LABORATORY DATA CONSULTANTS, INC.
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AECOM
1001 Bishop Street Suite 1600
Honolulu, HI 96813
ATTN: Ms. Alethea Ramos
alethea.ramos@aecom.com

September 14, 2021

SUBJECT: Red Hill Bulk Storage Facility, CTO 18F0126, Data Validation

Dear Ms. Ramos,

Enclosed are the final validation reports for the fractions listed below. These SDGs were received from June 3rd & 4th, 2021. Attachment 1 is a summary of the samples that were reviewed for each analysis.

LDC Project #50747 C, D and E:

SDG #	Fraction
95917/1D27023 96222/1E21031 96681/1F29037	Semivolatiles

The data validation was performed under Stage 2B & 4 validation guidelines. The analyses were validated using the following documents and variances, as applicable to each method:

- Data validation was performed in accordance with the Work Plan/Scope of Work, Investigation and Remediation of Releases and Groundwater Protection and Evaluation, Red Hill Bulk Fuel Storage Facility, Joint Base Pearl Harbor-Hickam, O'ahu, Hawai'i (Revision 02, January 2017)
- Sampling and Analysis Plan, Investigation and Remediation of Releases and Groundwater Protection and Evaluation, Red Hill Bulk Fuel Storage Facility, Joint Base Pearl Harbor-Hickam, O'ahu, Hawai'i (Revision 01, April 2017)
- Sampling and Analysis Plan, Addendum 01, Investigation and Remediation of Releases and Groundwater Protection and Evaluation, Red Hill Bulk Fuel Storage Facility, Joint Base Pearl Harbor-Hickam, O'ahu, Hawai'i (Revision 00, September 2017)
- Sampling and Analysis Plan, Addendum 03, Investigation and Remediation of Releases and Groundwater Protection and Evaluation, Red Hill Bulk Fuel Storage Facility, Joint Base Pearl Harbor-Hickam, O'ahu, Hawai'i (Revision 00, June 2018)
- U.S. Department of Defense (DoD) Quality Systems Manual (QSM) for Environmental Laboratories, Version 5.3 (2019)
- DoD General Validation Guidelines (November 2019)
- U.S. Department of Defense (DoD) Data Validation Guidelines Module 1: Data Validation Procedure for Organic Analysis by GC/MS (May 2020)
- 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; update V, July 2014

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

Sincerely,

Stella Cuenco
Operations Manager/Senior Chemist
scuenco@lab-data.com

525 pages-DL/EM

Attachment 1

90/10 2B/4 EDD

LDC# 50747 (AECOM - Honolulu, HI / Red Hill Bulk Storage Facility, CTO 18F0126)

LDC	SDG#	DATE REC'D	(2) DATE DUE	SVOA (525.2)																											
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
C	95917/1D27023	06/03/21	06/17/21	2	0																										
D	96222/1E21031	06/04/21	06/18/21	1	0																										
D	96222/1E21031	06/04/21	06/18/21	1	0																										
E	96681/1F29037	07/09/21	07/23/21	3	0																										
Total	T/J/SC			7	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	7

Shaded cells indicate Stage 4 validation (all other cells are Stage 2B/4 validation). These sample counts do not include MS/MSD, and DUPs.

LDC Report# 50747C2a

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: Red Hill Bulk Storage Facility, CTO 18F0126

LDC Report Date: September 14, 2021

Parameters: Semivolatiles

Validation Level: Stage 2B

Laboratory: APPL, Inc./Weck Laboratories, Inc.

