: SL-636-SA5A-TR-7.5 *Collected:* 5/23/2014 8:41:00 *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	0.0665	JBQ	0.0270	MDL	5.12	PQL	ng/Kg	U	B
1,2,3,4,6,7,8-HPCDF	0.0678	JB	0.00919	MDL	5.12	PQL	ng/Kg	U	B
1,2,3,4,7,8,9-HPCDF	0.0440	JB	0.0174	MDL	5.12	PQL	ng/Kg	U	B
1,2,3,4,7,8-HxCDD	0.0281	JBQ	0.0223	MDL	5.12	PQL	ng/Kg	U	B
1,2,3,4,7,8-HXCDF	0.0419	JB	0.0218	MDL	5.12	PQL	ng/Kg	U	B
1,2,3,6,7,8-HXCDD	0.0595	JBQ	0.0235	MDL	5.12	PQL	ng/Kg	U	B
1,2,3,6,7,8-HXCDF	0.0544	JBQ	0.0191	MDL	5.12	PQL	ng/Kg	U	B
1,2,3,7,8,9-HXCDD	0.0663	JBQ	0.0226	MDL	5.12	PQL	ng/Kg	U	B
1,2,3,7,8,9-HXCDF	0.0904	JBQ	0.0258	MDL	5.12	PQL	ng/Kg	U	B
1,2,3,7,8-PECDF	0.0362	JBQ	0.0164	MDL	5.12	PQL	ng/Kg	U	B
2,3,4,6,7,8-HXCDF	0.0258	JBQ	0.0204	MDL	5.12	PQL	ng/Kg	U	B
2,3,4,7,8-PECDF	0.0342	JBQ	0.0176	MDL	5.12	PQL	ng/Kg	U	B
OCDD	0.598	JB	0.0205	MDL	10.2	PQL	ng/Kg	U	B
OCDF	0.147	JBQ	0.0483	MDL	10.2	PQL	ng/Kg	U	B

Method Category: SVOA

Method: 8015M **Matrix: SO**

Sample ID: SL-636-SA5A-TR-3.5 *Collected:* 5/23/2014 8:47:00 *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)	4.8	J	2.1	MDL	5.3	PQL	mg/Kg	J	Z

Method Category: SVOA

Method: 8082A **Matrix: SO**

Sample ID: SL-636-SA5A-TR-0.5 *Collected:* 5/23/2014 7:46:00 *Analysis Type:* RES *Dilution:* 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
AROCLOR 1254	8.4	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: PH199 **Laboratory: LL**

EDD Filename: PrepPH199_v2 **eQAPP Name: CDM_SSFL_140617_Lan**

Method Category: SVOA

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

Sample ID: **SL-636-SA5A-TR-0.5** *Collected:* **5/23/2014 7:46:00** *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
BENZO(G,H,I)PERYLENE	1.5	J	0.69	MDL	1.7	PQL	ug/Kg	J	Z

Sample ID: **SL-636-SA5A-TR-3.5** *Collected:* **5/23/2014 8:47:00** *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-636-SA5A-TR-7.5** *Collected:* **5/23/2014 8:41:00** *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

* 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: PH199 **Laboratory: LL**

EDD Filename: PrepPH199_v2 **eQAPP Name: CDM_SSFL_140617_Lan**

Reason Code Legend

Reason Code	*Description*
B	Method Blank Contamination
F	Field Blank Contamination
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

(Including Manual Review Outliers)

Quality Control Outlier Reports

PH199

Method Blank Outlier Report

Lab Reporting Batch ID: PH199 **Laboratory: LL**

EDD Filename: PrepPH199_v2 **eQAPP Name: CDM_SSFL_140617_Lan**

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

Method Blank Sample ID	Analysis Date	Analyte	Result	Associated Samples
BLK1530B370625	6/5/2014 6:25:00 AM	1,2,3,4,6,7,8-HPCDD	0.0893 ng/Kg	SL-636-SA5A-TR-0.5
		1,2,3,4,6,7,8-HPCDF	0.0727 ng/Kg	SL-636-SA5A-TR-3.5
		1,2,3,4,7,8,9-HPCDF	0.0705 ng/Kg	SL-636-SA5A-TR-7.5
		1,2,3,4,7,8-HxCDD	0.0830 ng/Kg	
		1,2,3,4,7,8-HXCDF	0.0629 ng/Kg	
		1,2,3,6,7,8-HXCDD	0.0643 ng/Kg	
		1,2,3,6,7,8-HXCDF	0.0439 ng/Kg	
		1,2,3,7,8,9-HXCDD	0.0684 ng/Kg	
		1,2,3,7,8,9-HXCDF	0.0800 ng/Kg	
		1,2,3,7,8-PECDD	0.0540 ng/Kg	
		1,2,3,7,8-PECDF	0.103 ng/Kg	
		2,3,4,6,7,8-HXCDF	0.0522 ng/Kg	
		2,3,4,7,8-PECDF	0.105 ng/Kg	
		2,3,7,8-TCDD	0.0448 ng/Kg	
		2,3,7,8-TCDF	0.0491 ng/Kg	
		OCDD	0.452 ng/Kg	
		OCDF	0.182 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-636-SA5A-TR-0.5(RES)	1,2,3,4,7,8,9-HPCDF	0.0658 ng/Kg	0.0658U ng/Kg
SL-636-SA5A-TR-0.5(RES)	1,2,3,4,7,8-HxCDD	0.0985 ng/Kg	0.0985U ng/Kg
SL-636-SA5A-TR-0.5(RES)	1,2,3,4,7,8-HXCDF	0.156 ng/Kg	0.156U ng/Kg
SL-636-SA5A-TR-0.5(RES)	1,2,3,6,7,8-HXCDD	0.214 ng/Kg	0.214U ng/Kg
SL-636-SA5A-TR-0.5(RES)	1,2,3,6,7,8-HXCDF	0.218 ng/Kg	0.218U ng/Kg
SL-636-SA5A-TR-0.5(RES)	1,2,3,7,8,9-HXCDD	0.171 ng/Kg	0.171U ng/Kg
SL-636-SA5A-TR-0.5(RES)	1,2,3,7,8,9-HXCDF	0.138 ng/Kg	0.138U ng/Kg
SL-636-SA5A-TR-0.5(RES)	1,2,3,7,8-PECDD	0.158 ng/Kg	0.158U ng/Kg
SL-636-SA5A-TR-0.5(RES)	2,3,4,6,7,8-HXCDF	0.134 ng/Kg	0.134U ng/Kg
SL-636-SA5A-TR-0.5(RES)	2,3,4,7,8-PECDF	0.178 ng/Kg	0.178U ng/Kg
SL-636-SA5A-TR-3.5(RES)	1,2,3,4,6,7,8-HPCDD	0.320 ng/Kg	0.320U ng/Kg
SL-636-SA5A-TR-3.5(RES)	1,2,3,4,6,7,8-HPCDF	0.128 ng/Kg	0.128U ng/Kg
SL-636-SA5A-TR-3.5(RES)	1,2,3,4,7,8,9-HPCDF	0.0309 ng/Kg	0.0309U ng/Kg
SL-636-SA5A-TR-3.5(RES)	1,2,3,4,7,8-HxCDD	0.0278 ng/Kg	0.0278U ng/Kg
SL-636-SA5A-TR-3.5(RES)	1,2,3,4,7,8-HXCDF	0.0765 ng/Kg	0.0765U ng/Kg
SL-636-SA5A-TR-3.5(RES)	1,2,3,6,7,8-HXCDD	0.291 ng/Kg	0.291U ng/Kg
SL-636-SA5A-TR-3.5(RES)	1,2,3,7,8,9-HXCDF	0.282 ng/Kg	0.282U ng/Kg
SL-636-SA5A-TR-3.5(RES)	1,2,3,7,8-PECDD	0.134 ng/Kg	0.134U ng/Kg
SL-636-SA5A-TR-3.5(RES)	1,2,3,7,8-PECDF	0.184 ng/Kg	0.184U ng/Kg
SL-636-SA5A-TR-3.5(RES)	2,3,4,6,7,8-HXCDF	0.0307 ng/Kg	0.0307U ng/Kg
SL-636-SA5A-TR-3.5(RES)	2,3,4,7,8-PECDF	0.0749 ng/Kg	0.0749U ng/Kg
SL-636-SA5A-TR-3.5(RES)	2,3,7,8-TCDD	0.0593 ng/Kg	0.0593U ng/Kg
SL-636-SA5A-TR-3.5(RES)	OCDF	0.195 ng/Kg	0.195U ng/Kg
SL-636-SA5A-TR-7.5(RES)	1,2,3,4,6,7,8-HPCDD	0.0665 ng/Kg	0.0665U ng/Kg
SL-636-SA5A-TR-7.5(RES)	1,2,3,4,6,7,8-HPCDF	0.0678 ng/Kg	0.0678U ng/Kg
SL-636-SA5A-TR-7.5(RES)	1,2,3,4,7,8,9-HPCDF	0.0440 ng/Kg	0.0440U ng/Kg
SL-636-SA5A-TR-7.5(RES)	1,2,3,4,7,8-HxCDD	0.0281 ng/Kg	0.0281U ng/Kg
SL-636-SA5A-TR-7.5(RES)	1,2,3,4,7,8-HXCDF	0.0419 ng/Kg	0.0419U ng/Kg

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

Method Blank Outlier Report

Lab Reporting Batch ID: PH199 **Laboratory: LL**

EDD Filename: PrepPH199_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-636-SA5A-TR-7.5(RES)	1,2,3,6,7,8-HXCDD	0.0595 ng/Kg	0.0595U ng/Kg
SL-636-SA5A-TR-7.5(RES)	1,2,3,6,7,8-HXCDF	0.0544 ng/Kg	0.0544U ng/Kg
SL-636-SA5A-TR-7.5(RES)	1,2,3,7,8,9-HXCDD	0.0663 ng/Kg	0.0663U ng/Kg
SL-636-SA5A-TR-7.5(RES)	1,2,3,7,8,9-HXCDF	0.0904 ng/Kg	0.0904U ng/Kg
SL-636-SA5A-TR-7.5(RES)	1,2,3,7,8-PECDF	0.0362 ng/Kg	0.0362U ng/Kg
SL-636-SA5A-TR-7.5(RES)	2,3,4,6,7,8-HXCDF	0.0258 ng/Kg	0.0258U ng/Kg
SL-636-SA5A-TR-7.5(RES)	2,3,4,7,8-PECDF	0.0342 ng/Kg	0.0342U ng/Kg
SL-636-SA5A-TR-7.5(RES)	OCDD	0.598 ng/Kg	0.598U ng/Kg
SL-636-SA5A-TR-7.5(RES)	OCDF	0.147 ng/Kg	0.147U ng/Kg

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

Method Blank Sample ID	Analysis Date	Analyte	Result	Associated Samples
P14737BB222033	5/28/2014 8:33:00 PM	ALUMINUM BORON CALCIUM TIN ZINC	9.28 mg/Kg 0.858 mg/Kg 12.8 mg/Kg 1.36 mg/Kg 0.956 mg/Kg	SL-636-SA5A-TR-0.5 SL-636-SA5A-TR-3.5 SL-636-SA5A-TR-7.5

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
SL-636-SA5A-TR-0.5(RES)	BORON	3.55 mg/Kg	3.55U mg/Kg
SL-636-SA5A-TR-0.5(RES)	TIN	2.40 mg/Kg	2.40U mg/Kg
SL-636-SA5A-TR-3.5(RES)	TIN	2.32 mg/Kg	2.32U mg/Kg
SL-636-SA5A-TR-7.5(RES)	TIN	3.26 mg/Kg	3.26U mg/Kg

Field Blank Outlier Report

Lab Reporting Batch ID: PH199 **Laboratory: LL**

EDD Filename: PrepPH199_v2 **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-636-SA5A-TR-0.5 SL-636-SA5A-TR-3.5 SL-636-SA5A-TR-7.5

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
SL-636-SA5A-TR-0.5(RES)	Zirconium	2.36 mg/Kg	2.36U mg/Kg
SL-636-SA5A-TR-3.5(RES)	Zirconium	3.67 mg/Kg	3.67U mg/Kg
SL-636-SA5A-TR-7.5(RES)	Zirconium	4.60 mg/Kg	4.60U mg/Kg

Lab Control Spike/Lab Control Spike Duplicate Outlier Report

Lab Reporting Batch ID: PH199 **Laboratory: LL**

EDD Filename: PrepPH199_v2 **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*
P5LALCSQ260113 (SL-636-SA5A-TR-0.5 SL-636-SA5A-TR-3.5 SL-636-SA5A-TR-7.5)	BENZO(E)PYRENE	80	-	81.00-110.00	-	BENZO(E)PYRENE	J (all detects) UJ (all non-detects)

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

Reporting Limit Outliers

Lab Reporting Batch ID: PH199 **Laboratory: LL**

EDD Filename: PrepPH199_v2 **eQAPP Name: CDM_SSFL_140617_Lan**

Method: 1613B

Matrix: SO

SampleID	Analyte	Lab Qual	Result	Reporting Limit	RL Type	Units	Flag
SL-636-SA5A-TR-0.5	1,2,3,4,6,7,8-HPCDD	JB	3.52	4.95	PQL	ng/Kg	
	1,2,3,4,6,7,8-HPCDF	JB	0.686	4.95	PQL	ng/Kg	
	1,2,3,4,7,8,9-HPCDF	JB	0.0658	4.95	PQL	ng/Kg	
	1,2,3,4,7,8-HxCDD	JBQ	0.0985	4.95	PQL	ng/Kg	
	1,2,3,4,7,8-HXCDF	JB	0.156	4.95	PQL	ng/Kg	
	1,2,3,6,7,8-HXCDD	JBQ	0.214	4.95	PQL	ng/Kg	
	1,2,3,6,7,8-HXCDF	JBQ	0.218	4.95	PQL	ng/Kg	J (all detects)
	1,2,3,7,8,9-HXCDD	JB	0.171	4.95	PQL	ng/Kg	
	1,2,3,7,8,9-HXCDF	JB	0.138	4.95	PQL	ng/Kg	
	1,2,3,7,8-PECDD	JBQ	0.158	4.95	PQL	ng/Kg	
	1,2,3,7,8-PECDF	JB	3.08	4.95	PQL	ng/Kg	
	2,3,4,6,7,8-HXCDF	JB	0.134	4.95	PQL	ng/Kg	
	2,3,4,7,8-PECDF	JBQ	0.178	4.95	PQL	ng/Kg	
	OCDF	JB	1.56	9.90	PQL	ng/Kg	
SL-636-SA5A-TR-3.5	1,2,3,4,6,7,8-HPCDD	JB	0.320	5.09	PQL	ng/Kg	
	1,2,3,4,6,7,8-HPCDF	JBQ	0.128	5.09	PQL	ng/Kg	
	1,2,3,4,7,8,9-HPCDF	JBQ	0.0309	5.09	PQL	ng/Kg	
	1,2,3,4,7,8-HxCDD	JBQ	0.0278	5.09	PQL	ng/Kg	
	1,2,3,4,7,8-HXCDF	JB	0.0765	5.09	PQL	ng/Kg	
	1,2,3,6,7,8-HXCDD	JBQ	0.291	5.09	PQL	ng/Kg	
	1,2,3,7,8,9-HXCDD	JB	0.545	5.09	PQL	ng/Kg	
	1,2,3,7,8,9-HXCDF	JBQ	0.282	5.09	PQL	ng/Kg	J (all detects)
	1,2,3,7,8-PECDD	JB	0.134	5.09	PQL	ng/Kg	
	1,2,3,7,8-PECDF	JB	0.184	5.09	PQL	ng/Kg	
	2,3,4,6,7,8-HXCDF	JBQ	0.0307	5.09	PQL	ng/Kg	
	2,3,4,7,8-PECDF	JB	0.0749	5.09	PQL	ng/Kg	
	2,3,7,8-TCDD	JBQ	0.0593	1.02	PQL	ng/Kg	
	OCDD	JB	3.87	10.2	PQL	ng/Kg	
	OCDF	JBQ	0.195	10.2	PQL	ng/Kg	
SL-636-SA5A-TR-7.5	1,2,3,4,6,7,8-HPCDD	JBQ	0.0665	5.12	PQL	ng/Kg	
	1,2,3,4,6,7,8-HPCDF	JB	0.0678	5.12	PQL	ng/Kg	
	1,2,3,4,7,8,9-HPCDF	JB	0.0440	5.12	PQL	ng/Kg	
	1,2,3,4,7,8-HxCDD	JBQ	0.0281	5.12	PQL	ng/Kg	
	1,2,3,4,7,8-HXCDF	JB	0.0419	5.12	PQL	ng/Kg	
	1,2,3,6,7,8-HXCDD	JBQ	0.0595	5.12	PQL	ng/Kg	
	1,2,3,6,7,8-HXCDF	JBQ	0.0544	5.12	PQL	ng/Kg	
	1,2,3,7,8,9-HXCDD	JBQ	0.0663	5.12	PQL	ng/Kg	J (all detects)
	1,2,3,7,8,9-HXCDF	JBQ	0.0904	5.12	PQL	ng/Kg	
	1,2,3,7,8-PECDF	JBQ	0.0362	5.12	PQL	ng/Kg	
	2,3,4,6,7,8-HXCDF	JBQ	0.0258	5.12	PQL	ng/Kg	
	2,3,4,7,8-PECDF	JBQ	0.0342	5.12	PQL	ng/Kg	
	OCDD	JB	0.598	10.2	PQL	ng/Kg	
	OCDF	JBQ	0.147	10.2	PQL	ng/Kg	

Reporting Limit Outliers

Lab Reporting Batch ID: PH199 **Laboratory: LL**

EDD Filename: PrepPH199_v2 **eQAPP Name: CDM_SSFL_140617_Lan**

Method: 6010C

Matrix: SO

SampleID	Analyte	Lab Qual	Result	Reporting Limit	RL Type	Units	Flag
SL-636-SA5A-TR-0.5	ARSENIC	J	2.91	4.00	PQL	mg/Kg	J (all detects)
	BERYLLIUM	J	0.380	0.999	PQL	mg/Kg	
	BORON	J	3.55	9.99	PQL	mg/Kg	
	CADMIUM	J	0.428	0.999	PQL	mg/Kg	
	TIN	J	2.40	9.99	PQL	mg/Kg	
	Zirconium	J	2.36	4.99	PQL	mg/Kg	
SL-636-SA5A-TR-3.5	ARSENIC	J	3.49	4.13	PQL	mg/Kg	J (all detects)
	BERYLLIUM	J	0.565	1.03	PQL	mg/Kg	
	BORON	J	4.61	10.3	PQL	mg/Kg	
	CADMIUM	J	0.590	1.03	PQL	mg/Kg	
	MOLYBDENUM	J	0.329	2.07	PQL	mg/Kg	
	TIN	J	2.32	10.3	PQL	mg/Kg	
	Zirconium	J	3.67	5.17	PQL	mg/Kg	
SL-636-SA5A-TR-7.5	BERYLLIUM	J	0.915	1.05	PQL	mg/Kg	J (all detects)
	BORON	J	6.78	10.5	PQL	mg/Kg	
	CADMIUM	J	0.711	1.05	PQL	mg/Kg	
	MOLYBDENUM	J	0.261	2.10	PQL	mg/Kg	
	TIN	J	3.26	10.5	PQL	mg/Kg	
	Zirconium	J	4.60	5.26	PQL	mg/Kg	

Method: 6020A

Matrix: SO

SampleID	Analyte	Lab Qual	Result	Reporting Limit	RL Type	Units	Flag
SL-636-SA5A-TR-3.5	SELENIUM	J	0.141	0.413	PQL	mg/Kg	J (all detects)
	SILVER	J	0.0338	0.207	PQL	mg/Kg	
SL-636-SA5A-TR-7.5	SELENIUM	J	0.129	0.420	PQL	mg/Kg	J (all detects)
	SILVER	J	0.0811	0.210	PQL	mg/Kg	

Method: 7471B

Matrix: SO

SampleID	Analyte	Lab Qual	Result	Reporting Limit	RL Type	Units	Flag
SL-636-SA5A-TR-0.5	MERCURY	J	0.0143	0.0167	PQL	mg/Kg	J (all detects)

Method: 8015M

Matrix: SO

SampleID	Analyte	Lab Qual	Result	Reporting Limit	RL Type	Units	Flag
SL-636-SA5A-TR-3.5	EFH (C21-C30)	J	4.8	5.3	PQL	mg/Kg	J (all detects)

Reporting Limit Outliers

Lab Reporting Batch ID: PH199 **Laboratory: LL**

EDD Filename: PrepPH199_v2 **eQAPP Name: CDM_SSFL_140617_Lan**

Method: 8082A

Matrix: SO

SampleID	Analyte	Lab Qual	Result	Reporting Limit	RL Type	Units	Flag
SL-636-SA5A-TR-0.5	AROCLOR 1254	J	8.4	17	PQL	ug/Kg	J (all detects)

Method: 8270D SIM

Matrix: SO

SampleID	Analyte	Lab Qual	Result	Reporting Limit	RL Type	Units	Flag
SL-636-SA5A-TR-0.5	BENZO(G,H,I)PERYLENE	J	1.5	1.7	PQL	ug/Kg	J (all detects)

LDC #: 32095B4 **VALIDATION COMPLETENESS WORKSHEET** Date: 7/8/14

SDG #: PH199 ADR Page: 1 of 1

Laboratory: Eurofins Lancaster Laboratories Reviewer: VK

2nd Reviewer: AL

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

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: 5/23/14
II.	ICP/MS Tune	N	
III.	Calibration	~~A~~	
IV.	Blanks	A	~~CCB hits, no quals~~ APL 7/9/14
V.	ICP Interference Check Sample (ICS) Analysis	~~A~~	
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	N	
XII.	Sample Result Verification	N	
XIII.	Overall Assessment of Data	N	
XIV.	Field Duplicates	N	
XV	Field Blanks	SW	EB = EB3-052214 SDG# PH195 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-636-SA5A-TR-0.5	11		21		31	
2	SL-636-SA5A-TR-3.5	12		22		32	
3	SL-636-SA5A-TR-7.5	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 #: 32095B4

VALIDATION FINDINGS WORKSHEET
Sample Specific Element Reference

Reviewer: KJ
2nd reviewer:

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
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 #: 32095B4

VALIDATION FINDINGS WORKSHEET
Field Blanks

Reviewer: KA
2nd Reviewer: AR

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

Blank units: mg/L **Associated sample units:** mg/kg
Sampling date: 5/21/14 & 5/22/14 Soil factor applied 100
Field blank type: (circle one) Field Blank / Rinsate / Other: EB Associated Samples: All

Analyte	EB	FB	Sample Identification							
	EB3-052214 SDG#PH195	FB-052114 SDG#PH191	Action Limit	1	2	3				
Zr		0.0110	5.50	2.36	3.67	4.60				
Mn	0.00090		0.450							
Ca	0.150		75							
Sr	0.00046		0.23							

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: PH201

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

July 27, 2014

INTRODUCTION

This Data Validation Report (DVR) presents Level III data validation results for samples collected on May 27, 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 8081A
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 duplicates (DUP), 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) 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.

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 one sample for TPH as extractables with silica gel clean up. The associated sample results were qualified as 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.

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 non-detected estimated (UJ). 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 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 PH201	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 not detected or were significantly greater than the concentrations found in the equipment blank, therefore no data were qualified.

One field blank (from SDG PH191) 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 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
27-May-2014	TB3-052714	7479356	TB	5030B	8015M	III
27-May-2014	SL-707-SA5B-TR-0.5	7479354	N	3050B	6010C	III
27-May-2014	SL-707-SA5B-TR-0.5	7479354	N	3050B	6020A	III
27-May-2014	SL-707-SA5B-TR-0.5	7479354	N	3546	8015M	III
27-May-2014	SL-707-SA5B-TR-0.5	7479354	N	3546	8081B	III
27-May-2014	SL-707-SA5B-TR-0.5	7479354	N	3546	8082A	III
27-May-2014	SL-707-SA5B-TR-0.5	7479354	N	3546	8270D SIM	III
27-May-2014	SL-707-SA5B-TR-0.5	7479354	N	METHOD	1613B	III
27-May-2014	SL-707-SA5B-TR-0.5	7479354	N	METHOD	7471B	III
27-May-2014	SL-707-SA5B-TR-0.5MSD	P479354M260647	MSD	3546	8270D SIM	III
27-May-2014	SL-707-SA5B-TR-0.5MSD	P479354M320311A	MSD	3546	8015M	III
27-May-2014	SL-707-SA5B-TR-0.5MSD	P479354M321816A	MSD	3546	8015M	III
27-May-2014	SL-707-SA5B-TR-0.5MS	P479354R260615	MS	3546	8270D SIM	III
27-May-2014	SL-707-SA5B-TR-0.5MS	P479354R320249A	MS	3546	8015M	III
27-May-2014	SL-707-SA5B-TR-0.5MS	P479354R321754A	MS	3546	8015M	III
27-May-2014	SL-707-SA5B-TR-3.0	7479355	N	3050B	6010C	III
27-May-2014	SL-707-SA5B-TR-3.0	7479355	N	3050B	6020A	III
27-May-2014	SL-707-SA5B-TR-3.0	7479355	N	3546	8015M	III
27-May-2014	SL-707-SA5B-TR-3.0	7479355	N	3546	8081B	III
27-May-2014	SL-707-SA5B-TR-3.0	7479355	N	3546	8082A	III
27-May-2014	SL-707-SA5B-TR-3.0	7479355	N	3546	8270D SIM	III
27-May-2014	SL-707-SA5B-TR-3.0	7479355	N	5035A	8015M	III
27-May-2014	SL-707-SA5B-TR-3.0	7479355	N	METHOD	1613B	III
27-May-2014	SL-707-SA5B-TR-3.0	7479355	N	METHOD	7471B	III
27-May-2014	SL-707-SA5B-TR-3.0DUP	P479355D222115	DUP	METHOD	7471B	III
27-May-2014	SL-707-SA5B-TR-3.0MSD	P479355M222119	MSD	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*

Sample Cross Reference

Date Collected	Field Sample ID	Lab Sample ID	Sample Type	Prep Method	Analytical Method	Review Level
27-May-2014	SL-707-SA5B-TR-3.0MS	P479355R222117	MS	METHOD	7471B	III
27-May-2014	SL-693-SA5B-TR-0.5	7479357	N	3050B	6010C	III
27-May-2014	SL-693-SA5B-TR-0.5	7479357	N	3050B	6020A	III
27-May-2014	SL-693-SA5B-TR-0.5	7479357	N	3546	8015M	III
27-May-2014	SL-693-SA5B-TR-0.5	7479357	N	3546	8081B	III
27-May-2014	SL-693-SA5B-TR-0.5	7479357	N	3546	8082A	III
27-May-2014	SL-693-SA5B-TR-0.5	7479357	N	3546	8270D SIM	III
27-May-2014	SL-693-SA5B-TR-0.5	7479357	N	METHOD	1613B	III
27-May-2014	SL-693-SA5B-TR-0.5	7479357	N	METHOD	7471B	III
27-May-2014	SL-693-SA5B-TR-3.5	7479358	N	3050B	6010C	III
27-May-2014	SL-693-SA5B-TR-3.5	7479358	N	3050B	6020A	III
27-May-2014	SL-693-SA5B-TR-3.5	7479358	N	3546	8015M	III
27-May-2014	SL-693-SA5B-TR-3.5	7479358	N	3546	8081B	III
27-May-2014	SL-693-SA5B-TR-3.5	7479358	N	3546	8082A	III
27-May-2014	SL-693-SA5B-TR-3.5	7479358	N	3546	8270D SIM	III
27-May-2014	SL-693-SA5B-TR-3.5	7479358	N	5035A	8015M	III
27-May-2014	SL-693-SA5B-TR-3.5	7479358	N	METHOD	1613B	III
27-May-2014	SL-693-SA5B-TR-3.5	7479358	N	METHOD	7471B	III
27-May-2014	SL-693-SA5B-TR-5.0	7479359	N	3050B	6010C	III
27-May-2014	SL-693-SA5B-TR-5.0	7479359	N	3050B	6020A	III
27-May-2014	SL-693-SA5B-TR-5.0	7479359	N	3546	8015M	III
27-May-2014	SL-693-SA5B-TR-5.0	7479359	N	3546	8081B	III
27-May-2014	SL-693-SA5B-TR-5.0	7479359	N	3546	8082A	III
27-May-2014	SL-693-SA5B-TR-5.0	7479359	N	3546	8270D SIM	III
27-May-2014	SL-693-SA5B-TR-5.0	7479359	N	5035A	8015M	III
27-May-2014	SL-693-SA5B-TR-5.0	7479359	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
27-May-2014	SL-693-SA5B-TR-5.0	7479359	N	METHOD	7471B	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: PH201 **Laboratory: LL**

EDD Filename: PrepPH201_v2 **eQAPP Name: CDM_SSFL_140617_Lan**

Method Category: METALS

Method: 6010C **Matrix: SO**

Sample ID: SL-693-SA5B-TR-0.5 **Collected: 5/27/2014 10:17:00** **Analysis Type: RES** **Dilution: 1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
BERYLLIUM	0.909	J	0.0669	MDL	0.998	PQL	mg/Kg	J	Z
BORON	5.59	J	0.839	MDL	9.98	PQL	mg/Kg	U	B
CADMIUM	0.324	J	0.0759	MDL	0.998	PQL	mg/Kg	J	Z
SODIUM	93.0	J	16.7	MDL	99.8	PQL	mg/Kg	J	Z
TIN	3.12	J	0.220	MDL	9.98	PQL	mg/Kg	U	B
Zirconium	4.24	J	0.839	MDL	4.99	PQL	mg/Kg	U	F
MOLYBDENUM	0.427	J	0.170	MDL	2.00	PQL	mg/Kg	U	F

Sample ID: SL-693-SA5B-TR-3.5 **Collected: 5/27/2014 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
BORON	6.43	J	0.858	MDL	10.2	PQL	mg/Kg	U	B
CADMIUM	0.178	J	0.0776	MDL	1.02	PQL	mg/Kg	J	Z
MOLYBDENUM	0.388	J	0.174	MDL	2.04	PQL	mg/Kg	U	F
TIN	3.28	J	0.225	MDL	10.2	PQL	mg/Kg	U	B
Zirconium	4.88	J	0.858	MDL	5.10	PQL	mg/Kg	U	F

Sample ID: SL-693-SA5B-TR-5.0 **Collected: 5/27/2014 1:40:00** **Analysis Type: RES** **Dilution: 1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
BERYLLIUM	0.898	J	0.0688	MDL	1.03	PQL	mg/Kg	J	Z
BORON	4.81	J	0.863	MDL	10.3	PQL	mg/Kg	U	B
CADMIUM	0.128	J	0.0781	MDL	1.03	PQL	mg/Kg	J	Z
MOLYBDENUM	0.347	J	0.175	MDL	2.05	PQL	mg/Kg	J	Z
TIN	2.97	J	0.226	MDL	10.3	PQL	mg/Kg	U	B
Zirconium	4.46	J	0.863	MDL	5.14	PQL	mg/Kg	U	F

Sample ID: SL-707-SA5B-TR-0.5 **Collected: 5/27/2014 8:13:00** **Analysis Type: RES** **Dilution: 1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
BERYLLIUM	0.825	J	0.0658	MDL	0.983	PQL	mg/Kg	J	Z
BORON	5.48	J	0.825	MDL	9.83	PQL	mg/Kg	U	B
CADMIUM	0.240	J	0.0747	MDL	0.983	PQL	mg/Kg	J	Z
MOLYBDENUM	0.457	J	0.167	MDL	1.97	PQL	mg/Kg	U	F
SODIUM	97.2	J	16.4	MDL	98.3	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: PH201 **Laboratory: LL**

EDD Filename: PrepPH201_v2 **eQAPP Name: CDM_SSFL_140617_Lan**

Method Category: METALS

Method: 6010C **Matrix: SO**

Sample ID: SL-707-SA5B-TR-0.5 *Collected:* 5/27/2014 8:13:00 *Analysis Type:* RES *Dilution:* 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
TIN	2.96	J	0.216	MDL	9.83	PQL	mg/Kg	U	B
Zirconium	4.75	J	0.825	MDL	4.91	PQL	mg/Kg	U	F

Sample ID: SL-707-SA5B-TR-3.0 *Collected:* 5/27/2014 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
BERYLLIUM	0.987	J	0.0668	MDL	0.997	PQL	mg/Kg	J	Z
BORON	5.41	J	0.838	MDL	9.97	PQL	mg/Kg	U	B
CADMIUM	0.128	J	0.0758	MDL	0.997	PQL	mg/Kg	J	Z
MOLYBDENUM	0.352	J	0.170	MDL	1.99	PQL	mg/Kg	U	F
TIN	3.08	J	0.219	MDL	9.97	PQL	mg/Kg	U	B
Zirconium	4.29	J	0.838	MDL	4.99	PQL	mg/Kg	U	F

Method Category: METALS

Method: 6020A **Matrix: SO**

Sample ID: SL-693-SA5B-TR-0.5 *Collected:* 5/27/2014 10:17:00 *Analysis Type:* REA *Dilution:* 2

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
SELENIUM	0.389	J	0.0998	MDL	0.399	PQL	mg/Kg	J	Z

Sample ID: SL-693-SA5B-TR-0.5 *Collected:* 5/27/2014 10:17:00 *Analysis Type:* RES *Dilution:* 2

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
SILVER	0.0459	J	0.0260	MDL	0.200	PQL	mg/Kg	J	Z

Sample ID: SL-693-SA5B-TR-3.5 *Collected:* 5/27/2014 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	0.267	J	0.102	MDL	0.408	PQL	mg/Kg	J	Z

Sample ID: SL-693-SA5B-TR-3.5 *Collected:* 5/27/2014 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	0.0610	J	0.0265	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: PH201 **Laboratory: LL**

EDD Filename: PrepPH201_v2 **eQAPP Name: CDM_SSFL_140617_Lan**

Method Category: METALS

Method: 6020A **Matrix: SO**

Sample ID: **SL-693-SA5B-TR-5.0** *Collected:* **5/27/2014 1:40:00** *Analysis Type:* **REA** *Dilution:* **2**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
SELENIUM	0.273	J	0.103	MDL	0.411	PQL	mg/Kg	J	Z

Sample ID: **SL-693-SA5B-TR-5.0** *Collected:* **5/27/2014 1:40:00** *Analysis Type:* **RES** *Dilution:* **2**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
SILVER	0.0448	J	0.0267	MDL	0.205	PQL	mg/Kg	J	Z

Sample ID: **SL-707-SA5B-TR-0.5** *Collected:* **5/27/2014 8:13:00** *Analysis Type:* **REA** *Dilution:* **2**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
SELENIUM	0.274	J	0.0983	MDL	0.393	PQL	mg/Kg	J	Z

Sample ID: **SL-707-SA5B-TR-3.0** *Collected:* **5/27/2014 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	0.272	J	0.0997	MDL	0.399	PQL	mg/Kg	J	Z

Sample ID: **SL-707-SA5B-TR-3.0** *Collected:* **5/27/2014 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	0.0347	J	0.0259	MDL	0.199	PQL	mg/Kg	J	Z

Method Category: SVOA

Method: 1613B **Matrix: SO**

Sample ID: **SL-693-SA5B-TR-0.5** *Collected:* **5/27/2014 10:17:00** *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	2.17	JB	0.0249	MDL	4.95	PQL	ng/Kg	J	Z
1,2,3,4,7,8,9-HPCDF	0.200	JB	0.0485	MDL	4.95	PQL	ng/Kg	U	B
1,2,3,4,7,8-HxCDD	0.137	JB	0.0499	MDL	4.95	PQL	ng/Kg	U	B
1,2,3,4,7,8-HXCDF	0.100	JBQ	0.0539	MDL	4.95	PQL	ng/Kg	U	B
1,2,3,6,7,8-HXCDD	0.572	JQ	0.0521	MDL	4.95	PQL	ng/Kg	J	Z
1,2,3,6,7,8-HXCDF	0.190	JB	0.0452	MDL	4.95	PQL	ng/Kg	J	Z
1,2,3,7,8,9-HXCDD	0.665	J	0.0492	MDL	4.95	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: PH201 **Laboratory: LL**

EDD Filename: PrepPH201_v2 **eQAPP Name: CDM_SSFL_140617_Lan**

Method Category: SVOA

Method: 1613B **Matrix: SO**

Sample ID: SL-693-SA5B-TR-0.5 **Collected: 5/27/2014 10:17:00** **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	0.450	JBQ	0.0518	MDL	4.95	PQL	ng/Kg	J	Z
1,2,3,7,8-PECDD	0.126	JQ	0.0357	MDL	4.95	PQL	ng/Kg	J	Z
1,2,3,7,8-PECDF	0.243	JB	0.0199	MDL	4.95	PQL	ng/Kg	J	Z
2,3,4,6,7,8-HXCDF	0.157	JBQ	0.0464	MDL	4.95	PQL	ng/Kg	J	Z
2,3,4,7,8-PECDF	0.0787	JBQ	0.0206	MDL	4.95	PQL	ng/Kg	J	Z
OCDF	5.75	JB	0.0356	MDL	9.91	PQL	ng/Kg	J	Z

Sample ID: SL-693-SA5B-TR-3.5 **Collected: 5/27/2014 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-HPCDD	0.195	JB	0.0279	MDL	5.11	PQL	ng/Kg	U	B
1,2,3,4,6,7,8-HPCDF	0.0703	JBQ	0.0151	MDL	5.11	PQL	ng/Kg	U	B
1,2,3,4,7,8-HXCDF	0.0232	JBQ	0.0189	MDL	5.11	PQL	ng/Kg	U	B
1,2,3,6,7,8-HXCDD	0.0540	JQ	0.0251	MDL	5.11	PQL	ng/Kg	J	Z
1,2,3,6,7,8-HXCDF	0.0263	JB	0.0170	MDL	5.11	PQL	ng/Kg	U	B
1,2,3,7,8,9-HXCDD	0.0802	JQ	0.0255	MDL	5.11	PQL	ng/Kg	J	Z
1,2,3,7,8,9-HXCDF	0.0626	JBQ	0.0187	MDL	5.11	PQL	ng/Kg	U	B
OCDD	1.70	JB	0.0395	MDL	10.2	PQL	ng/Kg	J	Z
OCDF	0.177	JBQ	0.0394	MDL	10.2	PQL	ng/Kg	U	B

Sample ID: SL-693-SA5B-TR-5.0 **Collected: 5/27/2014 1:40:00** **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	0.885	JBQ	0.0317	MDL	5.21	PQL	ng/Kg	J	Z
1,2,3,4,6,7,8-HPCDF	0.210	JB	0.0108	MDL	5.21	PQL	ng/Kg	U	B
1,2,3,4,7,8,9-HPCDF	0.0351	JB	0.0191	MDL	5.21	PQL	ng/Kg	U	B
1,2,3,4,7,8-HXCDF	0.0383	JBQ	0.0162	MDL	5.21	PQL	ng/Kg	U	B
1,2,3,6,7,8-HXCDD	0.103	J	0.0223	MDL	5.21	PQL	ng/Kg	J	Z
1,2,3,6,7,8-HXCDF	0.0504	JB	0.0139	MDL	5.21	PQL	ng/Kg	U	B
1,2,3,7,8,9-HXCDD	0.178	J	0.0230	MDL	5.21	PQL	ng/Kg	J	Z
1,2,3,7,8,9-HXCDF	0.171	JBQ	0.0149	MDL	5.21	PQL	ng/Kg	U	B
1,2,3,7,8-PECDD	0.0450	JQ	0.0272	MDL	5.21	PQL	ng/Kg	J	Z
1,2,3,7,8-PECDF	0.139	JB	0.0145	MDL	5.21	PQL	ng/Kg	U	B
2,3,4,6,7,8-HXCDF	0.0344	JBQ	0.0151	MDL	5.21	PQL	ng/Kg	U	B
2,3,4,7,8-PECDF	0.0216	JB	0.0144	MDL	5.21	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: PH201 **Laboratory: LL**

EDD Filename: PrepPH201_v2 **eQAPP Name: CDM_SSFL_140617_Lan**

Method Category: SVOA

Method: 1613B **Matrix: SO**

Sample ID: **SL-693-SA5B-TR-5.0** *Collected:* **5/27/2014 1:40:00** *Analysis Type:* **RES** *Dilution:* **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
OCDD	7.98	JB	0.0224	MDL	10.4	PQL	ng/Kg	J	Z
OCDF	0.516	JB	0.0289	MDL	10.4	PQL	ng/Kg	U	B

Sample ID: **SL-707-SA5B-TR-0.5** *Collected:* **5/27/2014 8:13:00** *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	3.83	JB	0.102	MDL	4.99	PQL	ng/Kg	J	Z
1,2,3,4,7,8-HxCDD	3.45	JB	0.101	MDL	4.99	PQL	ng/Kg	J	Z
1,2,3,4,7,8-HXCDF	2.09	JB	0.121	MDL	4.99	PQL	ng/Kg	J	Z
1,2,3,6,7,8-HXCDF	1.66	JB	0.103	MDL	4.99	PQL	ng/Kg	J	Z
1,2,3,7,8,9-HXCDF	0.839	JB	0.115	MDL	4.99	PQL	ng/Kg	J	Z
1,2,3,7,8-PECDD	1.88	J	0.0851	MDL	4.99	PQL	ng/Kg	J	Z
1,2,3,7,8-PECDF	0.381	JB	0.0438	MDL	4.99	PQL	ng/Kg	J	Z
2,3,4,6,7,8-HXCDF	2.32	JB	0.106	MDL	4.99	PQL	ng/Kg	J	Z
2,3,4,7,8-PECDF	0.580	JBQ	0.0435	MDL	4.99	PQL	ng/Kg	J	Z
2,3,7,8-TCDD	0.179	J	0.0582	MDL	0.998	PQL	ng/Kg	J	Z
2,3,7,8-TCDF	0.101	JQ	0.0873	MDL	0.998	PQL	ng/Kg	J	Z

Sample ID: **SL-707-SA5B-TR-3.0** *Collected:* **5/27/2014 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
1,2,3,4,6,7,8-HPCDF	2.55	JB	0.0208	MDL	5.09	PQL	ng/Kg	J	Z
1,2,3,4,7,8,9-HPCDF	0.196	JBQ	0.0423	MDL	5.09	PQL	ng/Kg	U	B
1,2,3,4,7,8-HxCDD	0.111	JBQ	0.0428	MDL	5.09	PQL	ng/Kg	U	B
1,2,3,4,7,8-HXCDF	0.134	JBQ	0.0438	MDL	5.09	PQL	ng/Kg	J	Z
1,2,3,6,7,8-HXCDD	0.389	J	0.0435	MDL	5.09	PQL	ng/Kg	J	Z
1,2,3,6,7,8-HXCDF	0.0699	JBQ	0.0366	MDL	5.09	PQL	ng/Kg	U	B
1,2,3,7,8,9-HXCDD	0.313	J	0.0425	MDL	5.09	PQL	ng/Kg	J	Z
1,2,3,7,8,9-HXCDF	0.0833	JBQ	0.0410	MDL	5.09	PQL	ng/Kg	U	B
1,2,3,7,8-PECDF	0.0652	JB	0.0166	MDL	5.09	PQL	ng/Kg	U	B
2,3,4,6,7,8-HXCDF	0.134	JBQ	0.0398	MDL	5.09	PQL	ng/Kg	J	Z
2,3,4,7,8-PECDF	0.0696	JBQ	0.0172	MDL	5.09	PQL	ng/Kg	U	B
OCDF	9.89	JB	0.0389	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: PH201 **Laboratory: LL**

EDD Filename: PrepPH201_v2 **eQAPP Name: CDM_SSFL_140617_Lan**

Method Category: SVOA

Method: 8015M **Matrix: SO**

Sample ID: **SL-693-SA5B-TR-0.5** *Collected:* **5/27/2014 10:17:00** *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	5.1	U	2.0	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	2.0	MDL	5.1	PQL	mg/Kg	UJ	L, S

Sample ID: **SL-693-SA5B-TR-3.5** *Collected:* **5/27/2014 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	5.3	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-693-SA5B-TR-5.0** *Collected:* **5/27/2014 1:40:00** *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)	5.0	J	2.1	MDL	5.3	PQL	mg/Kg	J	Z

Sample ID: **SL-693-SA5B-TR-5.0** *Collected:* **5/27/2014 1:40:00** *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	5.3	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-707-SA5B-TR-0.5** *Collected:* **5/27/2014 8:13:00** *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	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: PH201 **Laboratory: LL**

EDD Filename: PrepPH201_v2 **eQAPP Name: CDM_SSFL_140617_Lan**

Method Category: SVOA

Method: 8015M **Matrix: SO**

Sample ID: SL-707-SA5B-TR-3.0 **Collected: 5/27/2014 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 (C21-C30)	3.2	J	2.1	MDL	5.2	PQL	mg/Kg	J	Z

Sample ID: SL-707-SA5B-TR-3.0 **Collected: 5/27/2014 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)	5.2	U	2.1	MDL	5.2	PQL	mg/Kg	UJ	L
EFH (C15-C20)	5.2	U	2.1	MDL	5.2	PQL	mg/Kg	UJ	L
EFH (C21-C30)	5.2	U	2.1	MDL	5.2	PQL	mg/Kg	UJ	L
EFH (C8-C11)	5.2	U	2.1	MDL	5.2	PQL	mg/Kg	UJ	L