Sample Delivery Group (SDG): 95917/1D27023

Sample Identification	Laboratory Sample Identification	Matrix	Collection Date
ERH1355	BA31078/1D27023-01	Water	04/21/21
ERH1356	BA31079/1D27023-02	Water	04/21/21

Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with the Work Plan/Scope of Work, Investigation and Remediation of Releases and Groundwater Protection and Evaluation, Red Hill Bulk Fuel Storage Facility, Joint Base Pearl Harbor-Hickam, O'ahu, Hawai'i (Revision 02, January 2017), the Sampling and Analysis Plan, Investigation and Remediation of Releases and Groundwater Protection and Evaluation, Red Hill Bulk Fuel Storage Facility, Joint Base Pearl Harbor-Hickam, O'ahu, Hawai'i (Revision 01, April 2017), the Sampling and Analysis Plan, Addendum 01, Investigation and Remediation of Releases and Groundwater Protection and Evaluation, Red Hill Bulk Fuel Storage Facility, Joint Base Pearl Harbor-Hickam, O'ahu, Hawai'i (Revision 00, September 2017), the Sampling and Analysis Plan, Addendum 03, Investigation and Remediation of Releases and Groundwater Protection and Evaluation, Red Hill Bulk Fuel Storage Facility, Joint Base Pearl Harbor-Hickam, O'ahu, Hawai'i (Revision 00, June 2018), the U.S. Department of Defense (DoD) Quality Systems Manual (QSM) for Environmental Laboratories, Version 5.3 (2019), the DoD General Validation Guidelines (November 2019), and the U.S. Department of Defense (DoD) Data Validation Guidelines Module 1: Data Validation Procedure for Organic Analysis by GC/MS (May 2020). Where specific guidance was 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 method:

Semivolatile Organic Compounds (SVOCs) by Environmental Protection Agency (EPA) Method 525.2

All sample results were subjected to Stage 2B data validation, which comprises an evaluation of quality control (QC) summary results.

The following are definitions of the data qualifiers utilized during data validation:

J+ (Estimated, High Bias): The analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated, displaying high bias, due to non-conformances discovered during data validation.

J- (Estimated, Low Bias): The analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated, displaying low bias, due to non-conformances discovered during data validation.

J (Estimated, Bias Indeterminate): The analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation. Bias is indeterminate.

U (Non-detected): The analyte was analyzed for and positively identified by the laboratory; however the analyte should be considered non-detected due to the presence of contaminants detected in the associated blank(s).

UJ (Non-detected estimated): The analyte was not detected and the associated numerical value is approximate.

X (Exclusion of data recommended): The sample results (including non-detects) were affected by serious deficiencies in the ability to analyze the sample and to meet published method and project quality control criteria. The presence or absence of the analyte cannot be substantiated by the data provided. Exclusion of the data is recommended.

NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

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.

Qualification Code Reference

a ICP Serial Dilution %D was not within control limits.

b Presumed contamination from preparation (method blank).

c Calibration %RSD, r, r^2, %D or %R was noncompliant.

d The analysis with this flag should not be used because another more technically sound analysis is available.

e MS/MSD or Duplicate RPD was high.

f Presumed contamination from FB or ER.

g ICP ICS results were unsatisfactory.

h Holding times were exceeded.

i Internal standard performance was unsatisfactory.

k Estimated Maximum Possible Concentration (HRGC/HRMS only)

l LCS/LCSD %R was not within control limits.

m Result exceeded the calibration range.

o Cooler temperature or temperature blank was noncompliant and/or sample custody problems.

p RPD between two columns was high (GC only).

q MS/MSD recovery was not within control limits.

s Surrogate recovery was not within control limits.

t Presumed contamination from trip blank.

v Unusual problems found with the data not defined elsewhere. Description of the problem can be found in the validation report.

w LCS/LCSD RPD was high.

y Chemical recovery was not within control limits (Radiochemistry only).

I. Sample Receipt and Technical Holding Times

All samples were received in good condition and cooler temperatures upon receipt met validation criteria.

All technical holding time requirements were met with the following exceptions:

Sample	Analyte	Total Days From Sample Collection Until Extraction	Required Holding Time (in Days) From Sample Collection Until Extraction	Flag	A or P
All samples in SDG 95917/1D27023	All analytes	12	7	UJ (all non-detects)	P

II. GC/MS Instrument Performance Check

A decafluorotriphenylphosphine (DFTPP) tune was performed at 12 hour intervals.

All ion abundance requirements were met.

III. Initial Calibration and Initial Calibration Verification

An initial calibration was performed as required by the method.

For analytes where average relative response factors (RRFs) were utilized, the percent relative standard deviations (%RSD) were less than or equal to 30.0%.

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

Average relative response factors (RRF) were within validation criteria.

The percent differences (%D) of the initial calibration verification (ICV) standard were less than or equal to 30.0% for all analytes with the following exceptions:

Date	Analyte	%D	Associated Samples	Flag	A or P
03/13/21	2,6-Dinitrotoluene	40.27	All samples in SDG 95917/1D27023	UJ (all non-detects)	A

IV. Continuing Calibration

Continuing calibration was performed at the required frequencies.

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

Date	Analyte	%D	Associated Samples	Flag	A or P
05/06/21 (2135)	Diazinon Metolachlor Metribuzin	43 38 39	All samples in SDG 95917/1D27023	UJ (all non-detects) UJ (all non-detects) UJ (all non-detects)	A
05/06/21 (2229)	Endrin Methoxychlor	40 38	All samples in SDG 95917/1D27023	UJ (all non-detects) UJ (all non-detects)	A

The percent differences (%D) of the ending continuing calibration verifications (CCVs) were less than or equal to 50.0% for all analytes with the following exceptions:

Date	Analyte	%D	Associated Samples	Flag	A or P
05/07/21 (0855)	Bis(2-ethylhexyl)adipate Bis(2-ethylhexyl)phthalate Butylbenzylphthalate Di-n-octylphthalate	53 56 52 64	All samples in SDG 95917/1D27023	UJ (all non-detects) UJ (all non-detects) UJ (all non-detects) UJ (all non-detects)	A
05/07/21 (0923)	Acetochlor Diazinon Metolachlor Metribuzin Prometryn	54 65 60 66 54	All samples in SDG 95917/1D27023	UJ (all non-detects) UJ (all non-detects) UJ (all non-detects) UJ (all non-detects) UJ (all non-detects)	A

Although the percent difference was grossly exceeded (>50%) for several analytes, using professional judgment, associated results were qualified as estimated instead of “X”, since the percent differences were biased high and the associated results were not detected.

All of the continuing calibration relative response factors (RRF) were within validation criteria.

V. Laboratory Blanks

Laboratory blanks were analyzed as required by the method. No contaminants were found in the laboratory blanks.

VI. Field Blanks

No field blanks were identified in this SDG.

VII. Surrogates

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

VIII. 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.

IX. Laboratory Control Samples

Laboratory control samples (LCS) were analyzed as required by the method with the following exceptions:

LCS ID	Analyte	Finding	Associated Samples	Flag	A or P
W1E0023-LCS	4,4'-DDD 4,4'-DDE 4,4'-DDT Aldrin alpha-BHC alpha-Chlordane beta-BHC delta-BHC Dieldrin Endosulfan I Endosulfan II Endosulfan sulfate Endrin Endrin aldehyde Endrin ketone gamma-BHC gamma-Chlordane Heptachlor Heptachlor epoxide Hexachlorobenzene Hexachlorocyclopentadiene Methoxychlor Propachlor Trifluralin	The laboratory indicated that these analytes were not spiked in the LCS mix analyzed for this SDG.	All samples in SDG 95917/1D27023	UJ (all non-detects) UJ (all non-detects)	P

Percent recoveries (%R) were within QC limits with the following exceptions:

LCS ID (Associated Samples)	Analyte	%R (Limits)	Flag	A or P
W1E0023-LCS (All samples in SDG 95917/1D27023)	Pentachlorophenol	22 (50-120)	UJ (all non-detects)	P
W1E0023-LCS (All samples in SDG 95917/1D27023)	Captan	1.09 (70-130)	X (all non-detects)	P

X. Field Duplicates

No field duplicates were identified in this SDG.

XI. Internal Standards

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

XII. Target Analyte Quantitation

Raw data were not reviewed for Stage 2B validation.

XIII. Target Analyte Identification

Raw data were not reviewed for Stage 2B validation.

XIV. System Performance

Raw data were not reviewed for Stage 2B validation.

XV. Overall Assessment of Data

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

Due LCS %R, data were recommended for exclusion in two samples.