Method Category: SVOA

Method: 8081B **Matrix: SO**

Sample ID: SL-693-SA5B-TR-0.5 **Collected: 5/27/2014 10:17:00** **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	0.40	J	0.36	MDL	1.7	PQL	ug/Kg	J	Z

Sample ID: SL-707-SA5B-TR-0.5 **Collected: 5/27/2014 8:13:00** **Analysis Type: DL** **Dilution: 50**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
4,4'-DDT	45	J	18	MDL	86	PQL	ug/Kg	J	Z

Sample ID: SL-707-SA5B-TR-0.5 **Collected: 5/27/2014 8:13:00** **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	1.4	J	0.33	MDL	1.7	PQL	ug/Kg	J	Z
ENDOSULFAN II	0.56	J	0.33	MDL	1.7	PQL	ug/Kg	J	Z
ENDRIN KETONE	0.92	J	0.61	MDL	1.8	PQL	ug/Kg	J	Z

Sample ID: SL-707-SA5B-TR-3.0 **Collected: 5/27/2014 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
4,4'-DDT	1.1	J	0.36	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: PH201 **Laboratory: LL**

EDD Filename: PrepPH201_v2 **eQAPP Name: CDM_SSFL_140617_Lan**

Method Category: SVOA

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

Sample ID: **SL-693-SA5B-TR-0.5** ***Collected:*** **5/27/2014 10:17:00** ***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	1.0	J	0.68	MDL	1.7	PQL	ug/Kg	J	Z
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
FLUORANTHENE	1.1	J	0.68	MDL	1.7	PQL	ug/Kg	J	Z
NAPHTHALENE	0.73	J	0.68	MDL	1.7	PQL	ug/Kg	J	Z
PYRENE	0.81	J	0.68	MDL	1.7	PQL	ug/Kg	J	Z

Sample ID: **SL-693-SA5B-TR-3.5** ***Collected:*** **5/27/2014 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
BENZO(E)PYRENE	18	U	3.5	MDL	18	PQL	ug/Kg	UJ	L

Sample ID: **SL-693-SA5B-TR-5.0** ***Collected:*** **5/27/2014 1:40:00** ***Analysis Type:*** **RES-BASE/NEUTRAL** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
BENZO(E)PYRENE	18	U	3.5	MDL	18	PQL	ug/Kg	UJ	L
CHRYSENE	0.68	J	0.35	MDL	1.8	PQL	ug/Kg	J	Z
FLUORANTHENE	0.82	J	0.71	MDL	1.8	PQL	ug/Kg	J	Z
PYRENE	0.71	J	0.71	MDL	1.8	PQL	ug/Kg	J	Z

Sample ID: **SL-707-SA5B-TR-0.5** ***Collected:*** **5/27/2014 8:13:00** ***Analysis Type:*** **RES** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
1-METHYLNAPHTHALENE	0.92	J	0.67	MDL	1.7	PQL	ug/Kg	J	Z

Sample ID: **SL-707-SA5B-TR-0.5** ***Collected:*** **5/27/2014 8:13:00** ***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	0.71	J	0.67	MDL	1.7	PQL	ug/Kg	J	Z
BENZO(E)PYRENE	17	U	3.4	MDL	17	PQL	ug/Kg	UJ	L
NAPHTHALENE	1.4	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: PH201 **Laboratory: LL**

EDD Filename: PrepPH201_v2 **eQAPP Name: CDM_SSFL_140617_Lan**

Method Category: SVOA

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

Sample ID: SL-707-SA5B-TR-3.0 *Collected:* 5/27/2014 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
1-METHYLNAPHTHALENE	1.0	J	0.69	MDL	1.7	PQL	ug/Kg	J	Z

Sample ID: SL-707-SA5B-TR-3.0 *Collected:* 5/27/2014 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
2-METHYLNAPHTHALENE	1.3	J	0.69	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: PH201 **Laboratory: LL**

EDD Filename: PrepPH201_v2 **eQAPP Name: CDM_SSFL_140617_Lan**

Reason Code Legend

Reason Code	*Description*
B	Method Blank Contamination
F	Equipment Blank Contamination
F	Field Blank Contamination
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

(Including Manual Review Outliers)

Quality Control Outlier Reports

PH201

Method Blank Outlier Report

Lab Reporting Batch ID: PH201 **Laboratory: LL**

EDD Filename: PrepPH201_v2 **eQAPP Name: CDM_SSFL_140617_Lan**

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

Method Blank Sample ID	Analysis Date	Analyte	Result	Associated Samples
BLK1540B371251	6/5/2014 12:51:00 PM	1,2,3,4,6,7,8-HPCDD	0.0576 ng/Kg	SL-693-SA5B-TR-0.5
		1,2,3,4,6,7,8-HPCDF	0.0496 ng/Kg	SL-693-SA5B-TR-3.5
		1,2,3,4,7,8,9-HPCDF	0.0536 ng/Kg	SL-693-SA5B-TR-5.0
		1,2,3,4,7,8-HxCDD	0.0420 ng/Kg	SL-707-SA5B-TR-0.5
		1,2,3,4,7,8-HXCDF	0.0223 ng/Kg	SL-707-SA5B-TR-3.0
		1,2,3,6,7,8-HXCDF	0.0187 ng/Kg	
		1,2,3,7,8,9-HXCDF	0.0558 ng/Kg	
		1,2,3,7,8-PECDF	0.0470 ng/Kg	
		2,3,4,6,7,8-HXCDF	0.0179 ng/Kg	
		2,3,4,7,8-PECDF	0.0155 ng/Kg	
		OCDD	0.308 ng/Kg	
		OCDF	0.159 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-693-SA5B-TR-0.5(RES)	1,2,3,4,7,8,9-HPCDF	0.200 ng/Kg	0.200U ng/Kg
SL-693-SA5B-TR-0.5(RES)	1,2,3,4,7,8-HxCDD	0.137 ng/Kg	0.137U ng/Kg
SL-693-SA5B-TR-0.5(RES)	1,2,3,4,7,8-HXCDF	0.100 ng/Kg	0.100U ng/Kg
SL-693-SA5B-TR-3.5(RES)	1,2,3,4,6,7,8-HPCDD	0.195 ng/Kg	0.195U ng/Kg
SL-693-SA5B-TR-3.5(RES)	1,2,3,4,6,7,8-HPCDF	0.0703 ng/Kg	0.0703U ng/Kg
SL-693-SA5B-TR-3.5(RES)	1,2,3,4,7,8-HXCDF	0.0232 ng/Kg	0.0232U ng/Kg
SL-693-SA5B-TR-3.5(RES)	1,2,3,6,7,8-HXCDF	0.0263 ng/Kg	0.0263U ng/Kg
SL-693-SA5B-TR-3.5(RES)	1,2,3,7,8,9-HXCDF	0.0626 ng/Kg	0.0626U ng/Kg
SL-693-SA5B-TR-3.5(RES)	OCDF	0.177 ng/Kg	0.177U ng/Kg
SL-693-SA5B-TR-5.0(RES)	1,2,3,4,6,7,8-HPCDF	0.210 ng/Kg	0.210U ng/Kg
SL-693-SA5B-TR-5.0(RES)	1,2,3,4,7,8,9-HPCDF	0.0351 ng/Kg	0.0351U ng/Kg
SL-693-SA5B-TR-5.0(RES)	1,2,3,4,7,8-HXCDF	0.0383 ng/Kg	0.0383U ng/Kg
SL-693-SA5B-TR-5.0(RES)	1,2,3,6,7,8-HXCDF	0.0504 ng/Kg	0.0504U ng/Kg
SL-693-SA5B-TR-5.0(RES)	1,2,3,7,8,9-HXCDF	0.171 ng/Kg	0.171U ng/Kg
SL-693-SA5B-TR-5.0(RES)	1,2,3,7,8-PECDF	0.139 ng/Kg	0.139U ng/Kg
SL-693-SA5B-TR-5.0(RES)	2,3,4,6,7,8-HXCDF	0.0344 ng/Kg	0.0344U ng/Kg
SL-693-SA5B-TR-5.0(RES)	2,3,4,7,8-PECDF	0.0216 ng/Kg	0.0216U ng/Kg
SL-693-SA5B-TR-5.0(RES)	OCDF	0.516 ng/Kg	0.516U ng/Kg
SL-707-SA5B-TR-3.0(RES)	1,2,3,4,7,8,9-HPCDF	0.196 ng/Kg	0.196U ng/Kg
SL-707-SA5B-TR-3.0(RES)	1,2,3,4,7,8-HxCDD	0.111 ng/Kg	0.111U ng/Kg
SL-707-SA5B-TR-3.0(RES)	1,2,3,6,7,8-HXCDF	0.0699 ng/Kg	0.0699U ng/Kg
SL-707-SA5B-TR-3.0(RES)	1,2,3,7,8,9-HXCDF	0.0833 ng/Kg	0.0833U ng/Kg
SL-707-SA5B-TR-3.0(RES)	1,2,3,7,8-PECDF	0.0652 ng/Kg	0.0652U ng/Kg
SL-707-SA5B-TR-3.0(RES)	2,3,4,7,8-PECDF	0.0696 ng/Kg	0.0696U ng/Kg

Method Blank Outlier Report

Lab Reporting Batch ID: PH201 **Laboratory: LL**

EDD Filename: PH201_v2. **eQAPP Name: CDM_SSFL_140617_Lan**

Method: 6010C
Matrix: SO

Method Blank Sample ID	Analysis Date	Analyte	Result	Associated Samples
P14937AB220850	6/2/2014 8:50:00 AM	ALUMINUM	7.59 mg/Kg	SL-693-SA5B-TR-0.5
		BERYLLIUM	0.0890 mg/Kg	SL-693-SA5B-TR-3.5
		BORON	1.60 mg/Kg	SL-693-SA5B-TR-5.0
		CALCIUM	21.3 mg/Kg	SL-707-SA5B-TR-0.5
		TIN	1.59 mg/Kg	SL-707-SA5B-TR-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
SL-693-SA5B-TR-0.5(RES)	BORON	5.59 mg/Kg	5.59U mg/Kg
SL-693-SA5B-TR-0.5(RES)	TIN	3.12 mg/Kg	3.12U mg/Kg
SL-693-SA5B-TR-3.5(RES)	BORON	6.43 mg/Kg	6.43U mg/Kg
SL-693-SA5B-TR-3.5(RES)	TIN	3.28 mg/Kg	3.28U mg/Kg
SL-693-SA5B-TR-5.0(RES)	BORON	4.81 mg/Kg	4.81U mg/Kg
SL-693-SA5B-TR-5.0(RES)	TIN	2.97 mg/Kg	2.97U mg/Kg
SL-707-SA5B-TR-0.5(RES)	BORON	5.48 mg/Kg	5.48U mg/Kg
SL-707-SA5B-TR-0.5(RES)	TIN	2.96 mg/Kg	2.96U mg/Kg
SL-707-SA5B-TR-3.0(RES)	BORON	5.41 mg/Kg	5.41U mg/Kg
SL-707-SA5B-TR-3.0(RES)	TIN	3.08 mg/Kg	3.08U mg/Kg

Method: 6020A
Matrix: SO

Method Blank Sample ID	Analysis Date	Analyte	Result	Associated Samples
P14937AB221403A	6/2/2014 2:03:00 PM	STRONTIUM	0.103 mg/Kg	SL-693-SA5B-TR-0.5 SL-693-SA5B-TR-3.5 SL-693-SA5B-TR-5.0 SL-707-SA5B-TR-0.5 SL-707-SA5B-TR-3.0

Equipment Rinsate Blank Outlier Report

Lab Reporting Batch ID: PH201 **Laboratory: LL**

EDD Filename: PrepPH201_v2 **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-693-SA5B-TR-0.5 SL-693-SA5B-TR-3.5 SL-693-SA5B-TR-5.0 SL-707-SA5B-TR-0.5 SL-707-SA5B-TR-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
SL-693-SA5B-TR-0.5(RES)	MOLYBDENUM	0.427 mg/Kg	0.427U mg/Kg
SL-693-SA5B-TR-3.5(RES)	MOLYBDENUM	0.388 mg/Kg	0.388U mg/Kg
SL-707-SA5B-TR-0.5(RES)	MOLYBDENUM	0.457 mg/Kg	0.457U mg/Kg
SL-707-SA5B-TR-3.0(RES)	MOLYBDENUM	0.352 mg/Kg	0.352U mg/Kg

Field Blank Outlier Report

Lab Reporting Batch ID: PH201 **Laboratory: LL**

EDD Filename: PH201_v2. **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-693-SA5B-TR-0.5 SL-693-SA5B-TR-3.5 SL-693-SA5B-TR-5.0 SL-707-SA5B-TR-0.5 SL-707-SA5B-TR-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
SL-693-SA5B-TR-0.5(RES)	Zirconium	4.24 mg/Kg	4.24U mg/Kg
SL-693-SA5B-TR-3.5(RES)	Zirconium	4.88 mg/Kg	4.88U mg/Kg
SL-693-SA5B-TR-5.0(RES)	Zirconium	4.46 mg/Kg	4.46U mg/Kg
SL-707-SA5B-TR-0.5(RES)	Zirconium	4.75 mg/Kg	4.75U mg/Kg
SL-707-SA5B-TR-3.0(RES)	Zirconium	4.29 mg/Kg	4.29U mg/Kg

Surrogate Outlier Report

Lab Reporting Batch ID: PH201 **Laboratory: LL**

EDD Filename: PH201_v2. **eQAPP Name: CDM_SSFL_140617_Lan**

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

Sample ID (Analysis Type)	*Surrogate*	*Sample % Recovery*	*% Recovery Limits*	*Affected Compounds*	*Flag*
SL-693-SA5B-TR-0.5 (REA)	O-TERPHENYL	62	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: PH201 **Laboratory: LL**

EDD Filename: PrepPH201_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-693-SA5B-TR-0.5 SL -693-SA5B-TR-3.5 SL -693-SA5B-TR-5.0 SL -707-SA5B-TR-0.5 SL -707-SA5B-TR-3.0)	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-693-SA5B-TR-0.5 SL -693-SA5B-TR-3.5 SL -693-SA5B-TR-5.0 SL -707-SA5B-TR-0.5 SL -707-SA5B-TR-3.0)	BENZO(E)PYRENE	79	-	81.00-110.00	-	BENZO(E)PYRENE	 J(all detects) UJ(all non-detects)

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

Reporting Limit Outliers

Lab Reporting Batch ID: PH201 **Laboratory: LL**

EDD Filename: PH201_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-0.5	1,2,3,4,6,7,8-HPCDF	JB	2.17	4.95	PQL	ng/Kg	
	1,2,3,4,7,8,9-HPCDF	JB	0.200	4.95	PQL	ng/Kg	
	1,2,3,4,7,8-HxCDD	JB	0.137	4.95	PQL	ng/Kg	
	1,2,3,4,7,8-HXCDF	JBQ	0.100	4.95	PQL	ng/Kg	
	1,2,3,6,7,8-HXCDD	JQ	0.572	4.95	PQL	ng/Kg	
	1,2,3,6,7,8-HXCDF	JB	0.190	4.95	PQL	ng/Kg	
	1,2,3,7,8,9-HXCDD	J	0.665	4.95	PQL	ng/Kg	J (all detects)
	1,2,3,7,8,9-HXCDF	JBQ	0.450	4.95	PQL	ng/Kg	
	1,2,3,7,8-PECDD	JQ	0.126	4.95	PQL	ng/Kg	
	1,2,3,7,8-PECDF	JB	0.243	4.95	PQL	ng/Kg	
	2,3,4,6,7,8-HXCDF	JBQ	0.157	4.95	PQL	ng/Kg	
	2,3,4,7,8-PECDF	JBQ	0.0787	4.95	PQL	ng/Kg	
	OCDF	JB	5.75	9.91	PQL	ng/Kg	
SL-693-SA5B-TR-3.5	1,2,3,4,6,7,8-HPCDD	JB	0.195	5.11	PQL	ng/Kg	
	1,2,3,4,6,7,8-HPCDF	JBQ	0.0703	5.11	PQL	ng/Kg	
	1,2,3,4,7,8-HXCDF	JBQ	0.0232	5.11	PQL	ng/Kg	
	1,2,3,6,7,8-HXCDD	JQ	0.0540	5.11	PQL	ng/Kg	
	1,2,3,6,7,8-HXCDF	JB	0.0263	5.11	PQL	ng/Kg	J (all detects)
	1,2,3,7,8,9-HXCDD	JQ	0.0802	5.11	PQL	ng/Kg	
	1,2,3,7,8,9-HXCDF	JBQ	0.0626	5.11	PQL	ng/Kg	
	OCDD	JB	1.70	10.2	PQL	ng/Kg	
	OCDF	JBQ	0.177	10.2	PQL	ng/Kg	
SL-693-SA5B-TR-5.0	1,2,3,4,6,7,8-HPCDD	JBQ	0.885	5.21	PQL	ng/Kg	
	1,2,3,4,6,7,8-HPCDF	JB	0.210	5.21	PQL	ng/Kg	
	1,2,3,4,7,8,9-HPCDF	JB	0.0351	5.21	PQL	ng/Kg	
	1,2,3,4,7,8-HXCDF	JBQ	0.0383	5.21	PQL	ng/Kg	
	1,2,3,6,7,8-HXCDD	J	0.103	5.21	PQL	ng/Kg	
	1,2,3,6,7,8-HXCDF	JB	0.0504	5.21	PQL	ng/Kg	
	1,2,3,7,8,9-HXCDD	J	0.178	5.21	PQL	ng/Kg	J (all detects)
	1,2,3,7,8,9-HXCDF	JBQ	0.171	5.21	PQL	ng/Kg	
	1,2,3,7,8-PECDD	JQ	0.0450	5.21	PQL	ng/Kg	
	1,2,3,7,8-PECDF	JB	0.139	5.21	PQL	ng/Kg	
	2,3,4,6,7,8-HXCDF	JBQ	0.0344	5.21	PQL	ng/Kg	
	2,3,4,7,8-PECDF	JB	0.0216	5.21	PQL	ng/Kg	
	OCDD	JB	7.98	10.4	PQL	ng/Kg	
	OCDF	JB	0.516	10.4	PQL	ng/Kg	
SL-707-SA5B-TR-0.5	1,2,3,4,7,8,9-HPCDF	JB	3.83	4.99	PQL	ng/Kg	
	1,2,3,4,7,8-HxCDD	JB	3.45	4.99	PQL	ng/Kg	
	1,2,3,4,7,8-HXCDF	JB	2.09	4.99	PQL	ng/Kg	
	1,2,3,6,7,8-HXCDF	JB	1.66	4.99	PQL	ng/Kg	
	1,2,3,7,8,9-HXCDF	JB	0.839	4.99	PQL	ng/Kg	
	1,2,3,7,8-PECDD	J	1.88	4.99	PQL	ng/Kg	J (all detects)
	1,2,3,7,8-PECDF	JB	0.381	4.99	PQL	ng/Kg	
	2,3,4,6,7,8-HXCDF	JB	2.32	4.99	PQL	ng/Kg	
	2,3,4,7,8-PECDF	JBQ	0.580	4.99	PQL	ng/Kg	
	2,3,7,8-TCDD	J	0.179	0.998	PQL	ng/Kg	
	2,3,7,8-TCDF	JQ	0.101	0.998	PQL	ng/Kg	

Reporting Limit Outliers

Lab Reporting Batch ID: PH201 **Laboratory: LL**

EDD Filename: PH201_v2. **eQAPP Name: CDM_SSFL_140617_Lan**

Method: 1613B

Matrix: SO

SampleID	Analyte	Lab Qual	Result	Reporting Limit	RL Type	Units	Flag
SL-707-SA5B-TR-3.0	1,2,3,4,6,7,8-HPCDF	JB	2.55	5.09	PQL	ng/Kg	J (all detects)
	1,2,3,4,7,8,9-HPCDF	JBQ	0.196	5.09	PQL	ng/Kg	
	1,2,3,4,7,8-HxCDD	JBQ	0.111	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	J	0.389	5.09	PQL	ng/Kg	
	1,2,3,6,7,8-HXCDF	JBQ	0.0699	5.09	PQL	ng/Kg	
	1,2,3,7,8,9-HXCDD	J	0.313	5.09	PQL	ng/Kg	
	1,2,3,7,8,9-HXCDF	JBQ	0.0833	5.09	PQL	ng/Kg	
	1,2,3,7,8-PECDF	JB	0.0652	5.09	PQL	ng/Kg	
	2,3,4,6,7,8-HXCDF	JBQ	0.134	5.09	PQL	ng/Kg	
	2,3,4,7,8-PECDF	JBQ	0.0696	5.09	PQL	ng/Kg	
	OCDF	JB	9.89	10.2	PQL	ng/Kg	

Method: 6010C

Matrix: SO

SampleID	Analyte	Lab Qual	Result	Reporting Limit	RL Type	Units	Flag
SL-693-SA5B-TR-0.5	BERYLLIUM	J	0.909	0.998	PQL	mg/Kg	J (all detects)
	BORON	J	5.59	9.98	PQL	mg/Kg	
	CADMIUM	J	0.324	0.998	PQL	mg/Kg	
	MOLYBDENUM	J	0.427	2.00	PQL	mg/Kg	
	SODIUM	J	93.0	99.8	PQL	mg/Kg	
	TIN	J	3.12	9.98	PQL	mg/Kg	
	Zirconium	J	4.24	4.99	PQL	mg/Kg	
SL-693-SA5B-TR-3.5	BORON	J	6.43	10.2	PQL	mg/Kg	J (all detects)
	CADMIUM	J	0.178	1.02	PQL	mg/Kg	
	MOLYBDENUM	J	0.388	2.04	PQL	mg/Kg	
	TIN	J	3.28	10.2	PQL	mg/Kg	
	Zirconium	J	4.88	5.10	PQL	mg/Kg	
SL-693-SA5B-TR-5.0	BERYLLIUM	J	0.898	1.03	PQL	mg/Kg	J (all detects)
	BORON	J	4.81	10.3	PQL	mg/Kg	
	CADMIUM	J	0.128	1.03	PQL	mg/Kg	
	MOLYBDENUM	J	0.347	2.05	PQL	mg/Kg	
	TIN	J	2.97	10.3	PQL	mg/Kg	
	Zirconium	J	4.46	5.14	PQL	mg/Kg	
SL-707-SA5B-TR-0.5	BERYLLIUM	J	0.825	0.983	PQL	mg/Kg	J (all detects)
	BORON	J	5.48	9.83	PQL	mg/Kg	
	CADMIUM	J	0.240	0.983	PQL	mg/Kg	
	MOLYBDENUM	J	0.457	1.97	PQL	mg/Kg	
	SODIUM	J	97.2	98.3	PQL	mg/Kg	
	TIN	J	2.96	9.83	PQL	mg/Kg	
	Zirconium	J	4.75	4.91	PQL	mg/Kg	
SL-707-SA5B-TR-3.0	BERYLLIUM	J	0.987	0.997	PQL	mg/Kg	J (all detects)
	BORON	J	5.41	9.97	PQL	mg/Kg	
	CADMIUM	J	0.128	0.997	PQL	mg/Kg	
	MOLYBDENUM	J	0.352	1.99	PQL	mg/Kg	
	TIN	J	3.08	9.97	PQL	mg/Kg	
	Zirconium	J	4.29	4.99	PQL	mg/Kg	

Reporting Limit Outliers

Lab Reporting Batch ID: PH201 **Laboratory: LL**

EDD Filename: PH201_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-0.5	SELENIUM	J	0.389	0.399	PQL	mg/Kg	J (all detects)
	SILVER	J	0.0459	0.200	PQL	mg/Kg	
SL-693-SA5B-TR-3.5	SELENIUM	J	0.267	0.408	PQL	mg/Kg	J (all detects)
	SILVER	J	0.0610	0.204	PQL	mg/Kg	
SL-693-SA5B-TR-5.0	SELENIUM	J	0.273	0.411	PQL	mg/Kg	J (all detects)
	SILVER	J	0.0448	0.205	PQL	mg/Kg	
SL-707-SA5B-TR-0.5	SELENIUM	J	0.274	0.393	PQL	mg/Kg	J (all detects)
SL-707-SA5B-TR-3.0	SELENIUM	J	0.272	0.399	PQL	mg/Kg	J (all detects)
	SILVER	J	0.0347	0.199	PQL	mg/Kg	

Method: 8015M

Matrix: SO

SampleID	Analyte	Lab Qual	Result	Reporting Limit	RL Type	Units	Flag
SL-693-SA5B-TR-5.0	EFH (C21-C30)	J	5.0	5.3	PQL	mg/Kg	J (all detects)
SL-707-SA5B-TR-3.0	EFH (C21-C30)	J	3.2	5.2	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-0.5	4,4'-DDT	J	0.40	1.7	PQL	ug/Kg	J (all detects)
SL-707-SA5B-TR-0.5	4,4'-DDD	J	1.4	1.7	PQL	ug/Kg	J (all detects)
	4,4'-DDT	J	45	86	PQL	ug/Kg	
	ENDOSULFAN II	J	0.56	1.7	PQL	ug/Kg	
	ENDRIN KETONE	J	0.92	1.8	PQL	ug/Kg	
SL-707-SA5B-TR-3.0	4,4'-DDT	J	1.1	1.8	PQL	ug/Kg	J (all detects)

Method: 8270D SIM

Matrix: SO

SampleID	Analyte	Lab Qual	Result	Reporting Limit	RL Type	Units	Flag
SL-693-SA5B-TR-0.5	BENZO(B)FLUORANTHENE	J	1.0	1.7	PQL	ug/Kg	J (all detects)
	CHRYSENE	J	1.3	1.7	PQL	ug/Kg	
	FLUORANTHENE	J	1.1	1.7	PQL	ug/Kg	
	NAPHTHALENE	J	0.73	1.7	PQL	ug/Kg	
	PYRENE	J	0.81	1.7	PQL	ug/Kg	
SL-693-SA5B-TR-5.0	CHRYSENE	J	0.68	1.8	PQL	ug/Kg	J (all detects)
	FLUORANTHENE	J	0.82	1.8	PQL	ug/Kg	
	PYRENE	J	0.71	1.8	PQL	ug/Kg	

Reporting Limit Outliers

Lab Reporting Batch ID: PH201 **Laboratory: LL**

EDD Filename: PH201_v2. **eQAPP Name: CDM_SSFL_140617_Lan**

Method: **8270D SIM**

Matrix: **SO**

SampleID	*Analyte*	*Lab Qual*	*Result*	*Reporting Limit*	*RL Type*	*Units*	*Flag*
SL-707-SA5B-TR-0.5	1-METHYLNAPHTHALENE	J	0.92	1.7	PQL	ug/Kg	J (all detects)
	BENZO(A)ANTHRACENE	J	0.71	1.7	PQL	ug/Kg	
	NAPHTHALENE	J	1.4	1.7	PQL	ug/Kg	
SL-707-SA5B-TR-3.0	1-METHYLNAPHTHALENE	J	1.0	1.7	PQL	ug/Kg	J (all detects)
	2-METHYLNAPHTHALENE	J	1.3	1.7	PQL	ug/Kg	

LDC #: 32095C4 **VALIDATION COMPLETENESS WORKSHEET** Date: 7/8/14

SDG #: PH201 ADR Page: 1 of 1

Laboratory: Eurofins Lancaster Laboratories Reviewer: KL

2nd Reviewer: a

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

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: 5/27/14
II.	ICP/MS Tune	N	
III.	Calibration	~~SW~~ —	
IV.	Blanks	A	~~CCB hits, no quals~~ APL 7-9-14
V.	ICP Interference Check Sample (ICS) Analysis	~~A~~	
VI.	Matrix Spike Analysis	N	MS/D
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	
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-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: 501

1	SL-707-SA5B-TR-0.5	11		21		31	
2	SL-707-SA5B-TR-3.0	12		22		32	
3	SL-693-SA5B-TR-0.5	13		23		33	
4	SL-693-SA5B-TR-3.5	14		24		34	
5	SL-693-SA5B-TR-5.0	15		25		35	
6	SL-707-SA5B-TR-3.0 MS	16		26		36	
7	SL-707-SA5B-TR-3.0 MSD	17		27		37	
8	SL-707-SA5B-TR-3.0 DUP	18		28		38	
9		19		29		39	
10		20		30		40	

Notes: _____

LDC #: 32095C4

VALIDATION FINDINGS WORKSHEET
Sample Specific Element Reference

Reviewer: KK
2nd reviewer: a

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
QC6-8	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
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 #: 32095C4

VALIDATION FINDINGS WORKSHEET
Field Blanks

Reviewer: KK
2nd Reviewer: CR

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

Blank units: mg/L **Associated sample units:** mg/kg
Sampling date: 5/27/14 and 5/29/14 Soil factor applied: 100
Field blank type: (circle one) Field Blank / Rinsate / Other: EB Associated Samples: All

Analyte	EB	FB	Sample Identification								
	EB1-052914 SDG#PH207	FB-052114 SDG#PH191	Action Limit	1	2	3	4	5			
Zr		0.0110	5.50	4.75	4.29	4.24	4.88	4.46			
Ca	0.108		54								
Mg	0.0252		12.6								
Mo	0.0054		2.70	0.457 ~~0.46~~	0.352	0.427 ~~0.43~~	0.388 ~~0.39~~	0.347 ~~0.35~~			
Sr	0.00042		0.21								

APL 7/29/14

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".

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 4, 2014

SUBJECT: Santa Susana Field Laboratory, SVL, Data Validation

Dear Mrs. Zakowski,

Enclosed are the final validation reports for the fraction 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 #32177:

SDG #	Fraction
PH216, PH219, PH222 PH223, PH226, PH228 PH230	Volatiles

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
- 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

953 pages-CD

Attachment 1

90/10 ADR/IV

LDC #32177 (CDM Federal Programs-Chantilly VA / Santa Susana Field Laboratory, SVL)

LDC	SDG#	DATE REC'D	(4) DATE DUE	VOA (8260B)																																	
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	PH216	07/11/14	08/08/14	5	7																																
B	PH219	07/11/14	08/08/14	1	3																																
C	PH222	07/11/14	08/08/14	1	1																																
D	PH223	07/11/14	08/08/14	1	4																																
E	PH226	07/11/14	08/08/14	1	4																																
F	PH228	07/11/14	08/08/14	5	4																																
G	PH230	07/11/14	08/08/14	1	3																																
Total	T/SM			15	26	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	41

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 SVL

SDG: PH216

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

July 30, 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). 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

The sample identification and methods of analyses performed on each sample is presented in Attachment 1. Please note that some sample names 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, 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). 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

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 pair for 2-Chloro-1,1,1-trifluoroethane. No data were qualified for due to high %Rs since the associated results were non-detected.

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.

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 PH216	All compounds reported as detected below the RL.	J (all detects)	A

XI. Field Duplicate Samples

One field duplicate pair was collected and analyzed for VOCs. No VOCs were detected in the field duplicates.

XII. Field Blank Samples

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

Four equipment blanks were collected and analyzed for VOCs. No contaminant concentrations were found in the equipment blank.

One field blank (from SDG PH176) was collected and analyzed for VOCs. 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
04-Jun-2014	EB1-060414	7488107	EB	5030B	8260B	III
04-Jun-2014	EB4-060414	7488109	EB	5030B	8260B	III
04-Jun-2014	EB2-060414	7488108	EB	5030B	8260B	III
04-Jun-2014	EB5-060414	7488110	EB	5030B	8260B	III
04-Jun-2014	TB3-060414	7488097	TB	5030B	8260B	III
04-Jun-2014	SVL-577-SA5B-SB-5.3-5.8	7488098	N	5035A	8260B	III
04-Jun-2014	586-SA5B-SB-3.75-4.25	7488099	N	5035A	8260B	III
04-Jun-2014	586-SA5B-SB-3.75-4.25MS	7488100	MS	5035A	8260B	III
04-Jun-2014	586-SA5B-SB-3.75-4.25MSD	7488101	MSD	5035A	8260B	III
04-Jun-2014	SVL-986-SA5B-SB-3.75-4.25	7488102	FD	5035A	8260B	III
04-Jun-2014	SVL-576-SA5A-SB-2.5-3.0	7488103	N	5035A	8260B	III
04-Jun-2014	SVL-574-SA5A-SB-1.5-2.0	7488105	N	5035A	8260B	III
04-Jun-2014	SVL-571-SA5A-SB-2.5-3.0	7488104	N	5035A	8260B	III
04-Jun-2014	SVL-566-SA5A-SB-3.0-3.5	7488106	N	5035A	8260B	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: PH216 **Laboratory: LL**

EDD Filename: PH216_v1 **eQAPP Name: CDM_SSFL_140617_Lan**

No Data Review Qualifiers Applied.

Enclosure I

Level III ADR Outliers

Quality Control
Outlier Reports

PH216

Matrix Spike/Matrix Spike Duplicate Outlier Report

Lab Reporting Batch ID: PH216 **Laboratory: LL**

EDD Filename: PH216_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*
SVL-586-SA5B-SB-3.75-4.25MSD (SVL-586-SA5B-SB-3.75-4.25)	2-Chloro-1,1,1-trifluoroethane	-	132	61.00-131.00	-	2-Chloro-1,1,1-trifluoroethane	J (all detects)

Data Validation Report
Santa Susana Field Laboratory

Go Backs, Subgroup SVL

SDG: PH219

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

July 30, 2014

INTRODUCTION

This Data Validation Report (DVR) presents Level IV data validation results for samples collected on June 5, 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:

Volatiles (VOCs) by Environmental Protection Agency (EPA) SW 846 Method 8260B

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. 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 IV data validation, which comprises an evaluation of quality control (QC) summary results for sample holding times, initial and continuing calibrations, surrogates, internal standards, 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 and internal standards, which were reviewed 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

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.

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.

IX. Internal Standards

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

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 PH219	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 VOCs. No contaminant concentrations were found in the trip blank.

One equipment blank (from SDG PH216) was collected and analyzed for VOCs. No contaminant concentrations were found in the equipment blank.

One field blank (from SDG PH176) was collected and analyzed for VOCs. No contaminant concentrations were found in the field blank.

XIII. 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. All data are deemed useable for the intended use.

Attachment 1

Sample Cross Reference

Sample Cross Reference

Date Collected	Field Sample ID	Lab Sample ID	Sample Type	Prep Method	Analytical Method	Review Level
05-Jun-2014	TB2-060514	7489860	TB	5030B	8260B	IV
05-Jun-2014	SVL-552-SA5A-SB-1.5-2.0	7489861	N	5035A	8260B	IV
05-Jun-2014	SVL-554-SA5A-SB-1.5-2.0	7489862	N	5035A	8260B	IV
05-Jun-2014	SVL-529-SA5A-SB-4.0-4.5	7489863	N	5035A	8260B	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: PH219 **Laboratory: LL**

EDD Filename: PH219_v1 **eQAPP Name: CDM_SSFL_140617_Lan**

No Data Review Qualifiers Applied.

Enclosure I

Level III ADR Outliers

Quality Control Outlier Reports

PH219

(No Outliers)

Enclosure II

Level IV Data Validation Reports

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: Santa Susana Field Laboratory

Collection Date: June 5, 2014

LDC Report Date: August 3, 2014

Matrix: Soil/Water

Parameters: Volatiles

Validation Level: Level IV

Laboratory: Eurofins

Sample Delivery Group (SDG): PH219

Sample Identification

TB2-060514
SVL-552-SA5A-SB-1.5-2.0
SVL-554-SA5A-SB-1.5-2.0
SVL-529-SA5A-SB-4.0-4.5

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 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.

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.

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 volatile contaminants were found in the method blanks.

Sample TB2-060514 was identified as a trip blank. No volatile contaminants were found.

Sample EB1-060414 (from SDG PH216) was identified as an equipment blank. No volatile contaminants were found.

Sample FB-051314 (from SDG PH176) was identified as a field blank. No volatile 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. 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 PH219	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
Volatiles - Data Qualification Summary - SDG PH219

SDG	Sample	Compound	Flag	A or P	Reason (Code)
PH219	TB2-060514 SVL-552-SA5A-SB-1.5-2.0 SVL-554-SA5A-SB-1.5-2.0 SVL-529-SA5A-SB-4.0-4.5	All compounds reported below the RL.	J (all detects)	A	Compound quantitation (Z)

Santa Susana Field Laboratory
Volatiles - Laboratory Blank Data Qualification Summary - SDG PH219

No Sample Data Qualified in this SDG

Santa Susana Field Laboratory
Volatiles - Field Blank Data Qualification Summary - SDG PH219

No Sample Data Qualified in this SDG

LDC #: 32177B1a **VALIDATION COMPLETENESS WORKSHEET** Date: 7/24/14
SDG #: PH219 Level IV Page: 1 of 1
Laboratory: Eurofins Lancaster Laboratories 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: 6/5/14
II.	GC/MS Instrument performance check	A	
III.	Initial calibration	A	RSD ≤ 30%, r^2
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	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	N	
XVII.	Field blanks	ND	TB = 1 EB = EB1-060414 (SDG # PH216) FB = FB-051314 (SDG # PH176)

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	TB2-060514	11		21		31	VBLKY54
2	SVL-552-SA5A-SB-1.5-2.0	12		22		32	VBLKB82
3	SVL-554-SA5A-SB-1.5-2.0	13		23		33	
4	SVL-529-SA5A-SB-4.0-4.5	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 #: 32177B1a

VALIDATION FINDINGS CHECKLIST

Reviewer: KR
2nd Reviewer: CM

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 FINDINGS CHECKLIST

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 # 32177B1a

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:

$RRF = (A_x)(C_{is})/(A_{is})(C_x)$

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 (300 std)	Recalculated RRF (300 std)	Reported Average RRF (Initial)	Recalculated Average RRF (Initial)	Reported %RSD	Recalculated %RSD
1	ICAL HP09953	6/4/2014	Vinyl acetate (IS1)	0.2664	0.2664	0.2607	0.2607	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 # 32177B1a

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:

$RRF = (A_x)(C_{is})/(A_{is})(C_x)$ — 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	6/3/2014	tert-Butyl alcohol (IS1)	1.0694	1.0694	1.1390	1.1390	10	10
	HP09953		Trichloroethene (IS2)	0.2701	0.2701	0.2659	0.2659	6	6
			Tetrachloroethene (IS3)	0.4433	0.4433	0.4293	0.4294	6	6.5
			1,1,2,2-Tetrachloroethane (IS4)	0.6798	0.6798	0.6837	0.6837	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 # 32177B1a

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 (100 std)	Recalculated RRF (100 std)	Reported Average RRF (Initial)	Recalculated Average RRF (Initial)	Reported %RSD	Recalculated %RSD
1	ICAL HP09355	5/19/2014	tert-Butyl alcohol (IS1)	1.4155	1.4155	1.4269	1.4269	4	4
			Trichloroethene (IS2)	0.3206	0.3206	0.3112	0.3112	8	8
			Tetrachloroethene (IS3)	0.4916	0.4916	0.4899	0.4900	9	9
			1,1,2,2-Tetrachloroethane (IS4)	1.3664	1.3664	1.3609	1.3609	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 # 32177B1a

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 (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#: 32177B1a

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	bu10c05	6/10/2014	tert-Butyl alcohol (IS1)	1.1390	1.1016	1.1016	3	3
			Trichloroethene (IS2)	0.2659	0.2866	0.2866	8	8
			Tetrachloroethene (IS3)	0.4293	0.4550	0.4550	6	6
			1,1,2,2-Tetrachloroethane (IS4	0.6837	0.7166	0.7166	5	5
2	bu10c06	6/10/2014	Vinyl acetate (IS1)	0.2607	0.2676	0.2676	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#: 32177B1a

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	yu11c01	6/11/2014	tert-Butyl alcohol (IS1)	1.4269	1.4223	1.4223	0	0
			Trichloroethene (IS2)	0.3112	0.3144	0.3144	1	1
			Tetrachloroethene (IS3)	0.4899	0.5030	0.5030	3	3
			1,1,2,2-Tetrachloroethane (IS4)	1.3609	1.2480	1.2480	8	8
2	yu11c02	6/11/2014	Vinyl acetate (IS1)	0.6990	0.6888	0.6888	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 #: 32177B4

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	50.00	50.595	101	101	0
1,2-Dichloroethane-d4		49.721	99	99	0
Toluene-d8		48.423	97	97	0
Bromofluorobenzene		47.338	95	95	0

Sample ID: 2

	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
Dibromofluoromethane	50.00	54.098	108	108	0
1,2-Dichloroethane-d4		52.388	105	105	0
Toluene-d8		49.487	99	99	0
Bromofluorobenzene		46.830	94	94	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 #: 32177B1a

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: LCS882

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
1,1-Dichloroethene	20	—	23.16	—	116	116				
Trichloroethene	↓	↓	21.59	↓	108	108				
Benzene			21.19		106	106				
Toluene			20.44		102	102				
Chlorobenzene			20.75		104	104				

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 #: 32177BK

VALIDATION FINDINGS WORKSHEET
Sample Calculation Verification

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

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. A11, ND:

LCSB82: S = 21.59 ug/kg

Conc. = $\frac{(1187370)(50)(5)}{(1033990)(0.2659)(5)}$

= 21.59341842 ug/kg

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

Data Validation Report
Santa Susana Field Laboratory

Go Backs, Subgroup SVL

SDG: PH222

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

July 30, 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:

Volatiles (VOCs) by Environmental Protection Agency (EPA) SW 846 Method 8260B

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.

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 PH222	All compounds reported as detected below the RL.	J (all detects)	A

XI. Field Duplicate Samples

No field duplicate samples were identified in this SDG.

XII. Field Blank Samples

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

One equipment blank (from SDG PH216) was collected and analyzed for VOCs. No contaminant concentrations were found in the equipment blank.

One field blank (from SDG PH176) was collected and analyzed for VOCs. 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	TB2-060614	7491488	TB	5030B	8260B	III
06-Jun-2014	SVL-627-SA5A-SB-3.0-3.5	7491489	N	5035A	8260B	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: PH222 **Laboratory: LL**

EDD Filename: PH222_v1 **eQAPP Name: CDM_SSFL_140617_Lan**

Method Category: **VOA**

Method: **8260B** ***Matrix:*** **SO**

Sample ID: **SVL-627-SA5A-SB-3.0-3.5** ***Collected:*** **6/6/2014 9:13:00 AM** ***Analysis Type:*** **RES** ***Dilution:*** **1.04**

Analyte	*Lab Result*	*Lab Qual*	*DL*	*DL Type*	*RL*	*RL Type*	*Units*	*Data Review Qual*	*Reason Code*
ACETONE	16	J	8	MDL	22	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: PH222 **Laboratory: LL**

EDD Filename: PH222_v1 **eQAPP Name: CDM_SSFL_140617_Lan**

Reason Code Legend

Reason Code	*Description*
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

PH222

Reporting Limit Outliers

Lab Reporting Batch ID: PH222 **Laboratory: LL**

EDD Filename: PH222_v1 **eQAPP Name: CDM_SSFL_140617_Lan**

Method: **8260B**

Matrix: **SO**

SampleID	*Analyte*	*Lab Qual*	*Result*	*Reporting Limit*	*RL Type*	*Units*	*Flag*
SVL-627-SA5A-SB-3.0-3.5	ACETONE	J	16	22	PQL	ug/Kg	J (all detects)

Data Validation Report
Santa Susana Field Laboratory

Go Backs, Subgroup SVL

SDG: PH223

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

July 30, 2014

INTRODUCTION

This Data Validation Report (DVR) presents Level III 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). 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

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.

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 PH223	All compounds reported as detected below the RL.	J (all detects)	A

XI. Field Duplicate Samples

No field duplicate samples were identified in this SDG.

XII. Field Blank Samples

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

Two equipment blanks (from SDG PH228) were collected and analyzed for VOCs. The equipment blanks had detections for methylene chloride. The associated sample results were not detected or were significantly greater than the concentrations found in the equipment blanks, therefore no data were qualified.

One field blank (from SDG PH176) was collected and analyzed for VOCs. 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
09-Jun-2014	TB-060914	7492845	TB	5030B	8260B	III
09-Jun-2014	SVL-611-SA5A-SB-1.35-1.85	7492844	N	5035A	8260B	III
09-Jun-2014	SVL-527-SA6-SB-2.0-3.0	7492846	N	5035A	8260B	III
09-Jun-2014	SVL-630-SA5A-SB-1.5-2.0	7492848	N	5035A	8260B	III
09-Jun-2014	SVL-574-SA6-SB-3.8-4.3	7492847	N	5035A	8260B	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: PH223 **Laboratory: LL**

EDD Filename: PH223_v1 **eQAPP Name: CDM_SSFL_140617_Lan**

Method Category: **VOA**

Method: **8260B** ***Matrix:*** **SO**

Sample ID: **SVL-574-SA6-SB-3.8-4.3** ***Collected:*** **6/9/2014 2:48:00 PM** ***Analysis Type:*** **RES** ***Dilution:*** **0.96**

Analyte	*Lab Result*	*Lab Qual*	*DL*	*DL Type*	*RL*	*RL Type*	*Units*	*Data Review Qual*	*Reason Code*
ACETONE	11	J	7	MDL	20	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: PH223 **Laboratory: LL**

EDD Filename: PH223_v1 **eQAPP Name: CDM_SSFL_140617_Lan**

Reason Code Legend

Reason Code	*Description*
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

PH223

Reporting Limit Outliers

Lab Reporting Batch ID: PH223 **Laboratory: LL**

EDD Filename: PH223_v1 **eQAPP Name: CDM_SSFL_140617_Lan**

Method: **8260B**

Matrix: **SO**

SampleID	*Analyte*	*Lab Qual*	*Result*	*Reporting Limit*	*RL Type*	*Units*	*Flag*
SVL-574-SA6-SB-3.8-4.3	ACETONE	J	11	20	PQL	ug/Kg	J (all detects)

Data Validation Report
Santa Susana Field Laboratory

Go Backs, Subgroup SVL

SDG: PH226

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

July 30, 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). 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

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.