Due to technical holding time, ICV %D, continuing calibration %D, LCS not spiked, and LCS %R, data were qualified as estimated in two samples.

Red Hill Bulk Storage Facility, CTO 18F0126
Semivolatiles - Data Qualification Summary - SDG 95917/1D27023

Sample	Analyte	Flag	A or P	Reason (Code)
ERH1355 ERH1356	All analytes except Captan	UJ (all non-detects)	P	Technical holding time (h)
ERH1355 ERH1356	2,6-Dinitrotoluene	UJ (all non-detects)	A	Initial calibration verification (%D) (c)
ERH1355 ERH1356	Diazinon Metolachlor Metribuzin Endrin Methoxychlor	UJ (all non-detects) UJ (all non-detects) UJ (all non-detects) UJ (all non-detects) UJ (all non-detects)	A	Continuing calibration (%D) (c)
ERH1355 ERH1356	Bis(2-ethylhexyl)adipate Bis(2-ethylhexyl)phthalate Butylbenzylphthalate Di-n-octylphthalate Acetochlor Diazinon Metolachlor Metribuzin Prometryn	UJ (all non-detects) UJ (all non-detects) UJ (all non-detects) UJ (all non-detects) UJ (all non-detects) UJ (all non-detects) UJ (all non-detects) UJ (all non-detects) UJ (all non-detects)	A	Continuing calibration (ending CCV %D) (c)
ERH1355 ERH1356	4,4'-DDD 4,4'-DDE 4,4'-DDT Aldrin alpha-BHC alpha-Chlordane beta-BHC delta-BHC Dieldrin Endosulfan I Endosulfan II Endosulfan sulfate Endrin Endrin aldehyde Endrin ketone gamma-BHC gamma-Chlordane Heptachlor Heptachlor epoxide Hexachlorobenzene Hexachlorocyclopentadiene Methoxychlor Propachlor Trifluralin	UJ (all non-detects) UJ (all non-detects)	P	Laboratory control samples (not spiked) (v)
ERH1355 ERH1356	Pentachlorophenol	UJ (all non-detects)	P	Laboratory control samples (%R) (l)
ERH1355 ERH1356	Captan	X (all non-detects)	P	Laboratory control samples (%R) (l)

Red Hill Bulk Storage Facility, CTO 18F0126
Semivolatiles - Laboratory Blank Data Qualification Summary - SDG 95917/1D27023

No Sample Data Qualified in this SDG

Red Hill Bulk Storage Facility, CTO 18F0126
Semivolatiles - Field Blank Data Qualification Summary - SDG 95917/1D27023

No Sample Data Qualified in this SDG

APPL, Inc.
908 N. Temperance Avenue
Clovis, CA 93611

Project Number: 95917

Project Manager: Libby Cheeseborough

Reported: 05/17/2021 15:09

Sample Results

Sample: BA31078, Alias: ERH1355
1D27023-01 (Water)

Sampled: 04/21/21 9:15 by Client

Semivolatile Organic Compounds by GC/MS

Method: EPA 525.2 **Instr:** GCMS16

Batch ID: W1E0023 **Preparation:** EPA 525.2/SPE **Prepared:** 05/03/21 08:27 **Analyst:** rmr