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 PH226	All compounds reported as detected below the RL.	J (all detects)	A

XI. Field Duplicate Samples

No field duplicate samples were identified in this SDG.

XII. Field Blank Samples

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

Two equipment blanks (from SDG PH228) were collected and analyzed for VOCs. The equipment blanks had detections for methylene chloride. The associated sample results were not detected or were significantly greater than the concentrations found in the equipment blanks, therefore no data were qualified.

One field blank (from SDG PH176) was collected and analyzed for VOCs. No contaminant concentrations were found in the field blank.

XIII. 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. All data are deemed useable for the intended use.

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	TB2-061014	7494355	TB	5030B	8260B	III
10-Jun-2014	SVL-551-SA6-SB-4.0-5.0	7494356	N	5035A	8260B	III
10-Jun-2014	SVL-561-SA5C-SB-10.5-11.0	7494359	N	5035A	8260B	III
10-Jun-2014	SVL-549-SA5C-SB-6.3-6.8	7494358	N	5035A	8260B	III
10-Jun-2014	SVL-562-SA5B-SB-8.0-9.0	7494357	N	5035A	8260B	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: PH226 **Laboratory: LL**

EDD Filename: PH226_v1 **eQAPP Name: CDM_SSFL_140617_Lan**

No Data Review Qualifiers Applied.

Enclosure I

Level III ADR Outliers

Quality Control Outlier Reports

PH226

(No Outliers)

Data Validation Report
Santa Susana Field Laboratory

Go Backs, Subgroup SVL

SDG: PH228

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

July 30, 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). 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

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.

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 PH228	All compounds reported as detected below the RL.	J (all detects)	A

XI. Field Duplicate Samples

No field duplicate samples were identified in this SDG.

XII. Field Blank Samples

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

Four equipment blanks were collected and analyzed for VOCs. The equipment blanks had several detections for methylene chloride and 2-butanone. The associated sample results were not detected or were significantly greater than the concentrations found in the equipment blanks, therefore no data were qualified.

One field blank (from SDG PH176) was collected and analyzed for VOCs. No contaminant concentrations were found in the field blank.

XIII. 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
11-Jun-2014	EB1-061114	7496171	EB	5030B	8260B	III
11-Jun-2014	EB2-061114	7496172	EB	5030B	8260B	III
11-Jun-2014	EB3-061114	7496173	EB	5030B	8260B	III
11-Jun-2014	EB4-061114	7496174	EB	5030B	8260B	III
11-Jun-2014	TB2-061114	7496166	TB	5030B	8260B	III
11-Jun-2014	SVL-563-SA5B-SB-4.5-5.0	7496167	N	5035A	8260B	III
11-Jun-2014	SVL-536-SA5B-SB-1.5-2.0	7496168	N	5035A	8260B	III
11-Jun-2014	SVL-569-SA5B-SB-2.5-3.0	7496170	N	5035A	8260B	III
11-Jun-2014	SVL-577-SA6-SB-1.0-2.0	7496169	N	5035A	8260B	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: PH228 **Laboratory: LL**

EDD Filename: PH228_v1 **eQAPP Name: CDM_SSFL_140617_Lan**

Method Category: **VOA**

Method: **8260B** ***Matrix:*** **AQ**

Sample ID: **EB3-061114** ***Collected:*** **6/11/2014 7:22:00** ***Analysis Type:*** **RES** ***Dilution:*** **1**

Analyte	*Lab Result*	*Lab Qual*	*DL*	*DL Type*	*RL*	*RL Type*	*Units*	*Data Review Qual*	*Reason Code*
2-BUTANONE (MEK)	3	J	3	MDL	10	PQL	ug/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: PH228 **Laboratory: LL**

EDD Filename: PH228_v1 **eQAPP Name: CDM_SSFL_140617_Lan**

Reason Code Legend

Reason Code	*Description*
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

PH228

Reporting Limit Outliers

Lab Reporting Batch ID: PH228 **Laboratory: LL**

EDD Filename: PH228_v1 **eQAPP Name: CDM_SSFL_140617_Lan**

Method: **8260B**

Matrix: **AQ**

SampleID	*Analyte*	*Lab Qual*	*Result*	*Reporting Limit*	*RL Type*	*Units*	*Flag*
EB3-061114	2-BUTANONE (MEK)	J	3	10	PQL	ug/L	J (all detects)

Data Validation Report
Santa Susana Field Laboratory

Go Backs, Subgroup SVL

SDG: PH230

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

July 30, 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). 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

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, 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). 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

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 pair for several VOCs. The associated sample results were qualified as non-detected estimated (UJ). The details regarding the qualification of data are provided in Enclosure I.

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.

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 PH230	All compounds reported as detected below the RL.	J (all detects)	A

XI. Field Duplicate Samples

One field duplicate pair was collected and analyzed for VOCs. No VOCs were detected in the field duplicates.

XII. Field Blank Samples

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

Two equipment blanks (from SDG PH230) were collected and analyzed for VOCs. The equipment blanks had detections for methylene chloride and 2-butanone. The associated sample results were not detected or were significantly greater than the concentrations found in the equipment blanks, therefore no data were qualified.

One field blank (from SDG PH176) was collected and analyzed for VOCs. 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
12-Jun-2014	TB-061214	7497907	TB	5030B	8260B	III
12-Jun-2014	SVL-546-SA8-SB-4.4-4.9	7497908	N	5035A	8260B	III
12-Jun-2014	SVL-546-SA8-SB-4.4-4.9MS	7497909	MS	5035A	8260B	III
12-Jun-2014	SVL-546-SA8-SB-4.4-4.9MSD	7497910	MSD	5035A	8260B	III
12-Jun-2014	SVL-846-SA8-SB-4.4-4.9	7497911	FD	5035A	8260B	III
12-Jun-2014	SVL-532-SA8-SB-3.5-4.0	7497906	N	5035A	8260B	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: PH230 **Laboratory: LL**

EDD Filename: PH230_v1 **eQAPP Name: CDM_SSFL_140617_Lan**

Method Category: **VOA**

Method: **8260B** ***Matrix:*** **SO**

Sample ID: **SVL-546-SA8-SB-4.4-4.9** ***Collected:*** **6/12/2014 10:25:00** ***Analysis Type:*** **RES** ***Dilution:*** **0.98**

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/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: PH230 **Laboratory: LL**

EDD Filename: PH230_v1 **eQAPP Name: CDM_SSFL_140617_Lan**

Reason Code Legend

Reason Code	*Description*
E	Matrix Spike Precision
Q	Matrix Spike Lower Estimation
Q	Matrix Spike Precision

* 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

PH230

Matrix Spike/Matrix Spike Duplicate Outlier Report

Lab Reporting Batch ID: PH230 **Laboratory: LL**

EDD Filename: PH230_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*
SVL-546-SA8-SB-4.4-4.9MSD (SVL-546-SA8-SB-4.4-4.9)	1,1,2,2-TETRACHLOROETHANE	-	-	40.00-152.00	32 (30.00)	1,1,2,2-TETRACHLOROETHAN	J (all detects)
	1,2,3-TRICHLOROBENZENE	-	-	10.00-140.00	43 (30.00)	1,2,3-TRICHLOROBENZENE	
	1,2,4-TRICHLOROBENZENE	-	-	10.00-136.00	42 (30.00)	1,2,4-TRICHLOROBENZENE	
	1,2,4-TRIMETHYLBENZENE	-	-	37.00-149.00	37 (30.00)	1,2,4-TRIMETHYLBENZENE	
	1,2-DICHLOROBENZENE	-	-	36.00-133.00	39 (30.00)	1,2-DICHLOROBENZENE	
	1,3,5-TRIMETHYLBENZENE	-	-	38.00-150.00	36 (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	39 (30.00)	1,4-DICHLOROBENZENE	
	2-CHLOROTOLUENE	-	-	42.00-146.00	36 (30.00)	2-CHLOROTOLUENE	
	4-CHLOROTOLUENE	-	-	50.00-150.00	36 (30.00)	4-CHLOROTOLUENE	
	BROMOBENZENE	-	-	43.00-139.00	35 (30.00)	BROMOBENZENE	
	HEXACHLOROBUTADIENE	-	-	10.00-155.00	38 (30.00)	HEXACHLOROBUTADIENE	
	N-BUTYLBENZENE	-	-	40.00-140.00	35 (30.00)	N-BUTYLBENZENE	
	N-PROPYLBENZENE	-	-	50.00-150.00	33 (30.00)	N-PROPYLBENZENE	
	P-ISOPROPYLTOLUENE	-	-	29.00-152.00	35 (30.00)	P-ISOPROPYLTOLUENE	
	SEC-BUTYLBENZENE	-	-	33.00-157.00	35 (30.00)	SEC-BUTYLBENZENE	
	TERT-BUTYLBENZENE	-	-	41.00-152.00	34 (30.00)	TERT-BUTYLBENZENE	
	Tertiary butyl alcohol	-	-	50.00-150.00	41 (30.00)	Tertiary butyl alcohol	
SVL-546-SA8-SB-4.4-4.9MS **SVL-546-SA8-SB-4.4-4.9MSD** (SVL-546-SA8-SB-4.4-4.9)	VINYL ACETATE	18	-	21.00-139.00	46 (30.00)	VINYL ACETATE	J(all detects) UJ(all non-detects)

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 8, 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 11, 2014. Attachment 1 is a summary of the samples that were reviewed for each analysis.

LDC Project #32181:

SDG #	Fraction
PH193, PH197 PH220, PH221 PH224, PH227	Semivolatiles, Chlorinated Pesticides, Polychlorinated Biphenyls, Metals, Formaldehyde, Total Petroleum Hydrocarbons as Gasolines, Total Petroleum Hydrocarbons as Extractables, Dioxins and 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

90/10 ADR/IV

LDC #32181 (CDM Federal Programs-Chantilly VA / Santa Susana Field Laboratory, FDG Block 2)

LDC	SDG#	DATE REC'D	(4) DATE DUE	SVOA (8270D -SIM)		Pest. (8081B)		PCBs (8082A)		Metals & Hg (SW846)		Herbs. (8151A)		TPH-G (8015M)		TPH-E (8015M)		Dioxins (1613B)		Formal dehyde (8315A)																			
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	W	S
A	PH193	07/11/14	08/08/14	0	10	0	7	0	10	0	10	-	-	1	7	0	24	0	7	0	7																			
B	PH197	07/11/14	08/08/14	0	1	-	-	0	1	0	1	-	-	-	-	0	2	-	-	-	-																			
C	PH220	07/11/14	08/08/14	1	1	-	-	1	1	1	1	-	-	2	2	2	10	1	0	-	-																			
D	PH221	07/11/14	08/08/14	-	-	-	-	-	-	-	-	-	-	1	1	0	10	-	-	-	-																			
E	PH224	07/11/14	08/08/14	0	3	0	3	0	3	0	3	0	3	-	-	0	8	0	3	-	-																			
F	PH227	07/11/14	08/08/14	0	2	-	-	0	5	0	3	-	-	1	3	0	24	-	-	-	-																			
Total	T/SM			1	17	0	10	1	20	1	18	0	3	5	13	2	78	1	10	0	7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	187

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: PH193

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 8, 2014

INTRODUCTION

This Data Validation Report (DVR) presents Level IV data validation results for samples collected on May 21, 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
Formaldehyde by EPA 846 Method 8315A

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 two TPH as extractable results. 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 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.

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 with the exception of one MS/MSD pair for SVOCs, pesticides, 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 one LCS/LCSD pair for acenaphthene. No data were qualified due to high %Rs since the associated results were non-detected. The details regarding the outliers 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 with the exception of several metals. The associated sample results were qualified as detected estimated (J). The details regarding the qualification of data are provided in Enclosure II.

XII. Compound Quantitation

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

All compound quantitations were within validation criteria with the following exceptions:

Method	Sample	Compound	Finding	Flag
1613B	FDG2-SL-584-SA5D-SB-0.0-0.5	OCDD	Sample result exceeded calibration range	J (all detects)

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

Sample	Finding	Flag
All samples in SDG PH193	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, pesticides, PCBs, metals, TPH as extractables with and without silica gel clean up, formaldehyde, and dioxins and dibenzofurans. All RPDs were within QC limits with the exception of SVOCs, pesticides, TPH as extractables with and without silica gel clean up, metals, 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 PH196) was collected and analyzed for SVOCs, pesticides, PCBs, metals, TPH as gasoline, TPH as extractables with and without silica gel clean up, formaldehyde, 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, TPH as gasoline, TPH as extractables with and without silica gel clean up, formaldehyde, 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

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
21-May-2014	SL-584-SA5D-SB-0.0-0.5	7473692	N	3050B	6010C	IV
21-May-2014	SL-584-SA5D-SB-0.0-0.5	7473692	N	3050B	6020A	IV
21-May-2014	SL-584-SA5D-SB-0.0-0.5	7473692	N	3546	8015M	IV
21-May-2014	SL-584-SA5D-SB-0.0-0.5	7473692	N	3546	8081B	IV
21-May-2014	SL-584-SA5D-SB-0.0-0.5	7473692	N	3546	8082A	IV
21-May-2014	SL-584-SA5D-SB-0.0-0.5	7473692	N	3546	8270D SIM	IV
21-May-2014	SL-584-SA5D-SB-0.0-0.5	7473692	N	METHOD	1613B	IV
21-May-2014	SL-584-SA5D-SB-0.0-0.5	7473692	N	METHOD	7471B	IV
21-May-2014	SL-584-SA5D-SB-0.0-0.5	7473692	N	METHOD	8315A	IV
21-May-2014	TB1-052114	7473685	TB	5030B	8015M	IV
21-May-2014	SL-584-SA5D-SB-4.0-5.0	7473693	N	3050B	6010C	IV
21-May-2014	SL-584-SA5D-SB-4.0-5.0	7473693	N	3050B	6020A	IV
21-May-2014	SL-584-SA5D-SB-4.0-5.0	7473693	N	3546	8015M	IV
21-May-2014	SL-584-SA5D-SB-4.0-5.0	7473693	N	3546	8081B	IV
21-May-2014	SL-584-SA5D-SB-4.0-5.0	7473693	N	3546	8082A	IV
21-May-2014	SL-584-SA5D-SB-4.0-5.0	7473693	N	3546	8270D SIM	IV
21-May-2014	SL-584-SA5D-SB-4.0-5.0	7473693	N	5035A	8015M	IV
21-May-2014	SL-584-SA5D-SB-4.0-5.0	7473693	N	METHOD	1613B	IV
21-May-2014	SL-584-SA5D-SB-4.0-5.0	7473693	N	METHOD	7471B	IV
21-May-2014	SL-584-SA5D-SB-4.0-5.0	7473693	N	METHOD	8315A	IV
21-May-2014	SL-585-SA5D-SB-0.0-0.5	7473686	N	3050B	6010C	IV
21-May-2014	SL-585-SA5D-SB-0.0-0.5	7473686	N	3050B	6020A	IV
21-May-2014	SL-585-SA5D-SB-0.0-0.5	7473686	N	3546	8015M	IV
21-May-2014	SL-585-SA5D-SB-0.0-0.5	7473686	N	3546	8081B	IV
21-May-2014	SL-585-SA5D-SB-0.0-0.5	7473686	N	3546	8082A	IV
21-May-2014	SL-585-SA5D-SB-0.0-0.5	7473686	N	3546	8270D 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
21-May-2014	SL-585-SA5D-SB-0.0-0.5	7473686	N	METHOD	1613B	IV
21-May-2014	SL-585-SA5D-SB-0.0-0.5	7473686	N	METHOD	7471B	IV
21-May-2014	SL-585-SA5D-SB-0.0-0.5	7473686	N	METHOD	8315A	IV
21-May-2014	SL-585-SA5D-SB-0.0-0.5MS	7473687	MS	3050B	6010C	IV
21-May-2014	SL-585-SA5D-SB-0.0-0.5MS	7473687	MS	3050B	6020A	IV
21-May-2014	SL-585-SA5D-SB-0.0-0.5MS	7473687	MS	3546	8015M	IV
21-May-2014	SL-585-SA5D-SB-0.0-0.5MS	7473687	MS	3546	8081B	IV
21-May-2014	SL-585-SA5D-SB-0.0-0.5MS	7473687	MS	3546	8082A	IV
21-May-2014	SL-585-SA5D-SB-0.0-0.5MS	7473687	MS	3546	8270D SIM	IV
21-May-2014	SL-585-SA5D-SB-0.0-0.5MS	7473687	MS	METHOD	1613B	IV
21-May-2014	SL-585-SA5D-SB-0.0-0.5MS	7473687	MS	METHOD	7471B	IV
21-May-2014	SL-585-SA5D-SB-0.0-0.5MS	7473687	MS	METHOD	8315A	IV
21-May-2014	SL-585-SA5D-SB-0.0-0.5MSD	7473688	MSD	3050B	6010C	IV
21-May-2014	SL-585-SA5D-SB-0.0-0.5MSD	7473688	MSD	3050B	6020A	IV
21-May-2014	SL-585-SA5D-SB-0.0-0.5MSD	7473688	MSD	3546	8015M	IV
21-May-2014	SL-585-SA5D-SB-0.0-0.5MSD	7473688	MSD	3546	8081B	IV
21-May-2014	SL-585-SA5D-SB-0.0-0.5MSD	7473688	MSD	3546	8082A	IV
21-May-2014	SL-585-SA5D-SB-0.0-0.5MSD	7473688	MSD	3546	8270D SIM	IV
21-May-2014	SL-585-SA5D-SB-0.0-0.5MSD	7473688	MSD	METHOD	1613B	IV
21-May-2014	SL-585-SA5D-SB-0.0-0.5MSD	7473688	MSD	METHOD	7471B	IV
21-May-2014	SL-585-SA5D-SB-0.0-0.5MSD	7473688	MSD	METHOD	8315A	IV
21-May-2014	SL-585-SA5D-SB-0.0-0.5DUP	7473689	DUP	3050B	6010C	IV
21-May-2014	SL-585-SA5D-SB-0.0-0.5DUP	7473689	DUP	3050B	6020A	IV
21-May-2014	SL-585-SA5D-SB-0.0-0.5DUP	7473689	DUP	METHOD	7471B	IV
21-May-2014	SL-885-SA5D-SB-0.0-0.5	7473690	FD	3050B	6010C	IV
21-May-2014	SL-885-SA5D-SB-0.0-0.5	7473690	FD	3050B	6020A	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
21-May-2014	SL-885-SA5D-SB-0.0-0.5	7473690	FD	3546	8015M	IV
21-May-2014	SL-885-SA5D-SB-0.0-0.5	7473690	FD	3546	8081B	IV
21-May-2014	SL-885-SA5D-SB-0.0-0.5	7473690	FD	3546	8082A	IV
21-May-2014	SL-885-SA5D-SB-0.0-0.5	7473690	FD	3546	8270D SIM	IV
21-May-2014	SL-885-SA5D-SB-0.0-0.5	7473690	FD	METHOD	1613B	IV
21-May-2014	SL-885-SA5D-SB-0.0-0.5	7473690	FD	METHOD	7471B	IV
21-May-2014	SL-885-SA5D-SB-0.0-0.5	7473690	FD	METHOD	8315A	IV
21-May-2014	SL-585-SA5D-SB-4.0-5.0	7473691	N	3050B	6010C	IV
21-May-2014	SL-585-SA5D-SB-4.0-5.0	7473691	N	3050B	6020A	IV
21-May-2014	SL-585-SA5D-SB-4.0-5.0	7473691	N	3546	8015M	IV
21-May-2014	SL-585-SA5D-SB-4.0-5.0	7473691	N	3546	8081B	IV
21-May-2014	SL-585-SA5D-SB-4.0-5.0	7473691	N	3546	8082A	IV
21-May-2014	SL-585-SA5D-SB-4.0-5.0	7473691	N	3546	8270D SIM	IV
21-May-2014	SL-585-SA5D-SB-4.0-5.0	7473691	N	5035A	8015M	IV
21-May-2014	SL-585-SA5D-SB-4.0-5.0	7473691	N	METHOD	1613B	IV
21-May-2014	SL-585-SA5D-SB-4.0-5.0	7473691	N	METHOD	7471B	IV
21-May-2014	SL-585-SA5D-SB-4.0-5.0	7473691	N	METHOD	8315A	IV
21-May-2014	SL-586-SA5D-SB-0.0-0.5	7473694	N	3050B	6010C	IV
21-May-2014	SL-586-SA5D-SB-0.0-0.5	7473694	N	3050B	6020A	IV
21-May-2014	SL-586-SA5D-SB-0.0-0.5	7473694	N	3546	8015M	IV
21-May-2014	SL-586-SA5D-SB-0.0-0.5	7473694	N	3546	8081B	IV
21-May-2014	SL-586-SA5D-SB-0.0-0.5	7473694	N	3546	8082A	IV
21-May-2014	SL-586-SA5D-SB-0.0-0.5	7473694	N	3546	8270D SIM	IV
21-May-2014	SL-586-SA5D-SB-0.0-0.5	7473694	N	METHOD	1613B	IV
21-May-2014	SL-586-SA5D-SB-0.0-0.5	7473694	N	METHOD	7471B	IV
21-May-2014	SL-586-SA5D-SB-0.0-0.5	7473694	N	METHOD	8315A	IV

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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
21-May-2014	SL-586-SA5D-SB-2.0-3.0	7473695	N	3050B	6010C	IV
21-May-2014	SL-586-SA5D-SB-2.0-3.0	7473695	N	3050B	6020A	IV
21-May-2014	SL-586-SA5D-SB-2.0-3.0	7473695	N	3546	8015M	IV
21-May-2014	SL-586-SA5D-SB-2.0-3.0	7473695	N	3546	8081B	IV
21-May-2014	SL-586-SA5D-SB-2.0-3.0	7473695	N	3546	8082A	IV
21-May-2014	SL-586-SA5D-SB-2.0-3.0	7473695	N	3546	8270D SIM	IV
21-May-2014	SL-586-SA5D-SB-2.0-3.0	7473695	N	5035A	8015M	IV
21-May-2014	SL-586-SA5D-SB-2.0-3.0	7473695	N	METHOD	1613B	IV
21-May-2014	SL-586-SA5D-SB-2.0-3.0	7473695	N	METHOD	7471B	IV
21-May-2014	SL-586-SA5D-SB-2.0-3.0	7473695	N	METHOD	8315A	IV
21-May-2014	SL-623-SA8-SB-0.0-0.5	7473696	N	3546	8015M	IV
21-May-2014	SL-623-SA8-SB-4.0-5.0	7473697	N	3546	8015M	IV
21-May-2014	SL-623-SA8-SB-4.0-5.0	7473697	N	5035A	8015M	IV
21-May-2014	SL-623-SA8-SB-9.0-10.0	7473698	N	3050B	6010C	IV
21-May-2014	SL-623-SA8-SB-9.0-10.0	7473698	N	3050B	6020A	IV
21-May-2014	SL-623-SA8-SB-9.0-10.0	7473698	N	3546	8015M	IV
21-May-2014	SL-623-SA8-SB-9.0-10.0	7473698	N	3546	8082A	IV
21-May-2014	SL-623-SA8-SB-9.0-10.0	7473698	N	3546	8270D SIM	IV
21-May-2014	SL-623-SA8-SB-9.0-10.0	7473698	N	5035A	8015M	IV
21-May-2014	SL-623-SA8-SB-9.0-10.0	7473698	N	METHOD	7471B	IV
21-May-2014	SL-623-SA8-SB-14.0-15.0	7473699	N	3050B	6010C	IV
21-May-2014	SL-623-SA8-SB-14.0-15.0	7473699	N	3050B	6020A	IV
21-May-2014	SL-623-SA8-SB-14.0-15.0	7473699	N	3546	8015M	IV
21-May-2014	SL-623-SA8-SB-14.0-15.0	7473699	N	3546	8082A	IV
21-May-2014	SL-623-SA8-SB-14.0-15.0	7473699	N	3546	8270D SIM	IV
21-May-2014	SL-623-SA8-SB-14.0-15.0	7473699	N	5035A	8015M	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
21-May-2014	SL-623-SA8-SB-14.0-15.0	7473699	N	METHOD	7471B	IV
21-May-2014	SL-623-SA8-SB-19.0-20.0	7473700	N	3050B	6010C	IV
21-May-2014	SL-623-SA8-SB-19.0-20.0	7473700	N	3050B	6020A	IV
21-May-2014	SL-623-SA8-SB-19.0-20.0	7473700	N	3546	8015M	IV
21-May-2014	SL-623-SA8-SB-19.0-20.0	7473700	N	3546	8082A	IV
21-May-2014	SL-623-SA8-SB-19.0-20.0	7473700	N	3546	8270D SIM	IV
21-May-2014	SL-623-SA8-SB-19.0-20.0	7473700	N	5035A	8015M	IV
21-May-2014	SL-623-SA8-SB-19.0-20.0	7473700	N	METHOD	7471B	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: PH193 **Laboratory: LL**

EDD Filename: PrepPH193 **eQAPP Name: CDM_SSFL_140617_Lan**

Method Category: METALS

Method: 6010C **Matrix:** SO

Sample ID: **FDG2-SL-584-SA5D-SB-0.0-0.5** ***Collected:*** **5/21/2014 7:52:00** ***Analysis Type:*** **RES** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
ALUMINUM	16600		7.55	MDL	41.9	PQL	mg/Kg	J	E
ANTIMONY	4.19	U	0.775	MDL	4.19	PQL	mg/Kg	UJ	Q, E
BARIUM	97.4		0.0346	MDL	1.05	PQL	mg/Kg	J	Q
BERYLLIUM	0.638	J	0.0702	MDL	1.05	PQL	mg/Kg	J	Z
BORON	5.41	J	0.880	MDL	10.5	PQL	mg/Kg	U	B
IRON	22900		3.79	MDL	41.9	PQL	mg/Kg	J	E
LEAD	17.2		0.524	MDL	3.14	PQL	mg/Kg	J	E
MANGANESE	323		0.0869	MDL	1.05	PQL	mg/Kg	J	E
MOLYBDENUM	0.348	J	0.178	MDL	2.09	PQL	mg/Kg	J	Z
NICKEL	17.4		0.136	MDL	2.09	PQL	mg/Kg	J	A
PHOSPHORUS	483		3.03	MDL	10.5	PQL	mg/Kg	J	Q, A
POTASSIUM	3650		8.73	MDL	105	PQL	mg/Kg	J	Q
SODIUM	101	J	17.5	MDL	105	PQL	mg/Kg	J	Z
TIN	2.63	J	0.230	MDL	10.5	PQL	mg/Kg	U	B
VANADIUM	37.1		0.136	MDL	1.05	PQL	mg/Kg	J	Q
ZINC	148		0.209	MDL	4.19	PQL	mg/Kg	J	Q, E, A
Zirconium	3.63	J	0.880	MDL	5.24	PQL	mg/Kg	U	F, F
CHROMIUM	25.4		0.168	MDL	3.14	PQL	mg/Kg	J	Q

Sample ID: **FDG2-SL-584-SA5D-SB-4.0-5.0** ***Collected:*** **5/21/2014 8:10:00** ***Analysis Type:*** **RES** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
ALUMINUM	15400		7.60	MDL	42.1	PQL	mg/Kg	J	E
ANTIMONY	4.21	U	0.780	MDL	4.21	PQL	mg/Kg	UJ	Q, E
BARIUM	82.1		0.0348	MDL	1.05	PQL	mg/Kg	J	Q
BERYLLIUM	0.449	J	0.0706	MDL	1.05	PQL	mg/Kg	J	Z
BORON	3.20	J	0.885	MDL	10.5	PQL	mg/Kg	U	B
CADMIUM	0.490	J	0.0801	MDL	1.05	PQL	mg/Kg	J	Z
CHROMIUM	22.6		0.169	MDL	3.16	PQL	mg/Kg	J	Q
IRON	21700		3.81	MDL	42.1	PQL	mg/Kg	J	E
LEAD	2.56	J	0.527	MDL	3.16	PQL	mg/Kg	J	Z, E
MANGANESE	456		0.0875	MDL	1.05	PQL	mg/Kg	J	E
NICKEL	15.6		0.137	MDL	2.11	PQL	mg/Kg	J	A
PHOSPHORUS	390		3.05	MDL	10.5	PQL	mg/Kg	J	Q, 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: PH193 **Laboratory: LL**

EDD Filename: PrepPH193 **eQAPP Name: CDM_SSFL_140617_Lan**

Method Category: **METALS**

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

Sample ID: **FDG2-SL-584-SA5D-SB-4.0-5.0** ***Collected:*** **5/21/2014 8:10:00** ***Analysis Type:*** **RES** ***Dilution:*** **1**

Analyte	*Lab Result*	*Lab Qual*	*DL*	*DL Type*	*RL*	*RL Type*	*Units*	*Data Review Qual*	*Reason Code*
POTASSIUM	2240		8.79	MDL	105	PQL	mg/Kg	J	Q
TIN	2.44	J	0.232	MDL	10.5	PQL	mg/Kg	U	B
VANADIUM	33.3		0.137	MDL	1.05	PQL	mg/Kg	J	Q
ZINC	51.0		0.211	MDL	4.21	PQL	mg/Kg	J	Q, E, A
Zirconium	5.17	J	0.885	MDL	5.27	PQL	mg/Kg	U	F, F

Sample ID: **FDG2-SL-585-SA5D-SB-0.0-0.5** ***Collected:*** **5/21/2014 9:06:00** ***Analysis Type:*** **RES** ***Dilution:*** **1**

Analyte	*Lab Result*	*Lab Qual*	*DL*	*DL Type*	*RL*	*RL Type*	*Units*	*Data Review Qual*	*Reason Code*
ALUMINUM	16300		7.62	MDL	42.3	PQL	mg/Kg	J	E
ANTIMONY	4.23	U	0.782	MDL	4.23	PQL	mg/Kg	UJ	Q, E
BARIUM	93.9		0.0349	MDL	1.06	PQL	mg/Kg	J	Q
BERYLLIUM	0.593	J	0.0708	MDL	1.06	PQL	mg/Kg	J	Z
BORON	5.14	J	0.888	MDL	10.6	PQL	mg/Kg	U	B
CADMIUM	0.590	J	0.0803	MDL	1.06	PQL	mg/Kg	J	Z
CHROMIUM	23.5		0.169	MDL	3.17	PQL	mg/Kg	J	Q
IRON	20100		3.83	MDL	42.3	PQL	mg/Kg	J	E
LEAD	12.0		0.529	MDL	3.17	PQL	mg/Kg	J	E
MANGANESE	218		0.0877	MDL	1.06	PQL	mg/Kg	J	E
MOLYBDENUM	0.424	J	0.180	MDL	2.11	PQL	mg/Kg	J	Z
NICKEL	14.0		0.137	MDL	2.11	PQL	mg/Kg	J	A
PHOSPHORUS	350		3.05	MDL	10.6	PQL	mg/Kg	J	Q, A
POTASSIUM	3600		8.82	MDL	106	PQL	mg/Kg	J	Q
SODIUM	91.2	J	17.7	MDL	106	PQL	mg/Kg	J	Z
TIN	2.25	J	0.233	MDL	10.6	PQL	mg/Kg	U	B
VANADIUM	37.1		0.137	MDL	1.06	PQL	mg/Kg	J	Q
ZINC	88.2		0.211	MDL	4.23	PQL	mg/Kg	J	Q, E, A
Zirconium	4.44	J	0.888	MDL	5.29	PQL	mg/Kg	U	F, F

Sample ID: **FDG2-SL-585-SA5D-SB-4.0-5.0** ***Collected:*** **5/21/2014 9:21:00** ***Analysis Type:*** **REA** ***Dilution:*** **2**

Analyte	*Lab Result*	*Lab Qual*	*DL*	*DL Type*	*RL*	*RL Type*	*Units*	*Data Review Qual*	*Reason Code*
IRON	38900		8.04	MDL	88.9	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: PH193 **Laboratory: LL**

EDD Filename: PrepPH193 **eQAPP Name: CDM_SSFL_140617_Lan**

Method Category: **METALS**

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

Sample ID: **FDG2-SL-585-SA5D-SB-4.0-5.0** ***Collected:*** **5/21/2014 9:21:00** ***Analysis Type:*** **RES** ***Dilution:*** **1**

Analyte	*Lab Result*	*Lab Qual*	*DL*	*DL Type*	*RL*	*RL Type*	*Units*	*Data Review Qual*	*Reason Code*
ALUMINUM	23900		8.01	MDL	44.4	PQL	mg/Kg	J	E
ANTIMONY	4.44	U	0.822	MDL	4.44	PQL	mg/Kg	UJ	Q, E
BARIUM	136		0.0367	MDL	1.11	PQL	mg/Kg	J	Q
BORON	6.03	J	0.933	MDL	11.1	PQL	mg/Kg	U	B
CADMIUM	0.763	J	0.0844	MDL	1.11	PQL	mg/Kg	J	Z
CHROMIUM	42.3		0.178	MDL	3.33	PQL	mg/Kg	J	Q
LEAD	9.63		0.555	MDL	3.33	PQL	mg/Kg	J	E
MANGANESE	310		0.0922	MDL	1.11	PQL	mg/Kg	J	E
NICKEL	32.9		0.144	MDL	2.22	PQL	mg/Kg	J	A
PHOSPHORUS	672		3.21	MDL	11.1	PQL	mg/Kg	J	Q, A
POTASSIUM	2300		9.26	MDL	111	PQL	mg/Kg	J	Q
TIN	3.03	J	0.244	MDL	11.1	PQL	mg/Kg	U	B
VANADIUM	56.1		0.144	MDL	1.11	PQL	mg/Kg	J	Q
ZINC	94.1		0.222	MDL	4.44	PQL	mg/Kg	J	Q, E, A

Sample ID: **FDG2-SL-586-SA5D-SB-0.0-0.5** ***Collected:*** **5/21/2014 10:25:00** ***Analysis Type:*** **REA** ***Dilution:*** **2**

Analyte	*Lab Result*	*Lab Qual*	*DL*	*DL Type*	*RL*	*RL Type*	*Units*	*Data Review Qual*	*Reason Code*
IRON	33100		7.49	MDL	82.8	PQL	mg/Kg	J	E

Sample ID: **FDG2-SL-586-SA5D-SB-0.0-0.5** ***Collected:*** **5/21/2014 10:25:00** ***Analysis Type:*** **RES** ***Dilution:*** **1**

Analyte	*Lab Result*	*Lab Qual*	*DL*	*DL Type*	*RL*	*RL Type*	*Units*	*Data Review Qual*	*Reason Code*
ALUMINUM	21200		7.46	MDL	41.4	PQL	mg/Kg	J	E
ANTIMONY	4.14	U	0.766	MDL	4.14	PQL	mg/Kg	UJ	Q, E
BARIUM	124		0.0341	MDL	1.03	PQL	mg/Kg	J	Q
BERYLLIUM	0.909	J	0.0693	MDL	1.03	PQL	mg/Kg	J	Z
BORON	4.32	J	0.869	MDL	10.3	PQL	mg/Kg	U	B
CADMIUM	0.701	J	0.0786	MDL	1.03	PQL	mg/Kg	J	Z
CHROMIUM	30.1		0.166	MDL	3.10	PQL	mg/Kg	J	Q
LEAD	9.26		0.517	MDL	3.10	PQL	mg/Kg	J	E
MANGANESE	407		0.0859	MDL	1.03	PQL	mg/Kg	J	E
MOLYBDENUM	0.800	J	0.176	MDL	2.07	PQL	mg/Kg	J	Z
NICKEL	21.6		0.134	MDL	2.07	PQL	mg/Kg	J	A
PHOSPHORUS	576		2.99	MDL	10.3	PQL	mg/Kg	J	Q, 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: PH193 **Laboratory: LL**

EDD Filename: PrepPH193 **eQAPP Name: CDM_SSFL_140617_Lan**

Method Category: METALS

Method: 6010C **Matrix:** SO

Sample ID: **FDG2-SL-586-SA5D-SB-0.0-0.5** *Collected:* **5/21/2014 10:25:00** *Analysis Type:* **RES** *Dilution:* **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
POTASSIUM	4530		8.63	MDL	103	PQL	mg/Kg	J	Q
TIN	2.65	J	0.228	MDL	10.3	PQL	mg/Kg	U	B
VANADIUM	50.0		0.134	MDL	1.03	PQL	mg/Kg	J	Q
ZINC	81.3		0.207	MDL	4.14	PQL	mg/Kg	J	Q, E, A

Sample ID: **FDG2-SL-586-SA5D-SB-2.0-3.0** *Collected:* **5/21/2014 10:32:00** *Analysis Type:* **RES** *Dilution:* **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
ALUMINUM	12300		7.21	MDL	40.0	PQL	mg/Kg	J	E
ANTIMONY	4.00	U	0.740	MDL	4.00	PQL	mg/Kg	UJ	Q, E
BARIUM	84.5		0.0330	MDL	1.00	PQL	mg/Kg	J	Q
BERYLLIUM	0.313	J	0.0670	MDL	1.00	PQL	mg/Kg	J	Z
BORON	2.56	J	0.840	MDL	10.0	PQL	mg/Kg	U	B
CADMIUM	0.458	J	0.0760	MDL	1.00	PQL	mg/Kg	J	Z
CHROMIUM	28.0		0.160	MDL	3.00	PQL	mg/Kg	J	Q
IRON	19000		3.62	MDL	40.0	PQL	mg/Kg	J	E
LEAD	2.99	J	0.500	MDL	3.00	PQL	mg/Kg	J	Z, E
MANGANESE	239		0.0830	MDL	1.00	PQL	mg/Kg	J	E
MOLYBDENUM	0.174	J	0.170	MDL	2.00	PQL	mg/Kg	J	Z
NICKEL	21.1		0.130	MDL	2.00	PQL	mg/Kg	J	A
PHOSPHORUS	439		2.89	MDL	10.0	PQL	mg/Kg	J	Q, A
POTASSIUM	2630		8.34	MDL	100	PQL	mg/Kg	J	Q
TIN	2.40	J	0.220	MDL	10.0	PQL	mg/Kg	U	B
VANADIUM	40.9		0.130	MDL	1.00	PQL	mg/Kg	J	Q
ZINC	54.2		0.200	MDL	4.00	PQL	mg/Kg	J	Q, E, A
Zirconium	4.93	J	0.840	MDL	5.00	PQL	mg/Kg	U	F, F

Sample ID: **FDG2-SL-623-SA8-SB-14.0-15.0** *Collected:* **5/21/2014 1:56:00** *Analysis Type:* **RES** *Dilution:* **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
ALUMINUM	17200		7.67	MDL	42.6	PQL	mg/Kg	J	E
ANTIMONY	4.26	U	0.787	MDL	4.26	PQL	mg/Kg	UJ	Q, E
BARIUM	89.8		0.0351	MDL	1.06	PQL	mg/Kg	J	Q
BERYLLIUM	0.616	J	0.0713	MDL	1.06	PQL	mg/Kg	J	Z
BORON	5.90	J	0.894	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: PH193 **Laboratory: LL**

EDD Filename: PrepPH193 **eQAPP Name: CDM_SSFL_140617_Lan**

Method Category: METALS

Method: 6010C **Matrix:** SO

Sample ID: **FDG2-SL-623-SA8-SB-14.0-15.0** *Collected:* **5/21/2014 1:56:00** *Analysis Type:* **RES** *Dilution:* **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
CADMIUM	0.487	J	0.0809	MDL	1.06	PQL	mg/Kg	J	Z
CHROMIUM	19.3		0.170	MDL	3.19	PQL	mg/Kg	J	Q
IRON	22800		3.85	MDL	42.6	PQL	mg/Kg	J	E
LEAD	4.74		0.532	MDL	3.19	PQL	mg/Kg	J	E
MANGANESE	378		0.0883	MDL	1.06	PQL	mg/Kg	J	E
MOLYBDENUM	0.396	J	0.181	MDL	2.13	PQL	mg/Kg	J	Z
NICKEL	10.6		0.138	MDL	2.13	PQL	mg/Kg	J	A
PHOSPHORUS	295		3.07	MDL	10.6	PQL	mg/Kg	J	Q, A
POTASSIUM	3280		8.87	MDL	106	PQL	mg/Kg	J	Q
TIN	2.91	J	0.234	MDL	10.6	PQL	mg/Kg	U	B
VANADIUM	38.6		0.138	MDL	1.06	PQL	mg/Kg	J	Q
ZINC	54.6		0.213	MDL	4.26	PQL	mg/Kg	J	Q, E, A
Zirconium	4.11	J	0.894	MDL	5.32	PQL	mg/Kg	U	F, F

Sample ID: **FDG2-SL-623-SA8-SB-19.0-20.0** *Collected:* **5/21/2014 2:14:00** *Analysis Type:* **RES** *Dilution:* **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
ALUMINUM	13000		7.39	MDL	41.0	PQL	mg/Kg	J	E
ANTIMONY	4.10	U	0.758	MDL	4.10	PQL	mg/Kg	UJ	Q, E
BARIUM	55.5		0.0338	MDL	1.02	PQL	mg/Kg	J	Q
BERYLLIUM	0.457	J	0.0686	MDL	1.02	PQL	mg/Kg	J	Z
BORON	5.60	J	0.861	MDL	10.2	PQL	mg/Kg	U	B
CADMIUM	0.454	J	0.0779	MDL	1.02	PQL	mg/Kg	J	Z
CHROMIUM	13.9		0.164	MDL	3.07	PQL	mg/Kg	J	Q
IRON	20000		3.71	MDL	41.0	PQL	mg/Kg	J	E
LEAD	2.96	J	0.512	MDL	3.07	PQL	mg/Kg	J	Z, E
MANGANESE	275		0.0850	MDL	1.02	PQL	mg/Kg	J	E
MOLYBDENUM	0.339	J	0.174	MDL	2.05	PQL	mg/Kg	J	Z
NICKEL	7.06		0.133	MDL	2.05	PQL	mg/Kg	J	A
PHOSPHORUS	224		2.96	MDL	10.2	PQL	mg/Kg	J	Q, A
POTASSIUM	3010		8.54	MDL	102	PQL	mg/Kg	J	Q
TIN	2.77	J	0.225	MDL	10.2	PQL	mg/Kg	U	B
VANADIUM	30.6		0.133	MDL	1.02	PQL	mg/Kg	J	Q
ZINC	48.7		0.205	MDL	4.10	PQL	mg/Kg	J	Q, E, 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: PH193 **Laboratory: LL**

EDD Filename: PrepPH193 **eQAPP Name: CDM_SSFL_140617_Lan**

Method Category: METALS

Method: 6010C **Matrix: SO**

Sample ID: FDG2-SL-623-SA8-SB-19.0-20.0 **Collected: 5/21/2014 2:14:00** **Analysis Type: RES** **Dilution: 1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
Zirconium	3.01	J	0.861	MDL	5.12	PQL	mg/Kg	U	F, F

Sample ID: FDG2-SL-623-SA8-SB-9.0-10.0 **Collected: 5/21/2014 1:41:00** **Analysis Type: RES** **Dilution: 1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
ALUMINUM	15400		7.44	MDL	41.3	PQL	mg/Kg	J	E
ANTIMONY	4.13	U	0.764	MDL	4.13	PQL	mg/Kg	UJ	Q, E
BARIUM	68.4		0.0341	MDL	1.03	PQL	mg/Kg	J	Q
BERYLLIUM	0.598	J	0.0691	MDL	1.03	PQL	mg/Kg	J	Z
BORON	4.68	J	0.867	MDL	10.3	PQL	mg/Kg	U	B
CADMIUM	0.463	J	0.0784	MDL	1.03	PQL	mg/Kg	J	Z
CHROMIUM	16.1		0.165	MDL	3.10	PQL	mg/Kg	J	Q
IRON	21600		3.74	MDL	41.3	PQL	mg/Kg	J	E
LEAD	4.67		0.516	MDL	3.10	PQL	mg/Kg	J	E
MANGANESE	298		0.0857	MDL	1.03	PQL	mg/Kg	J	E
MOLYBDENUM	0.453	J	0.175	MDL	2.06	PQL	mg/Kg	J	Z
NICKEL	9.20		0.134	MDL	2.06	PQL	mg/Kg	J	A
PHOSPHORUS	252		2.98	MDL	10.3	PQL	mg/Kg	J	Q, A
POTASSIUM	2820		8.61	MDL	103	PQL	mg/Kg	J	Q
SODIUM	80.4	J	17.2	MDL	103	PQL	mg/Kg	J	Z
TIN	2.82	J	0.227	MDL	10.3	PQL	mg/Kg	U	B
VANADIUM	32.5		0.134	MDL	1.03	PQL	mg/Kg	J	Q
ZINC	53.1		0.206	MDL	4.13	PQL	mg/Kg	J	Q, E, A
Zirconium	3.26	J	0.867	MDL	5.16	PQL	mg/Kg	U	F, F