Analyte	Result	MRL	Units	Dil	Analyzed	Qualifier
2,4-Dinitrotoluene	ND	2.0	ug/l	1	05/07/21	U-01
2,6-Dinitrotoluene	ND	2.0	ug/l	1	05/07/21	U-01
4,4'-DDD	ND	0.10	ug/l	1	05/07/21	U-01
4,4'-DDE	ND	0.20	ug/l	1	05/07/21	U-01
4,4'-DDT	ND	0.10	ug/l	1	05/07/21	U-01
Acenaphthene	ND	0.50	ug/l	1	05/07/21	U-01
Acenaphthylene	ND	0.50	ug/l	1	05/07/21	U-01
Acetochlor	ND	0.10	ug/l	1	05/07/21	U-01
Alachlor	ND	0.10	ug/l	1	05/07/21	U-01
Aldrin	ND	0.10	ug/l	1	05/07/21	U-01
alpha-BHC	ND	0.10	ug/l	1	05/07/21	U-01
alpha-Chlordane	ND	0.10	ug/l	1	05/07/21	U-01
Anthracene	ND	0.50	ug/l	1	05/07/21	U-01
Atrazine	ND	0.10	ug/l	1	05/07/21	U-01
Benzo (a) anthracene	ND	0.50	ug/l	1	05/07/21	U-01
Benzo (a) pyrene	ND	0.10	ug/l	1	05/07/21	U-01
Benzo (b) fluoranthene	ND	0.50	ug/l	1	05/07/21	U-01
Benzo (g,h,i) perylene	ND	0.50	ug/l	1	05/07/21	U-01
Benzo (k) fluoranthene	ND	0.50	ug/l	1	05/07/21	U-01
beta-BHC	ND	0.20	ug/l	1	05/07/21	U-01
Bis(2-ethylhexyl)adipate	ND	5.0	ug/l	1	05/07/21	U-01
Bis(2-ethylhexyl)phthalate	ND	3.0	ug/l	1	05/07/21	U-01
Bromacil	ND	0.50	ug/l	1	05/07/21	U-01
Butachlor	ND	0.10	ug/l	1	05/07/21	U-01
Butyl benzyl phthalate	ND	2.0	ug/l	1	05/07/21	U-01
Caffeine	ND	0.10	ug/l	1	05/07/21	U-01
Captan	ND	1.0	ug/l	1	05/07/21	BS-03, U-01
Chlorpropham	ND	0.10	ug/l	1	05/07/21	U-01
Chrysene	ND	0.50	ug/l	1	05/07/21	U-01
Cyanazine	ND	0.10	ug/l	1	05/07/21	U-01
delta-BHC	ND	0.10	ug/l	1	05/07/21	U-01
Diazinon	ND	0.10	ug/l	1	05/07/21	U-01
Dibenzo (a,h) anthracene	ND	0.50	ug/l	1	05/07/21	U-01
Dieldrin	ND	0.20	ug/l	1	05/07/21	U-01
Diethyl phthalate	ND	2.0	ug/l	1	05/07/21	U-01

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APPL, Inc.
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Project Number: 95917

Project Manager: Libby Cheeseborough

Reported: 05/17/2021 15:09

Sample Results

(Continued)

Sample: BA31078, Alias: ERH1355
1D27023-01 (Water)

Sampled: 04/21/21 9:15 by Client

(Continued)

Semivolatile Organic Compounds by GC/MS (Continued)

Method: EPA 525.2 **Instr:** GCMS16

Batch ID: W1E0023 **Preparation:** EPA 525.2/SPE **Prepared:** 05/03/21 08:27 **Analyst:** rmr