Sample ID: FDG2-SL-885-SA5D-SB-0.0-0.5 **Collected: 5/21/2014 9:16:00** **Analysis Type: RES** **Dilution: 1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
ALUMINUM	17900		7.41	MDL	41.1	PQL	mg/Kg	J	E
ANTIMONY	4.11	U	0.760	MDL	4.11	PQL	mg/Kg	UJ	Q, E
BARIUM	112		0.0339	MDL	1.03	PQL	mg/Kg	J	Q
BERYLLIUM	0.652	J	0.0689	MDL	1.03	PQL	mg/Kg	J	Z
BORON	5.55	J	0.863	MDL	10.3	PQL	mg/Kg	U	B
CADMIUM	0.969	J	0.0781	MDL	1.03	PQL	mg/Kg	J	Z
CHROMIUM	26.8		0.164	MDL	3.08	PQL	mg/Kg	J	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: PH193 **Laboratory: LL**

EDD Filename: PrepPH193 **eQAPP Name: CDM_SSFL_140617_Lan**

Method Category: METALS

Method: 6010C **Matrix: SO**

Sample ID: **FDG2-SL-885-SA5D-SB-0.0-0.5** *Collected:* **5/21/2014 9:16:00** *Analysis Type:* **RES** *Dilution:* **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
IRON	23000		3.72	MDL	41.1	PQL	mg/Kg	J	E
LEAD	15.0		0.514	MDL	3.08	PQL	mg/Kg	J	E
MANGANESE	290		0.0853	MDL	1.03	PQL	mg/Kg	J	E
MOLYBDENUM	0.331	J	0.175	MDL	2.06	PQL	mg/Kg	J	Z
NICKEL	17.3		0.134	MDL	2.06	PQL	mg/Kg	J	A
PHOSPHORUS	448		2.97	MDL	10.3	PQL	mg/Kg	J	Q, A
POTASSIUM	4090		8.57	MDL	103	PQL	mg/Kg	J	Q
SODIUM	96.9	J	17.2	MDL	103	PQL	mg/Kg	J	Z
TIN	2.30	J	0.226	MDL	10.3	PQL	mg/Kg	U	B
VANADIUM	42.1		0.134	MDL	1.03	PQL	mg/Kg	J	Q
ZINC	111		0.206	MDL	4.11	PQL	mg/Kg	J	Q, E, A
Zirconium	4.92	J	0.863	MDL	5.14	PQL	mg/Kg	U	F, F

Method Category: METALS

Method: 6020A **Matrix: SO**

Sample ID: **FDG2-SL-584-SA5D-SB-0.0-0.5** *Collected:* **5/21/2014 7:52:00** *Analysis Type:* **REA** *Dilution:* **2**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
SELENIUM	0.239	J	0.105	MDL	0.419	PQL	mg/Kg	J	Z

Sample ID: **FDG2-SL-584-SA5D-SB-0.0-0.5** *Collected:* **5/21/2014 7:52:00** *Analysis Type:* **RES** *Dilution:* **2**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
STRONTIUM	42.4		0.0712	MDL	0.419	PQL	mg/Kg	J	Q

Sample ID: **FDG2-SL-584-SA5D-SB-4.0-5.0** *Collected:* **5/21/2014 8:10:00** *Analysis Type:* **REA** *Dilution:* **2**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
SELENIUM	0.165	J	0.105	MDL	0.421	PQL	mg/Kg	J	Z

Sample ID: **FDG2-SL-584-SA5D-SB-4.0-5.0** *Collected:* **5/21/2014 8:10:00** *Analysis Type:* **RES** *Dilution:* **2**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
STRONTIUM	22.9		0.0717	MDL	0.421	PQL	mg/Kg	J	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: PH193 **Laboratory: LL**

EDD Filename: PrepPH193 **eQAPP Name: CDM_SSFL_140617_Lan**

Method Category: METALS

Method: 6020A **Matrix: SO**

Sample ID: FDG2-SL-585-SA5D-SB-0.0-0.5 **Collected: 5/21/2014 9:06:00** **Analysis Type: REA** **Dilution: 2**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
SELENIUM	0.183	J	0.106	MDL	0.423	PQL	mg/Kg	J	Z

Sample ID: FDG2-SL-585-SA5D-SB-0.0-0.5 **Collected: 5/21/2014 9:06:00** **Analysis Type: RES** **Dilution: 2**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
SILVER	0.372		0.0275	MDL	0.211	PQL	mg/Kg	J	FD
STRONTIUM	24.4		0.0719	MDL	0.423	PQL	mg/Kg	J	Q

Sample ID: FDG2-SL-585-SA5D-SB-4.0-5.0 **Collected: 5/21/2014 9:21:00** **Analysis Type: REA** **Dilution: 2**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
SELENIUM	0.294	J	0.111	MDL	0.444	PQL	mg/Kg	J	Z

Sample ID: FDG2-SL-585-SA5D-SB-4.0-5.0 **Collected: 5/21/2014 9:21:00** **Analysis Type: RES** **Dilution: 2**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
STRONTIUM	62.2		0.0755	MDL	0.444	PQL	mg/Kg	J	Q

Sample ID: FDG2-SL-586-SA5D-SB-0.0-0.5 **Collected: 5/21/2014 10:25:00** **Analysis Type: REA** **Dilution: 2**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
SELENIUM	0.243	J	0.103	MDL	0.414	PQL	mg/Kg	J	Z

Sample ID: FDG2-SL-586-SA5D-SB-0.0-0.5 **Collected: 5/21/2014 10:25:00** **Analysis Type: RES** **Dilution: 2**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
STRONTIUM	27.6		0.0704	MDL	0.414	PQL	mg/Kg	J	Q

Sample ID: FDG2-SL-586-SA5D-SB-2.0-3.0 **Collected: 5/21/2014 10:32:00** **Analysis Type: RES** **Dilution: 2**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
STRONTIUM	19.0		0.0680	MDL	0.400	PQL	mg/Kg	J	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: PH193 **Laboratory: LL**

EDD Filename: PrepPH193 **eQAPP Name: CDM_SSFL_140617_Lan**

Method Category: METALS

Method: 6020A **Matrix: SO**

Sample ID: **FDG2-SL-623-SA8-SB-14.0-15.0** *Collected:* **5/21/2014 1:56:00** *Analysis Type:* **RES** *Dilution:* **2**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
SILVER	0.0306	J	0.0277	MDL	0.213	PQL	mg/Kg	J	Z
STRONTIUM	31.9		0.0723	MDL	0.426	PQL	mg/Kg	J	Q

Sample ID: **FDG2-SL-623-SA8-SB-19.0-20.0** *Collected:* **5/21/2014 2:14:00** *Analysis Type:* **RES** *Dilution:* **2**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
STRONTIUM	19.2		0.0697	MDL	0.410	PQL	mg/Kg	J	Q

Sample ID: **FDG2-SL-623-SA8-SB-9.0-10.0** *Collected:* **5/21/2014 1:41:00** *Analysis Type:* **RES** *Dilution:* **2**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
STRONTIUM	26.8		0.0702	MDL	0.413	PQL	mg/Kg	J	Q

Sample ID: **FDG2-SL-885-SA5D-SB-0.0-0.5** *Collected:* **5/21/2014 9:16:00** *Analysis Type:* **REA** *Dilution:* **2**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
SELENIUM	0.189	J	0.103	MDL	0.411	PQL	mg/Kg	J	Z

Sample ID: **FDG2-SL-885-SA5D-SB-0.0-0.5** *Collected:* **5/21/2014 9:16:00** *Analysis Type:* **RES** *Dilution:* **2**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
SILVER	0.714		0.0267	MDL	0.206	PQL	mg/Kg	J	FD
STRONTIUM	27.0		0.0699	MDL	0.411	PQL	mg/Kg	J	Q

Method Category: METALS

Method: 7471B **Matrix: SO**

Sample ID: **FDG2-SL-585-SA5D-SB-4.0-5.0** *Collected:* **5/21/2014 9:21:00** *Analysis Type:* **RES** *Dilution:* **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
MERCURY	0.0123	J	0.0112	MDL	0.0187	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: PH193 **Laboratory: LL**

EDD Filename: PrepPH193 **eQAPP Name: CDM_SSFL_140617_Lan**

Method Category: SVOA

Method: 1613B **Matrix: SO**

Sample ID: **FDG2-SL-584-SA5D-SB-0.0-0.5** *Collected:* **5/21/2014 7:52:00** *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	4.34	J	0.105	MDL	5.08	PQL	ng/Kg	J	Z
1,2,3,7,8,9-HXCDF	1.62	JB	0.118	MDL	5.08	PQL	ng/Kg	J	Z
1,2,3,7,8-PECDD	4.35	J	0.142	MDL	5.08	PQL	ng/Kg	J	Z
1,2,3,7,8-PECDF	4.19	JB	0.0694	MDL	5.08	PQL	ng/Kg	J	Z
2,3,4,7,8-PECDF	1.79	JB	0.0647	MDL	5.08	PQL	ng/Kg	J	Z
OCDD	8880	BE	0.150	MDL	10.2	PQL	ng/Kg	J	*XI

Sample ID: **FDG2-SL-584-SA5D-SB-4.0-5.0** *Collected:* **5/21/2014 8:10:00** *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	0.912	JBQ	0.0343	MDL	5.19	PQL	ng/Kg	J	Z
1,2,3,4,6,7,8-HPCDF	0.136	JBQ	0.0155	MDL	5.19	PQL	ng/Kg	U	B
1,2,3,4,7,8,9-HPCDF	0.0753	JBQ	0.0281	MDL	5.19	PQL	ng/Kg	U	B
1,2,3,4,7,8-HxCDD	0.0551	JBQ	0.0294	MDL	5.19	PQL	ng/Kg	U	B
1,2,3,4,7,8-HXCDF	0.0490	JQ	0.0277	MDL	5.19	PQL	ng/Kg	J	Z
1,2,3,6,7,8-HXCDD	0.126	JQ	0.0311	MDL	5.19	PQL	ng/Kg	J	Z
1,2,3,6,7,8-HXCDF	0.0578	JBQ	0.0242	MDL	5.19	PQL	ng/Kg	U	B
1,2,3,7,8,9-HXCDD	0.0748	JQ	0.0302	MDL	5.19	PQL	ng/Kg	J	Z
1,2,3,7,8,9-HXCDF	0.0572	JB	0.0313	MDL	5.19	PQL	ng/Kg	U	B
1,2,3,7,8-PECDD	0.0676	JQ	0.0402	MDL	5.19	PQL	ng/Kg	J	Z
1,2,3,7,8-PECDF	0.0726	JBQ	0.0247	MDL	5.19	PQL	ng/Kg	U	B
2,3,4,6,7,8-HXCDF	0.0479	JB	0.0255	MDL	5.19	PQL	ng/Kg	U	B
2,3,4,7,8-PECDF	0.0643	JBQ	0.0245	MDL	5.19	PQL	ng/Kg	U	B
OCDD	7.55	JB	0.0291	MDL	10.4	PQL	ng/Kg	J	Z
OCDF	0.543	JB	0.0434	MDL	10.4	PQL	ng/Kg	U	B

Sample ID: **FDG2-SL-585-SA5D-SB-0.0-0.5** *Collected:* **5/21/2014 9:06:00** *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	144	B	0.121	MDL	5.28	PQL	ng/Kg	J	Q, Q
1,2,3,4,6,7,8-HPCDF	17.1	B	0.0281	MDL	5.28	PQL	ng/Kg	J	FD
1,2,3,4,7,8,9-HPCDF	1.95	JB	0.0363	MDL	5.28	PQL	ng/Kg	J	Z, FD
1,2,3,4,7,8-HxCDD	1.51	JB	0.0487	MDL	5.28	PQL	ng/Kg	J	Z
1,2,3,4,7,8-HXCDF	0.950	J	0.0492	MDL	5.28	PQL	ng/Kg	J	Z, FD
1,2,3,6,7,8-HXCDF	0.955	JB	0.0482	MDL	5.28	PQL	ng/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: PH193 **Laboratory: LL**

EDD Filename: PrepPH193 **eQAPP Name: CDM_SSFL_140617_Lan**

Method Category: SVOA

Method: 1613B **Matrix: SO**

Sample ID: **FDG2-SL-585-SA5D-SB-0.0-0.5** ***Collected:*** **5/21/2014 9:06:00** ***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-HXCDD	3.64	J	0.0492	MDL	5.28	PQL	ng/Kg	J	Z
1,2,3,7,8,9-HXCDF	0.762	JB	0.0557	MDL	5.28	PQL	ng/Kg	J	Z
1,2,3,7,8-PECDD	0.990	J	0.0695	MDL	5.28	PQL	ng/Kg	J	Z
1,2,3,7,8-PECDF	1.73	JB	0.0388	MDL	5.28	PQL	ng/Kg	J	Z
2,3,4,6,7,8-HXCDF	1.24	JB	0.0486	MDL	5.28	PQL	ng/Kg	J	Z, FD
2,3,4,7,8-PECDF	1.02	JB	0.0381	MDL	5.28	PQL	ng/Kg	J	Z
2,3,7,8-TCDD	1.06	U	0.0458	MDL	1.06	PQL	ng/Kg	UJ	FD
2,3,7,8-TCDF	0.835	J	0.102	MDL	1.06	PQL	ng/Kg	J	Z
OCDF	50.0	B	0.0291	MDL	10.6	PQL	ng/Kg	J	Q, FD

Sample ID: **FDG2-SL-585-SA5D-SB-4.0-5.0** ***Collected:*** **5/21/2014 9:21:00** ***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	0.500	JBQ	0.0340	MDL	5.66	PQL	ng/Kg	U	B
1,2,3,4,6,7,8-HPCDF	0.115	JBQ	0.0143	MDL	5.66	PQL	ng/Kg	U	B
1,2,3,4,7,8,9-HPCDF	0.0440	JBQ	0.0269	MDL	5.66	PQL	ng/Kg	U	B
1,2,3,4,7,8-HxCDD	0.0647	JBQ	0.0273	MDL	5.66	PQL	ng/Kg	U	B
1,2,3,4,7,8-HXCDF	0.0625	J	0.0273	MDL	5.66	PQL	ng/Kg	J	Z
1,2,3,6,7,8-HXCDD	0.0755	J	0.0290	MDL	5.66	PQL	ng/Kg	J	Z
1,2,3,6,7,8-HXCDF	0.0523	JBQ	0.0231	MDL	5.66	PQL	ng/Kg	U	B
1,2,3,7,8,9-HXCDD	0.0701	JQ	0.0271	MDL	5.66	PQL	ng/Kg	J	Z
1,2,3,7,8,9-HXCDF	0.0526	JB	0.0300	MDL	5.66	PQL	ng/Kg	U	B
1,2,3,7,8-PECDD	0.0931	JQ	0.0491	MDL	5.66	PQL	ng/Kg	J	Z
1,2,3,7,8-PECDF	0.0883	JBQ	0.0208	MDL	5.66	PQL	ng/Kg	U	B
2,3,4,6,7,8-HXCDF	0.0478	JBQ	0.0246	MDL	5.66	PQL	ng/Kg	U	B
2,3,4,7,8-PECDF	0.0216	JBQ	0.0203	MDL	5.66	PQL	ng/Kg	U	B
OCDD	4.25	JB	0.0382	MDL	11.3	PQL	ng/Kg	J	Z
OCDF	0.272	JBQ	0.0424	MDL	11.3	PQL	ng/Kg	U	B

Sample ID: **FDG2-SL-586-SA5D-SB-0.0-0.5** ***Collected:*** **5/21/2014 10:25:00** ***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-HPCDD	2.59	JB	0.0150	MDL	5.05	PQL	ng/Kg	J	Z
1,2,3,4,6,7,8-HPCDF	0.439	JB	0.00525	MDL	5.05	PQL	ng/Kg	J	Z
1,2,3,4,7,8,9-HPCDF	0.0828	JB	0.0103	MDL	5.05	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: PH193 **Laboratory: LL**

EDD Filename: PrepPH193 **eQAPP Name: CDM_SSFL_140617_Lan**

Method Category: SVOA

Method: 1613B **Matrix: SO**

Sample ID: FDG2-SL-586-SA5D-SB-0.0-0.5 **Collected: 5/21/2014 10:25:00** **Analysis Type: RES** **Dilution: 1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
1,2,3,4,7,8-HxCDD	0.0749	JB	0.0158	MDL	5.05	PQL	ng/Kg	U	B
1,2,3,4,7,8-HXCDF	0.107	J	0.0170	MDL	5.05	PQL	ng/Kg	J	Z
1,2,3,6,7,8-HXCDD	1.15	J	0.0159	MDL	5.05	PQL	ng/Kg	J	Z
1,2,3,6,7,8-HXCDF	0.175	JB	0.0141	MDL	5.05	PQL	ng/Kg	U	B
1,2,3,7,8,9-HXCDD	1.52	J	0.0156	MDL	5.05	PQL	ng/Kg	J	Z
1,2,3,7,8,9-HXCDF	1.88	JB	0.0176	MDL	5.05	PQL	ng/Kg	J	Z
1,2,3,7,8-PECDD	0.314	J	0.0181	MDL	5.05	PQL	ng/Kg	J	Z
1,2,3,7,8-PECDF	0.531	JB	0.00750	MDL	5.05	PQL	ng/Kg	J	Z
2,3,4,6,7,8-HXCDF	0.0953	JB	0.0140	MDL	5.05	PQL	ng/Kg	U	B
2,3,4,7,8-PECDF	0.180	JB	0.00758	MDL	5.05	PQL	ng/Kg	U	B
2,3,7,8-TCDD	0.0430	JB	0.0136	MDL	1.01	PQL	ng/Kg	U	B
2,3,7,8-TCDF	0.0941	J	0.0147	MDL	1.01	PQL	ng/Kg	J	Z
OCDF	1.34	JB	0.00971	MDL	10.1	PQL	ng/Kg	J	Z

Sample ID: FDG2-SL-586-SA5D-SB-2.0-3.0 **Collected: 5/21/2014 10:32:00** **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	0.149	JB	0.00760	MDL	5.11	PQL	ng/Kg	U	B
1,2,3,4,6,7,8-HPCDF	0.0609	JB	0.00241	MDL	5.11	PQL	ng/Kg	U	B
1,2,3,4,7,8,9-HPCDF	0.0332	JB	0.00434	MDL	5.11	PQL	ng/Kg	U	B
1,2,3,4,7,8-HxCDD	0.0289	JBQ	0.00863	MDL	5.11	PQL	ng/Kg	U	B
1,2,3,4,7,8-HXCDF	0.0367	JQ	0.00533	MDL	5.11	PQL	ng/Kg	J	Z
1,2,3,6,7,8-HXCDD	0.0356	J	0.00865	MDL	5.11	PQL	ng/Kg	J	Z
1,2,3,6,7,8-HXCDF	0.0391	JBQ	0.00459	MDL	5.11	PQL	ng/Kg	U	B
1,2,3,7,8,9-HXCDD	0.0395	J	0.00889	MDL	5.11	PQL	ng/Kg	J	Z
1,2,3,7,8,9-HXCDF	0.0388	JBQ	0.00576	MDL	5.11	PQL	ng/Kg	U	B
1,2,3,7,8-PECDD	0.0245	JQ	0.00653	MDL	5.11	PQL	ng/Kg	J	Z
1,2,3,7,8-PECDF	0.0427	JB	0.00319	MDL	5.11	PQL	ng/Kg	U	B
2,3,4,6,7,8-HXCDF	0.0315	JB	0.00489	MDL	5.11	PQL	ng/Kg	U	B
2,3,7,8-TCDD	0.00908	JBQ	0.00729	MDL	1.02	PQL	ng/Kg	U	B
OCDD	0.984	JB	0.00694	MDL	10.2	PQL	ng/Kg	U	B
OCDF	0.174	JB	0.00610	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: PH193 **Laboratory: LL**

EDD Filename: PrepPH193 **eQAPP Name: CDM_SSFL_140617_Lan**

Method Category: SVOA

Method: 1613B **Matrix: SO**

Sample ID: **FDG2-SL-885-SA5D-SB-0.0-0.5** *Collected:* **5/21/2014 9:16:00** *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	32.8	B	0.0414	MDL	5.10	PQL	ng/Kg	J	FD
1,2,3,4,7,8,9-HPCDF	3.43	JB	0.0532	MDL	5.10	PQL	ng/Kg	J	Z, FD
1,2,3,4,7,8-HxCDD	2.10	JB	0.0632	MDL	5.10	PQL	ng/Kg	J	Z
1,2,3,4,7,8-HXCDF	1.95	J	0.0794	MDL	5.10	PQL	ng/Kg	J	Z, FD
1,2,3,6,7,8-HXCDF	1.64	JB	0.0766	MDL	5.10	PQL	ng/Kg	J	Z, FD
1,2,3,7,8,9-HXCDD	4.30	J	0.0590	MDL	5.10	PQL	ng/Kg	J	Z
1,2,3,7,8,9-HXCDF	1.04	JB	0.0770	MDL	5.10	PQL	ng/Kg	J	Z
1,2,3,7,8-PECDD	1.11	J	0.0862	MDL	5.10	PQL	ng/Kg	J	Z
1,2,3,7,8-PECDF	1.81	JB	0.0525	MDL	5.10	PQL	ng/Kg	J	Z
2,3,4,6,7,8-HXCDF	2.15	JB	0.0743	MDL	5.10	PQL	ng/Kg	J	Z, FD
2,3,4,7,8-PECDF	1.15	JB	0.0502	MDL	5.10	PQL	ng/Kg	J	Z
2,3,7,8-TCDD	0.0875	JBQ	0.0543	MDL	1.02	PQL	ng/Kg	UJ	B, FD
2,3,7,8-TCDF	0.690	J	0.130	MDL	1.02	PQL	ng/Kg	J	Z
OCDF	104	B	0.0317	MDL	10.2	PQL	ng/Kg	J	FD

Method Category: SVOA

Method: 8015M **Matrix: SO**

Sample ID: **FDG2-SL-584-SA5D-SB-0.0-0.5** *Collected:* **5/21/2014 7:52:00** *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)	5.2	U	2.1	MDL	5.2	PQL	mg/Kg	UJ	C
EFH (C15-C20)	3.1	J	2.1	MDL	5.2	PQL	mg/Kg	J	Z, C
EFH (C21-C30)	30		2.1	MDL	5.2	PQL	mg/Kg	J	C
EFH (C30-C40)	48		4.2	MDL	10	PQL	mg/Kg	J	C
EFH (C8-C11)	5.2	U	2.1	MDL	5.2	PQL	mg/Kg	UJ	C

Sample ID: **FDG2-SL-584-SA5D-SB-4.0-5.0** *Collected:* **5/21/2014 8:10:00** *Analysis Type:* **RES** *Dilution:* **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
EFH (C12-C14)	5.3	U	2.1	MDL	5.3	PQL	mg/Kg	UJ	C
EFH (C15-C20)	5.3	U	2.1	MDL	5.3	PQL	mg/Kg	UJ	C
EFH (C21-C30)	5.3	U	2.1	MDL	5.3	PQL	mg/Kg	UJ	C
EFH (C30-C40)	11	U	4.2	MDL	11	PQL	mg/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: PH193 **Laboratory: LL**

EDD Filename: PrepPH193 **eQAPP Name: CDM_SSFL_140617_Lan**

Method Category: SVOA

Method: 8015M **Matrix: SO**

Sample ID: FDG2-SL-584-SA5D-SB-4.0-5.0 **Collected: 5/21/2014 8:10:00** **Analysis Type: RES** **Dilution: 1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
EFH (C8-C11)	5.3	U	2.1	MDL	5.3	PQL	mg/Kg	UJ	C

Sample ID: FDG2-SL-585-SA5D-SB-0.0-0.5 **Collected: 5/21/2014 9:06:00** **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	2.7	J	2.1	MDL	5.3	PQL	mg/Kg	J	Z, Q, Q, FD
EFH (C30-C40) SG	5.7	J	4.2	MDL	11	PQL	mg/Kg	J	Z, Q, Q, FD

Sample ID: FDG2-SL-585-SA5D-SB-0.0-0.5 **Collected: 5/21/2014 9:06:00** **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)	5.3	U	2.1	MDL	5.3	PQL	mg/Kg	UJ	C
EFH (C15-C20)	5.3	U	2.1	MDL	5.3	PQL	mg/Kg	UJ	C, FD
EFH (C21-C30)	7.3		2.1	MDL	5.3	PQL	mg/Kg	J	Q, Q, C, FD
EFH (C30-C40)	18		4.2	MDL	11	PQL	mg/Kg	J	Q, Q, C, FD
EFH (C8-C11)	5.3	U	2.1	MDL	5.3	PQL	mg/Kg	UJ	C

Sample ID: FDG2-SL-585-SA5D-SB-4.0-5.0 **Collected: 5/21/2014 9:21:00** **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)	5.7	U	2.3	MDL	5.7	PQL	mg/Kg	UJ	C
EFH (C15-C20)	5.7	U	2.3	MDL	5.7	PQL	mg/Kg	UJ	C
EFH (C21-C30)	5.7	U	2.3	MDL	5.7	PQL	mg/Kg	UJ	C
EFH (C30-C40)	11	U	4.6	MDL	11	PQL	mg/Kg	UJ	C
EFH (C8-C11)	5.7	U	2.3	MDL	5.7	PQL	mg/Kg	UJ	C

Sample ID: FDG2-SL-586-SA5D-SB-0.0-0.5 **Collected: 5/21/2014 10:25:00** **Analysis Type: RES** **Dilution: 1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
EFH (C12-C14)	5.2	U	2.1	MDL	5.2	PQL	mg/Kg	UJ	C
EFH (C15-C20)	5.2	U	2.1	MDL	5.2	PQL	mg/Kg	UJ	C
EFH (C21-C30)	11		2.1	MDL	5.2	PQL	mg/Kg	J	C
EFH (C30-C40)	22		4.2	MDL	10	PQL	mg/Kg	J	C
EFH (C8-C11)	5.2	U	2.1	MDL	5.2	PQL	mg/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: PH193 **Laboratory: LL**

EDD Filename: PrepPH193 **eQAPP Name: CDM_SSFL_140617_Lan**

Method Category: **SVOA**

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

Sample ID: **FDG2-SL-586-SA5D-SB-2.0-3.0** ***Collected:*** **5/21/2014 10:32:00** ***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)	5.3	U	2.1	MDL	5.3	PQL	mg/Kg	UJ	C
EFH (C15-C20)	5.3	U	2.1	MDL	5.3	PQL	mg/Kg	UJ	C
EFH (C21-C30)	5.3	U	2.1	MDL	5.3	PQL	mg/Kg	UJ	C
EFH (C30-C40)	11	U	4.2	MDL	11	PQL	mg/Kg	UJ	C
EFH (C8-C11)	5.3	U	2.1	MDL	5.3	PQL	mg/Kg	UJ	C

Sample ID: **FDG2-SL-623-SA8-SB-0.0-0.5** ***Collected:*** **5/21/2014 1:14:00** ***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)	5.4	U	2.2	MDL	5.4	PQL	mg/Kg	UJ	C
EFH (C15-C20)	2.8	J	2.2	MDL	5.4	PQL	mg/Kg	J	Z, C
EFH (C21-C30)	13		2.2	MDL	5.4	PQL	mg/Kg	J	C
EFH (C30-C40)	20		4.4	MDL	11	PQL	mg/Kg	J	C
EFH (C8-C11)	5.4	U	2.2	MDL	5.4	PQL	mg/Kg	UJ	C

Sample ID: **FDG2-SL-623-SA8-SB-14.0-15.0** ***Collected:*** **5/21/2014 1:56:00** ***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)	5.3	U	2.1	MDL	5.3	PQL	mg/Kg	UJ	C
EFH (C15-C20)	5.3	U	2.1	MDL	5.3	PQL	mg/Kg	UJ	C
EFH (C21-C30)	5.3	U	2.1	MDL	5.3	PQL	mg/Kg	UJ	C
EFH (C30-C40)	11	U	4.2	MDL	11	PQL	mg/Kg	UJ	C
EFH (C8-C11)	5.3	U	2.1	MDL	5.3	PQL	mg/Kg	UJ	C

Sample ID: **FDG2-SL-623-SA8-SB-19.0-20.0** ***Collected:*** **5/21/2014 2:14:00** ***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)	5.2	U	2.1	MDL	5.2	PQL	mg/Kg	UJ	C
EFH (C15-C20)	5.2	U	2.1	MDL	5.2	PQL	mg/Kg	UJ	C
EFH (C21-C30)	5.2	U	2.1	MDL	5.2	PQL	mg/Kg	UJ	C
EFH (C30-C40)	10	U	4.2	MDL	10	PQL	mg/Kg	UJ	C
EFH (C8-C11)	5.2	U	2.1	MDL	5.2	PQL	mg/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: PH193 **Laboratory: LL**

EDD Filename: PrepPH193 **eQAPP Name: CDM_SSFL_140617_Lan**

Method Category: SVOA

Method: 8015M **Matrix: SO**

Sample ID: **FDG2-SL-623-SA8-SB-4.0-5.0** *Collected:* **5/21/2014 1:21:00** *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)	5.3	U	2.1	MDL	5.3	PQL	mg/Kg	UJ	C
EFH (C15-C20)	5.3	U	2.1	MDL	5.3	PQL	mg/Kg	UJ	C
EFH (C21-C30)	5.3	U	2.1	MDL	5.3	PQL	mg/Kg	UJ	C
EFH (C30-C40)	11	U	4.2	MDL	11	PQL	mg/Kg	UJ	C
EFH (C8-C11)	5.3	U	2.1	MDL	5.3	PQL	mg/Kg	UJ	C

Sample ID: **FDG2-SL-623-SA8-SB-9.0-10.0** *Collected:* **5/21/2014 1:41:00** *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)	5.3	U	2.1	MDL	5.3	PQL	mg/Kg	UJ	C
EFH (C15-C20)	5.3	U	2.1	MDL	5.3	PQL	mg/Kg	UJ	C
EFH (C21-C30)	5.3	U	2.1	MDL	5.3	PQL	mg/Kg	UJ	C
EFH (C30-C40)	11	U	4.2	MDL	11	PQL	mg/Kg	UJ	C
EFH (C8-C11)	5.3	U	2.1	MDL	5.3	PQL	mg/Kg	UJ	C

Sample ID: **FDG2-SL-885-SA5D-SB-0.0-0.5** *Collected:* **5/21/2014 9:16:00** *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)	13	J	10	MDL	26	PQL	mg/Kg	J	Z, FD
EFH (C21-C30)	150		10	MDL	26	PQL	mg/Kg	J	FD
EFH (C30-C40)	350		21	MDL	52	PQL	mg/Kg	J	FD

Sample ID: **FDG2-SL-885-SA5D-SB-0.0-0.5** *Collected:* **5/21/2014 9:16:00** *Analysis Type:* **RES** *Dilution:* **2**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
EFH (C21-C30) SG	55		4.2	MDL	10	PQL	mg/Kg	J	FD
EFH (C30-C40) SG	100		8.4	MDL	21	PQL	mg/Kg	J	FD

Method Category: SVOA

Method: 8081B **Matrix: SO**

Sample ID: **FDG2-SL-584-SA5D-SB-0.0-0.5** *Collected:* **5/21/2014 7:52:00** *Analysis Type:* **RES** *Dilution:* **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
gamma-BHC (Lindane)	0.21	J	0.18	MDL	0.85	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: PH193 **Laboratory: LL**

EDD Filename: PrepPH193 **eQAPP Name: CDM_SSFL_140617_Lan**

Method Category: SVOA

Method: 8081B **Matrix: SO**

Sample ID: **FDG2-SL-585-SA5D-SB-0.0-0.5** *Collected:* **5/21/2014 9:06:00** *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	7.8		0.36	MDL	1.8	PQL	ug/Kg	J	Q, Q
DIELDRIN	1.8	U	0.85	MDL	1.8	PQL	ug/Kg	UJ	FD

Sample ID: **FDG2-SL-885-SA5D-SB-0.0-0.5** *Collected:* **5/21/2014 9:16:00** *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	1.6	J	0.34	MDL	1.8	PQL	ug/Kg	J	Z
DIELDRIN	1.2	J	0.34	MDL	1.8	PQL	ug/Kg	J	Z, FD

Method Category: SVOA

Method: 8082A **Matrix: SO**

Sample ID: **FDG2-SL-584-SA5D-SB-0.0-0.5** *Collected:* **5/21/2014 7:52:00** *Analysis Type:* **RES** *Dilution:* **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
Aroclor 5460	27	J	10	MDL	34	PQL	ug/Kg	J	Z

Sample ID: **FDG2-SL-585-SA5D-SB-0.0-0.5** *Collected:* **5/21/2014 9:06:00** *Analysis Type:* **RES** *Dilution:* **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
Aroclor 5460	26	J	10	MDL	34	PQL	ug/Kg	J	Z

Sample ID: **FDG2-SL-885-SA5D-SB-0.0-0.5** *Collected:* **5/21/2014 9:16:00** *Analysis Type:* **RES** *Dilution:* **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
Aroclor 5460	22	J	10	MDL	34	PQL	ug/Kg	J	Z

Method Category: SVOA

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

Sample ID: **FDG2-SL-584-SA5D-SB-0.0-0.5** *Collected:* **5/21/2014 7:52:00** *Analysis Type:* **RES-BASE/NEUTRAL** *Dilution:* **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
ACENAPHTHYLENE	1.6	J	0.35	MDL	1.7	PQL	ug/Kg	J	Z
FLUORENE	0.81	J	0.70	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: PH193 **Laboratory: LL**

EDD Filename: PrepPH193 **eQAPP Name: CDM_SSFL_140617_Lan**

Method Category: **SVOA**

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

Sample ID: **FDG2-SL-585-SA5D-SB-0.0-0.5** ***Collected:*** **5/21/2014 9:06:00** ***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	0.70	MDL	1.8	PQL	ug/Kg	J	Z
ACENAPHTHYLENE	0.35	J	0.35	MDL	1.8	PQL	ug/Kg	J	Z
ANTHRACENE	1.7	J	0.35	MDL	1.8	PQL	ug/Kg	J	Z
BENZO(B)FLUORANTHENE	18		0.70	MDL	1.8	PQL	ug/Kg	J	Q
BENZO(E)PYRENE	13	J	3.5	MDL	18	PQL	ug/Kg	J	Z, Q, Q
BENZO(G,H,I)PERYLENE	11		0.70	MDL	1.8	PQL	ug/Kg	J	Q, Q, FD
CHRYSENE	14		0.35	MDL	1.8	PQL	ug/Kg	J	Q
Di-n-butylphthalate	7.1	J	6.3	MDL	19	PQL	ug/Kg	J	Z, FD
FLUORANTHENE	11		0.70	MDL	1.8	PQL	ug/Kg	J	Q
INDENO(1,2,3-CD)PYRENE	13		0.70	MDL	1.8	PQL	ug/Kg	J	Q, FD
PHENANTHRENE	8.4		0.70	MDL	1.8	PQL	ug/Kg	J	Q

Sample ID: **FDG2-SL-586-SA5D-SB-0.0-0.5** ***Collected:*** **5/21/2014 10:25:00** ***Analysis Type:*** **RES-BASE/NEUTRAL** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
1-METHYLNAPHTHALENE	0.72	J	0.70	MDL	1.7	PQL	ug/Kg	J	Z
2-METHYLNAPHTHALENE	1.3	J	0.70	MDL	1.7	PQL	ug/Kg	J	Z
BENZO(B)FLUORANTHENE	1.0	J	0.70	MDL	1.7	PQL	ug/Kg	J	Z
BIS(2-ETHYLHEXYL)PHTHALATE	12	J	6.3	MDL	19	PQL	ug/Kg	J	Z
CHRYSENE	1.2	J	0.35	MDL	1.7	PQL	ug/Kg	J	Z
FLUORANTHENE	1.2	J	0.70	MDL	1.7	PQL	ug/Kg	J	Z
NAPHTHALENE	0.77	J	0.70	MDL	1.7	PQL	ug/Kg	J	Z
PHENANTHRENE	1.0	J	0.70	MDL	1.7	PQL	ug/Kg	J	Z
PYRENE	0.89	J	0.70	MDL	1.7	PQL	ug/Kg	J	Z

Sample ID: **FDG2-SL-623-SA8-SB-9.0-10.0** ***Collected:*** **5/21/2014 1:41:00** ***Analysis Type:*** **RES-BASE/NEUTRAL** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
BIS(2-ETHYLHEXYL)PHTHALATE	11	J	6.3	MDL	19	PQL	ug/Kg	J	Z

Sample ID: **FDG2-SL-885-SA5D-SB-0.0-0.5** ***Collected:*** **5/21/2014 9:16:00** ***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	1.3	J	0.70	MDL	1.7	PQL	ug/Kg	J	Z
ACENAPHTHYLENE	0.49	J	0.35	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: PH193 **Laboratory: LL**

EDD Filename: PrepPH193 **eQAPP Name: CDM_SSFL_140617_Lan**

Method Category: **SVOA**

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

Sample ID: **FDG2-SL-885-SA5D-SB-0.0-0.5** ***Collected:*** **5/21/2014 9:16:00** ***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(G,H,I)PERYLENE	20		0.70	MDL	1.7	PQL	ug/Kg	J	FD
Di-n-butylphthalate	19	U	6.3	MDL	19	PQL	ug/Kg	UJ	FD
INDENO(1,2,3-CD)PYRENE	22		0.70	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: PH193 **Laboratory: LL**

EDD Filename: PrepPH193 **eQAPP Name: CDM_SSFL_140617_Lan**

Reason Code Legend

Reason Code	*Description*
*XI	Exceeded Calibration Range
A	ICP Serial Dilution
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 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

PH193

Method Blank Outlier Report

Lab Reporting Batch ID: PH193 **Laboratory: LL**

EDD Filename: PH193_v3. **eQAPP Name: CDM_SSFL_140617_Lan**

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

Method Blank Sample ID	Analysis Date	Analyte	Result	Associated Samples
BLK1490B371855	6/2/2014 6:55:00 PM	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-HxCDD 1,2,3,6,7,8-HXCDF 1,2,3,7,8,9-HXCDF 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	0.138 ng/Kg 0.0309 ng/Kg 0.0568 ng/Kg 0.0301 ng/Kg 0.0424 ng/Kg 0.0302 ng/Kg 0.0624 ng/Kg 0.0252 ng/Kg 0.0410 ng/Kg 0.0770 ng/Kg 0.831 ng/Kg 0.119 ng/Kg	FDG2-SL-584-SA5D-SB-0.0-0.5 FDG2-SL-584-SA5D-SB-4.0-5.0 FDG2-SL-585-SA5D-SB-0.0-0.5 FDG2-SL-585-SA5D-SB-4.0-5.0 FDG2-SL-586-SA5D-SB-0.0-0.5 FDG2-SL-586-SA5D-SB-2.0-3.0 FDG2-SL-885-SA5D-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-584-SA5D-SB-4.0-5.0(RES)	1,2,3,4,6,7,8-HPCDF	0.136 ng/Kg	0.136U ng/Kg
FDG2-SL-584-SA5D-SB-4.0-5.0(RES)	1,2,3,4,7,8,9-HPCDF	0.0753 ng/Kg	0.0753U ng/Kg
FDG2-SL-584-SA5D-SB-4.0-5.0(RES)	1,2,3,4,7,8-HxCDD	0.0551 ng/Kg	0.0551U ng/Kg
FDG2-SL-584-SA5D-SB-4.0-5.0(RES)	1,2,3,6,7,8-HXCDF	0.0578 ng/Kg	0.0578U ng/Kg
FDG2-SL-584-SA5D-SB-4.0-5.0(RES)	1,2,3,7,8,9-HXCDF	0.0572 ng/Kg	0.0572U ng/Kg
FDG2-SL-584-SA5D-SB-4.0-5.0(RES)	1,2,3,7,8-PECDF	0.0726 ng/Kg	0.0726U ng/Kg
FDG2-SL-584-SA5D-SB-4.0-5.0(RES)	2,3,4,6,7,8-HXCDF	0.0479 ng/Kg	0.0479U ng/Kg
FDG2-SL-584-SA5D-SB-4.0-5.0(RES)	2,3,4,7,8-PECDF	0.0643 ng/Kg	0.0643U ng/Kg
FDG2-SL-584-SA5D-SB-4.0-5.0(RES)	OCDF	0.543 ng/Kg	0.543U ng/Kg
FDG2-SL-585-SA5D-SB-4.0-5.0(RES)	1,2,3,4,6,7,8-HPCDD	0.500 ng/Kg	0.500U ng/Kg
FDG2-SL-585-SA5D-SB-4.0-5.0(RES)	1,2,3,4,6,7,8-HPCDF	0.115 ng/Kg	0.115U ng/Kg
FDG2-SL-585-SA5D-SB-4.0-5.0(RES)	1,2,3,4,7,8,9-HPCDF	0.0440 ng/Kg	0.0440U ng/Kg
FDG2-SL-585-SA5D-SB-4.0-5.0(RES)	1,2,3,4,7,8-HxCDD	0.0647 ng/Kg	0.0647U ng/Kg
FDG2-SL-585-SA5D-SB-4.0-5.0(RES)	1,2,3,6,7,8-HXCDF	0.0523 ng/Kg	0.0523U ng/Kg
FDG2-SL-585-SA5D-SB-4.0-5.0(RES)	1,2,3,7,8,9-HXCDF	0.0526 ng/Kg	0.0526U ng/Kg
FDG2-SL-585-SA5D-SB-4.0-5.0(RES)	1,2,3,7,8-PECDF	0.0883 ng/Kg	0.0883U ng/Kg
FDG2-SL-585-SA5D-SB-4.0-5.0(RES)	2,3,4,6,7,8-HXCDF	0.0478 ng/Kg	0.0478U ng/Kg
FDG2-SL-585-SA5D-SB-4.0-5.0(RES)	2,3,4,7,8-PECDF	0.0216 ng/Kg	0.0216U ng/Kg
FDG2-SL-585-SA5D-SB-4.0-5.0(RES)	OCDF	0.272 ng/Kg	0.272U ng/Kg
FDG2-SL-586-SA5D-SB-0.0-0.5(RES)	1,2,3,4,7,8,9-HPCDF	0.0828 ng/Kg	0.0828U ng/Kg
FDG2-SL-586-SA5D-SB-0.0-0.5(RES)	1,2,3,4,7,8-HxCDD	0.0749 ng/Kg	0.0749U ng/Kg
FDG2-SL-586-SA5D-SB-0.0-0.5(RES)	1,2,3,6,7,8-HXCDF	0.175 ng/Kg	0.175U ng/Kg
FDG2-SL-586-SA5D-SB-0.0-0.5(RES)	2,3,4,6,7,8-HXCDF	0.0953 ng/Kg	0.0953U ng/Kg
FDG2-SL-586-SA5D-SB-0.0-0.5(RES)	2,3,4,7,8-PECDF	0.180 ng/Kg	0.180U ng/Kg
FDG2-SL-586-SA5D-SB-0.0-0.5(RES)	2,3,7,8-TCDD	0.0430 ng/Kg	0.0430U ng/Kg
FDG2-SL-586-SA5D-SB-2.0-3.0(RES)	1,2,3,4,6,7,8-HPCDD	0.149 ng/Kg	0.149U ng/Kg
FDG2-SL-586-SA5D-SB-2.0-3.0(RES)	1,2,3,4,6,7,8-HPCDF	0.0609 ng/Kg	0.0609U ng/Kg
FDG2-SL-586-SA5D-SB-2.0-3.0(RES)	1,2,3,4,7,8,9-HPCDF	0.0332 ng/Kg	0.0332U ng/Kg
FDG2-SL-586-SA5D-SB-2.0-3.0(RES)	1,2,3,4,7,8-HxCDD	0.0289 ng/Kg	0.0289U ng/Kg
FDG2-SL-586-SA5D-SB-2.0-3.0(RES)	1,2,3,6,7,8-HXCDF	0.0391 ng/Kg	0.0391U ng/Kg
FDG2-SL-586-SA5D-SB-2.0-3.0(RES)	1,2,3,7,8,9-HXCDF	0.0388 ng/Kg	0.0388U ng/Kg

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

Method Blank Outlier Report

Lab Reporting Batch ID: PH193 **Laboratory: LL**

EDD Filename: PH193_v3. **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-586-SA5D-SB-2.0-3.0(RES)	1,2,3,7,8-PECDF	0.0427 ng/Kg	0.0427U ng/Kg
FDG2-SL-586-SA5D-SB-2.0-3.0(RES)	2,3,4,6,7,8-HXCDF	0.0315 ng/Kg	0.0315U ng/Kg
FDG2-SL-586-SA5D-SB-2.0-3.0(RES)	2,3,7,8-TCDD	0.00908 ng/Kg	0.00908U ng/Kg
FDG2-SL-586-SA5D-SB-2.0-3.0(RES)	OCDD	0.984 ng/Kg	0.984U ng/Kg
FDG2-SL-586-SA5D-SB-2.0-3.0(RES)	OCDF	0.174 ng/Kg	0.174U ng/Kg
FDG2-SL-885-SA5D-SB-0.0-0.5(RES)	2,3,7,8-TCDD	0.0875 ng/Kg	0.0875U ng/Kg

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

Method Blank Sample ID	Analysis Date	Analyte	Result	Associated Samples
P14737CB221255	5/30/2014 12:55:00 PM	BORON CALCIUM TIN	1.59 mg/Kg 27.9 mg/Kg 1.57 mg/Kg	FDG2-SL-584-SA5D-SB-0.0-0.5 FDG2-SL-584-SA5D-SB-4.0-5.0 FDG2-SL-585-SA5D-SB-0.0-0.5 FDG2-SL-585-SA5D-SB-4.0-5.0 FDG2-SL-586-SA5D-SB-0.0-0.5 FDG2-SL-586-SA5D-SB-2.0-3.0 FDG2-SL-623-SA8-SB-14.0-15.0 FDG2-SL-623-SA8-SB-19.0-20.0 FDG2-SL-623-SA8-SB-9.0-10.0 FDG2-SL-885-SA5D-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-584-SA5D-SB-0.0-0.5(RES)	BORON	5.41 mg/Kg	5.41U mg/Kg
FDG2-SL-584-SA5D-SB-0.0-0.5(RES)	TIN	2.63 mg/Kg	2.63U mg/Kg
FDG2-SL-584-SA5D-SB-4.0-5.0(RES)	BORON	3.20 mg/Kg	3.20U mg/Kg
FDG2-SL-584-SA5D-SB-4.0-5.0(RES)	TIN	2.44 mg/Kg	2.44U mg/Kg
FDG2-SL-585-SA5D-SB-0.0-0.5(RES)	BORON	5.14 mg/Kg	5.14U mg/Kg
FDG2-SL-585-SA5D-SB-0.0-0.5(RES)	TIN	2.25 mg/Kg	2.25U mg/Kg
FDG2-SL-585-SA5D-SB-4.0-5.0(RES)	BORON	6.03 mg/Kg	6.03U mg/Kg
FDG2-SL-585-SA5D-SB-4.0-5.0(RES)	TIN	3.03 mg/Kg	3.03U mg/Kg
FDG2-SL-586-SA5D-SB-0.0-0.5(RES)	BORON	4.32 mg/Kg	4.32U mg/Kg
FDG2-SL-586-SA5D-SB-0.0-0.5(RES)	TIN	2.65 mg/Kg	2.65U mg/Kg
FDG2-SL-586-SA5D-SB-2.0-3.0(RES)	BORON	2.56 mg/Kg	2.56U mg/Kg
FDG2-SL-586-SA5D-SB-2.0-3.0(RES)	TIN	2.40 mg/Kg	2.40U mg/Kg

Method Blank Outlier Report

Lab Reporting Batch ID: PH193 **Laboratory: LL**

EDD Filename: PH193_v3. **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-623-SA8-SB-14.0-15.0(RES)	BORON	5.90 mg/Kg	5.90U mg/Kg
FDG2-SL-623-SA8-SB-14.0-15.0(RES)	TIN	2.91 mg/Kg	2.91U mg/Kg
FDG2-SL-623-SA8-SB-19.0-20.0(RES)	BORON	5.60 mg/Kg	5.60U mg/Kg
FDG2-SL-623-SA8-SB-19.0-20.0(RES)	TIN	2.77 mg/Kg	2.77U mg/Kg
FDG2-SL-623-SA8-SB-9.0-10.0(RES)	BORON	4.68 mg/Kg	4.68U mg/Kg
FDG2-SL-623-SA8-SB-9.0-10.0(RES)	TIN	2.82 mg/Kg	2.82U mg/Kg
FDG2-SL-885-SA5D-SB-0.0-0.5(RES)	BORON	5.55 mg/Kg	5.55U mg/Kg
FDG2-SL-885-SA5D-SB-0.0-0.5(RES)	TIN	2.30 mg/Kg	2.30U mg/Kg

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

Method Blank Sample ID	Analysis Date	Analyte	Result	Associated Samples
P14737CB222047A	5/28/2014 8:47:00 PM	STRONTIUM	0.125 mg/Kg	FDG2-SL-584-SA5D-SB-0.0-0.5 FDG2-SL-584-SA5D-SB-4.0-5.0 FDG2-SL-585-SA5D-SB-0.0-0.5 FDG2-SL-585-SA5D-SB-4.0-5.0 FDG2-SL-586-SA5D-SB-0.0-0.5 FDG2-SL-586-SA5D-SB-2.0-3.0 FDG2-SL-623-SA8-SB-14.0-15.0 FDG2-SL-623-SA8-SB-19.0-20.0 FDG2-SL-623-SA8-SB-9.0-10.0 FDG2-SL-885-SA5D-SB-0.0-0.5

Equipment Rinsate Blank Outlier Report

Lab Reporting Batch ID: PH193 **Laboratory: LL**

EDD Filename: PrepPH193 **eQAPP Name: CDM_SSFL_140617_Lan**

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

Equipment Blank Sample ID	Collected Date	Analyte	Result	Associated Samples
EB2-052214(RES)	5/22/2014 3:30:00 PM	Zirconium	0.0108 mg/L	FDG2-SL-584-SA5D-SB-0.0-0.5 FDG2-SL-584-SA5D-SB-4.0-5.0 FDG2-SL-585-SA5D-SB-0.0-0.5 FDG2-SL-585-SA5D-SB-4.0-5.0 FDG2-SL-586-SA5D-SB-0.0-0.5 FDG2-SL-586-SA5D-SB-2.0-3.0 FDG2-SL-623-SA8-SB-0.0-0.5 FDG2-SL-623-SA8-SB-14.0-15.0 FDG2-SL-623-SA8-SB-19.0-20.0 FDG2-SL-623-SA8-SB-4.0-5.0 FDG2-SL-623-SA8-SB-9.0-10.0 FDG2-SL-885-SA5D-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-584-SA5D-SB-0.0-0.5(RES)	Zirconium	3.63 mg/Kg	3.63U mg/Kg
FDG2-SL-584-SA5D-SB-4.0-5.0(RES)	Zirconium	5.17 mg/Kg	5.17U mg/Kg
FDG2-SL-585-SA5D-SB-0.0-0.5(RES)	Zirconium	4.44 mg/Kg	4.44U mg/Kg
FDG2-SL-586-SA5D-SB-2.0-3.0(RES)	Zirconium	4.93 mg/Kg	4.93U mg/Kg
FDG2-SL-623-SA8-SB-14.0-15.0(RES)	Zirconium	4.11 mg/Kg	4.11U mg/Kg
FDG2-SL-623-SA8-SB-19.0-20.0(RES)	Zirconium	3.01 mg/Kg	3.01U mg/Kg
FDG2-SL-623-SA8-SB-9.0-10.0(RES)	Zirconium	3.26 mg/Kg	3.26U mg/Kg
FDG2-SL-885-SA5D-SB-0.0-0.5(RES)	Zirconium	4.92 mg/Kg	4.92U mg/Kg

Matrix Spike/Matrix Spike Duplicate Outlier Report

Lab Reporting Batch ID: PH193 **Laboratory: LL**

EDD Filename: PH193_v3. **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-585-SA5D-SB-0.0-0.5MSD (FDG2-SL-585-SA5D-SB-0.0-0.5)	4,4'-DDT	-	0	12.00-193.00	54 (50.00)	4,4'-DDT	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-585-SA5D-SB-0.0-0.5MS FDG2-SL-585-SA5D-SB-0.0-0.5MSD (FDG2-SL-585-SA5D-SB-0.0-0.5)	EFH (C15-C20) EFH (C21-C30) EFH (C30-C40)	140 353 484	- 130 156	49.00-123.00 49.00-123.00 49.00-123.00	- 75 (20.00) 76 (20.00)	EFH (C15-C20) EFH (C21-C30) EFH (C30-C40)	J(all detects)
FDG2-SL-585-SA5D-SB-0.0-0.5MS FDG2-SL-585-SA5D-SB-0.0-0.5MSD (FDG2-SL-585-SA5D-SB-0.0-0.5)	EFH (C21-C30) SG EFH (C30-C40) SG	196 216	- -	49.00-123.00 49.00-123.00	79 (20.00) 80 (20.00)	EFH (C21-C30) EFH (C30-C40)	J(all detects)

Method: 1613B
Matrix: SO

QC Sample ID (Associated Samples)	Compound	MS %R	MSD %R	%R Limits	RPD (Limits)	Affected Compounds	Flag
FDG2-SL-585-SA5D-SB-0.0-0.5MSD (FDG2-SL-585-SA5D-SB-0.0-0.5)	OCDF	-	-	40.00-135.00	24 (20.00)	OCDF	J(all detects)
FDG2-SL-585-SA5D-SB-0.0-0.5MS FDG2-SL-585-SA5D-SB-0.0-0.5MSD (FDG2-SL-585-SA5D-SB-0.0-0.5)	1,2,3,4,6,7,8-HPCDD OCDD	- 166	-26 -605	40.00-135.00 40.00-135.00	82 (20.00) 133 (20.00)	1,2,3,4,6,7,8-HPCDD OCDD	J(all detects) R(all non-detects) OCDD, No Qual, >4x

Method: 8270D SIM
Matrix: SO

QC Sample ID (Associated Samples)	Compound	MS %R	MSD %R	%R Limits	RPD (Limits)	Affected Compounds	Flag
FDG2-SL-585-SA5D-SB-0.0-0.5MSD (FDG2-SL-585-SA5D-SB-0.0-0.5)	BENZO(B)FLUORANTHENE	-	-	26.00-142.00	38 (30.00)	BENZO(B)FLUORANTHENE	J(all detects)
	CHRYSENE	-	-	43.00-141.00	37 (30.00)	CHRYSENE	
	Di-n-octylphthalate	-	235	52.00-162.00	54 (30.00)	Di-n-octylphthalate	
	FLUORANTHENE	-	-	38.00-153.00	34 (30.00)	FLUORANTHENE	
	INDENO(1,2,3-CD)PYRENE	-	-	26.00-139.00	65 (30.00)	INDENO(1,2,3-CD)PYRENE	
	PHENANTHRENE	-	-	50.00-137.00	34 (30.00)	PHENANTHRENE	

Matrix Spike/Matrix Spike Duplicate Outlier Report

Lab Reporting Batch ID: PH193 **Laboratory: LL**

EDD Filename: PH193_v3. **eQAPP Name: CDM_SSFL_140617_Lan**

Method: 8270D SIM
Matrix: SO

QC Sample ID (Associated Samples)	Compound	MS %R	MSD %R	%R Limits	RPD (Limits)	Affected Compounds	Flag
FDG2-SL-585-SA5D-SB-0.0-0.5MSD (FDG2-SL-585-SA5D-SB-0.0-0.5)	BENZO(E)PYRENE BENZO(G,H,I)PERYLENE	- -	50 22	63.00-111.00 33.00-141.00	47 (30.00) 63 (30.00)	BENZO(E)PYRENE BENZO(G,H,I)PERYLENE	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-585-SA5D-SB-0.0-0.5MS (TOT) **FDG2-SL-585-SA5D-SB-0.0-0.5MSD (TOT)** (FDG2-SL-584-SA5D-SB-0.0-0.5 FDG2-SL-584-SA5D-SB-4.0-5.0 FDG2-SL-585-SA5D-SB-0.0-0.5 FDG2-SL-585-SA5D-SB-4.0-5.0 FDG2-SL-586-SA5D-SB-0.0-0.5 FDG2-SL-586-SA5D-SB-2.0-3.0 FDG2-SL-623-SA8-SB-14.0-15.0 FDG2-SL-623-SA8-SB-19.0-20.0 FDG2-SL-623-SA8-SB-9.0-10.0 FDG2-SL-885-SA5D-SB-0.0-0.5)	BARIUM CALCIUM CHROMIUM MAGNESIUM PHOSPHORUS POTASSIUM TITANIUM VANADIUM	- 191 - 365 158 177 420 -	128 284 145 902 154 254 599 141	75.00-125.00 75.00-125.00 75.00-125.00 75.00-125.00 75.00-125.00 75.00-125.00 75.00-125.00 75.00-125.00	- - - - - - - -	BARIUM CALCIUM CHROMIUM MAGNESIUM PHOSPHORUS POTASSIUM TITANIUM VANADIUM	J(all detects) Ca, Mg, Ti, No Qual, >4x
FDG2-SL-585-SA5D-SB-0.0-0.5MS (TOT) **FDG2-SL-585-SA5D-SB-0.0-0.5MSD (TOT)** (FDG2-SL-584-SA5D-SB-0.0-0.5 FDG2-SL-584-SA5D-SB-4.0-5.0 FDG2-SL-585-SA5D-SB-0.0-0.5 FDG2-SL-585-SA5D-SB-4.0-5.0 FDG2-SL-586-SA5D-SB-0.0-0.5 FDG2-SL-586-SA5D-SB-2.0-3.0 FDG2-SL-623-SA8-SB-14.0-15.0 FDG2-SL-623-SA8-SB-19.0-20.0 FDG2-SL-623-SA8-SB-9.0-10.0 FDG2-SL-885-SA5D-SB-0.0-0.5)	ANTIMONY	43	27	75.00-125.00	46 (20.00)	ANTIMONY	J(all detects) UJ(all non-detects) Post Spike = 107%

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

Matrix Spike/Matrix Spike Duplicate Outlier Report

Lab Reporting Batch ID: PH193 **Laboratory: LL**

EDD Filename: PH193_v3. **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-585-SA5D-SB-0.0-0.5MS (TOT)	ALUMINUM	2775	5957	75.00-125.00	25 (20.00)	ALUMINUM	
	IRON	3043	11499	75.00-125.00	31 (20.00)	IRON	
FDG2-SL-585-SA5D-SB-0.0-0.5MSD (TOT)	LEAD	-	-	75.00-125.00	25 (20.00)	LEAD	
	MANGANESE	280	632	75.00-125.00	39 (20.00)	MANGANESE	
(FDG2-SL-584-SA5D-SB-0.0-0.5	ZINC	190	-	75.00-125.00	36 (20.00)	ZINC	
FDG2-SL-584-SA5D-SB-4.0-5.0							J(all detects) UJ(all non-detects)
FDG2-SL-585-SA5D-SB-0.0-0.5							
FDG2-SL-585-SA5D-SB-4.0-5.0							
FDG2-SL-586-SA5D-SB-0.0-0.5							Al, Fe, Mn, No Qual %R >4x
FDG2-SL-586-SA5D-SB-2.0-3.0							
FDG2-SL-623-SA8-SB-14.0-15.0							
FDG2-SL-623-SA8-SB-19.0-20.0							
FDG2-SL-623-SA8-SB-9.0-10.0							
FDG2-SL-885-SA5D-SB-0.0-0.5)							

Method: 6020A
Matrix: SO

QC Sample ID (Associated Samples)	Compound	MS %R	MSD %R	%R Limits	RPD (Limits)	Affected Compounds	Flag
FDG2-SL-585-SA5D-SB-0.0-0.5MS (TOT)	STRONTIUM	147	195	75.00-125.00	-	STRONTIUM	
FDG2-SL-585-SA5D-SB-0.0-0.5MSD (TOT)							
(FDG2-SL-584-SA5D-SB-0.0-0.5							
FDG2-SL-584-SA5D-SB-4.0-5.0							
FDG2-SL-585-SA5D-SB-0.0-0.5							
FDG2-SL-585-SA5D-SB-4.0-5.0							J(all detects)
FDG2-SL-586-SA5D-SB-0.0-0.5							
FDG2-SL-586-SA5D-SB-2.0-3.0							
FDG2-SL-623-SA8-SB-14.0-15.0							
FDG2-SL-623-SA8-SB-19.0-20.0							
FDG2-SL-623-SA8-SB-9.0-10.0							
FDG2-SL-885-SA5D-SB-0.0-0.5)							

Lab Duplicate Outlier Report

Lab Reporting Batch ID: PH193 **Laboratory: LL**

EDD Filename: PH193_v3. **eQAPP Name: CDM_SSFL_140617_Lan**

Method: 6010C
Matrix: SO

QC Sample ID (Associated Sample ID)	Analyte	Sample RPD	eQAPP RPD	Flag
FDG2-SL-585-SA5D-SB-0.0-0.5DUP (TOT) (FDG2-SL-584-SA5D-SB-0.0-0.5 FDG2 -SL-584-SA5D-SB-4.0-5.0 FDG2 -SL-585-SA5D-SB-0.0-0.5 FDG2 -SL-585-SA5D-SB-4.0-5.0 FDG2 -SL-586-SA5D-SB-0.0-0.5 FDG2 -SL-586-SA5D-SB-2.0-3.0 FDG2 -SL-623-SA8-SB-14.0-15.0 FDG2 -SL-623-SA8-SB-19.0-20.0 FDG2 -SL-623-SA8-SB-9.0-10.0 FDG2 -SL-885-SA5D-SB-0.0-0.5)	CADMIUM	24	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-585-SA5D-SB-0.0-0.5DUP (TOT) (FDG2-SL-584-SA5D-SB-0.0-0.5 FDG2 -SL-584-SA5D-SB-4.0-5.0 FDG2 -SL-585-SA5D-SB-0.0-0.5 FDG2 -SL-585-SA5D-SB-4.0-5.0 FDG2 -SL-586-SA5D-SB-0.0-0.5 FDG2 -SL-586-SA5D-SB-2.0-3.0 FDG2 -SL-623-SA8-SB-14.0-15.0 FDG2 -SL-623-SA8-SB-19.0-20.0 FDG2 -SL-623-SA8-SB-9.0-10.0 FDG2 -SL-885-SA5D-SB-0.0-0.5)	SILVER	33	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: PH193 **Laboratory: LL**

EDD Filename: PH193_v3. **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*
P3LDLCSQ260518 (FDG2-SL-584-SA5D-SB-0.0-0.5 FDG2-SL-584-SA5D-SB-4.0-5.0 FDG2-SL-585-SA5D-SB-0.0-0.5 FDG2-SL-585-SA5D-SB-4.0-5.0 FDG2-SL-586-SA5D-SB-0.0-0.5 FDG2-SL-586-SA5D-SB-2.0-3.0 FDG2-SL-623-SA8-SB-14.0-15.0 FDG2-SL-623-SA8-SB-19.0-20.0 FDG2-SL-623-SA8-SB-9.0-10.0 FDG2-SL-885-SA5D-SB-0.0-0.5)	ACENAPHTHENE	121	-	84.00-118.00	-	ACENAPHTHENE	J (all detects)

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

Field Duplicate RPD Report

Lab Reporting Batch ID: PH193 **Laboratory: LL**

EDD Filename: PH193_v3. **eQAPP Name: CDM_SSFL_140617_Lan**

Method: 160.3M
Matrix: SO

Analyte	Concentration (%)		Sample RPD	eQAPP RPD	Flag
	FDG2-SL-585-SA5D-SB-0.0-0.5	FDG2-SL-885-SA5D-SB-0.0-0.5			
MOISTURE	5.4	4.6	16		Not Validated

Method: 1613B
Matrix: SO

Analyte	Concentration (ng/Kg)		Sample RPD	eQAPP RPD	Flag
	FDG2-SL-585-SA5D-SB-0.0-0.5	FDG2-SL-885-SA5D-SB-0.0-0.5			
1,2,3,4,6,7,8-HPCDD	144	197	31	50.00	
1,2,3,4,7,8-HxCDD	1.51	2.10	33	50.00	
1,2,3,6,7,8-HXCDD	6.21	8.66	33	50.00	
1,2,3,7,8,9-HXCDD	3.64	4.30	17	50.00	
1,2,3,7,8,9-HXCDF	0.762	1.04	31	50.00	
1,2,3,7,8-PECDD	0.990	1.11	11	50.00	No Qualifiers Applied
1,2,3,7,8-PECDF	1.73	1.81	5	50.00	
2,3,4,7,8-PECDF	1.02	1.15	12	50.00	
2,3,7,8-TCDF	0.835	0.690	19	50.00	
OCDD	1670	2050	20	50.00	
1,2,3,4,6,7,8-HPCDF	17.1	32.8	63	50.00	
1,2,3,4,7,8,9-HPCDF	1.95	3.43	55	50.00	
1,2,3,4,7,8-HXCDF	0.950	1.95	69	50.00	
1,2,3,6,7,8-HXCDF	0.955	1.64	53	50.00	J(all detects) UJ(all non-detects)
2,3,4,6,7,8-HXCDF	1.24	2.15	54	50.00	
2,3,7,8-TCDD	1.06 U	0.0875	200	50.00	
OCDF	50.0	104	70	50.00	

Method: 6010C
Matrix: SO

Analyte	Concentration (mg/Kg)		Sample RPD	eQAPP RPD	Flag
	FDG2-SL-585-SA5D-SB-0.0-0.5 (TOT)	FDG2-SL-885-SA5D-SB-0.0-0.5 (TOT)			
ALUMINUM	16300	17900	9	50.00	
ARSENIC	6.33	8.49	29	50.00	
BARIUM	93.9	112	18	50.00	
BERYLLIUM	0.593	0.652	9	50.00	
BORON	5.14	5.55	8	50.00	
CADMIUM	0.590	0.969	49	50.00	
CALCIUM	3210	3770	16	50.00	
CHROMIUM	23.5	26.8	13	50.00	
COBALT	5.16	6.64	25	50.00	
COPPER	16.1	26.7	50	50.00	
IRON	20100	23000	13	50.00	
LEAD	12.0	15.0	22	50.00	
LITHIUM	22.1	25.1	13	50.00	No Qualifiers Applied
MAGNESIUM	4300	5130	18	50.00	
MANGANESE	218	290	28	50.00	
MOLYBDENUM	0.424	0.331	25	50.00	
NICKEL	14.0	17.3	21	50.00	
PHOSPHORUS	350	448	25	50.00	
POTASSIUM	3600	4090	13	50.00	
SODIUM	91.2	96.9	6	50.00	
TIN	2.25	2.30	2	50.00	
TITANIUM	1030	1140	10	50.00	
VANADIUM	37.1	42.1	13	50.00	
ZINC	88.2	111	23	50.00	
Zirconium	4.44	4.92	10	50.00	

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

Field Duplicate RPD Report

Lab Reporting Batch ID: PH193 **Laboratory: LL**

EDD Filename: PH193_v3. **eQAPP Name: CDM_SSFL_140617_Lan**

Method: 6020A
Matrix: SO

Analyte	Concentration (mg/Kg) FDG2-SL-585-SA5D-SB-0.0-0.5 (TOT)	Concentration (mg/Kg) FDG2-SL-885-SA5D-SB-0.0-0.5 (TOT)	Sample RPD	eQAPP RPD	Flag
SELENIUM	0.183	0.189	3	50.00	No Qualifiers Applied
STRONTIUM	24.4	27.0	10	50.00	
THALLIUM	0.300	0.318	6	50.00	
SILVER	0.372	0.714	63	50.00	J(all detects)

Method: 7471B
Matrix: SO

Analyte	Concentration (mg/Kg) FDG2-SL-585-SA5D-SB-0.0-0.5 (TOT)	Concentration (mg/Kg) FDG2-SL-885-SA5D-SB-0.0-0.5 (TOT)	Sample RPD	eQAPP RPD	Flag
MERCURY	0.0591	0.0627	6	50.00	No Qualifiers Applied

Method: 8015M
Matrix: SO

Analyte	Concentration (mg/Kg) FDG2-SL-585-SA5D-SB-0.0-0.5	Concentration (mg/Kg) FDG2-SL-885-SA5D-SB-0.0-0.5	Sample RPD	eQAPP RPD	Flag
EFH (C15-C20)	5.3 U	13	200	50.00	J(all detects) UJ(all non-detects)
EFH (C21-C30) SG	2.7	55	181	50.00	
EFH (C21-C30)	7.3	150	181	50.00	
EFH (C30-C40) SG	5.7	100	178	50.00	
EFH (C30-C40)	18	350	180	50.00	

Method: 8081B
Matrix: SO

Analyte	Concentration (ug/Kg) FDG2-SL-585-SA5D-SB-0.0-0.5	Concentration (ug/Kg) FDG2-SL-885-SA5D-SB-0.0-0.5	Sample RPD	eQAPP RPD	Flag
4,4'-DDE	2.4	1.6	40	50.00	No Qualifiers Applied
4,4'-DDT	7.8	6.1	24	50.00	
DIELDRIN	1.8 U	1.2	200	50.00	J(all detects) UJ(all non-detects)

Method: 8082A
Matrix: SO

Analyte	Concentration (ug/Kg) FDG2-SL-585-SA5D-SB-0.0-0.5	Concentration (ug/Kg) FDG2-SL-885-SA5D-SB-0.0-0.5	Sample RPD	eQAPP RPD	Flag
AROCLOR 1254	28	30	7	50.00	No Qualifiers Applied
Aroclor 5460	26	22	17	50.00	

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

Field Duplicate RPD Report

Lab Reporting Batch ID: PH193 **Laboratory: LL**

EDD Filename: PH193_v3. **eQAPP Name: CDM_SSFL_140617_Lan**

Method: 8270D SIM
Matrix: SO

Analyte	Concentration (ug/Kg)		Sample RPD	eQAPP RPD	Flag
	FDG2-SL-585-SA5D-SB-0.0-0.5	FDG2-SL-885-SA5D-SB-0.0-0.5			
1-METHYLNAPHTHALENE	1.6	1.3	21	50.00	No Qualifiers Applied
2-METHYLNAPHTHALENE	2.5	2.4	4	50.00	
ACENAPHTHYLENE	0.35	0.49	33	50.00	
ANTHRACENE	1.7	2.5	38	50.00	
BENZO(A)ANTHRACENE	5.7	7.4	26	50.00	
BENZO(A)PYRENE	7.5	9.1	19	50.00	
BENZO(B)FLUORANTHENE	18	24	29	50.00	
BENZO(E)PYRENE	13	18	32	50.00	
BENZO(K)FLUORANTHENE	4.8	6.2	25	50.00	
BIS(2-ETHYLHEXYL)PHTHALATE	34	22	43	50.00	
CHRYSENE	14	20	35	50.00	
DIBENZO(A,H)ANTHRACENE	2.1	3.0	35	50.00	
FLUORANTHENE	11	15	31	50.00	
NAPHTHALENE	2.0	2.6	26	50.00	
PHENANTHRENE	8.4	12	35	50.00	
PYRENE	8.7	11	23	50.00	
BENZO(G,H,I)PERYLENE	11	20	58	50.00	J(all detects) UJ(all non-detects)
Di-n-butylphthalate	7.1	19 U	200	50.00	
INDENO(1,2,3-CD)PYRENE	13	22	51	50.00	

Method: 9045M
Matrix: SO

Analyte	Concentration (pH unit)		Sample RPD	eQAPP RPD	Flag
	FDG2-SL-585-SA5D-SB-0.0-0.5	FDG2-SL-885-SA5D-SB-0.0-0.5			
PH	7.24	7.29	1	50.00	Not Validated

Reporting Limit Outliers

Lab Reporting Batch ID: PH193 **Laboratory: LL**

EDD Filename: PH193_v3. **eQAPP Name: CDM_SSFL_140617_Lan**

Method: 1613B

Matrix: SO

SampleID	Analyte	Lab Qual	Result	Reporting Limit	RL Type	Units	Flag
FDG2-SL-584-SA5D-SB-0.0 -0.5	1,2,3,4,7,8-HXCDF	J	4.34	5.08	PQL	ng/Kg	
	1,2,3,7,8,9-HXCDF	JB	1.62	5.08	PQL	ng/Kg	
	1,2,3,7,8-PECDD	J	4.35	5.08	PQL	ng/Kg	J (all detects)
	1,2,3,7,8-PECDF	JB	4.19	5.08	PQL	ng/Kg	
	2,3,4,7,8-PECDF	JB	1.79	5.08	PQL	ng/Kg	
FDG2-SL-584-SA5D-SB-4.0 -5.0	1,2,3,4,6,7,8-HPCDD	JBQ	0.912	5.19	PQL	ng/Kg	
	1,2,3,4,6,7,8-HPCDF	JBQ	0.136	5.19	PQL	ng/Kg	
	1,2,3,4,7,8,9-HPCDF	JBQ	0.0753	5.19	PQL	ng/Kg	
	1,2,3,4,7,8-HxCDD	JBQ	0.0551	5.19	PQL	ng/Kg	
	1,2,3,4,7,8-HXCDF	JQ	0.0490	5.19	PQL	ng/Kg	
	1,2,3,6,7,8-HXCDD	JQ	0.126	5.19	PQL	ng/Kg	
	1,2,3,6,7,8-HXCDF	JBQ	0.0578	5.19	PQL	ng/Kg	
	1,2,3,7,8,9-HXCDD	JQ	0.0748	5.19	PQL	ng/Kg	J (all detects)
	1,2,3,7,8,9-HXCDF	JB	0.0572	5.19	PQL	ng/Kg	
	1,2,3,7,8-PECDD	JQ	0.0676	5.19	PQL	ng/Kg	
	1,2,3,7,8-PECDF	JBQ	0.0726	5.19	PQL	ng/Kg	
	2,3,4,6,7,8-HXCDF	JB	0.0479	5.19	PQL	ng/Kg	
	2,3,4,7,8-PECDF	JBQ	0.0643	5.19	PQL	ng/Kg	
	OCDD	JB	7.55	10.4	PQL	ng/Kg	
	OCDF	JB	0.543	10.4	PQL	ng/Kg	
FDG2-SL-585-SA5D-SB-0.0 -0.5	1,2,3,4,7,8,9-HPCDF	JB	1.95	5.28	PQL	ng/Kg	
	1,2,3,4,7,8-HxCDD	JB	1.51	5.28	PQL	ng/Kg	
	1,2,3,4,7,8-HXCDF	J	0.950	5.28	PQL	ng/Kg	
	1,2,3,6,7,8-HXCDF	JB	0.955	5.28	PQL	ng/Kg	
	1,2,3,7,8,9-HXCDD	J	3.64	5.28	PQL	ng/Kg	
	1,2,3,7,8,9-HXCDF	JB	0.762	5.28	PQL	ng/Kg	J (all detects)
	1,2,3,7,8-PECDD	J	0.990	5.28	PQL	ng/Kg	
	1,2,3,7,8-PECDF	JB	1.73	5.28	PQL	ng/Kg	
	2,3,4,6,7,8-HXCDF	JB	1.24	5.28	PQL	ng/Kg	
	2,3,4,7,8-PECDF	JB	1.02	5.28	PQL	ng/Kg	
	2,3,7,8-TCDF	J	0.835	1.06	PQL	ng/Kg	
FDG2-SL-585-SA5D-SB-4.0 -5.0	1,2,3,4,6,7,8-HPCDD	JBQ	0.500	5.66	PQL	ng/Kg	
	1,2,3,4,6,7,8-HPCDF	JBQ	0.115	5.66	PQL	ng/Kg	
	1,2,3,4,7,8,9-HPCDF	JBQ	0.0440	5.66	PQL	ng/Kg	
	1,2,3,4,7,8-HxCDD	JBQ	0.0647	5.66	PQL	ng/Kg	
	1,2,3,4,7,8-HXCDF	J	0.0625	5.66	PQL	ng/Kg	
	1,2,3,6,7,8-HXCDD	J	0.0755	5.66	PQL	ng/Kg	
	1,2,3,6,7,8-HXCDF	JBQ	0.0523	5.66	PQL	ng/Kg	
	1,2,3,7,8,9-HXCDD	JQ	0.0701	5.66	PQL	ng/Kg	J (all detects)
	1,2,3,7,8,9-HXCDF	JB	0.0526	5.66	PQL	ng/Kg	
	1,2,3,7,8-PECDD	JQ	0.0931	5.66	PQL	ng/Kg	
	1,2,3,7,8-PECDF	JBQ	0.0883	5.66	PQL	ng/Kg	
	2,3,4,6,7,8-HXCDF	JBQ	0.0478	5.66	PQL	ng/Kg	
	2,3,4,7,8-PECDF	JBQ	0.0216	5.66	PQL	ng/Kg	
	OCDD	JB	4.25	11.3	PQL	ng/Kg	
	OCDF	JBQ	0.272	11.3	PQL	ng/Kg	

Reporting Limit Outliers

Lab Reporting Batch ID: PH193 **Laboratory: LL**

EDD Filename: PH193_v3. **eQAPP Name: CDM_SSFL_140617_Lan**

Method: 1613B

Matrix: SO

SampleID	Analyte	Lab Qual	Result	Reporting Limit	RL Type	Units	Flag
FDG2-SL-586-SA5D-SB-0.0 -0.5	1,2,3,4,6,7,8-HPCDD	JB	2.59	5.05	PQL	ng/Kg	J (all detects)
	1,2,3,4,6,7,8-HPCDF	JB	0.439	5.05	PQL	ng/Kg	
	1,2,3,4,7,8,9-HPCDF	JB	0.0828	5.05	PQL	ng/Kg	
	1,2,3,4,7,8-HxCDD	JB	0.0749	5.05	PQL	ng/Kg	
	1,2,3,4,7,8-HXCDF	J	0.107	5.05	PQL	ng/Kg	
	1,2,3,6,7,8-HXCDD	J	1.15	5.05	PQL	ng/Kg	
	1,2,3,6,7,8-HXCDF	JB	0.175	5.05	PQL	ng/Kg	
	1,2,3,7,8,9-HXCDD	J	1.52	5.05	PQL	ng/Kg	
	1,2,3,7,8,9-HXCDF	JB	1.88	5.05	PQL	ng/Kg	
	1,2,3,7,8-PECDD	J	0.314	5.05	PQL	ng/Kg	
	1,2,3,7,8-PECDF	JB	0.531	5.05	PQL	ng/Kg	
	2,3,4,6,7,8-HXCDF	JB	0.0953	5.05	PQL	ng/Kg	
	2,3,4,7,8-PECDF	JB	0.180	5.05	PQL	ng/Kg	
	2,3,7,8-TCDD	JB	0.0430	1.01	PQL	ng/Kg	
	2,3,7,8-TCDF	J	0.0941	1.01	PQL	ng/Kg	
	OCDF	JB	1.34	10.1	PQL	ng/Kg	
FDG2-SL-586-SA5D-SB-2.0 -3.0	1,2,3,4,6,7,8-HPCDD	JB	0.149	5.11	PQL	ng/Kg	J (all detects)
	1,2,3,4,6,7,8-HPCDF	JB	0.0609	5.11	PQL	ng/Kg	
	1,2,3,4,7,8,9-HPCDF	JB	0.0332	5.11	PQL	ng/Kg	
	1,2,3,4,7,8-HxCDD	JBQ	0.0289	5.11	PQL	ng/Kg	
	1,2,3,4,7,8-HXCDF	JQ	0.0367	5.11	PQL	ng/Kg	
	1,2,3,6,7,8-HXCDD	J	0.0356	5.11	PQL	ng/Kg	
	1,2,3,6,7,8-HXCDF	JBQ	0.0391	5.11	PQL	ng/Kg	
	1,2,3,7,8,9-HXCDD	J	0.0395	5.11	PQL	ng/Kg	
	1,2,3,7,8,9-HXCDF	JBQ	0.0388	5.11	PQL	ng/Kg	
	1,2,3,7,8-PECDD	JQ	0.0245	5.11	PQL	ng/Kg	
	1,2,3,7,8-PECDF	JB	0.0427	5.11	PQL	ng/Kg	
	2,3,4,6,7,8-HXCDF	JB	0.0315	5.11	PQL	ng/Kg	
	2,3,7,8-TCDD	JBQ	0.00908	1.02	PQL	ng/Kg	
	OCDD	JB	0.984	10.2	PQL	ng/Kg	
	OCDF	JB	0.174	10.2	PQL	ng/Kg	
FDG2-SL-885-SA5D-SB-0.0 -0.5	1,2,3,4,7,8,9-HPCDF	JB	3.43	5.10	PQL	ng/Kg	J (all detects)
	1,2,3,4,7,8-HxCDD	JB	2.10	5.10	PQL	ng/Kg	
	1,2,3,4,7,8-HXCDF	J	1.95	5.10	PQL	ng/Kg	
	1,2,3,6,7,8-HXCDF	JB	1.64	5.10	PQL	ng/Kg	
	1,2,3,7,8,9-HXCDD	J	4.30	5.10	PQL	ng/Kg	
	1,2,3,7,8,9-HXCDF	JB	1.04	5.10	PQL	ng/Kg	
	1,2,3,7,8-PECDD	J	1.11	5.10	PQL	ng/Kg	
	1,2,3,7,8-PECDF	JB	1.81	5.10	PQL	ng/Kg	
	2,3,4,6,7,8-HXCDF	JB	2.15	5.10	PQL	ng/Kg	
	2,3,4,7,8-PECDF	JB	1.15	5.10	PQL	ng/Kg	
	2,3,7,8-TCDD	JBQ	0.0875	1.02	PQL	ng/Kg	
	2,3,7,8-TCDF	J	0.690	1.02	PQL	ng/Kg	

Method: 6010C

Matrix: SO

SampleID	Analyte	Lab Qual	Result	Reporting Limit	RL Type	Units	Flag
FDG2-SL-584-SA5D-SB-0.0 -0.5	BERYLLIUM	J	0.638	1.05	PQL	mg/Kg	J (all detects)
	BORON	J	5.41	10.5	PQL	mg/Kg	
	MOLYBDENUM	J	0.348	2.09	PQL	mg/Kg	
	SODIUM	J	101	105	PQL	mg/Kg	
	TIN	J	2.63	10.5	PQL	mg/Kg	
	Zirconium	J	3.63	5.24	PQL	mg/Kg	

Reporting Limit Outliers

Lab Reporting Batch ID: PH193 **Laboratory: LL**

EDD Filename: PH193_v3. **eQAPP Name: CDM_SSFL_140617_Lan**

Method: **6010C**

Matrix: **SO**

SampleID	Analyte	Lab Qual	Result	Reporting Limit	RL Type	Units	Flag
FDG2-SL-584-SA5D-SB-4.0-5.0	BERYLLIUM	J	0.449	1.05	PQL	mg/Kg	J (all detects)
	BORON	J	3.20	10.5	PQL	mg/Kg	
	CADMIUM	J	0.490	1.05	PQL	mg/Kg	
	LEAD	J	2.56	3.16	PQL	mg/Kg	
	TIN	J	2.44	10.5	PQL	mg/Kg	
	Zirconium	J	5.17	5.27	PQL	mg/Kg	
FDG2-SL-585-SA5D-SB-0.0-0.5	BERYLLIUM	J	0.593	1.06	PQL	mg/Kg	J (all detects)
	BORON	J	5.14	10.6	PQL	mg/Kg	
	CADMIUM	J	0.590	1.06	PQL	mg/Kg	
	MOLYBDENUM	J	0.424	2.11	PQL	mg/Kg	
	SODIUM	J	91.2	106	PQL	mg/Kg	
	TIN	J	2.25	10.6	PQL	mg/Kg	
	Zirconium	J	4.44	5.29	PQL	mg/Kg	
FDG2-SL-585-SA5D-SB-4.0-5.0	BORON	J	6.03	11.1	PQL	mg/Kg	J (all detects)
	CADMIUM	J	0.763	1.11	PQL	mg/Kg	
	TIN	J	3.03	11.1	PQL	mg/Kg	
FDG2-SL-586-SA5D-SB-0.0-0.5	BERYLLIUM	J	0.909	1.03	PQL	mg/Kg	J (all detects)
	BORON	J	4.32	10.3	PQL	mg/Kg	
	CADMIUM	J	0.701	1.03	PQL	mg/Kg	
	MOLYBDENUM	J	0.800	2.07	PQL	mg/Kg	
	TIN	J	2.65	10.3	PQL	mg/Kg	
FDG2-SL-586-SA5D-SB-2.0-3.0	BERYLLIUM	J	0.313	1.00	PQL	mg/Kg	J (all detects)
	BORON	J	2.56	10.0	PQL	mg/Kg	
	CADMIUM	J	0.458	1.00	PQL	mg/Kg	
	LEAD	J	2.99	3.00	PQL	mg/Kg	
	MOLYBDENUM	J	0.174	2.00	PQL	mg/Kg	
	TIN	J	2.40	10.0	PQL	mg/Kg	
	Zirconium	J	4.93	5.00	PQL	mg/Kg	
FDG2-SL-623-SA8-SB-14.0-15.0	BERYLLIUM	J	0.616	1.06	PQL	mg/Kg	J (all detects)
	BORON	J	5.90	10.6	PQL	mg/Kg	
	CADMIUM	J	0.487	1.06	PQL	mg/Kg	
	MOLYBDENUM	J	0.396	2.13	PQL	mg/Kg	
	TIN	J	2.91	10.6	PQL	mg/Kg	
	Zirconium	J	4.11	5.32	PQL	mg/Kg	
FDG2-SL-623-SA8-SB-19.0-20.0	BERYLLIUM	J	0.457	1.02	PQL	mg/Kg	J (all detects)
	BORON	J	5.60	10.2	PQL	mg/Kg	
	CADMIUM	J	0.454	1.02	PQL	mg/Kg	
	LEAD	J	2.96	3.07	PQL	mg/Kg	
	MOLYBDENUM	J	0.339	2.05	PQL	mg/Kg	
	TIN	J	2.77	10.2	PQL	mg/Kg	
	Zirconium	J	3.01	5.12	PQL	mg/Kg	
FDG2-SL-623-SA8-SB-9.0-10.0	BERYLLIUM	J	0.598	1.03	PQL	mg/Kg	J (all detects)
	BORON	J	4.68	10.3	PQL	mg/Kg	
	CADMIUM	J	0.463	1.03	PQL	mg/Kg	
	MOLYBDENUM	J	0.453	2.06	PQL	mg/Kg	
	SODIUM	J	80.4	103	PQL	mg/Kg	
	TIN	J	2.82	10.3	PQL	mg/Kg	
	Zirconium	J	3.26	5.16	PQL	mg/Kg	
FDG2-SL-885-SA5D-SB-0.0-0.5	BERYLLIUM	J	0.652	1.03	PQL	mg/Kg	J (all detects)
	BORON	J	5.55	10.3	PQL	mg/Kg	
	CADMIUM	J	0.969	1.03	PQL	mg/Kg	
	MOLYBDENUM	J	0.331	2.06	PQL	mg/Kg	
	SODIUM	J	96.9	103	PQL	mg/Kg	
	TIN	J	2.30	10.3	PQL	mg/Kg	
	Zirconium	J	4.92	5.14	PQL	mg/Kg	

Reporting Limit Outliers

Lab Reporting Batch ID: PH193 **Laboratory: LL**

EDD Filename: PH193_v3. **eQAPP Name: CDM_SSFL_140617_Lan**

Method: 6020A

Matrix: SO

SampleID	Analyte	Lab Qual	Result	Reporting Limit	RL Type	Units	Flag
FDG2-SL-584-SA5D-SB-0.0 -0.5	SELENIUM	J	0.239	0.419	PQL	mg/Kg	J (all detects)
FDG2-SL-584-SA5D-SB-4.0 -5.0	SELENIUM	J	0.165	0.421	PQL	mg/Kg	J (all detects)
FDG2-SL-585-SA5D-SB-0.0 -0.5	SELENIUM	J	0.183	0.423	PQL	mg/Kg	J (all detects)
FDG2-SL-585-SA5D-SB-4.0 -5.0	SELENIUM	J	0.294	0.444	PQL	mg/Kg	J (all detects)
FDG2-SL-586-SA5D-SB-0.0 -0.5	SELENIUM	J	0.243	0.414	PQL	mg/Kg	J (all detects)
FDG2-SL-623-SA8-SB-14.0-15.0	SILVER	J	0.0306	0.213	PQL	mg/Kg	J (all detects)
FDG2-SL-885-SA5D-SB-0.0 -0.5	SELENIUM	J	0.189	0.411	PQL	mg/Kg	J (all detects)

Method: 7471B

Matrix: SO

SampleID	Analyte	Lab Qual	Result	Reporting Limit	RL Type	Units	Flag
FDG2-SL-585-SA5D-SB-4.0 -5.0	MERCURY	J	0.0123	0.0187	PQL	mg/Kg	J (all detects)

Method: 8015M

Matrix: SO

SampleID	Analyte	Lab Qual	Result	Reporting Limit	RL Type	Units	Flag
FDG2-SL-584-SA5D-SB-0.0 -0.5	EFH (C15-C20)	J	3.1	5.2	PQL	mg/Kg	J (all detects)
FDG2-SL-585-SA5D-SB-0.0 -0.5	EFH (C21-C30) SG EFH (C30-C40) SG	J J	2.7 5.7	5.3 11	PQL PQL	mg/Kg mg/Kg	J (all detects)
FDG2-SL-623-SA8-SB-0.0-0.5	EFH (C15-C20)	J	2.8	5.4	PQL	mg/Kg	J (all detects)
FDG2-SL-885-SA5D-SB-0.0 -0.5	EFH (C15-C20)	J	13	26	PQL	mg/Kg	J (all detects)

Method: 8081B

Matrix: SO

SampleID	Analyte	Lab Qual	Result	Reporting Limit	RL Type	Units	Flag
FDG2-SL-584-SA5D-SB-0.0 -0.5	gamma-BHC (Lindane)	J	0.21	0.85	PQL	ug/Kg	J (all detects)
FDG2-SL-885-SA5D-SB-0.0 -0.5	4,4'-DDE DIELDRIN	J J	1.6 1.2	1.8 1.8	PQL PQL	ug/Kg ug/Kg	J (all detects)

Reporting Limit Outliers

Lab Reporting Batch ID: PH193 **Laboratory: LL**

EDD Filename: PH193_v3. **eQAPP Name: CDM_SSFL_140617_Lan**

Method: 8082A

Matrix: SO

SampleID	Analyte	Lab Qual	Result	Reporting Limit	RL Type	Units	Flag
FDG2-SL-584-SA5D-SB-0.0 -0.5	Aroclor 5460	J	27	34	PQL	ug/Kg	J (all detects)
FDG2-SL-585-SA5D-SB-0.0 -0.5	Aroclor 5460	J	26	34	PQL	ug/Kg	J (all detects)
FDG2-SL-885-SA5D-SB-0.0 -0.5	Aroclor 5460	J	22	34	PQL	ug/Kg	J (all detects)

Method: 8270D SIM

Matrix: SO

SampleID	Analyte	Lab Qual	Result	Reporting Limit	RL Type	Units	Flag
FDG2-SL-584-SA5D-SB-0.0 -0.5	ACENAPHTHYLENE	J	1.6	1.7	PQL	ug/Kg	J (all detects)
	FLUORENE	J	0.81	1.7	PQL	ug/Kg	
FDG2-SL-585-SA5D-SB-0.0 -0.5	1-METHYLNAPHTHALENE	J	1.6	1.8	PQL	ug/Kg	J (all detects)
	ACENAPHTHYLENE	J	0.35	1.8	PQL	ug/Kg	
	ANTHRACENE	J	1.7	1.8	PQL	ug/Kg	
	BENZO(E)PYRENE	J	13	18	PQL	ug/Kg	
	Di-n-butylphthalate	J	7.1	19	PQL	ug/Kg	
FDG2-SL-586-SA5D-SB-0.0 -0.5	1-METHYLNAPHTHALENE	J	0.72	1.7	PQL	ug/Kg	J (all detects)
	2-METHYLNAPHTHALENE	J	1.3	1.7	PQL	ug/Kg	
	BENZO(B)FLUORANTHENE	J	1.0	1.7	PQL	ug/Kg	
	BIS(2-ETHYLHEXYL)PHTHALATE	J	12	19	PQL	ug/Kg	
	CHRYSENE	J	1.2	1.7	PQL	ug/Kg	
	FLUORANTHENE	J	1.2	1.7	PQL	ug/Kg	
	NAPHTHALENE	J	0.77	1.7	PQL	ug/Kg	
	PHENANTHRENE	J	1.0	1.7	PQL	ug/Kg	
	PYRENE	J	0.89	1.7	PQL	ug/Kg	
FDG2-SL-623-SA8-SB-9.0-10.0	BIS(2-ETHYLHEXYL)PHTHALATE	J	11	19	PQL	ug/Kg	J (all detects)
FDG2-SL-885-SA5D-SB-0.0 -0.5	1-METHYLNAPHTHALENE	J	1.3	1.7	PQL	ug/Kg	J (all detects)
	ACENAPHTHYLENE	J	0.49	1.7	PQL	ug/Kg	

Enclosure II

Level IV Data Validation Reports

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: Santa Susana Field Laboratory

Collection Date: May 21, 2014

LDC Report Date: August 3, 2014

Matrix: Soil

Parameters: Semivolatiles

Validation Level: Level IV

Laboratory: Eurofins

Sample Delivery Group (SDG): PH193

Sample Identification

FDG2-SL-585-SA5D-SB-0.0-0.5
FDG2-SL-885-SA5D-SB-0.0-0.5
FDG2-SL-585-SA5D-SB-4.0-5.0
FDG2-SL-584-SA5D-SB-0.0-0.5
FDG2-SL-584-SA5D-SB-4.0-5.0
FDG2-SL-586-SA5D-SB-0.0-0.5
FDG2-SL-586-SA5D-SB-2.0-3.0
FDG2-SL-623-SA8-SB-9.0-10.0
FDG2-SL-623-SA8-SB-14.0-15.0
FDG2-SL-623-SA8-SB-19.0-20.0
FDG2-SL-585-SA5D-SB-0.0-0.5MS
FDG2-SL-585-SA5D-SB-0.0-0.5MSD

Introduction

This data review covers 12 soil samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA SW 846 Method 8270C 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.

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 EB2-052214 (from SDG PH196) was identified as an equipment blank. No semivolatile contaminants were found with the following exceptions:

Blank ID	Sampling Date	Compound	Concentration	Associated Samples
EB2-052214	5/22/14	Bis(2-ethylhexyl)phthalate Di-n-butylphthalate 1-Methylnaphthalene Naphthalene 2-Methylnaphthalene	0.095 ug/L 0.10 ug/L 0.033 ug/L 0.15 ug/L 0.052 ug/L	All samples in SDG PH193

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	Bis(2-ethylhexyl)phthalate Di-n-butylphthalate 1-Methylnaphthalene Naphthalene 2-Methylnaphthalene	0.058 ug/L 0.089 ug/L 0.022 ug/L 0.11 ug/L 0.032 ug/L	All samples in SDG PH193

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-585-SA5D-SB-0.0-0.5MS/MSD (FDG2-SL-585-SA5D-SB-0.0-0.5)	Phenanthrene Fluoranthene Chrysene Di-n-octylphthalate Benzo(b)fluoranthene Indeno(1,2,3-cd)pyrene	- - - - - -	- - - 235 (52-162) - -	34 (≤30) 34 (≤30) 37 (≤30) 54 (≤30) 38 (≤30) 65 (≤30)	J (all detects) J (all detects) J (all detects) J (all detects) J (all detects) J (all detects)	A
FDG2-SL-585-SA5D-SB-0.0-0.5MS/MSD (FDG2-SL-585-SA5D-SB-0.0-0.5)	Benzo(e)pyrene Benzo(g,h,i)perylene	-	50 (63-111) 22 (33-141)	47 (≤30) 63 (≤30)	J (all detects) UJ (all non-detects) J (all detects) UJ (all non-detects)	A

VIII. Laboratory Control Samples (LCS)

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

LCS ID	Compound	%R (Limits)	Associated Samples	Flag	A or P
143LDLCS	Acenaphthene	121 (84-118)	All samples in SDG PH193	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 PH193	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-585-SA5D-SB-0.0-0.5 and FDG2-SL-885-SA5D-SB-0.0-0.5 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-585-SA5D-SB-0.0-0.5	FDG2-SL-885-SA5D-SB-0.0-0.5			
Acenaphthylene	0.35	0.49	33 (≤50)	-	-
Anthracene	1.7	2.5	38 (≤50)	-	-
Benzo(a)anthracene	5.7	7.4	26 (≤50)	-	-
Benzo(a)pyrene	7.5	9.1	19 (≤50)	-	-
Benzo(b)fluoranthene	18	24	29 (≤50)	-	-
Benzo(e)pyrene	13	18	32 (≤50)	-	-
Benzo(g,h,i)perylene	11	20	58 (≤50)	J (all detects)	A
Benzo(k)fluoranthene	4.8	6.2	25 (≤50)	-	-
Di-n-butylphthalate	7.1	19U	200 (≤50)	J (all detects) UJ (all non-detects)	A
Chrysene	14	20	35 (≤50)	-	-
Dibenzo(a,h)anthracene	2.1	3.0	35 (≤50)	-	-
Bis(2-ethylhexyl)phthalate	34	22	43 (≤50)	-	-
Fluoranthene	11	15	31 (≤50)	-	-
Indeno(1,2,3-cd)pyrene	13	22	51 (≤50)	J (all detects)	A
1-Methylnaphthalene	1.6	1.3	21 (≤50)	-	-
2-Methylnaphthalene	2.5	2.4	4 (≤50)	-	-
Naphthalene	2.0	2.6	26 (≤50)	-	-
Phenanthrene	8.4	12	35 (≤50)	-	-
Pyrene	8.7	11	23 (≤50)	-	-

Santa Susana Field Laboratory
Semivolatiles - Data Qualification Summary - SDG PH193

SDG	Sample	Compound	Flag	A or P	Reason (Code)
PH193	FDG2-SL-585-SA5D-SB-0.0-0.5	Di-n-octylphthalate	J (all detects)	A	Matrix spike/Matrix spike duplicate (%R)(RPD) (Q)
PH193	FDG2-SL-585-SA5D-SB-0.0-0.5	Phenanthrene Fluoranthene Chrysene Benzo(b)fluoranthene Indeno(1,2,3-cd)pyrene	J (all detects) J (all detects) J (all detects) J (all detects) J (all detects)	A	Matrix spike/Matrix spike duplicate (RPD) (Q)
PH193	FDG2-SL-585-SA5D-SB-0.0-0.5	Benzo(e)pyrene Benzo(g,h,i)perylene	J (all detects) UJ (all non-detects) J (all detects) UJ (all non-detects)	A	Matrix spike/Matrix spike duplicate (%R)(RPD) (Q)
PH193	FDG2-SL-585-SA5D-SB-0.0-0.5 FDG2-SL-885-SA5D-SB-0.0-0.5 FDG2-SL-585-SA5D-SB-4.0-5.0 FDG2-SL-584-SA5D-SB-0.0-0.5 FDG2-SL-584-SA5D-SB-4.0-5.0 FDG2-SL-586-SA5D-SB-0.0-0.5 FDG2-SL-586-SA5D-SB-2.0-3.0 FDG2-SL-623-SA8-SB-9.0-10.0 FDG2-SL-623-SA8-SB-14.0-15.0 FDG2-SL-623-SA8-SB-19.0-20.0	Acenaphthene	J (all detects)	P	Laboratory control samples (%R) (L)
PH193	FDG2-SL-585-SA5D-SB-0.0-0.5 FDG2-SL-885-SA5D-SB-0.0-0.5 FDG2-SL-585-SA5D-SB-4.0-5.0 FDG2-SL-584-SA5D-SB-0.0-0.5 FDG2-SL-584-SA5D-SB-4.0-5.0 FDG2-SL-586-SA5D-SB-0.0-0.5 FDG2-SL-586-SA5D-SB-2.0-3.0 FDG2-SL-623-SA8-SB-9.0-10.0 FDG2-SL-623-SA8-SB-14.0-15.0 FDG2-SL-623-SA8-SB-19.0-20.0	All compounds reported below the RL.	J (all detects)	A	Compound quantitation (Z)
PH193	FDG2-SL-585-SA5D-SB-0.0-0.5 FDG2-SL-885-SA5D-SB-0.0-0.5	Benzo(g,h,i)perylene Indeno(1,2,3-cd)pyrene	J (all detects) J (all detects)	A	Field duplicates (RPD) (FD)
PH193	FDG2-SL-585-SA5D-SB-0.0-0.5 FDG2-SL-885-SA5D-SB-0.0-0.5	Di-n-butylphthalate	J (all detects) UJ (all non-detects)	A	Field duplicates (RPD) (FD)

Santa Susana Field Laboratory
Semivolatiles - Laboratory Blank Data Qualification Summary - SDG PH193

No Sample Data Qualified in this SDG

Santa Susana Field Laboratory
Semivolatiles - Field Blank Data Qualification Summary - SDG PH193

No Sample Data Qualified in this SDG

LDC #: 32181A2b **VALIDATION COMPLETENESS WORKSHEET** Date: 7/24/14

SDG #: PH193 Level IV Page: 1 of 1

Laboratory: Eurofins Lancaster Laboratories Reviewer: 6R

2nd Reviewer: SM

METHOD: GC/MS ~~Polynuclear Aromatic Hydrocarbons~~ Semivolatiles (EPA SW 846 Method 8270C-SIM)

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

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 5/21/14
II.	GC/MS Instrument performance check	A	
III.	Initial calibration	A	RSD ≤ 30 %, r2
IV.	Continuing calibration/ICV	A	ICV/CCV ≤ 25%
V.	Blanks	A	
VI.	Surrogate spikes	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 = 1 + 2
XVII.	Field blanks	SW	EB = EB2-052214 (SDG# PH196) FB = FB-052114 (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	FDG2-SL-585-SA5D-SB-0.0-0.5	11	FDG2-SL-585-SA5D-SB-0.0-0.5MS	21		31	SB2KLD143
2	FDG2-SL-885-SA5D-SB-0.0-0.5	12	FDG2-SL-585-SA5D-SB-0.0-0.5MSD	22		32	
3	FDG2-SL-585-SA5D-SB-4.0-5.0	13		23		33	
4	FDG2-SL-584-SA5D-SB-0.0-0.5	14		24		34	
5	FDG2-SL-584-SA5D-SB-4.0-5.0	15		25		35	
6	FDG2-SL-586-SA5D-SB-0.0-0.5	16		26		36	
7	FDG2-SL-586-SA5D-SB-2.0-3.0	17		27		37	
8	FDG2-SL-623-SA8-SB-9.0-10.0	18		28		38	
9	FDG2-SL-623-SA8-SB-14.0-15.0	19		29		39	
10	FDG2-SL-623-SA8-SB-19.0-20.0	20		30		40	

LDC #: 32181A25

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) and relative response factors (RRF) within method criteria for all CCCs and SPCCs?	✓			
Was a curve fit used for evaluation?	✓			
Did the initial calibration meet the curve fit acceptance criteria of $\geq$ 0.990?	✓			
Were all percent relative standard deviations (%RSD) $\leq$ 30% and relative response factors (RRF) $\geq$ 0.05?	✓			
IV. Continuing calibration				
Was a continuing calibration standard analyzed at least once every 12 hours for each instrument?	✓			
Were all percent differences (%D) and relative response factors (RRF) within method criteria for all CCCs and SPCCs?	✓			
Were all percent differences (%D) $\leq$ 25% and relative response factors (RRF) $\geq$ 0.05?	✓			
V. Blanks				
Was a method blank associated with every sample in this SDG?	✓			
Was a method blank analyzed for each matrix and concentration?	✓			
Was there contamination in the method blanks? If yes, please see the Blanks validation completeness worksheet.		✓		
VI. Surrogate spikes				
Were all surrogate %R within QC limits?	✓			
If 2 or more base neutral or acid surrogates were outside QC limits, was a reanalysis performed to confirm %R?			✓	
If any %R was less than 10 percent, was a reanalysis performed to confirm %R?			✓	
VII. Matrix spike/Matrix spike duplicates				
Were a matrix spike (MS) and matrix spike duplicate (MSD) analyzed for each matrix in this SDG? If no, indicate which matrix does not have an associated MS/MSD. Soil / Water.	✓			
Was a MS/MSD analyzed every 20 samples of each matrix?	✓			
Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?		✓		
VIII. Laboratory control samples				
Was an LCS analyzed for this SDG?	✓			

LDC #: 32818A26

VALIDATION FINDINGS CHECKLIST

Reviewer: KR
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 #: 32181126

VALIDATION FINDINGS WORKSHEET
Field Blanks

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

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

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 # PH 191)

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 + 5X)

Compound	Blank ID		Sample Identification							
	FB	5x/10x								
EEE	0.058	0.58								
XX	0.089	0.89								
TTT	0.022	0.11								
S	0.11	0.55								
W	0.032	0.16								

Blank units: ug/L **Associated sample units:** ug/kg
Sampling date: 5/22/14
Field blank type: (circle one) Field Blank / Rinsate / Other: EB Associated Samples: All (ND + 5X)

EB = EB2-052214 (SDG # PH 1918)

Compound	Blank ID	Sample Identification								
	EB	5x/10x								
EEE	0.045	0.45								
XX	0.10	1.0								
TTT	0.033	0.165								
S	0.15	0.75								
W	0.052	0.26								

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 #: 32181A21

VALIDATION FINDINGS WORKSHEET
Matrix Spike/Matrix Spike Duplicates

Page: 1 of 1
Reviewer: BA
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	Qualifications
		11/12	UU	( )	( )	34 (30)	1	J det /A (Q)
			YY	( )	( )	34 ( )		
			DDD	( )	( )	37 ( )		
			FFF	( )	235 (52-162)	54 ( )		
			GGG	( )	( )	38 ( )		
			~~HHH~~ WWW	( )	50 (63-111)	47 (30)		J|UJ|A
			JJJ	( )	( )	65 ( )		J det |A
			LLL	( )	22 (33-141)	63 ( )		J|UJ|A
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
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				( )	( )	( )		
				( )	( )	( )		

LDC #: 32181A26

VALIDATION FINDINGS WORKSHEET
Laboratory Control Samples (LCS)

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

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	Qualifications
		143LDLCS	GG	R1 (84-118)	( )	( )	All	J Nt IP (L)
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
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				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		

LDC#: 32181A2b

VALIDATION FINDINGS WORKSHEET
Field Duplicates

Reviewer: BR
2nd Reviewer: SM

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

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

Compound	Concentration (µg/Kg)		RPD (<50%)	Qualifications (Parent Only)
	1	2		
DD	0.35	0.49	33	
VV	1.7	2.5	38	
CCC	5.7	7.4	26	
III	7.5	9.1	19	
GGG	18	24	29	
WWW	13	18	32	
LLL	11	20	58	J DET/A(FD)
HHH	4.8	6.2	25	
XX	7.1	19U	200	J/UJ/A (FD)
DDD	14	20	35	
KKK	2.1	3.0	35	
EEE	34	22	43	
YY	11	15	31	
JJJ	13	22	51	J DET/A (FD)
TTT	1.6	1.3	21	
W	2.5	2.4	4	
S	2.0	2.6	26	
UU	8.4	12	35	
ZZ	8.7	11	23	

LDC #: 32181A2b

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# 32181A2b

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	FE0801A	05/28/14	N-Nitrosodimethylamine (IS1)	0.850	0.999	0.999	17	17.5
			Naphthalene (IS2)	1.222	1.245	1.245	2	2
			Fluorene (IS3)	1.460	1.459	1.459	0	0
			Anthracene (IS4)	1.187	1.297	1.297	9	9
			Chrysene (IS5)	1.553	1.431	1.431	8	8
			Benzo(a)pyrene (IS6)	1.619	1.608	1.608	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 #: 32181A26 **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	33.333	32.933	99	99	0
Benzo(a)pyrene-d12	↓	33.433	100	100	0
1-Methylnaphthalene-d10		27.5	82	82.5	0.6

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 #: 32181A26

VALIDATION FINDINGS WORKSHEET
Matrix Spike/Matrix Spike Duplicates Results Verification

Reviewer: BR
2nd Reviewer: BM

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

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 = | MSC - MSC | * 2/(MSC + MSDC)

MSC = Matrix spike concentration

MSDC = Matrix spike duplicate concentration

MS/MSD samples: 11/12

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	33.33	33.33	0	35.23	32.97	106	106	99	99	7	6.6
Pentachlorophenol											
Pyrene	33.33	33.33	8.25	38.62	29.75	91	91	65	65	26	25.9

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

LDC #: 32181A2b

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: 143LDLCS

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	-	40.45	-	121	121	-	-	-	-
Pentachlorophenol										
Pyrene	33.33	-	32.15	-	96	96	-	-	-	-

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 #: 32181A26

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 , S :

S = 2.0 ug

Conc. = $\frac{(12398)(1)(1000)(\quad)(\quad)}{(176323)(1.222)(30)(0.95)(\quad)}$

= 2.018954816 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: May 21, 2014

LDC Report Date: August 4, 2014

Matrix: Soil

Parameters: Chlorinated Pesticides

Validation Level: Level IV

Laboratory: Eurofins

Sample Delivery Group (SDG): PH193

Sample Identification

FDG2-SL-585-SA5D-SB-0.0-0.5
FDG2-SL-885-SA5D-SB-0.0-0.5
FDG2-SL-585-SA5D-SB-4.0-5.0
FDG2-SL-584-SA5D-SB-0.0-0.5
FDG2-SL-584-SA5D-SB-4.0-5.0
FDG2-SL-586-SA5D-SB-0.0-0.5
FDG2-SL-586-SA5D-SB-2.0-3.0
FDG2-SL-585-SA5D-SB-0.0-0.5MS
FDG2-SL-585-SA5D-SB-0.0-0.5MSD

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 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.

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 EB3-052214 (from SDG PH196) 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 with the following exceptions:

Spike ID (Associated Samples)	Compound	MS (%R) (Limits)	MSD (%R) (Limits)	RPD (Limits)	Flag	A or P
FDG2-SL-585-SA5D-SB-0.0-0.5MS/MSD (FDG2-SL-585-SA5D-SB-0.0-0.5)	p,p-DDT	-	0 (12-193)	54 (≤50)	J (all detects) R (all non-detects)	A

VIII. Laboratory Control Samples (LCS)

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

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 PH193	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-585-SA5D-SB-0.0-0.5 and FDG2-SL-885-SA5D-SB-0.0-0.5 were identified as field duplicates. No chlorinated pesticides were detected in any of the samples with the following exceptions:

Compound	Concentration (ug/Kg)		RPD (Limits)	Flag	A or P
	FDG2-SL-585-SA5D-SB-0.0-0.5	FDG2-SL-885-SA5D-SB-0.0-0.5			
p,p-DDE	2.4	1.6	40 (≤50)	-	-
p,p-DDT	7.8	6.1	24 (≤50)	-	-
Dieldrin	1.8U	1.2	200 (≤50)	J (all detects) UJ (all non-detects)	A

Santa Susana Field Laboratory
Chlorinated Pesticides - Data Qualification Summary - SDG PH193

SDG	Sample	Compound	Flag	A or P	Reason (Codes)
PH193	FDG2-SL-585-SA5D-SB-0.0-0.5	p,p-DDT	J (all detects) R (all non-detects)	A	Matrix spike/Matrix spike duplicate (%R)(RPD) (Q)
PH193	FDG2-SL-585-SA5D-SB-0.0-0.5 FDG2-SL-885-SA5D-SB-0.0-0.5 FDG2-SL-585-SA5D-SB-4.0-5.0 FDG2-SL-584-SA5D-SB-0.0-0.5 FDG2-SL-584-SA5D-SB-4.0-5.0 FDG2-SL-586-SA5D-SB-0.0-0.5 FDG2-SL-586-SA5D-SB-2.0-3.0	All compounds reported below the RL.	J (all detects)	A	Compound quantitation (Z)
PH193	FDG2-SL-585-SA5D-SB-0.0-0.5 FDG2-SL-885-SA5D-SB-0.0-0.5	Dieldrin	J (all detects) UJ (all non-detects)	A	Field duplicates (RPD) (FD)

Santa Susana Field Laboratory
Chlorinated Pesticides - Laboratory Blank Data Qualification Summary - SDG PH193

No Sample Data Qualified in this SDG

Santa Susana Field Laboratory
Chlorinated Pesticides - Field Blank Data Qualification Summary - SDG PH193

No Sample Data Qualified in this SDG

LDC #: 32181A3a **VALIDATION COMPLETENESS WORKSHEET** Date: 7/31/14
SDG #: PH193 Level IV Page: 1 of 1
Laboratory: Eurofins Lancaster Laboratories Reviewer: BR
2nd Reviewer: SM

METHOD: GC Chlorinated Pesticides (EPA SW846 Method 8081~~A~~B)

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
II.	GC Instrument Performance Check	A	
III.	Initial calibration	A	RSD ≤ 20%
IV.	Continuing calibration/ICV	A	|CV|CV ≤ 20%
V.	Blanks	A	
VI.	Surrogate spikes	A	
VII.	Matrix spike/Matrix spike duplicates	SW	
VIII.	Laboratory control samples	A	LCS
IX.	Regional quality assurance and quality control	N	
X.	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	SW	FD = 1 + 2

XVI.	Field blanks	ND	EB = EB2-052214 (SDG # PH196)
			TB = 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-585-SA5D-SB-0.0-0.5	11		21		31	PBLK13143
2	FDG2-SL-885-SA5D-SB-0.0-0.5	12		22		32	
3	FDG2-SL-585-SA5D-SB-4.0-5.0	13		23		33	
4	FDG2-SL-584-SA5D-SB-0.0-0.5	14		24		34	
5	FDG2-SL-584-SA5D-SB-4.0-5.0	15		25		35	
6	FDG2-SL-586-SA5D-SB-0.0-0.5	16		26		36	
7	FDG2-SL-586-SA5D-SB-2.0-3.0	17		27		37	
8	FDG2-SL-585-SA5D-SB-0.0-0.5MS	18		28		38	
9	FDG2-SL-585-SA5D-SB-0.0-0.5MSD	19		29		39	
10		20		30		40	

Notes:

LDC #: 32181A3a

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 #: 32181A3

VALIDATION FINDINGS WORKSHEET
Matrix Spike/Matrix Spike Duplicates

Page: 1 of 1
Reviewer: BK
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 a matrix spike (MS) and matrix spike duplicate (MSD) analyzed for each matrix in this SDG?
Y (N) N/A Was a 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 the relative percent differences (RPD) within the QC limits?

#	Date	MS/MSD ID	Compound	MS %R (Limits)	MSD %R (Limits)	RPD (Limits)	Associated Samples	Cd: Q Qualifications
		8/9	~~α-BHC~~ T	( )	0 (12-193)	54 (50)	1	J/R/A
			p,p-DDD ~~X~~	( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
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				( )	( )	( )		
				( )	( )	( )		

APL 8/5/11

LDC #: 32181A3a

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 (µg/kg)		%RPD Limit 50	Qualification
	1	2		Parent only / All Samples
p,p - ~~DDD~~ DDE	2.4	1.6	40	
p,p - DDT	7.8	6.1	24	
I	1.84	1.2	200	J/UJ/A (FD)

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

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

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

LDC#: 32181C3a

VALIDATION FINDINGS WORKSHEET
Initial Calibration Calculation Verification

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

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	5/28/2014	4,4-DDT (RTX-CLP)	353000	386821	395000	395131	13	13
	H9191A and B		Methoxychlor (RTX-CLP)	197000	201533	184000	184418	8	8
			4,4-DDT (RTX-CLPII)	69700	80848	76000	76014	10	10
			Methoxychlor (RTX-CLPII)	42400	45205	40300	40305	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#: 32181C3a

VALIDATION FINDINGS WORKSHEET
Continuing Calibration Calculation Verification

Reviewer: BR
2nd Reviewer: [signature]

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	MIXA3XD	5/28/2014	4,4-DDT (RTX-CLP)	20.00	21.19	21.19	6	6
			Methoxychlor (RTX-CLP)	100.0	107.50	107.52	7	7.5
			4,4-DDT (RTX-CLPII)	20.00	20.86	20.86	4	4
			Methoxychlor (RTX-CLPII)	100.0	103.47	103.47	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 #: 32181A3a

VALIDATION FINDINGS WORKSHEET
Surrogate Results Verification

Page: 1 of 1
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	CLP II	9.9342	6.834344	69	69	D
Decachlorobiphenyl	2	10.0328	9.278568	93	93	D
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 #: 32189A3a

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: 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
gamma-BHC	3.3	3.3	0	2.9	2.60	88	88	77	77	13	13
4,4'-DDT	7.04	7.04	7.3	~~7.3~~ 12.74	7.29	76	76	0	0	54	54
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 #: 32181A3a

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

Reviewer: BR
2nd Reviewer: [signature]

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: LCS3143

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	~~3.42~~	2.66	—	78	78	—	—	—	—
4,4'-DDT	7.15	~~7.15~~	7.68	—	107	107	—	—	—	—
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 #: 32181 A8c

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: RT CLP II 4,4'-DDT 7.8

Sample I.D. 1 4,4'-DDT

Conc. = $\frac{(1706812)(10)}{(760147)(30.5)(0.946)}$

= 7.782177376 ug/g

#	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: May 21, 2014

LDC Report Date: August 5, 2014

Matrix: Soil

Parameters: Polychlorinated Biphenyls

Validation Level: Level IV

Laboratory: Eurofins

Sample Delivery Group (SDG): PH193

Sample Identification

FDG2-SL-585-SA5D-SB-0.0-0.5
FDG2-SL-885-SA5D-SB-0.0-0.5
FDG2-SL-585-SA5D-SB-4.0-5.0
FDG2-SL-584-SA5D-SB-0.0-0.5
FDG2-SL-584-SA5D-SB-4.0-5.0
FDG2-SL-586-SA5D-SB-0.0-0.5
FDG2-SL-586-SA5D-SB-2.0-3.0
FDG2-SL-623-SA8-SB-9.0-10.0
FDG2-SL-623-SA8-SB-14.0-15.0
FDG2-SL-623-SA8-SB-19.0-20.0
FDG2-SL-585-SA5D-SB-0.0-0.5MS
FDG2-SL-585-SA5D-SB-0.0-0.5MSD

Introduction

This data review covers 12 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 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 EB2-052214 (from SDG PH196) 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
PBLK34144	ZBMR1	Decachlorobiphenyl	122 (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 PH193	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-585-SA5D-SB-0.0-0.5 and FDG2-SL-885-SA5D-SB-0.0-0.5 were identified as field duplicates. No polychlorinated biphenyls were detected in any of the samples with the following exceptions:

Compound	Concentration (ug/Kg)		RPD (Limits)	Flag	A or P
	FDG2-SL-585-SA5D-SB-0.0-0.5	FDG2-SL-885-SA5D-SB-0.0-0.5			
Aroclor-1254	28	30	7 (≤50)	-	-
Aroclor-5460	26	22	17 (≤50)	-	-

Santa Susana Field Laboratory
Polychlorinated Biphenyls - Data Qualification Summary - SDG PH193

SDG	Sample	Compound	Flag	A or P	Reason (Code)
PH193	FDG2-SL-585-SA5D-SB-0.0-0.5 FDG2-SL-885-SA5D-SB-0.0-0.5 FDG2-SL-585-SA5D-SB-4.0-5.0 FDG2-SL-584-SA5D-SB-0.0-0.5 FDG2-SL-584-SA5D-SB-4.0-5.0 FDG2-SL-586-SA5D-SB-0.0-0.5 FDG2-SL-586-SA5D-SB-2.0-3.0 FDG2-SL-623-SA8-SB-9.0-10.0 FDG2-SL-623-SA8-SB-14.0-15.0 FDG2-SL-623-SA8-SB-19.0-20.0	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 PH193

No Sample Data Qualified in this SDG

Santa Susana Field Laboratory
Polychlorinated Biphenyls - Field Blank Data Qualification Summary - SDG PH193

No Sample Data Qualified in this SDG

LDC #: 32181A3b **VALIDATION COMPLETENESS WORKSHEET** Date: 7/31/14

SDG #: PH193 Level IV Page: 1 of 1

Laboratory: Eurofins Lancaster Laboratories Reviewer: RR

2nd Reviewer: CM

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: 5/21/14
II.	GC Instrument Performance Check	A	
III.	Initial calibration	A	RSD ≤ 20%
IV.	Continuing calibration/ICV	A	ICV/CCV ≤ 20%
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.	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	~~SW~~ SW	FD = 1 + 2
XVI.	Field blanks	ND	EB = EB2-052214 (SDG# PH196) FB = FB-052114 (SDG# PH191)

APL 8-5-14

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-585-SA5D-SB-0.0-0.5	11	FDG2-SL-585-SA5D-SB-0.0-0.5MS	21		31	PBLK34144
2	FDG2-SL-885-SA5D-SB-0.0-0.5	12	FDG2-SL-585-SA5D-SB-0.0-0.5MSD	22		32	
3	FDG2-SL-585-SA5D-SB-4.0-5.0	13		23		33	
4	FDG2-SL-584-SA5D-SB-0.0-0.5	14		24		34	
5	FDG2-SL-584-SA5D-SB-4.0-5.0	15		25		35	
6	FDG2-SL-586-SA5D-SB-0.0-0.5	16		26		36	
7	FDG2-SL-586-SA5D-SB-2.0-3.0	17		27		37	
8	FDG2-SL-623-SA8-SB-9.0-10.0	18		28		38	
9	FDG2-SL-623-SA8-SB-14.0-15.0	19		29		39	
10	FDG2-SL-623-SA8-SB-19.0-20.0	20		30		40	

Notes:

LDC #: 32181A36

VALIDATION FINDINGS CHECKLIST

Page: 1 of 2
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?		✓	✓	R
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 X %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?	X R	✓		
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.	✓	✓		AIL 8-5-14
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. Aroclor 5460

Notes:_____

_____

_____

LDC #: 32181A36

VALIDATION FINDINGS WORKSHEET
Surrogate Spikes

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

METHOD: GC Pesticides/PCBs (EPA SW 846 Method 8081/8082)

Please see qualification 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 Did all surrogate percent recoveries (%R) meet the QC limits?

#	Date	Sample ID	Column	Surrogate Compound	%R (Limits)	Code: S Qualifications
		PBLK34144	ZB MR1	B	122 (45-120)	J det /P
					( )	
					( )	
					( )	
					( )	
					( )	
					( )	
					( )	
					( )	
					( )	
					( )	
					( )	
					( )	
					( )	
					( )	
					( )	
					( )	
					( )	
					( )	
					( )	

Letter Designation	Surrogate Compound	Recovery QC Limits (Soil)	Recovery QC Limits (Water)	Comments
A	Tetrachloro-m-xylene			
B	Decachlorobiphenyl			

LDC #: 32181A3L

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 (ug/kg)		%RPD Limit 50	Qualification
	1	2		Parent only / All Samples
AA	28	30	7	
NN	26	22	17	

APL B-5

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

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

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

LDC#: 32181A3b

VALIDATION FINDINGS WORKSHEET
Initial Calibration Calculation Verification

Reviewer: BR
2nd Reviewer: [signature]

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	5/20/2014	PCB1260-1 (ZB-MultiR1)	2229	2229	2342	2342	8	8
			PCB1260-1 (ZB-MultiR2I)	2627	2627	2871	2871	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#: 32181A3b

VALIDATION FINDINGS WORKSHEET
Initial Calibration Calculation Verification

Reviewer: BR
2nd Reviewer: [signature]

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	5/20/2014	PCB1254-1 (ZB-MultiR1)	2598	2598	2721	2721	7	7
			PCB1254-1 (ZB-MultiR2I)	3158	3158	3193	3193	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#: 32181A3b

VALIDATION FINDINGS WORKSHEET
Continuing Calibration Calculation Verification

Reviewer: BR
2nd Reviewer:

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	AR163UT	5/27/2014	PCB1260 (ZB-MultiR1)	200	194.19	194.20	3	3
			PCB1260 (ZB-MultiR2)	200	195.45	195.44	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 #: 32181A3L

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	ZBMR2	9.934426	8.943265	90	90	0
Decachlorobiphenyl	ZBMR1	10.03279	9.513187	95	95	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 #: 32187A36

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: 11/12

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	164	164 R	0	146.01	141.98	89	89	87	87	3	3

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

LDC #: 32181B36

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: LCS34144

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	-	179.06	-	107	107	-	-	-	-

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 #: 32181436

VALIDATION FINDINGS WORKSHEET
Sample Calculation Verification

Page: 1 of 1
Reviewer: BR
2nd reviewer: [signature]

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?

Aroclor 1254-1 = $\frac{(121832.1)(10)}{(2721)(30.5)}$

= 14.68024653

1254-2 = 25.852707

1254-3/4 = 18.859769

1254-5 = 27.05563

1254-6 = 46.683592

26.62638891

Example: 23 MRL 28 ug

Sample I.D. 1 BAA:

Conc. = $\frac{26.62638891}{0.94}$

= 28.14628849 ug/kg

#	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: May 21, 2014

LDC Report Date: August 3, 2014

Matrix: Soil

Parameters: Metals

Validation Level: Level IV

Laboratory: Eurofins

Sample Delivery Group (SDG): PH193

Sample Identification

FDG2-SL-585-SA5D-SB-0.0-0.5
FDG2-SL-885-SA5D-SB-0.0-0.5
FDG2-SL-585-SA5D-SB-4.0-5.0
FDG2-SL-584-SA5D-SB-0.0-0.5
FDG2-SL-584-SA5D-SB-4.0-5.0
FDG2-SL-586-SA5D-SB-0.0-0.5
FDG2-SL-586-SA5D-SB-2.0-3.0
FDG2-SL-623-SA8-SB-9.0-10.0
FDG2-SL-623-SA8-SB-14.0-15.0
FDG2-SL-623-SA8-SB-19.0-20.0
FDG2-SL-585-SA5D-SB-0.0-0.5MS
FDG2-SL-585-SA5D-SB-0.0-0.5MSD
FDG2-SL-585-SA5D-SB-0.0-0.5DUP

Introduction

This data review covers 13 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)	Boron Tin Strontium Calcium	1.59 mg/Kg 1.57 mg/Kg 0.125 mg/Kg 27.9 mg/Kg	All samples in SDG PH193

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-585-SA5D-SB-0.0-0.5	Boron Tin	5.14 mg/Kg 2.25 mg/Kg	5.14U mg/Kg 2.25U mg/Kg
FDG2-SL-885-SA5D-SB-0.0-0.5	Boron Tin	5.55 mg/Kg 2.30 mg/Kg	5.55U mg/Kg 2.30U mg/Kg
FDG2-SL-585-SA5D-SB-4.0-5.0	Boron Tin	6.03 mg/Kg 3.03 mg/Kg	6.03U mg/Kg 3.03U mg/Kg

Sample	Analyte	Reported Concentration	Modified Final Concentration
FDG2-SL-584-SA5D-SB-0.0-0.5	Boron Tin	5.41 mg/Kg 2.63 mg/Kg	5.41U mg/Kg 2.63U mg/Kg
FDG2-SL-584-SA5D-SB-4.0-5.0	Boron Tin	3.20 mg/Kg 2.44 mg/Kg	3.20U mg/Kg 2.44U mg/Kg
FDG2-SL-586-SA5D-SB-0.0-0.5	Boron Tin	4.32 mg/Kg 2.65 mg/Kg	4.32U mg/Kg 2.65U mg/Kg
FDG2-SL-586-SA5D-SB-2.0-3.0	Boron Tin	2.56 mg/Kg 2.40 mg/Kg	2.56U mg/Kg 2.40U mg/Kg
FDG2-SL-623-SA8-SB-9.0-10.0	Boron Tin	4.68 mg/Kg 2.82 mg/Kg	4.68U mg/Kg 2.82U mg/Kg
FDG2-SL-623-SA8-SB-14.0-15.0	Boron Tin	5.90 mg/Kg 2.91 mg/Kg	5.90U mg/Kg 2.91U mg/Kg
FDG2-SL-623-SA8-SB-19.0-20.0	Boron Tin	5.60 mg/Kg 2.77 mg/Kg	5.60U mg/Kg 2.77U mg/Kg

Sample EB2-052214 (from SDG PH196) was identified as an equipment blank. No metal contaminants were found with the following exceptions:

Blank ID	Sampling Date	Analyte	Concentration	Associated Samples
EB2-052214	5/22/14	Zirconium	10.8 ug/L	All samples in SDG PH193

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 PH193

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-585-SA5D-SB-0.0-0.5	Zirconium	4.44 mg/Kg	4.44U mg/Kg

Sample	Analyte	Reported Concentration	Modified Final Concentration
FDG2-SL-885-SA5D-SB-0.0-0.5	Zirconium	4.92 mg/Kg	4.92U mg/Kg
FDG2-SL-584-SA5D-SB-0.0-0.5	Zirconium	3.63 mg/Kg	3.63U mg/Kg
FDG2-SL-584-SA5D-SB-4.0-5.0	Zirconium	5.17 mg/Kg	5.17U mg/Kg
FDG2-SL-586-SA5D-SB-2.0-3.0	Zirconium	4.93 mg/Kg	4.93U mg/Kg
FDG2-SL-623-SA8-SB-9.0-10.0	Zirconium	3.26 mg/Kg	3.26U mg/Kg
FDG2-SL-623-SA8-SB-14.0-15.0	Zirconium	4.11 mg/Kg	4.11U mg/Kg
FDG2-SL-623-SA8-SB-19.0-20.0	Zirconium	3.01 mg/Kg	3.01U 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-585-SA5D-SB-0.0-0.5MS/MSD (All samples in SDG PH193)	Aluminum	-	-	25 (≤20)	J (all detects)	A
	Antimony	43 (75-125)	27 (75-125)	46 (≤20)	UJ (all non-detects)	
	Iron	-	-	31 (≤20)		
	Lead	-	-	25 (≤20)		
	Manganese	-	-	39 (≤20)		
	Zinc	190 (75-125)	-	36 (≤20)		
FDG2-SL-585-SA5D-SB-0.0-0.5MS/MSD (All samples in SDG PH193)	Barium	-	128 (75-125)	-	J (all detects)	A
	Chromium	-	145 (75-125)	-	J (all detects)	
	Phosphorus	158 (75-125)	154 (75-125)	-	J (all detects)	
	Potassium	177 (75-125)	254 (75-125)	-	J (all detects)	
	Strontium	147 (75-125)	195 (75-125)	-	J (all detects)	
	Vanadium	-	141 (75-125)	-	J (all detects)	

For FDG2-SL-585-SA5D-SB-0.0-0.5MS/MSD, no data were qualified for Aluminum, Calcium, Iron, Magnesium, Manganese, 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 with the following exceptions:

Diluted Sample	Analyte	%D (Limits)	Associated Samples	Flag	A or P
FDG2-SL-585-SA5D-SB-0.0-0.5	Nickel Phosphorus Zinc	16 (≤10) 11 (≤10) 13 (≤10)	All samples in SDG PH193	J (all detects) UJ (all non-detects)	A

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 PH193	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-585-SA5D-SB-0.0-0.5 and FDG2-SL-885-SA5D-SB-0.0-0.5 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-585-SA5D-SB-0.0-0.5	FDG2-SL-885-SA5D-SB-0.0-0.5			
Aluminum	16300	17900	9 (≤50)	-	-
Arsenic	6.33	8.49	29 (≤50)	-	-
Barium	93.9	112	18 (≤50)	-	-
Beryllium	0.593	0.652	9 (≤50)	-	-
Boron	5.14	5.55	8 (≤50)	-	-
Cadmium	0.590	0.969	49 (≤50)	-	-
Calcium	3210	3770	16 (≤50)	-	-
Chromium	23.5	26.8	13 (≤50)	-	-
Cobalt	5.16	6.64	25 (≤50)	-	-
Copper	16.1	26.7	50 (≤50)	-	-
Iron	20100	23000	13 (≤50)	-	-
Lead	12.0	15.0	22 (≤50)	-	-
Lithium	22.1	25.1	13 (≤50)	-	-
Magnesium	4300	5130	18 (≤50)	-	-
Manganese	218	290	28 (≤50)	-	-
Mercury	0.0591	0.0627	6 (≤50)	-	-
Molybdenum	0.424	0.331	25 (≤50)	-	-
Nickel	14.0	17.3	21 (≤50)	-	-
Phosphorus	350	448	25 (≤50)	-	-
Potassium	3600	4090	13 (≤50)	-	-
Selenium	0.183	0.189	3 (≤50)	-	-
Silver	0.372	0.714	63 (≤50)	J (all detects)	A

Analyte	Concentration (mg/Kg)		RPD (Limits)	Flag	A or P
	FDG2-SL-585-SA5D-SB-0.0-0.5	FDG2-SL-885-SA5D-SB-0.0-0.5			
Sodium	91.2	96.9	6 (≤50)	-	-
Strontium	24.4	27.0	10 (≤50)	-	-
Thallium	0.300	0.318	6 (≤50)	-	-
Titanium	1030	1140	10 (≤50)	-	-
Tin	2.25	2.30	2 (≤50)	-	-
Vanadium	37.1	42.1	13 (≤50)	-	-
Zinc	88.2	111	23 (≤50)	-	-
Zirconium	4.44	4.92	10 (≤50)	-	-

Santa Susana Field Laboratory
Metals - Data Qualification Summary - SDG PH193

SDG	Sample	Analyte	Flag	A or P	Reason (Code)
PH193	FDG2-SL-585-SA5D-SB-0.0-0.5 FDG2-SL-885-SA5D-SB-0.0-0.5 FDG2-SL-585-SA5D-SB-4.0-5.0 FDG2-SL-584-SA5D-SB-0.0-0.5 FDG2-SL-584-SA5D-SB-4.0-5.0 FDG2-SL-586-SA5D-SB-0.0-0.5 FDG2-SL-586-SA5D-SB-2.0-3.0 FDG2-SL-623-SA8-SB-9.0-10.0 FDG2-SL-623-SA8-SB-14.0-15.0 FDG2-SL-623-SA8-SB-19.0-20.0	Antimony Zinc	J (all detects) UJ (all non-detects) J (all detects) UJ (all non-detects)	A	Matrix spike/Matrix spike duplicate (%R)(RPD) (Q, E)
PH193	FDG2-SL-585-SA5D-SB-0.0-0.5 FDG2-SL-885-SA5D-SB-0.0-0.5 FDG2-SL-585-SA5D-SB-4.0-5.0 FDG2-SL-584-SA5D-SB-0.0-0.5 FDG2-SL-584-SA5D-SB-4.0-5.0 FDG2-SL-586-SA5D-SB-0.0-0.5 FDG2-SL-586-SA5D-SB-2.0-3.0 FDG2-SL-623-SA8-SB-9.0-10.0 FDG2-SL-623-SA8-SB-14.0-15.0 FDG2-SL-623-SA8-SB-19.0-20.0	Aluminum Iron Lead Manganese	J (all detects) UJ (all non-detects)	A	Matrix spike/Matrix spike duplicate (RPD) (E)
PH193	FDG2-SL-585-SA5D-SB-0.0-0.5 FDG2-SL-885-SA5D-SB-0.0-0.5 FDG2-SL-585-SA5D-SB-4.0-5.0 FDG2-SL-584-SA5D-SB-0.0-0.5 FDG2-SL-584-SA5D-SB-4.0-5.0 FDG2-SL-586-SA5D-SB-0.0-0.5 FDG2-SL-586-SA5D-SB-2.0-3.0 FDG2-SL-623-SA8-SB-9.0-10.0 FDG2-SL-623-SA8-SB-14.0-15.0 FDG2-SL-623-SA8-SB-19.0-20.0	Barium Chromium Phosphorus Potassium Strontium Vanadium	J (all detects) J (all detects) J (all detects) J (all detects) J (all detects) J (all detects)	A	Matrix spike/Matrix spike duplicate (%R) (Q)
PH193	FDG2-SL-585-SA5D-SB-0.0-0.5 FDG2-SL-885-SA5D-SB-0.0-0.5 FDG2-SL-585-SA5D-SB-4.0-5.0 FDG2-SL-584-SA5D-SB-0.0-0.5 FDG2-SL-584-SA5D-SB-4.0-5.0 FDG2-SL-586-SA5D-SB-0.0-0.5 FDG2-SL-586-SA5D-SB-2.0-3.0 FDG2-SL-623-SA8-SB-9.0-10.0 FDG2-SL-623-SA8-SB-14.0-15.0 FDG2-SL-623-SA8-SB-19.0-20.0	Nickel Phosphorus Zinc	J (all detects) UJ (all non-detects)	A	ICP serial dilution (%D) (A)
PH193	FDG2-SL-585-SA5D-SB-0.0-0.5 FDG2-SL-885-SA5D-SB-0.0-0.5 FDG2-SL-585-SA5D-SB-4.0-5.0 FDG2-SL-584-SA5D-SB-0.0-0.5 FDG2-SL-584-SA5D-SB-4.0-5.0 FDG2-SL-586-SA5D-SB-0.0-0.5 FDG2-SL-586-SA5D-SB-2.0-3.0 FDG2-SL-623-SA8-SB-9.0-10.0 FDG2-SL-623-SA8-SB-14.0-15.0 FDG2-SL-623-SA8-SB-19.0-20.0	All analytes reported below the RL and above the MDL.	J (all detects)	A	Sample result verification (Z)
PH193	FDG2-SL-585-SA5D-SB-0.0-0.5 FDG2-SL-885-SA5D-SB-0.0-0.5	Silver	J (all detects)	A	Field duplicates (RPD) (FD)

Santa Susana Field Laboratory
Metals - Laboratory Blank Data Qualification Summary - SDG PH193

SDG	Sample	Analyte	Modified Final Concentration	A or P	Code
PH193	FDG2-SL-585-SA5D-SB-0.0-0.5	Boron Tin	5.14U mg/Kg 2.25U mg/Kg	A	B
PH193	FDG2-SL-885-SA5D-SB-0.0-0.5	Boron Tin	5.55U mg/Kg 2.30U mg/Kg	A	B
PH193	FDG2-SL-585-SA5D-SB-4.0-5.0	Boron Tin	6.03U mg/Kg 3.03U mg/Kg	A	B
PH193	FDG2-SL-584-SA5D-SB-0.0-0.5	Boron Tin	5.41U mg/Kg 2.63U mg/Kg	A	B
PH193	FDG2-SL-584-SA5D-SB-4.0-5.0	Boron Tin	3.20U mg/Kg 2.44U mg/Kg	A	B
PH193	FDG2-SL-586-SA5D-SB-0.0-0.5	Boron Tin	4.32U mg/Kg 2.65U mg/Kg	A	B
PH193	FDG2-SL-586-SA5D-SB-2.0-3.0	Boron Tin	2.56U mg/Kg 2.40U mg/Kg	A	B
PH193	FDG2-SL-623-SA8-SB-9.0-10.0	Boron Tin	4.68U mg/Kg 2.82U mg/Kg	A	B
PH193	FDG2-SL-623-SA8-SB-14.0-15.0	Boron Tin	5.90U mg/Kg 2.91U mg/Kg	A	B
PH193	FDG2-SL-623-SA8-SB-19.0-20.0	Boron Tin	5.60U mg/Kg 2.77U mg/Kg	A	B

Santa Susana Field Laboratory
Metals - Field Blank Data Qualification Summary - SDG PH193

SDG	Sample	Analyte	Modified Final Concentration	A or P	Code
PH193	FDG2-SL-585-SA5D-SB-0.0-0.5	Zirconium	4.44U mg/Kg	A	F
PH193	FDG2-SL-885-SA5D-SB-0.0-0.5	Zirconium	4.92U mg/Kg	A	F
PH193	FDG2-SL-584-SA5D-SB-0.0-0.5	Zirconium	3.63U mg/Kg	A	F
PH193	FDG2-SL-584-SA5D-SB-4.0-5.0	Zirconium	5.17U mg/Kg	A	F

SDG	Sample	Analyte	Modified Final Concentration	A or P	Code
PH193	FDG2-SL-586-SA5D-SB-2.0-3.0	Zirconium	4.93U mg/Kg	A	F
PH193	FDG2-SL-623-SA8-SB-9.0-10.0	Zirconium	3.26U mg/Kg	A	F
PH193	FDG2-SL-623-SA8-SB-14.0-15.0	Zirconium	4.11U mg/Kg	A	F
PH193	FDG2-SL-623-SA8-SB-19.0-20.0	Zirconium	3.01U mg/Kg	A	F

LDC #: 32181A4
SDG #: PH193
Laboratory: Eurofins Lancaster Laboratories

VALIDATION COMPLETENESS WORKSHEET

Level IV

Date: 7/30/14
Page: 1 of 1
Reviewer: KM
2nd Reviewer:

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: 5/21/14
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 (Al, Ca, Fe, Mg, Mn, Ti >4x)
VII.	Duplicate Sample Analysis	A	DUP
VIII.	Laboratory Control Samples (LCS)	A	LCS
IX.	Internal Standard (ICP-MS)	A	
X.	Furnace Atomic Absorption QC	N	
XI.	ICP Serial Dilution	SW	
XII.	Sample Result Verification	A	
XIII.	Overall Assessment of Data	A	
XIV.	Field Duplicates	SW	FD=(1,2)
XV	Field Blanks	SW	EB = EB2-052214 SDG#PH196 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-585-SA5D-SB-0.0-0.5	11	FDG2-SL-585-SA5D-SB-0.0-0.5MS	21		31	
2	FDG2-SL-885-SA5D-SB-0.0-0.5	12	FDG2-SL-585-SA5D-SB-0.0-0.5MSD	22		32	
3	FDG2-SL-585-SA5D-SB-4.0-5.0	13	FDG2-SL-585-SA5D-SB-0.0-0.5DUP	23		33	
4	FDG2-SL-584-SA5D-SB-0.0-0.5	14		24		34	
5	FDG2-SL-584-SA5D-SB-4.0-5.0	15		25		35	
6	FDG2-SL-586-SA5D-SB-0.0-0.5	16		26		36	
7	FDG2-SL-586-SA5D-SB-2.0-3.0	17		27		37	
8	FDG2-SL-623-SA8-SB-9.0-10.0	18		28		38	
9	FDG2-SL-623-SA8-SB-14.0-15.0	19		29		39	
10	FDG2-SL-623-SA8-SB-19.0-20.0	20		30		40	

Notes:

LDC #: 32181A4

VALIDATION FINDINGS CHECKLIST

Reviewer: KR
2nd Reviewer: CR

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

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 #: 32181A4

VALIDATION FINDINGS WORKSHEET
Sample Specific Element Reference

Reviewer: M
2nd reviewer: CA

All circled elements are applicable to each sample.

Sample ID	Matrix	Target Analyte List (TAL)
1-10	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 11/12/13	↓	Al, Sb, As, Ba, Be, B, Cd, Ca, Cr, Co, Cu, Fe, Pb, Li, Mg, Mo, Mn, Hg, Ni, P, K, Se, Ag, Na, Sr, Tl, Sn, Ti, V, Zn, Zr

LDC #: 32181A4

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: 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	5	6	7	8	9	10	
B	1.59 ~~1.587~~			7.935	5.14	5.55	6.03	5.41	3.20	4.32	2.56	4.68	5.90	5.60	
Sn	1.57 ~~1.570~~			7.850	2.25	2.30	3.03	2.63	2.44	2.65	2.40	2.82	2.91	2.77	
Sr	0.125			0.625											
Ca	27.9 ~~27.941~~			134											

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 #: 32181A4

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 5/22/14 Soil factor applied 100
Field blank type: (circle one) Field Blank / Rinsate / Other: EB Associated Samples: All

Analyte	Blank ID	Blank ID	Sample Identification								
	EB2-052214 SDG#PH196	FB-052114 SDG# PH191	Action Limit (mg/kg)	1	2	4	5	7	8	9	10
Zr	10.8	11.0	5.50	4.44	4.92	3.63	5.17	4.93	3.26	4.11	3.01

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 #: 32181A4

VALIDATION FINDINGS WORKSHEET
Matrix Spike/Matrix Spike Duplicates

Reviewer: KK
2nd Reviewer: 9

METHOD: Trace metals (EPA SW 846 Method 6010C/6020A/7471A)

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 samples?

Y (N) N/A Was a post digestion spike analyzed for elements that did not meet the required criteria for matrix spike recovery?

LEVEL IV ONLY:

(Y) N N/A Were recalculated results acceptable? See Level IV Recalculation Worksheet for recalculations.

#	MS/MSD ID	Matrix	Analyte	MS %Recovery	MSD %Recovery	RPD (Limits)	Associated Samples	Qualifications	Post Spike (%R)
	11/12	Soil	Al			25(20)	All	(E) J/UJ/A (Q)	
			Sb	43	27	46(20)		(Q)(E) ~~J/R/A~~ J/UJ/A	107
			Ba		128			(Q) J det/A	
			Cr		145			↓ ↓	
			Fe			31(20)		(E) J/UJ/A	
			Pb			25(20)		↓ ↓	
			Mn			39(20)		↓ ↓	
			P	158	154			(Q) J det/A	
			K	177	254			↓ ↓	
			Sr	147	195			↓ ↓	
			V		141			↓ ↓	
	↓	↓	Zn	190		36(20)	↓	(E)(Q) J/UJ/A	

Comments: 11/12: (Al, Ca, Fe, Mg, Mn, Ti>4x)

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QUALITY ASSURANCE SUMMARY
FORM 6
DUPLICATES
SDG No.: PH193
Matrix: SOIL Level (low/med): LOW

Background Lab Sample ID: 7473686BKG Duplicate Lab Sample ID: 7473689DUP
Batch ID(s): P14737C, P14838A
Concentration Units: MG/KG

Analyte	Mass	Control Limit	Samples (S)	C	Duplicate (D)	C	RPD	Q	M
Aluminum			15390.1710		16368.4660		6		P
Antimony			0.7400	U	0.7400	U			P
Arsenic		4.0	5.9920		7.1040		17		P
Barium			88.7990		96.5320		8		P
Beryllium			0.5610	B	0.5900	B	5		P
Boron			4.8630	B	4.2350	B	14		P
Cadmium			0.5580	B	0.7070	B	24		P
Calcium			3037.4610		3212.7550		6		P
Chromium			22.2570		22.7640		2		P
Cobalt		1.0	4.8790		5.6680		15		P
Copper			15.2180		16.0300		5		P
Iron			19057.2680		21683.8680		13		P
Lead		3.0	11.3320		11.9340		5		P
Lithium			20.8950		23.5830		12		P
Magnesium			4069.7200		4492.0950		10		P
Manganese			205.7980		229.7610		11		P
Mercury		0.0	0.0559		0.0505		10		CV
Molybdenum			0.4010	B	0.3610	B	10		P
Nickel			13.2900		14.7420		10		P
Phosphorus			331.5570		386.5930		15		P
Potassium			3403.6140		3695.5250		8		P
Selenium	78		0.1734	B	0.1474	B	16		MS
Silver	107	0.2	0.3520		0.4928		33		MS
Sodium			86.3040	B	96.1970	B	11		P
Strontium	88		23.0800		22.8800		1		MS
Thallium	203	0.2	0.2836		0.2608		8		MS
Tin			2.1280	B	2.4260	B	13		P
Titanium			975.0650		1019.4080		4		P
Vanadium			35.0820		37.7960		7		P
Zinc			83.4060		91.7680		10		P
Zirconium		5.0	4.2000	B	5.0140		18		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.

OR BY Difference

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

LDC #: 32181AH

VALIDATION FINDINGS WORKSHEET
ICP Serial Dilution

Reviewer: KK
2nd Reviewer: [illegible]

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 If analyte concentrations were > 50X the MDL (ICP) ,or >100X the MDL (ICP/MS), was a serial dilution analyzed?
Y (N) N/A Were ICP serial dilution percent differences (%D) ≤10%?
Y (N) N/A Is there evidence of negative interference? If yes, professional judgement will be used to qualify the data.

LEVEL IV ONLY:

(Y) N N/A Were recalculated results acceptable? See Level IV Recalculation Worksheet for recalculations.

#	Date	Diluted Sample ID	Matrix	Analyte	%D (Limits)	Associated Samples	Qualifications
		1	Soil	~~Al~~ Ni	~~20~~ 16	All	J/UJ/A (A)
				~~Fe~~ P	11 ~~20~~		
				Zn	~~20~~ 13		

Comments: _____

SDILICPMS.wpd

LDC#: 32181A4

VALIDATION FINDINGS WORKSHEET
Field Duplicates

Reviewer: KK
2nd Reviewer: OV

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

Analyte	Concentration (mg/Kg)		RPD (≤50)	Qualifier (Parent Only)
	1	2		
Aluminum	16300	17900	9	
Arsenic	6.33	8.49	29	
Barium	93.9	112	18	
Beryllium	0.593	0.652	9	
Boron	5.14	5.55	8	
Cadmium	0.590	0.969	49	
Calcium	3210	3770	16	
Chromium	23.5	26.8	13	
Cobalt	5.16	6.64	25	
Copper	16.1	26.7	50	
Iron	20100	23000	13	
Lead	12.0	15.0	22	
Magnesium	4300	5130	18	
Manganese	218	290	28	
Mercury	0.0591	0.0627	6	
Molybdenum	0.424	0.331	25	
Nickel	14.0	17.3	21	
Phosphorus	350	448	25	
Potassium	3600	4090	13	
Selenium	0.183	0.189	3	
Lithium	22.1	25.1	13	

APL 8/5/14

LDC#: 32181A4

VALIDATION FINDINGS WORKSHEET
Field Duplicates

Reviewer: VK
2nd Reviewer: SV

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

Analyte	Concentration (mg/Kg)		RPD (≤50)	Qualifier (Parent Only)
	1	2		
Silver	0.372	0.714	63	J det/A (FD)
Sodium	91.2	96.9	6	
Strontium	24.4	27.0	10	
Thallium	0.300	0.318	6	
Titanium	1030	1140	10	
Tin	2.25	2.30	2	
Vanadium	37.1	42.1	13	
Zinc	88.2	111	23	
Zirconium	4.44	4.92	10	

LDC #: 32181A4

VALIDATION FINDINGS WORKSHEET
Initial and Continuing Calibration Calculation Verification

Reviewer: KR
2nd Reviewer: CR

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	~~mg/L~~ Found (ug/L)	True (ug/L)	Recalculated %R	Reported %R	Acceptable (Y/N)
ICV (12:23)	ICP (Initial calibration)	~~Ag~~ Al	31.01843 mg/L	30.00 mg/L	103.4	103.4	Y
ICV (20:25)	ICP/MS (Initial calibration)	Ag	51.03	50.0	102.1	102.1	Y
ICV (19:15)	CVAA (Initial calibration)	Hg	2.5010	2.5	100.0	100.0	Y
CCV (12:47)	ICP (Continuing calibration)	Li	0.49911 mg/L	0.500 mg/L	99.8	99.8	Y
CCV (20:42)	ICP/MS (Continuing calibration)	Se	27.11	25.0	108.4	108.4	Y
CCV (19:21)	CVAA (Continuing calibration)	Hg	1.0018	1.00	100.2	100.0	Y
	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 #: 32181A4

VALIDATION FINDINGS WORKSHEET
Level IV Recalculation Worksheet

Reviewer: KK
2nd Reviewer: CR

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	µg/L Found / S / I (units)	µg/L True / D / SDR (units)	Recalculated %R / RPD / %D	Reported %R / RPD / %D	Acceptable (Y/N)
ICSA+B (20:37)	ICP interference check	Ag	48.89	50.0	97.8	97.8	Y
LCS (20:47)	Laboratory control sample	Se	~~0.00963~~ 11014	1000.0	110 ~~X~~	110	Y
~~MS~~ ~~N~~ 11	Matrix spike	As	(SSR-SR) 17.4258 mg/kg	14.8515 mg/kg	117	117	Y
13	Duplicate	~~TL~~ Mn	~~0.2836 mg/kg 228.077 211013~~	~~0.2608 mg/kg 229.761~~	8	8	Y
1	ICP serial dilution	Sr	23.08 mg/kg	25.07 mg/kg	9	9	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 #: 32181A4

VALIDATION FINDINGS WORKSHEET
Sample Calculation Verification

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

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 Sr 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: $\frac{(131.6\ ppb)(100\ ml)(2)}{(1.02\ g)(1000)(0.954)} = 27.0481\ mg/kg$

#	Sample ID	Analyte	Reported Concentration (mg/kg)	Calculated Concentration (mg/kg)	Acceptable (Y/N)
	1	~~0.05~~ Hg	0.059	0.059	Y
	2	Sr	27.0	27.0	
	3	As	11.7	11.7	
	4	Ca	7920	7920	
	5	Pb	2.6	2.6	
	6	Zn	81.3	81.3	
	7	Ba	84.5	84.5	
	8	Na	80.4	80.4	
	9	Zr	4.1	4.1	
	10	Fe	20000	20000	

Note:

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: Santa Susana Field Laboratory

Collection Date: May 21, 2014

LDC Report Date: August 3, 2014

Matrix: Soil/Water

Parameters: Total Petroleum Hydrocarbons as Gasoline

Validation Level: Level IV

Laboratory: Eurofins

Sample Delivery Group (SDG): PH193

Sample Identification

TB1-052114
FDG2-SL-585-SA5D-SB-4.0-5.0
FDG2-SL-584-SA5D-SB-4.0-5.0
FDG2-SL-586-SA5D-SB-2.0-3.0
FDG2-SL-623-SA8-SB-4.0-5.0
FDG2-SL-623-SA8-SB-9.0-10.0
FDG2-SL-623-SA8-SB-14.0-15.0
FDG2-SL-623-SA8-SB-19.0-20.0

Introduction

This data review covers 7 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 TB1-052114 was identified as a trip blank. No total petroleum hydrocarbons as gasoline contaminants were found.

Sample EB2-052214 (from SDG PH196) 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 PH193	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 PH193

SDG	Sample	Compound	Flag	A or P	Reason (Code)
PH193	TB1-052114 FDG2-SL-585-SA5D-SB-4.0-5.0 FDG2-SL-584-SA5D-SB-4.0-5.0 FDG2-SL-586-SA5D-SB-2.0-3.0 FDG2-SL-623-SA8-SB-4.0-5.0 FDG2-SL-623-SA8-SB-9.0-10.0 FDG2-SL-623-SA8-SB-14.0-15.0 FDG2-SL-623-SA8-SB-19.0-20.0	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 PH193

No Sample Data Qualified in this SDG

Santa Susana Field Laboratory
Total Petroleum Hydrocarbons as Gasoline - Field Blank Data Qualification Summary - SDG PH193

No Sample Data Qualified in this SDG

LDC #: 32181A7 **VALIDATION COMPLETENESS WORKSHEET** Date: 7-24-14
SDG #: PH193 Level IV Page: 1 of 1
Laboratory: Eurofins Lancaster Laboratories Reviewer: CM
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: 5/21/14
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	N	
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	N	
XIII.	Field blanks	ND	TB=1, EB=EB2-052214(PH196) 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 2	TB1-052114 W	11		21		31	
2 1	FDG2-SL-585-SA5D-SB-4.0-5.0	12		22		32	
3 1	FDG2-SL-584-SA5D-SB-4.0-5.0	13		23		33	
4 1	FDG2-SL-586-SA5D-SB-2.0-3.0	14		24		34	
5 1	FDG2-SL-623-SA8-SB-4.0-5.0	15		25		35	
6 1	FDG2-SL-623-SA8-SB-9.0-10.0	16		26		36	
7 1	FDG2-SL-623-SA8-SB-14.0-15.0	17		27		37	
8 1	FDG2-SL-623-SA8-SB-19.0-20.0	18		28		38	
9		19 1	14147B16A	29		39	
10		20 2	14149A94A	30		40	

Notes:

LDC #: 32181A7

VALIDATION FINDINGS CHECKLIST

Reviewer: SM
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?			✓	

LDC #: 32181A7

VALIDATION FINDINGS CHECKLIST

Reviewer: CM
2nd Reviewer: SM

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 #: 32181A7

VALIDATION FINDINGS WORKSHEET
Initial Calibration Calculation Verification

Reviewer: 9h
2nd Reviewer: 9h

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	4UFT16270	9-27-13	GRO	55255	55254.5	55635	55635.2	4	4
2	4UFT94280	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 #: 32181A7

VALIDATION FINDINGS WORKSHEET
Continuing Calibration Results Verification

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

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	161147B.0030	5-28-14 17:47	GRO	220.04	235.55	235.55	7	7
2	161147CB.0016	5-29-14 4:44	GRO	220.04	221.05	221.05	Ø	0.5
3	94148B.0026	5-29-14 21:04	GRO	1100.20	1005.18	1005.17	9	9
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 #: 32181A7

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 Reported	Percent Recovery Recalculated	Percent Difference
Trifluorotoluene-F	-	30.00	24.7614	83	83	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 #: 32181A7

VALIDATION FINDINGS WORKSHEET

Laboratory Control Sample/Laboratory Control Sample Duplicates Results Verification

Reviewer: [illegible]

2nd Reviewer: [illegible]

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: 14149A94A LCS/D

Compound	Spike Added (ug/L)		Sample Conc. ( )	Spike Sample Concentration (ug/L)		LCS Percent Recovery		LCSD Percent Recovery		LCS/LCSD RPD	
	LCS	LCSD	---	LCS	LCSD	Reported	Recalc.	Reported	Recalc.	Reported	Recalc.
Gasoline (8015)	1100	1100	NA	1060.53	1050.22	96	96	95	95	1	1
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 #: 32181A7

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 = $\frac{(A_x)(V_f)(Df)}{(CF)(V_i)(V_o)}$

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: LCS
Sample I.D. 14147B16A, GRO:

Conc. = $\frac{(21498140)(25)(1)}{(55635.16)(1)(1)}$

= 9660 mg/kg x 9.7 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: May 21, 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): PH193

Sample Identification

FDG2-SL-585-SA5D-SB-0.0-0.5
FDG2-SL-885-SA5D-SB-0.0-0.5
FDG2-SL-585-SA5D-SB-4.0-5.0
FDG2-SL-584-SA5D-SB-0.0-0.5
FDG2-SL-584-SA5D-SB-4.0-5.0
FDG2-SL-586-SA5D-SB-0.0-0.5
FDG2-SL-586-SA5D-SB-2.0-3.0
FDG2-SL-623-SA8-SB-0.0-0.5
FDG2-SL-623-SA8-SB-4.0-5.0
FDG2-SL-623-SA8-SB-9.0-10.0
FDG2-SL-623-SA8-SB-14.0-15.0
FDG2-SL-623-SA8-SB-19.0-20.0
FDG2-SL-585-SA5D-SB-0.0-0.5(SGCU)
FDG2-SL-885-SA5D-SB-0.0-0.5(SGCU)
FDG2-SL-585-SA5D-SB-4.0-5.0(SGCU)
FDG2-SL-584-SA5D-SB-0.0-0.5(SGCU)
FDG2-SL-584-SA5D-SB-4.0-5.0(SGCU)
FDG2-SL-586-SA5D-SB-0.0-0.5(SGCU)
FDG2-SL-586-SA5D-SB-2.0-3.0(SGCU)
FDG2-SL-623-SA8-SB-0.0-0.5(SGCU)
FDG2-SL-623-SA8-SB-4.0-5.0(SGCU)
FDG2-SL-623-SA8-SB-9.0-10.0(SGCU)
FDG2-SL-623-SA8-SB-14.0-15.0(SGCU)
FDG2-SL-623-SA8-SB-19.0-20.0(SGCU)
FDG2-SL-585-SA5D-SB-0.0-0.5MS
FDG2-SL-585-SA5D-SB-0.0-0.5MSD
FDG2-SL-585-SA5D-SB-0.0-0.5(SGCU)MS
FDG2-SL-585-SA5D-SB-0.0-0.5(SGCU)MSD

Samples appended with SGCU underwent Silica Gel cleanup

Introduction

This data review covers 28 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 with the following exceptions:

Date	Compound	%D	Associated Samples	Affected Compound	Flag	A or P
5/28/14	Extractable fuel hydrocarbons (C8-C40) Extractable fuel hydrocarbons (C12-C40)	25 26	FDG2-SL-585-SA5D-SB-4.0-5.0 FDG2-SL-584-SA5D-SB-4.0-5.0 FDG2-SL-586-SA5D-SB-2.0-3.0 FDG2-SL-623-SA8-SB-4.0-5.0 FDG2-SL-623-SA8-SB-9.0-10.0 FDG2-SL-623-SA8-SB-14.0-15.0 FDG2-SL-623-SA8-SB-19.0-20.0 14144032A	All TCL compounds	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.

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 EB2-052214 (from SDG PH196) 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

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-585-SA5D-SB-0.0-0.5MS/MSD (FDG2-SL-585-SA5D-SB-0.0-0.5)	Extractable fuel hydrocarbons (C15-C20) Extractable fuel hydrocarbons (C21-C30) Extractable fuel hydrocarbons (C30-C40)	140 (49-123) 353 (49-123) 484 (49-123)	- 130 (49-123) 156 (49-123)	- 75 (≤20) 76 (≤20)	J (all detects) J (all detects) J (all detects)	A
FDG2-SL-585-SA5D-SB-0.0-0.5(SGCU)MS/MSD (FDG2-SL-585-SA5D-SB-0.0-0.5(SGCU))	Extractable fuel hydrocarbons (C21-C30) Extractable fuel hydrocarbons (C30-C40)	196 (49-123) 216 (49-123)	- -	79 (≤20) 80 (≤20)	J (all detects) J (all 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.

All compounds reported below the RL were qualified as follows:

Sample	Finding	Flag	A or P
All samples in SDG PH193	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-585-SA5D-SB-0.0-0.5 and FDG2-SL-885-SA5D-SB-0.0-0.5 and samples FDG2-SL-585-SA5D-SB-0.0-0.5(SGCU) and FDG2-SL-885-SA5D-SB-0.0-0.5(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-585-SA5D-SB-0.0-0.5	FDG2-SL-885-SA5D-SB-0.0-0.5			
Extractable fuel hydrocarbons (C30-C40)	18	350	180 (≤50)	J (all detects)	A
Extractable fuel hydrocarbons (C21-C30)	7.3	150	181 (≤50)	J (all detects)	A
Extractable fuel hydrocarbons (C15-C20)	5.3U	13	200 (≤50)	J (all detects) UJ (all non-detects)	A

Compound	Concentration (mg/Kg)		RPD (Limits)	Flag	A or P
	FDG2-SL-585-SA5D-SB-0.0-0.5(SGCU)	FDG2-SL-885-SA5D-SB-0.0-0.5(SGCU)			
Extractable fuel hydrocarbons (C30-C40)	5.7	100	178 (≤50)	J (all detects)	A
Extractable fuel hydrocarbons (C21-C30)	2.7	55	181 (≤50)	J (all detects)	A

Santa Susana Field Laboratory
Total Petroleum Hydrocarbons as Extractables - Data Qualification Summary - SDG PH193

SDG	Sample	Compound	Flag	A or P	Reason (Codes)
PH193	FDG2-SL-585-SA5D-SB-4.0-5.0 FDG2-SL-584-SA5D-SB-4.0-5.0 FDG2-SL-586-SA5D-SB-2.0-3.0 FDG2-SL-623-SA8-SB-4.0-5.0 FDG2-SL-623-SA8-SB-9.0-10.0 FDG2-SL-623-SA8-SB-14.0-15.0 FDG2-SL-623-SA8-SB-19.0-20.0	All TCL compounds	J (all detects) UJ (all non-detects)	A	Continuing calibration (%D) (C)
PH193	FDG2-SL-585-SA5D-SB-0.0-0.5	Extractable fuel hydrocarbons (C15-C20)	J (all detects)	A	Matrix spike/Matrix spike duplicate (%R) (Q)
PH193	FDG2-SL-585-SA5D-SB-0.0-0.5 FDG2-SL-585-SA5D-SB-0.0-0.5(SGCU)	Extractable fuel hydrocarbons (C21-C30) Extractable fuel hydrocarbons (C30-C40)	J (all detects) J (all detects)	A	Matrix spike/Matrix spike duplicate (%R)(RPD) (Q)
PH193	FDG2-SL-585-SA5D-SB-0.0-0.5 FDG2-SL-885-SA5D-SB-0.0-0.5 FDG2-SL-585-SA5D-SB-4.0-5.0 FDG2-SL-584-SA5D-SB-0.0-0.5 FDG2-SL-584-SA5D-SB-4.0-5.0 FDG2-SL-586-SA5D-SB-0.0-0.5 FDG2-SL-586-SA5D-SB-2.0-3.0 FDG2-SL-623-SA8-SB-0.0-0.5 FDG2-SL-623-SA8-SB-4.0-5.0 FDG2-SL-623-SA8-SB-9.0-10.0 FDG2-SL-623-SA8-SB-14.0-15.0 FDG2-SL-623-SA8-SB-19.0-20.0 FDG2-SL-585-SA5D-SB-0.0-0.5(SGCU) FDG2-SL-885-SA5D-SB-0.0-0.5(SGCU) FDG2-SL-585-SA5D-SB-4.0-5.0(SGCU) FDG2-SL-584-SA5D-SB-0.0-0.5(SGCU) FDG2-SL-584-SA5D-SB-4.0-5.0(SGCU) FDG2-SL-586-SA5D-SB-0.0-0.5(SGCU) FDG2-SL-586-SA5D-SB-2.0-3.0(SGCU) FDG2-SL-623-SA8-SB-0.0-0.5(SGCU) FDG2-SL-623-SA8-SB-4.0-5.0(SGCU) FDG2-SL-623-SA8-SB-9.0-10.0(SGCU) FDG2-SL-623-SA8-SB-14.0-15.0(SGCU) FDG2-SL-623-SA8-SB-19.0-20.0(SGCU)	All compounds reported below the RL.	J (all detects)	A	Compound quantitation (Z)
PH193	FDG2-SL-585-SA5D-SB-0.0-0.5 FDG2-SL-885-SA5D-SB-0.0-0.5 FDG2-SL-585-SA5D-SB-0.0-0.5(SGCU) FDG2-SL-885-SA5D-SB-0.0-0.5(SGCU)	Extractable fuel hydrocarbons (C30-C40) Extractable fuel hydrocarbons (C21-C30)	J (all detects) J (all detects)	A	Field duplicates (RPD) (FD)
PH193	FDG2-SL-585-SA5D-SB-0.0-0.5 FDG2-SL-885-SA5D-SB-0.0-0.5	Extractable fuel hydrocarbons (C15-C20)	J (all detects) UJ (all non-detects)	A	Field duplicates (RPD) (FD)

Santa Susana Field Laboratory
Total Petroleum Hydrocarbons as Extractables - Laboratory Blank Data Qualification Summary - SDG PH193

No Sample Data Qualified in this SDG

Santa Susana Field Laboratory
Total Petroleum Hydrocarbons as Extractables - Field Blank Data Qualification Summary - SDG PH193

No Sample Data Qualified in this SDG

LDC #: 32181A8 **VALIDATION COMPLETENESS WORKSHEET** Date: 7-24-14

SDG #: PH193 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: 5/21/14
II	Initial calibration	A	≤20
III.	Calibration verification/ICV	SW	CCV/ICV ≤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	A	
X.	System Performance	A	
XI.	Overall assessment of data	A	
XII.	Field duplicates	SW	D=1+2, 13+14
XIII.	Field blanks	ND	EB=EB2-052214(PH196), 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 1	FDG2-SL-585-SA5D-SB-0.0-0.5	11 1	FDG2-SL-623-SA8-SB-14.0-15.0	21 2	FDG2-SL-623-SA8-SB-4.0-5.0(SGCU)	31	
2 1	FDG2-SL-885-SA5D-SB-0.0-0.5	12 1	FDG2-SL-623-SA8-SB-19.0-20.0	22 2	FDG2-SL-623-SA8-SB-9.0-10.0(SGCU)	32	
3 1	FDG2-SL-585-SA5D-SB-4.0-5.0	13 2	FDG2-SL-585-SA5D-SB-0.0-0.5(SGCU)	23 2	FDG2-SL-623-SA8-SB-14.0-15.0(SGCU)	33	
4 1	FDG2-SL-584-SA5D-SB-0.0-0.5	14 2	FDG2-SL-885-SA5D-SB-0.0-0.5(SGCU)	24 2	FDG2-SL-623-SA8-SB-19.0-20.0(SGCU)	34	
5 1	FDG2-SL-584-SA5D-SB-4.0-5.0	15 2	FDG2-SL-585-SA5D-SB-4.0-5.0(SGCU)	25 1	FDG2-SL-585-SA5D-SB-0.0-0.5MS	35	
6 1	FDG2-SL-586-SA5D-SB-0.0-0.5	16 2	FDG2-SL-584-SA5D-SB-0.0-0.5(SGCU)	26 1	FDG2-SL-585-SA5D-SB-0.0-0.5MSD	36	
7 1	FDG2-SL-586-SA5D-SB-2.0-3.0	17 2	FDG2-SL-584-SA5D-SB-4.0-5.0(SGCU)	27 2	FDG2-SL-585-SA5D-SB-0.0-0.5(SGCU) MS	37	
8 1	FDG2-SL-623-SA8-SB-0.0-0.5	18 2	FDG2-SL-586-SA5D-SB-0.0-0.5(SGCU)	28 2	FDG2-SL-585-SA5D-SB-0.0-0.5(SGCU) MSD	38	
9 1	FDG2-SL-623-SA8-SB-4.0-5.0	19 2	FDG2-SL-586-SA5D-SB-2.0-3.0(SGCU)	29 1	1414400033A	39	
10 1	FDG2-SL-623-SA8-SB-9.0-10.0	20 2	FDG2-SL-623-SA8-SB-0.0-0.5(SGCU)	30 2	1414400033A	40	

Notes: _____

LDC #: 32181A8

VALIDATION FINDINGS CHECKLIST

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?			✓	

LDC #: 32181A8

VALIDATION FINDINGS CHECKLIST

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

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 #: 32181A8

VALIDATION FINDINGS WORKSHEET
Continuing Calibration

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 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?

(Code: C)

#	Date	Standard ID	Detector/ Column	Compound	%D (Limit)	RT (limit)	Associated Samples	Qualifications
CCV	5/8/14	J147B.0026	—	C8-C40	25	( )	3,5,7,9-12,14144032A	J/UJ/A (all)
				C12-C40	26	( )		✓
						( )		
						( )		
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LDC #: 32181A8

VALIDATION FINDINGS WORKSHEET
Matrix Spike/Matrix Spike Duplicates

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?

#	MS/MSD ID	Compound	MS %R (Limits)	MSD %R (Limits)	RPD (Limits)	Associated Samples	Qualifications
	25/26	EFH (C_{15}-C_{20})	140 (49-123)	( )	( )	1	Jdets/A (Q)
	↓	EFH (C_{21}-C_{30})	353 (↓)	130 (49-123)	75 (20)	↓	↓
		EFH (C_{30}-C_{40})	484 (↓)	156 (↓)	76 (↓)		
			( )	( )	( )		
	27/28	EFH (C_{21}-C_{30})	196 (49-123)	( )	79 (20)	13	Jdets/A (Q)
		EFH (C_{30}-C_{40})	216 (↓)	( )	80 (↓)	↓	↓
			( )	( )	( )		
			( )	( )	( )		
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LDC #: 32181A8

VALIDATION FINDINGS WORKSHEET

Field Duplicates

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

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

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 (mg/kg)		%RPD (≤50)	Qualification Parent only
	1	2		
C_{30}-C_{40}	18	350	180	Jdet/A (FD)
C_{21}-C_{30}	7.3	150	181	↓
C_{15}-C_{20}	5.3 U	13	200	J/UJ/A ↓

Compound	Concentration (mg/kg)		%RPD (≤50)	Qualification Parent only
	13	14		
C_{30}-C_{40}	5.7	100	178	Jdet/A (FD)
C_{21}-C_{30}	2.7	55	181	↓

LDC #: 32181A8

VALIDATION FINDINGS WORKSHEET
Initial Calibration Calculation Verification

Page: 1 of 1
Reviewer: 9m
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	TPHK125	5/5/14	C12-C40	28726	28726	24350	24349.8	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 #: 32181A8

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	J147B.0026	5-28-14 1:30	C_{12}-C_{40}	239.97	301.34	301.34	26	26
2	J148B.0004	5-28-14 16:53	C_{12}-C_{40}	239.97	231.66	231.66	3	3
3	J149B.0028	5-29-14 23:38	C_{12}-C_{40}	239.97	240.42	240.42	Ø	Ø.2
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 #: 32181A8

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	
Chlorobenzene	—	2	1.5353	77	77	0
o-Terphenyl	—	2	1.9206	96	96	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 #: 32181A8

VALIDATION FINDINGS WORKSHEET
Matrix Spike/Matrix Spike Duplicates Results Verification

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

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: 25/26

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_{14}) (8015)	5.00	5.00	ND	5.07	4.86	101	101	97	97	4	4

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 #: 32181A8

VALIDATION FINDINGS WORKSHEET

Laboratory Control Sample/Laboratory Control Sample Duplicates Results Verification

Reviewer: 9m
2nd Reviewer: 9m

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: LCS33144

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_{12}-C_{24}) (8015)	5.02	NA	NA	5.07	NA	101	101				

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 #: 32181A8

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 = $\frac{(A_x)(V_f)(DF)}{(CF)(Vi)(V_o)(\%S)}$

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, C_{21}-C_{30}:

Conc. = $\frac{(5048915)(1)(1)}{(24350)(1)(30)(0.946)}$

= 7.30611 mg/kg ≈ 7.3 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: May 21, 2014

LDC Report Date: August 4, 2014

Matrix: Soil

Parameters: Dioxins/Dibenzofurans

Validation Level: Level IV

Laboratory: Eurofins

Sample Delivery Group (SDG): PH193

Sample Identification

FDG2-SL-585-SA5D-SB-0.0-0.5
FDG2-SL-885-SA5D-SB-0.0-0.5
FDG2-SL-585-SA5D-SB-4.0-5.0
FDG2-SL-584-SA5D-SB-0.0-0.5
FDG2-SL-584-SA5D-SB-4.0-5.0
FDG2-SL-586-SA5D-SB-0.0-0.5
FDG2-SL-586-SA5D-SB-2.0-3.0
FDG2-SL-585-SA5D-SB-0.0-0.5MS
FDG2-SL-585-SA5D-SB-0.0-0.5MSD

Introduction

This data review covers 9 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
BLK149004	5/29/14	2,3,7,8-TCDD 1,2,3,4,7,8-HxCDD 1,2,3,4,6,7,8-HpCDD OCDD 1,2,3,7,8-PeCDF 2,3,4,7,8-PeCDF 1,2,3,6,7,8-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	0.0770 ng/Kg 0.0301 ng/Kg 0.138 ng/Kg 0.831 ng/Kg 0.0624 ng/Kg 0.0410 ng/Kg 0.0424 ng/Kg 0.0252 ng/Kg 0.0302 ng/Kg 0.0309 ng/Kg 0.0568 ng/Kg 0.119 ng/Kg	All samples in SDG PH193

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-885-SA5D-SB-0.0-0.5	2,3,7,8-TCDD	0.0875 ng/Kg	0.0875U ng/Kg
FDG2-SL-585-SA5D-SB-4.0-5.0	1,2,3,4,7,8-HxCDD 1,2,3,4,6,7,8-HpCDD 1,2,3,7,8-PeCDF 2,3,4,7,8-PeCDF 1,2,3,6,7,8-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	0.0647 ng/Kg 0.500 ng/Kg 0.0883 ng/Kg 0.0216 ng/Kg 0.0523 ng/Kg 0.0478 ng/Kg 0.0526 ng/Kg 0.115 ng/Kg 0.0440 ng/Kg 0.272 ng/Kg	0.0647U ng/Kg 0.500U ng/Kg 0.0883U ng/Kg 0.0216U ng/Kg 0.0523U ng/Kg 0.0478U ng/Kg 0.0526U ng/Kg 0.115U ng/Kg 0.0440U ng/Kg 0.272U ng/Kg
FDG2-SL-584-SA5D-SB-4.0-5.0	1,2,3,4,7,8-HxCDD 1,2,3,7,8-PeCDF 2,3,4,7,8-PeCDF 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	0.0551 ng/Kg 0.0726 ng/Kg 0.0643 ng/Kg 0.0578 ng/Kg 0.0479 ng/Kg 0.0572 ng/Kg 0.136 ng/Kg 0.0753 ng/Kg 0.543 ng/Kg	0.0551U ng/Kg 0.0726U ng/Kg 0.0643U ng/Kg 0.0578U ng/Kg 0.0479U ng/Kg 0.0572U ng/Kg 0.136U ng/Kg 0.0753U ng/Kg 0.543U ng/Kg
FDG2-SL-586-SA5D-SB-0.0-0.5	2,3,7,8-TCDD 1,2,3,4,7,8-HxCDD 2,3,4,7,8-PeCDF 1,2,3,6,7,8-HxCDF 2,3,4,6,7,8-HxCDF 1,2,3,4,7,8,9-HpCDF	0.0430 ng/Kg 0.0749 ng/Kg 0.180 ng/Kg 0.175 ng/Kg 0.0953 ng/Kg 0.0828 ng/Kg	0.0430U ng/Kg 0.0749U ng/Kg 0.180U ng/Kg 0.175U ng/Kg 0.0953U ng/Kg 0.0828U ng/Kg

Sample	Compound	Reported Concentration	Modified Final Concentration
FDG2-SL-586-SA5D-SB-2.0-3.0	2,3,7,8-TCDD	0.00908 ng/Kg	0.00908U ng/Kg
	1,2,3,4,7,8-HxCDD	0.0289 ng/Kg	0.0289U ng/Kg
	1,2,3,4,6,7,8-HpCDD	0.149 ng/Kg	0.149U ng/Kg
	OCDD	0.984 ng/Kg	0.984U ng/Kg
	1,2,3,7,8-PeCDF	0.0427 ng/Kg	0.0427U ng/Kg
	1,2,3,6,7,8-HxCDF	0.0391 ng/Kg	0.0391U ng/Kg
	2,3,4,6,7,8-HxCDF	0.0315 ng/Kg	0.0315U ng/Kg
	1,2,3,7,8,9-HxCDF	0.0388 ng/Kg	0.0388U ng/Kg
	1,2,3,4,6,7,8-HpCDF	0.0609 ng/Kg	0.0609U ng/Kg
	1,2,3,4,7,8,9-HpCDF	0.0332 ng/Kg	0.0332U ng/Kg
	OCDF	0.174 ng/Kg	0.174U ng/Kg

Sample EB2-052214 (from SDG PH196) 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
EB2-052214	5/22/14	2,3,7,8-TCDD	0.235 pg/L	All samples in SDG PH193
		2,3,7,8-TCDF	0.119 pg/L	
		1,2,3,7,8-PeCDD	0.485 pg/L	
		1,2,3,7,8-PeCDF	0.471 pg/L	
		2,3,4,7,8-PeCDF	0.621 pg/L	
		1,2,3,4,7,8-HxCDD	0.438 pg/L	
		1,2,3,6,7,8-HxCDD	0.45 pg/L	
		1,2,3,4,7,8-HxCDF	0.487 pg/L	
		1,2,3,6,7,8-HxCDF	0.596 pg/L	
		1,2,3,7,8,9-HxCDF	0.6 pg/L	
		2,3,4,6,7,8-HxCDF	0.567 pg/L	
		1,2,3,4,6,7,8-HpCDD	0.709 pg/L	
		1,2,3,4,6,7,8-HpCDF	0.704 pg/L	
		1,2,3,4,7,8,9-HpCDF	0.626 pg/L	
		OCDD	3.5 pg/L	
		OCDF	1.75 pg/L	

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	1.23 pg/L	All samples in SDG PH193
		OCDD	6.37 pg/L	
		1,2,3,7,8-PeCDF	0.333 pg/L	
		1,2,3,4,7,8-HxCDF	0.108 pg/L	
		2,3,4,6,7,8-HxCDF	0.188 pg/L	
		1,2,3,7,8,9-HxCDF	0.182 pg/L	
		1,2,3,4,6,7,8-HpCDF	0.176 pg/L	
		1,2,3,4,7,8,9-HpCDF	0.328 pg/L	
		OCDF	0.531 pg/L	

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-585-SA5D-SB-0.0-0.5MS/MSD (FDG2-SL-585-SA5D-SB-0.0-0.5)	1,2,3,4,6,7,8-HpCDD	-	-27 (40-135)	82 (≤20)	J (all detects) R (all non-detects)	A
FDG2-SL-585-SA5D-SB-0.0-0.5MS/MSD (FDG2-SL-585-SA5D-SB-0.0-0.5)	OCDF	-	-	24 (≤20)	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 with the following exceptions:

Sample	Compound	Finding	Criteria	Flag	A or P
FDG2-SL-584-SA5D-SB-0.0-0.5	OCDD	Sample result exceeded calibration range.	Reported result should be within calibration range.	J (all detects)	P

All compounds reported below the RL were qualified as follows:

Sample	Finding	Flag	A or P
All samples in SDG PH193	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-585-SA5D-SB-0.0-0.5 and FDG2-SL-885-SA5D-SB-0.0-0.5 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-585-SA5D-SB-0.0-0.5	FDG2-SL-885-SA5D-SB-0.0-0.5			
2,3,7,8-TCDD	1.06U	0.0875	200 (≤50)	J (all detects) UJ (all non-detects)	A
1,2,3,7,8-PeCDD	0.990	1.11	11 (≤50)	-	-
1,2,3,4,7,8-HxCDD	1.51	2.10	33 (≤50)	-	-
1,2,3,6,7,8-HxCDD	6.21	8.66	33 (≤50)	-	-
1,2,3,7,8,9-HxCDD	3.64	4.30	17 (≤50)	-	-
1,2,3,4,6,7,8-HpCDD	144	197	31 (≤50)	-	-
OCDD	1670	2050	20 (≤50)	-	-
2,3,7,8-TCDF	0.835	0.690	19 (≤50)	-	-
1,2,3,7,8-PeCDF	1.73	1.81	5 (≤50)	-	-
2,3,4,7,8-PeCDF	1.02	1.15	12 (≤50)	-	-
1,2,3,4,7,8-HxCDF	0.950	1.95	69 (≤50)	J (all detects)	A
1,2,3,6,7,8-HxCDF	0.955	1.64	53 (≤50)	J (all detects)	A

Compound	Concentration (ng/Kg)		RPD (Limits)	Flag	A or P
	FDG2-SL-585-SA5D-SB-0.0-0.5	FDG2-SL-885-SA5D-SB-0.0-0.5			
2,3,4,6,7,8-HxCDF	1.24	2.15	54 (≤50)	J (all detects)	A
1,2,3,7,8,9-HxCDF	0.762	1.04	31 (≤50)	-	-
1,2,3,4,6,7,8-HpCDF	17.1	32.8	63 (≤50)	J (all detects)	A
1,2,3,4,7,8,9-HpCDF	1.95	3.43	55 (≤50)	J (all detects)	A
OCDF	50.0	104	70 (≤50)	J (all detects)	A

Santa Susana Field Laboratory
Dioxins/Dibenzofurans - Data Qualification Summary - SDG PH193

SDG	Sample	Compound	Flag	A or P	Reason (Code)
PH193	FDG2-SL-585-SA5D-SB-0.0-0.5	1,2,3,4,6,7,8-HpCDD	J (all detects) R (all non-detects)	A	Matrix spike/Matrix spike duplicate (%R)(RPD) (Q)
PH193	FDG2-SL-585-SA5D-SB-0.0-0.5	OCDF	J (all detects)	A	Matrix spike/Matrix spike duplicate (RPD) (Q)
PH193	FDG2-SL-584-SA5D-SB-0.0-0.5	OCDD	J (all detects)	P	Compound quantitation (exceeded range) (*XI)
PH193	FDG2-SL-585-SA5D-SB-0.0-0.5 FDG2-SL-885-SA5D-SB-0.0-0.5 FDG2-SL-585-SA5D-SB-4.0-5.0 FDG2-SL-584-SA5D-SB-0.0-0.5 FDG2-SL-584-SA5D-SB-4.0-5.0 FDG2-SL-586-SA5D-SB-0.0-0.5 FDG2-SL-586-SA5D-SB-2.0-3.0	All compounds reported below the RL.	J (all detects)	A	Compound quantitation (Z)
PH193	FDG2-SL-585-SA5D-SB-0.0-0.5 FDG2-SL-885-SA5D-SB-0.0-0.5	2,3,7,8-TCDD	J (all detects) UJ (all non-detects)	A	Field duplicates (RPD) (FD)
PH193	FDG2-SL-585-SA5D-SB-0.0-0.5 FDG2-SL-885-SA5D-SB-0.0-0.5	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	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 PH193

SDG	Sample	Compound	Modified Final Concentration	A or P	Code
PH193	FDG2-SL-885-SA5D-SB-0.0-0.5	2,3,7,8-TCDD	0.0875U ng/Kg	A	B
PH193	FDG2-SL-585-SA5D-SB-4.0-5.0	1,2,3,4,7,8-HxCDD 1,2,3,4,6,7,8-HpCDD 1,2,3,7,8-PeCDF 2,3,4,7,8-PeCDF 1,2,3,6,7,8-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	0.0647U ng/Kg 0.500U ng/Kg 0.0883U ng/Kg 0.0216U ng/Kg 0.0523U ng/Kg 0.0478U ng/Kg 0.0526U ng/Kg 0.115U ng/Kg 0.0440U ng/Kg 0.272U ng/Kg	A	B

SDG	Sample	Compound	Modified Final Concentration	A or P	Code
PH193	FDG2-SL-584-SA5D-SB-4.0-5.0	1,2,3,4,7,8-HxCDD 1,2,3,7,8-PeCDF 2,3,4,7,8-PeCDF 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	0.0551U ng/Kg 0.0726U ng/Kg 0.0643U ng/Kg 0.0578U ng/Kg 0.0479U ng/Kg 0.0572U ng/Kg 0.136U ng/Kg 0.0753U ng/Kg 0.543U ng/Kg	A	B
PH193	FDG2-SL-586-SA5D-SB-0.0-0.5	2,3,7,8-TCDD 1,2,3,4,7,8-HxCDD 2,3,4,7,8-PeCDF 1,2,3,6,7,8-HxCDF 2,3,4,6,7,8-HxCDF 1,2,3,4,7,8,9-HpCDF	0.0430U ng/Kg 0.0749U ng/Kg 0.180U ng/Kg 0.175U ng/Kg 0.0953U ng/Kg 0.0828U ng/Kg	A	B
PH193	FDG2-SL-586-SA5D-SB-2.0-3.0	2,3,7,8-TCDD 1,2,3,4,7,8-HxCDD 1,2,3,4,6,7,8-HpCDD OCDD 1,2,3,7,8-PeCDF 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	0.00908U ng/Kg 0.0289U ng/Kg 0.149U ng/Kg 0.984U ng/Kg 0.0427U ng/Kg 0.0391U ng/Kg 0.0315U ng/Kg 0.0388U ng/Kg 0.0609U ng/Kg 0.0332U ng/Kg 0.174U ng/Kg	A	B

Santa Susana Field Laboratory
Dioxins/Dibenzofurans - Field Blank Data Qualification Summary - SDG PH193

No Sample Data Qualified in this SDG

LDC #: 32181A21 **VALIDATION COMPLETENESS WORKSHEET** Date: 7-25-14

SDG #: PH193 Level IV Page: 1 of 1

Laboratory: Eurofins Lancaster Laboratories Reviewer: SM

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: 5/21/14
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~~	SW	
XII.	System performance	A	
XIII.	Overall assessment of data	~~SW~~ A	
XIV.	Field duplicates	SW	D= 1+2
XV.	Field blanks	SW	EB=EB2-052214 (PH196), 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-585-SA5D-SB-0.0-0.5	11		21		31	
2	FDG2-SL-885-SA5D-SB-0.0-0.5	12		22		32	
3	FDG2-SL-585-SA5D-SB-4.0-5.0	13		23		33	
4	FDG2-SL-584-SA5D-SB-0.0-0.5	14		24		34	
5	FDG2-SL-584-SA5D-SB-4.0-5.0	15		25		35	
6	FDG2-SL-586-SA5D-SB-0.0-0.5	16		26		36	
7	FDG2-SL-586-SA5D-SB-2.0-3.0	17		27		37	
8	FDG2-SL-585-SA5D-SB-0.0-0.5MS	18		28		38	
9	FDG2-SL-585-SA5D-SB-0.0-0.5MSD	19		29		39	
10		20	BLK149004	30		40	

Notes:

LDC #: 32181A21

VALIDATION FINDINGS CHECKLIST

Reviewer: 9m
2nd Reviewer: 9m

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 #: 30181A21

VALIDATION FINDINGS CHECKLIST

Reviewer: 9R
2nd Reviewer: SM

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 #: 32181A21

VALIDATION FINDINGS WORKSHEET
Blanks

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 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: 05/29/14 **Blank analysis date:** 06/02/14 **Associated samples:** All Qual U (B)
Conc. units: ng/kg

Compound	Blank ID	Sample Identification								
	BLK149004	5x	2	3	5	6	7			
A	0.0770*	0.385	0.0875*			0.0430	0.00908*			
C	0.0301	0.151		0.0647*	0.0551*	0.0749	0.0289*			
F	0.138*	0.690		0.500*			0.149			
G	0.831	4.16					0.984			
I	0.0624*	0.312		0.0883*	0.0726*		0.0427			
J	0.0410*	0.205		0.0216*	0.0643*	0.180				
L	0.0424*	0.212		0.0523*	0.0578*	0.175	0.0391*			
M	0.0252*	0.126		0.0478*	0.0479	0.0953	0.0315			
N	0.0302*	0.151		0.0526	0.0572		0.0388*			
O	0.0309	0.155		0.115*	0.136*		0.0609			
P	0.0568*	0.284		0.0440*	0.0753*	0.0828	0.0332			
Q	0.119	0.595		0.272*	0.543		0.174			

*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 #: 32181A21

VALIDATION FINDINGS WORKSHEET
Field Blanks

Reviewer: 9h
2nd Reviewer: 5m

METHOD: HRGC/HRMS Dioxins/Furans (EPA Method 1613B)

Blank units: pg/L **Associated sample units:** ng/kg
Sampling date: 05/22/14
Field blank type: (circle one) Field Blank / Rinsate / Other: EB Associated Samples: all >5x

Compound	Blank ID	Sample Identification								
	EB2-052214	5X								
A	0.235*	0.00118								
H	0.119*	0.00060								
B	0.485*	0.00243								
I	0.471*	0.00236								
J	0.621	0.00311								
C	0.438	0.00219								
D	0.45*	0.00225								
K	0.487	0.00244								
L	0.596	0.00298								
N	0.6*	0.00300								
M	0.567	0.00284								
F	0.709*	0.00355								
O	0.704*	0.00352								
P	0.626*	0.00313								
G	3.5	0.0175								
Q	1.75	0.00875								

*EMPC

EB2-052214 (PH196)

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 #: 32181A21

VALIDATION FINDINGS WORKSHEET
Field Blanks

Reviewer: 9h
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 #: 32181A21

VALIDATION FINDINGS WORKSHEET
Matrix Spike/Matrix Spike Duplicates

Page: 1 of 1
Reviewer: 9m
2nd Reviewer: 8m

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
		8/9	F	( )	-27 (40-135)	82 (20)	1	J/R/A (Q)
		↓	G	166 (40-135)	-606 (↓)	133 (↓)	↓	No qual - >4xS.A.
			Q	( )	( )	24 (20)	↓	Jdets/A (Q)
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )				
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		

LDC #: 32181A21

VALIDATION FINDINGS WORKSHEET
Compound Quantitation and Reported CRQLs

Reviewer:
2nd Reviewer:

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

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

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

#	Date	Compound	Finding	Associated Samples	Qualifications
		G	result exceeds upper calibration range	4	Jdets/P (*XI)

Comments: See sample calculation verification worksheet for recalculations

LDC#: 32181A21

VALIDATION FINDINGS WORKSHEET
Field Duplicates

Reviewer:
2nd Reviewer:

Dioxins/Furans (EPA Method 1613B)

Compound	Concentration (ng/kg)		RPD (≤ 50%)	Qualifiers (Parents Only)
	1	2		
A	1.06U	0.0875	200	J/UJ/A (FD)
B	0.990	1.11	11	--
C	1.51	2.10	33	--
D	6.21	8.66	33	--
E	3.64	4.30	17	--
F	144	197	31	--
G	1670	2050	20	--
H	0.835	0.690	19	--
I	1.73	1.81	5	--
J	1.02	1.15	12	--
K	0.950	1.95	69	J/dets/A (FD)
L	0.955	1.64	53	J/dets/A (FD)
M	1.24	2.15	54	J/dets/A (FD)
N	0.762	1.04	31	--
O	17.1	32.8	63	J/dets/A (FD)
P	1.95	3.43	55	J/dets/A (FD)
Q	50.0	104	70	J/dets/A (FD)

LDC #: 32181A21

VALIDATION FINDINGS WORKSHEET
Initial Calibration Calculation Verification

Reviewer: 9th
2nd Reviewer: 9th

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	DF17280	05/06/14	2,3,7,8-TCDF (^{13}C-2,3,7,8-TCDF)	1.125	1.125	1.090	1.090	9.97	9.97
	DB5MS		2,3,7,8-TCDD (^{13}C-2,3,7,8-TCDD)	1.212	1.212	1.200	1.200	6.84	6.85
			1,2,3,6,7,8-HxCDD (^{13}C-1,2,3,6,7,8-HxCDD)	1.056	1.0565	1.028	1.028	9.26	9.24
			1,2,3,4,6,7,8-HpCDD (^{13}C-1,2,4,6,7,8,-HpCDD)	1.122	1.122	1.101	1.101	6.60	6.58
			OCDF (^{13}C-OCDF)	0.984	0.9835	0.954	0.954	7.35	7.36
2	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
	DB5MS		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
3	DF19780	4-15-14	2,3,7,8-TCDF (^{13}C-2,3,7,8-TCDF)	1.141	1.405	1.074	1.074	12.88	12.87
	SP2331		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 #: 32181A21

VALIDATION FINDINGS WORKSHEET
Routine Calibration Results Verification

Reviewer: VM
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	14JUN04-03	6-4-14	2,3,7,8-TCDF (^{13}C-2,3,7,8-TCDF)	10	9.457	9.457	95	95
			2,3,7,8-TCDD (^{13}C-2,3,7,8-TCDD)	10	9.840	9.840	98	98
			1,2,3,6,7,8-HxCDD (^{13}C-1,2,3,6,7,8-HxCDD)	50	46.292	46.309	93	93
			1,2,3,4,6,7,8-HpCDD (^{13}C-1,2,4,6,7,8,-HpCDD)	50	48.576	48.570	97	97
			OCDF (^{13}C-OCDF)	100	96.955	96.908	97	97
2	14JUN02-10	6-2-14	2,3,7,8-TCDF (^{13}C-2,3,7,8-TCDF)	10	10.282	10.277	103	103
			2,3,7,8-TCDD (^{13}C-2,3,7,8-TCDD)	10	10.234	10.233	102	102
			1,2,3,6,7,8-HxCDD (^{13}C-1,2,3,6,7,8-HxCDD)	50	49.347	49.352	99	99
			1,2,3,4,6,7,8-HpCDD (^{13}C-1,2,4,6,7,8,-HpCDD)	50	48.115	48.126	96	96
			OCDF (^{13}C-OCDF)	100	95.290	95.289	95	95
3	14JUN02-24	6-3-14	2,3,7,8-TCDF (^{13}C-2,3,7,8-TCDF)	10	10.141	10.136	101	101
			2,3,7,8-TCDD (^{13}C-2,3,7,8-TCDD)	10	10.436	10.436	104	104
			1,2,3,6,7,8-HxCDD (^{13}C-1,2,3,6,7,8-HxCDD)	50	50.094	50.100	100	100
			1,2,3,4,6,7,8-HpCDD (^{13}C-1,2,4,6,7,8,-HpCDD)	50	48.957	48.969	98	98
			OCDF (^{13}C-OCDF)	100	95.132	95.131	95	95

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 #: 32181A21

VALIDATION FINDINGS WORKSHEET
Routine Calibration Results Verification

Reviewer: VR
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	145UN103-03	6-3-14	2,3,7,8-TCDF (^{13}C-2,3,7,8-TCDF)	10	8.960	8.956	90	90
			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				
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 #: 32181A21

VALIDATION FINDINGS WORKSHEET
Matrix Spike/Matrix Spike Duplicates Results Verification

Reviewer: SM
2nd Reviewer: SM

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 = | MSR - MSDR | * 2/(MSR + MSDR) MSR = Matrix spike percent recovery MSDR = Matrix spike duplicate percent recovery

MS/MSD samples: 8|9

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	20.7	20.9	ND	20.4	21.0	99	99	100	100	3	3
1,2,3,7,8-PeCDD	104	104	0.990	104	106	99	99	100	101	2	2
1,2,3,4,7,8-HxCDD	104	104	1.51	101	104	96	96	98	99	3	3
1,2,3,4,7,8,9-HpCDF	104	104	1.95	99.1	97.1	94	93	91	91	2	2
OCDF	207	209	50.0	249	195	96	96	69	69	24	24

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 #: 32181A21

VALIDATION FINDINGS WORKSHEET
Laboratory Control Sample Results Verification

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

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

LCS ID: OPR149004

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	19.4	NA	97	97				
1,2,3,7,8-PeCDD	100		99.6		100	100				
1,2,3,4,7,8-HxCDD	100		96.8		97	97				
1,2,3,4,7,8,9-HpCDF	100		94.0		94	94				
OCDF	200		184		92	92				

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 #: 32181A21

VALIDATION FINDINGS WORKSHEET
Sample Calculation Verification

Reviewer: [illegible]
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, H:

Conc. = $\frac{(4001 + 2824)(2000)(1)}{(955535 + 762184)(1.005)(10.01)(.946)}$

= 0.835 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: May 21, 2014

LDC Report Date: August 3, 2014

Matrix: Soil

Parameters: Formaldehyde

Validation Level: Level IV

Laboratory: Eurofins

Sample Delivery Group (SDG): PH193

Sample Identification

FDG2-SL-585-SA5D-SB-0.0-0.5
FDG2-SL-885-SA5D-SB-0.0-0.5
FDG2-SL-585-SA5D-SB-4.0-5.0
FDG2-SL-584-SA5D-SB-0.0-0.5
FDG2-SL-584-SA5D-SB-4.0-5.0
FDG2-SL-586-SA5D-SB-0.0-0.5
FDG2-SL-586-SA5D-SB-2.0-3.0
FDG2-SL-585-SA5D-SB-0.0-0.5MS
FDG2-SL-585-SA5D-SB-0.0-0.5MSD

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 8315A for Formaldehyde.

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) were less than or equal to 20.0% for all compounds.

Retention time windows were evaluated and considered technically acceptable.

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.

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 formaldehyde was found in the method blanks.

Sample EB2-052214 (from SDG PH196) was identified as an equipment blank. No formaldehyde was found.

Sample FB-052114 (from SDG PH191) was identified as a field blank. No formaldehyde was 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) 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 PH193	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-585-SA5D-SB-0.0-0.5 and FDG2-SL-885-SA5D-SB-0.0-0.5 were identified as field duplicates. No formaldehyde was detected in any of the samples.

Santa Susana Field Laboratory
Formaldehyde - Data Qualification Summary - SDG PH193

SDG	Sample	Compound	Flag	A or P	Reason
PH193	FDG2-SL-585-SA5D-SB-0.0-0.5 FDG2-SL-885-SA5D-SB-0.0-0.5 FDG2-SL-585-SA5D-SB-4.0-5.0 FDG2-SL-584-SA5D-SB-0.0-0.5 FDG2-SL-584-SA5D-SB-4.0-5.0 FDG2-SL-586-SA5D-SB-0.0-0.5 FDG2-SL-586-SA5D-SB-2.0-3.0	All compounds reported below the RL.	J (all detects)	A	Compound quantitation (Z)

Santa Susana Field Laboratory
Formaldehyde - Laboratory Blank Data Qualification Summary - SDG PH193

No Sample Data Qualified in this SDG

Santa Susana Field Laboratory
Formaldehyde - Field Blank Data Qualification Summary - SDG PH193

No Sample Data Qualified in this SDG

LDC #: 32181A71 **VALIDATION COMPLETENESS WORKSHEET** Date: 7/24/14

SDG #: PH193 Level IV Page: 1 of 1

Laboratory: Eurofins Lancaster Laboratories Reviewer: KM

2nd Reviewer: SM

METHOD: HPLC Formaldehyde (EPA SW 846 Method 8315A)

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
II	Initial calibration	A	RSD ≤ 20?
III.	Calibration verification/ICV	A	(CCV ≤ 20)
IV.	Blanks	A	
V	Surrogate recovery	A	
VI.	Matrix spike/Matrix spike duplicates	A	
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	ND	FD = 1 + 2
XIII.	Field blanks	ND EB = EB2-052214 (PH195)	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-585-SA5D-SB-0.0-0.5	11		21		31	PB2K06147
2	FDG2-SL-885-SA5D-SB-0.0-0.5	12		22		32	
3	FDG2-SL-585-SA5D-SB-4.0-5.0	13		23		33	
4	FDG2-SL-584-SA5D-SB-0.0-0.5	14		24		34	
5	FDG2-SL-584-SA5D-SB-4.0-5.0	15		25		35	
6	FDG2-SL-586-SA5D-SB-0.0-0.5	16		26		36	
7	FDG2-SL-586-SA5D-SB-2.0-3.0	17		27		37	
8	FDG2-SL-585-SA5D-SB-0.0-0.5MS	18		28		38	
9	FDG2-SL-585-SA5D-SB-0.0-0.5MSD	19		29		39	
10		20		30		40	

Notes: #1, 2, 3

LDC #: 32181A71

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? 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?	✓			

LDC #: 32181A71

VALIDATION FINDINGS CHECKLIST

Reviewer: BR
2nd Reviewer: [illegible]

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 #: 32181A71

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 (2000 std)	Recalculated CF (2000 std)	Reported Average CF (Initial)	Recalculated Average CF (Initial)	Reported %RSD	Recalculated %RSD
1	ICAL F9006A C18	5/28/2014	Formaldehyde	27.5	27.5	29.2	29.2	12%	12%

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 #: 32181A71

VALIDATION FINDINGS WORKSHEET
Continuing Calibration Calculation Verification

Page: 1 of 1
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	FORM3KK	5/28/2014 19:02	Formaldehyde	2000.00	1772.48	1772.47	11	11
2	FORM3KL	5/28/2014 20:35	Formaldehyde	2000.00	1926.49	1926.48	4	4
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 #: 32181071

VALIDATION FINDINGS WORKSHEET
Surrogate Results Verification

Reviewer: BR
2nd reviewer: [illegible]

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	
Butyraldehyde	A	15800	180374	114	114	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 #: 32181A71

VALIDATION FINDINGS WORKSHEET
Matrix Spike/Matrix Spike Duplicates Results Verification

Reviewer: BR
2nd Reviewer: [signature]

METHOD: __ GC X 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

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

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

MS/MSD samples: 8/9

Compound	Spike Added (ug/kg)		Sample Conc. (ug/kg)	Spike Sample Concentration (ug/kg)		Matrix spike Percent Recovery		Matrix Spike Duplicate Percent Recovery		MS/MSD RPD	
	MS	MSD	---	MS	MSD	Reported	Recalc.	Reported	Recalc.	Reported	Recalc.
Gasoline (8015)											
Diesel (8015)											
Benzene (8021B)											
Methane (RSK-175)											
2,4-D (8151)											
Dinoseb (8151)											
Naphthalene (8310)											
Anthracene (8310)											
HMX (8330)											
2,4,6-Trinitrotoluene (8330)											
Formaldehyde	100000	100000	0	97511.18	99479.45	98	98	99	99	2	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 #: 32181071

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

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

LCS/LCSD samples: LCS 06147

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)										
Formaldehyde	10000	—	10148	—	101	101	—	—	—	—

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 #: 32181471

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= (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. All Compound Name ND

LCS 06147 = ~~10000 97511.184 1~~ 10148.61

Concentration = $\frac{(748101)(200000)(0.1)}{(29.18643)(1000)(10)}$

= 10148.62044 ug/kg

#	Sample ID	Compound	Reported Concentrations ( )	Recalculated Results Concentrations ( )	Qualifications

Comments: _____

Data Validation Report
Santa Susana Field Laboratory

Go Backs, Subgroup FDG Block 2

SDG: PH197

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 6, 2014

INTRODUCTION

This Data Validation Report (DVR) presents Level III data validation results for samples collected on May 23, 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 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, laboratory control sample/laboratory control sample duplicates (LCS/LCSD), 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 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

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 for benzo(e)pyrene. The associated sample result was qualified as non-detected estimated (UJ). 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 PH197	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 blanks were collected and analyzed for this SDG.

One equipment blank (from SDG PH196) was collected and analyzed for SVOCs, PCBs, metals, 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, 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
23-May-2014	FDG2-SL-561-NBZ-SB-0.0-0.	7476634	N	3050B	6010C	III
23-May-2014	FDG2-SL-561-NBZ-SB-0.0-0.	7476634	N	3050B	6020A	III
23-May-2014	FDG2-SL-561-NBZ-SB-0.0-0.	7476634	N	3546	8015M	III
23-May-2014	FDG2-SL-561-NBZ-SB-0.0-0.	7476634	N	3546	8082A	III
23-May-2014	FDG2-SL-561-NBZ-SB-0.0-0.	7476634	N	3546	8270D SIM	III
23-May-2014	FDG2-SL-561-NBZ-SB-0.0-0.	7476634	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: PH197 **Laboratory: LL**

EDD Filename: PH197 **eQAPP Name: CDM_SSFL_140617_Lan**

Method Category: METALS

Method: 6010C **Matrix: SO**

Sample ID: FDG2-SL-561-NBZ-SB-0.0-0.5 *Collected:* 5/23/2014 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
ARSENIC	3.11	J	0.701	MDL	4.01	PQL	mg/Kg	J	Z
BERYLLIUM	0.373	J	0.0671	MDL	1.00	PQL	mg/Kg	J	Z
BORON	6.03	J	0.841	MDL	10.0	PQL	mg/Kg	J	Z
CADMIUM	0.445	J	0.0761	MDL	1.00	PQL	mg/Kg	J	Z
Zirconium	3.29	J	0.841	MDL	5.01	PQL	mg/Kg	U	F, F
TIN	2.31	J	0.220	MDL	10.0	PQL	mg/Kg	U	B

Method Category: METALS

Method: 6020A **Matrix: SO**

Sample ID: FDG2-SL-561-NBZ-SB-0.0-0.5 *Collected:* 5/23/2014 9:25:00 *Analysis Type:* REA *Dilution:* 2

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
SELENIUM	0.117	J	0.100	MDL	0.401	PQL	mg/Kg	J	Z

Sample ID: FDG2-SL-561-NBZ-SB-0.0-0.5 *Collected:* 5/23/2014 9:25:00 *Analysis Type:* RES *Dilution:* 2

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
SILVER	0.0287	J	0.0260	MDL	0.200	PQL	mg/Kg	J	Z
THALLIUM	0.198	J	0.0300	MDL	0.200	PQL	mg/Kg	J	Z

Method Category: SVOA

Method: 8015M **Matrix: SO**

Sample ID: FDG2-SL-561-NBZ-SB-0.0-0.5 *Collected:* 5/23/2014 9:25:00 *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)	4.1	J	4.0	MDL	10	PQL	mg/Kg	J	Z

Sample ID: FDG2-SL-561-NBZ-SB-0.0-0.5 *Collected:* 5/23/2014 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 (C30-C40)	7.2	J	4.0	MDL	10	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: PH197 **Laboratory: LL**

EDD Filename: PH197 **eQAPP Name: CDM_SSFL_140617_Lan**

Method Category: **SVOA**

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

Sample ID: **FDG2-SL-561-NBZ-SB-0.0-0.5** ***Collected:*** **5/23/2014 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*
2-METHYLNAPHTHALENE	0.81	J	0.68	MDL	1.7	PQL	ug/Kg	J	Z
BENZO(E)PYRENE	17	U	3.4	MDL	17	PQL	ug/Kg	UJ	L
BIS(2-ETHYLHEXYL)PHTHALATE	9.7	J	6.1	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: PH197 **Laboratory: LL**

EDD Filename: PH197 **eQAPP Name: CDM_SSFL_140617_Lan**

Reason Code Legend

Reason Code	*Description*
B	Method Blank Contamination
F	Equipment Blank Contamination
F	Field Blank Contamination
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

(Including Manual Review Outliers)

Quality Control
Outlier Reports

PH197

Method Blank Outlier Report

Lab Reporting Batch ID: PH197 **Laboratory: LL**

EDD Filename: PH197 **eQAPP Name: CDM_SSFL_140617_Lan**

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

Method Blank Sample ID	Analysis Date	Analyte	Result	Associated Samples
P14737BB222033	5/28/2014 8:33:00 PM	ALUMINUM	9.28 mg/Kg	FDG2-SL-561-NBZ-SB-0.0-0.5
		BORON	0.858 mg/Kg	
		CALCIUM	12.8 mg/Kg	
		TIN	1.36 mg/Kg	
		ZINC	0.956 mg/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-561-NBZ-SB-0.0-0.5(RES)	TIN	2.31 mg/Kg	2.31U mg/Kg

Equipment Rinsate Blank Outlier Report

Lab Reporting Batch ID: PH197 **Laboratory: LL**

EDD Filename: PH197 **eQAPP Name: CDM_SSFL_140617_Lan**

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

Equipment Blank Sample ID	Collected Date	Analyte	Result	Associated Samples
EB2-052214(RES)	5/22/2014 3:30:00 PM	Zirconium	0.0108 mg/L	FDG2-SL-561-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-561-NBZ-SB-0.0-0.5(RES)	Zirconium	3.29 mg/Kg	3.29U mg/Kg

Lab Control Spike/Lab Control Spike Duplicate Outlier Report

Lab Reporting Batch ID: PH197 **Laboratory: LL**

EDD Filename: PH197 **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*
P5LALCSQ260113 (FDG2-SL-561-NBZ-SB-0.0-0.5)	BENZO(E)PYRENE	80	-	81.00-110.00	-	BENZO(E)PYRENE	J (all detects) UJ (all non-detects)

Reporting Limit Outliers

Lab Reporting Batch ID: PH197 **Laboratory: LL**

EDD Filename: PH197 **eQAPP Name: CDM_SSFL_140617_Lan**

Method: 6010C

Matrix: SO

SampleID	Analyte	Lab Qual	Result	Reporting Limit	RL Type	Units	Flag
FDG2-SL-561-NBZ-SB-0.0-0.5	ARSENIC	J	3.11	4.01	PQL	mg/Kg	J (all detects)
	BERYLLIUM	J	0.373	1.00	PQL	mg/Kg	
	BORON	J	6.03	10.0	PQL	mg/Kg	
	CADMIUM	J	0.445	1.00	PQL	mg/Kg	
	TIN	J	2.31	10.0	PQL	mg/Kg	
	Zirconium	J	3.29	5.01	PQL	mg/Kg	

Method: 6020A

Matrix: SO

SampleID	Analyte	Lab Qual	Result	Reporting Limit	RL Type	Units	Flag
FDG2-SL-561-NBZ-SB-0.0-0.5	SELENIUM	J	0.117	0.401	PQL	mg/Kg	J (all detects)
	SILVER	J	0.0287	0.200	PQL	mg/Kg	
	THALLIUM	J	0.198	0.200	PQL	mg/Kg	

Method: 8015M

Matrix: SO

SampleID	Analyte	Lab Qual	Result	Reporting Limit	RL Type	Units	Flag
FDG2-SL-561-NBZ-SB-0.0-0.5	EFH (C15-C20)	J	4.1	10	PQL	mg/Kg	J (all detects)
	EFH (C30-C40)	J	7.2	10	PQL	mg/Kg	

Method: 8270D SIM

Matrix: SO

SampleID	Analyte	Lab Qual	Result	Reporting Limit	RL Type	Units	Flag
FDG2-SL-561-NBZ-SB-0.0-0.5	2-METHYLNAPHTHALENE	J	0.81	1.7	PQL	ug/Kg	J (all detects)
	BIS(2-ETHYLHEXYL)PHTHALATE	J	9.7	18	PQL	ug/Kg	

LDC #: 32181B4

SDG #: PH197

Laboratory: Eurofins Lancaster Laboratories

VALIDATION COMPLETENESS WORKSHEET

ADR

Date: 7/28/14

Page: 1 of 1

Reviewer: KK

2nd Reviewer: AV

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: 5/23/14
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	N ~~SW~~	
XII.	Sample Result Verification	N	
XIII.	Overall Assessment of Data	N	
XIV.	Field Duplicates	N	
XV	Field Blanks	SW	EB=EB2-052214 SDG# PH196 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-561-NBZ-SB-0.0-0.5	11		21		31	
2		12		22		32	
3		13		23		33	
4		14		24		34	
5		15		25		35	
6		16		26		36	
7		17		27		37	
8		18		28		38	
9		19		29		39	
10		20		30		40	

Notes: _____

LDC #: 32181B4

VALIDATION FINDINGS WORKSHEET
Sample Specific Element Reference

Reviewer: KR
2nd reviewer: a

All circled elements are applicable to each sample.

Sample ID	Matrix	Target Analyte List (TAL)
1	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 #: 32181B4

VALIDATION FINDINGS WORKSHEET
Field Blanks

Reviewer: KK
2nd Reviewer: CR

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

Blank units: mg/l **Associated sample units:** mg/kg
Sampling date: 5/21/14 and 5/22/14 Soil factor applied 100
Field blank type: (circle one) ~~Field Blank~~ / Rinsate / Other: EB Associated Samples: All

Analyte	Blank ID	Blank ID	Sample Identification								
	EB2-052214 SDG#PH196	FB-052114 SDG#191	Action Limit	1							
Zr	0.0108	0.0110	5.5	3.29 ~~3.3~~							

APL 7/31/14

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 FDG Block 2

SDG: PH220

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 6, 2014

INTRODUCTION

This Data Validation Report (DVR) presents Level III data validation results for samples collected on June 5, 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)
Polychlorinated Biphenyls (PCBs) by EPA SW 846 Method 8082A
Metals by EPA SW 846 Method 6010C, 6020A, 7470A, 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. 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), 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) 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 several blanks for SVOCs, 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
PH220 (6010C)	ICB/CCB	Zirconium	9.0 ug/L	EB-060514

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
PH220 (6010C)	EB-060514	Zirconium	0.0109 mg/L	0.0109U mg/L

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. 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/LCSD pairs for SVOCs 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 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 PH220	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 this SDG for TPH as gasoline. No contaminant

concentrations were found in the trip blank.

One equipment blank 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 equipment blank had detections for SVOCs, metals, and dioxins and dibenzofurans. The associated sample results were not detected or were significantly greater than the concentrations found in the equipment blanks, therefore no data were qualified.

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 not detected or were significantly greater than the concentrations found in the equipment blanks, therefore no data were qualified.

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
05-Jun-2014	TB1-060514	7489907	TB	5030B	8015M	III
05-Jun-2014	SL-631-SA8-SB-0.0-0.5	7489904	N	3546	8015M	III
05-Jun-2014	SL-631-SA8-SB-0.0-0.5MSD	P489904M321133A	MSD	3546	8015M	III
05-Jun-2014	SL-631-SA8-SB-0.0-0.5MS	P489904R321111A	MS	3546	8015M	III
05-Jun-2014	SL-631-SA8-SB-4.5-5.0	7489905	N	3546	8015M	III
05-Jun-2014	SL-631-SA8-SB-4.5-5.0	7489905	N	5035A	8015M	III
05-Jun-2014	SL-631-SA8-SB-7.0-8.0	7489906	N	3050B	6010C	III
05-Jun-2014	SL-631-SA8-SB-7.0-8.0	7489906	N	3050B	6020A	III
05-Jun-2014	SL-631-SA8-SB-7.0-8.0	7489906	N	3546	8015M	III
05-Jun-2014	SL-631-SA8-SB-7.0-8.0	7489906	N	3546	8082A	III
05-Jun-2014	SL-631-SA8-SB-7.0-8.0	7489906	N	3546	8270D SIM	III
05-Jun-2014	SL-631-SA8-SB-7.0-8.0	7489906	N	5035A	8015M	III
05-Jun-2014	SL-631-SA8-SB-7.0-8.0	7489906	N	METHOD	7471B	III
05-Jun-2014	SL-624-SA8-SB-0.0-0.5	7489908	N	3546	8015M	III
05-Jun-2014	SL-625-SA8-SB-0.0-0.5	7489909	N	3546	8015M	III
05-Jun-2014	EB-060514	7489903	EB	3005A	6010C	III
05-Jun-2014	EB-060514	7489903	EB	3510C	8015M	III
05-Jun-2014	EB-060514	7489903	EB	3510C	8082A	III
05-Jun-2014	EB-060514	7489903	EB	3510C	8270D SIM	III
05-Jun-2014	EB-060514	7489903	EB	5030B	8015M	III
05-Jun-2014	EB-060514	7489903	EB	M3010A	6020A	III
05-Jun-2014	EB-060514	7489903	EB	METHOD	1613B	III
05-Jun-2014	EB-060514	7489903	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: PH220 **Laboratory: LL**

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

Method Category: METALS

Method: 6010C **Matrix: AQ**

Sample ID: EB-060514 *Collected:* 6/5/2014 3:00:00 PM *Analysis Type:* REA2 *Dilution:* 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
Zirconium	0.0109	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

Method Category: METALS

Method: 6010C **Matrix: SO**

Sample ID: FDG2-SL-631-SA8-SB-7.0-8.0 *Collected:* 6/5/2014 9:40:00 AM *Analysis Type:* REA *Dilution:* 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
CADMIUM	0.380	J	0.0911	MDL	1.20	PQL	mg/Kg	J	Z

Sample ID: FDG2-SL-631-SA8-SB-7.0-8.0 *Collected:* 6/5/2014 9:40:00 AM *Analysis Type:* RES *Dilution:* 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
ARSENIC	4.09	J	0.839	MDL	4.80	PQL	mg/Kg	J	Z
BERYLLIUM	0.911	J	0.0803	MDL	1.20	PQL	mg/Kg	J	Z
BORON	11.1	J	1.01	MDL	12.0	PQL	mg/Kg	J	Z
TIN	3.74	J	0.264	MDL	12.0	PQL	mg/Kg	U	B
Zirconium	5.77	J	1.01	MDL	6.00	PQL	mg/Kg	J	Z

Method Category: METALS

Method: 6020A **Matrix: SO**

Sample ID: FDG2-SL-631-SA8-SB-7.0-8.0 *Collected:* 6/5/2014 9:40:00 AM *Analysis Type:* REA *Dilution:* 2

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
SELENIUM	0.288	J	0.120	MDL	0.480	PQL	mg/Kg	J	Z

Sample ID: FDG2-SL-631-SA8-SB-7.0-8.0 *Collected:* 6/5/2014 9:40:00 AM *Analysis Type:* RES *Dilution:* 2

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
SILVER	0.0633	J	0.0312	MDL	0.240	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: PH220 **Laboratory: LL**

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

Method Category: METALS

Method: 7471B **Matrix: SO**

Sample ID: **FDG2-SL-631-SA8-SB-7.0-8.0** *Collected:* **6/5/2014 9:40:00 AM** *Analysis Type:* **RES** *Dilution:* **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
MERCURY	0.0161	J	0.0113	MDL	0.0188	PQL	mg/Kg	J	Z

Method Category: SVOA

Method: 1613B **Matrix: AQ**

Sample ID: **EB-060514** *Collected:* **6/5/2014 3:00:00 PM** *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	0.193	JBQ	0.169	MDL	9.72	PQL	pg/L	U	B
1,2,3,4,6,7,8-HPCDF	0.444	JBQ	0.0762	MDL	9.72	PQL	pg/L	U	B
1,2,3,4,7,8,9-HPCDF	0.245	JBQ	0.110	MDL	9.72	PQL	pg/L	U	B
1,2,3,4,7,8-HXCDF	0.395	JBQ	0.105	MDL	9.72	PQL	pg/L	U	B
1,2,3,6,7,8-HXCDF	0.313	JB	0.103	MDL	9.72	PQL	pg/L	U	B
1,2,3,7,8,9-HXCDD	0.141	JBQ	0.141	MDL	9.72	PQL	pg/L	U	B
1,2,3,7,8,9-HXCDF	0.154	JBQ	0.120	MDL	9.72	PQL	pg/L	U	B
1,2,3,7,8-PECDD	0.218	JBQ	0.205	MDL	9.72	PQL	pg/L	U	B
1,2,3,7,8-PECDF	0.544	JBQ	0.107	MDL	9.72	PQL	pg/L	U	B
2,3,4,6,7,8-HXCDF	0.225	JBQ	0.0970	MDL	9.72	PQL	pg/L	U	B
OCDD	1.75	JB	0.221	MDL	19.4	PQL	pg/L	U	B
OCDF	0.765	JBQ	0.236	MDL	19.4	PQL	pg/L	U	B

Method Category: SVOA

Method: 8015M **Matrix: AQ**

Sample ID: **EB-060514** *Collected:* **6/5/2014 3:00:00 PM** *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	0.10	U	0.050	MDL	0.10	PQL	mg/L	UJ	L
EFH (C8-C11) SG	0.10	U	0.050	MDL	0.10	PQL	mg/L	UJ	L, E

Sample ID: **EB-060514** *Collected:* **6/5/2014 3:00:00 PM** *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)	0.10	U	0.050	MDL	0.10	PQL	mg/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: PH220 **Laboratory: LL**

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

Method Category: SVOA

Method: 8015M **Matrix: AQ**

Sample ID: EB-060514 *Collected:* 6/5/2014 3:00:00 PM *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)	0.10	U	0.050	MDL	0.10	PQL	mg/L	UJ	L, E

Method Category: SVOA

Method: 8015M **Matrix: SO**

Sample ID: FDG2-SL-624-SA8-SB-0.0-0.5 *Collected:* 6/5/2014 1:00:00 PM *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: FDG2-SL-624-SA8-SB-0.0-0.5 *Collected:* 6/5/2014 1:00:00 PM *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	2.0	MDL	5.1	PQL	mg/Kg	J	Z

Sample ID: FDG2-SL-625-SA8-SB-0.0-0.5 *Collected:* 6/5/2014 1:55:00 PM *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	3.9	J	2.1	MDL	5.1	PQL	mg/Kg	J	Z
EFH (C30-C40) SG	8.3	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-625-SA8-SB-0.0-0.5 *Collected:* 6/5/2014 1:55:00 PM *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)	3.8	J	2.1	MDL	5.1	PQL	mg/Kg	J	Z

Sample ID: FDG2-SL-631-SA8-SB-0.0-0.5 *Collected:* 6/5/2014 8:15:00 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: PH220 **Laboratory: LL**

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

Method Category: SVOA

Method: 8015M **Matrix: SO**

Sample ID: FDG2-SL-631-SA8-SB-0.0-0.5 **Collected: 6/5/2014 8:15:00 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 (C21-C30) SG	2.3	J	2.1	MDL	5.3	PQL	mg/Kg	J	Z
EFH (C30-C40) SG	4.6	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

Sample ID: FDG2-SL-631-SA8-SB-0.0-0.5 **Collected: 6/5/2014 8:15:00 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)	4.5	J	2.1	MDL	5.3	PQL	mg/Kg	J	Z
EFH (C30-C40)	46		4.2	MDL	11	PQL	mg/Kg	J	Q

Sample ID: FDG2-SL-631-SA8-SB-4.5-5.0 **Collected: 6/5/2014 8:50:00 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	5.5	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	3.0	J	2.2	MDL	5.5	PQL	mg/Kg	J	Z
EFH (C30-C40) SG	7.4	J	4.4	MDL	11	PQL	mg/Kg	J	Z
EFH (C8-C11) SG	5.5	U	2.2	MDL	5.5	PQL	mg/Kg	UJ	L

Sample ID: FDG2-SL-631-SA8-SB-7.0-8.0 **Collected: 6/5/2014 9:40:00 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	6.0	U	2.4	MDL	6.0	PQL	mg/Kg	UJ	L
EFH (C15-C20) SG	6.0	U	2.4	MDL	6.0	PQL	mg/Kg	UJ	L
EFH (C8-C11) SG	6.0	U	2.4	MDL	6.0	PQL	mg/Kg	UJ	L

Sample ID: FDG2-SL-631-SA8-SB-7.0-8.0 **Collected: 6/5/2014 9:40:00 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)	2.9	J	2.4	MDL	6.0	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: PH220 **Laboratory: LL**

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

Method Category: SVOA

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

Sample ID: **EB-060514** *Collected:* **6/5/2014 3:00:00 PM** *Analysis Type:* **RES** *Dilution:* **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
1-METHYLNAPHTHALENE	0.024	J	0.011	MDL	0.053	PQL	ug/L	J	Z

Sample ID: **EB-060514** *Collected:* **6/5/2014 3:00:00 PM** *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	0.034	J	0.011	MDL	0.053	PQL	ug/L	J	Z
BIS(2-ETHYLHEXYL)PHTHALATE	1.0	J	0.053	MDL	1.1	PQL	ug/L	J	Z, L, E
Diethylphthalate	0.090	J	0.053	MDL	1.1	PQL	ug/L	U	B
Di-n-butylphthalate	0.098	J	0.053	MDL	1.1	PQL	ug/L	J	Z

Method Category: SVOA

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

Sample ID: **FDG2-SL-631-SA8-SB-7.0-8.0** *Collected:* **6/5/2014 9:40:00 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	0.55	J	0.40	MDL	2.0	PQL	ug/Kg	J	Z
N-NITROSODIMETHYLAMINE	2.0	U	0.80	MDL	2.0	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: PH220 **Laboratory: LL**

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

Reason Code Legend

Reason Code	*Description*
B	Calibration Blank Contamination
B	Method Blank Contamination
E	Laboratory Control Precision
L	Laboratory Control Precision
L	Laboratory Control Spike Lower Estimation
L	Laboratory Control Spike Upper Estimation
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

PH220