Analyte	Result	MRL	Units	Dil	Analyzed	Qualifier
Dimethoate	ND	0.20	ug/l	1	05/07/21	U-01
Dimethyl phthalate	ND	2.0	ug/l	1	05/07/21	U-01
Di-n-butyl phthalate	ND	2.0	ug/l	1	05/07/21	U-01
Di-n-octyl phthalate	ND	0.50	ug/l	1	05/07/21	U-01
Diphenamid	ND	0.10	ug/l	1	05/07/21	U-01
Disulfoton	ND	0.10	ug/l	1	05/07/21	U-01
Endosulfan I	ND	1.0	ug/l	1	05/07/21	U-01
Endosulfan II	ND	0.20	ug/l	1	05/07/21	U-01
Endosulfan sulfate	ND	0.20	ug/l	1	05/07/21	U-01
Endrin	ND	0.20	ug/l	1	05/07/21	U-01
Endrin aldehyde	ND	0.20	ug/l	1	05/07/21	U-01
Endrin ketone	ND	0.10	ug/l	1	05/07/21	U-01
EPTC	ND	0.10	ug/l	1	05/07/21	U-01
Ethion	ND	0.10	ug/l	1	05/07/21	U-01
Fluoranthene	ND	0.50	ug/l	1	05/07/21	U-01
Fluorene	ND	0.50	ug/l	1	05/07/21	U-01
gamma-BHC (Lindane)	ND	0.10	ug/l	1	05/07/21	U-01
gamma-Chlordane	ND	0.10	ug/l	1	05/07/21	U-01
Heptachlor	ND	0.10	ug/l	1	05/07/21	U-01
Heptachlor epoxide	ND	0.10	ug/l	1	05/07/21	U-01
Hexachlorobenzene	ND	0.10	ug/l	1	05/07/21	U-01
Hexachlorocyclopentadiene	ND	1.0	ug/l	1	05/07/21	U-01
Indeno (1,2,3-cd) pyrene	ND	0.50	ug/l	1	05/07/21	U-01
Methoxychlor	ND	0.20	ug/l	1	05/07/21	U-01
Metolachlor	ND	0.10	ug/l	1	05/07/21	U-01
Metribuzin	ND	0.10	ug/l	1	05/07/21	U-01
Molinate	ND	0.10	ug/l	1	05/07/21	U-01
Naphthalene	ND	0.50	ug/l	1	05/07/21	U-01
Pentachloronitrobenzene (PCNB)	ND	0.10	ug/l	1	05/07/21	U-01
Pentachlorophenol	ND	1.0	ug/l	1	05/07/21	BS-03, U-01
Phenanthrene	ND	0.50	ug/l	1	05/07/21	U-01
Prometon	ND	0.10	ug/l	1	05/07/21	U-01
Prometryn	ND	0.10	ug/l	1	05/07/21	U-01
Propachlor	ND	0.20	ug/l	1	05/07/21	U-01
Pyrene	ND	0.50	ug/l	1	05/07/21	U-01

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Project Number: 95917

Project Manager: Libby Cheeseborough

Reported: 05/17/2021 15:09

Sample Results

(Continued)

Sample: BA31078, Alias: ERH1355
1D27023-01 (Water)

Sampled: 04/21/21 9:15 by Client

(Continued)

Semivolatile Organic Compounds by GC/MS (Continued)

Method: EPA 525.2 **Instr:** GCMS16

Batch ID: W1E0023 **Preparation:** EPA 525.2/SPE **Prepared:** 05/03/21 08:27 **Analyst:** mv

Analyte	Result		MRL	Units	Dil	Analyzed	Qualifier
Simazine	ND	UJ (h)	0.10	ug/l	1	05/07/21	U-01
Terbacil	ND		2.0	ug/l	1	05/07/21	U-01
Thiobencarb	ND		0.10	ug/l	1	05/07/21	U-01
Trifluralin	ND	(v)	0.10	ug/l	1	05/07/21	U-01
Trithion	ND		0.10	ug/l	1	05/07/21	U-01
Surrogate(s)							
1,3-Dimethyl-2-nitrobenzene	*104%*	*Conc: 5.19*	*70-130*			*05/07/21*	*U-01*
Perylene-d12	*89%*	*Conc: 4.44*	*50-120*			*05/07/21*	*U-01*
Triphenyl phosphate	*123%*	*Conc: 6.13*	*70-130*			*05/07/21*	*U-01*

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Clovis, CA 93611

Project Number: 95917

Project Manager: Libby Cheeseborough

Reported: 05/17/2021 15:09

Sample Results

(Continued)

Sample: BA31079, Alias: ERH1356

1D27023-02 (Water)

Sampled: 04/21/21 9:45 by Client

Semivolatile Organic Compounds by GC/MS

Method: EPA 525.2 **Instr:** GCMS16

Batch ID: W1E0023 **Preparation:** EPA 525.2/SPE **Prepared:** 05/03/21 08:27 **Analyst:** rmr

Analyte	Result	MRL	Units	Dil	Analyzed	Qualifier
2,4-Dinitrotoluene	ND	2.0	ug/l	1	05/07/21	U-01
2,6-Dinitrotoluene	ND	2.0	ug/l	1	05/07/21	U-01
4,4'-DDD	ND	0.10	ug/l	1	05/07/21	U-01
4,4'-DDE	ND	0.20	ug/l	1	05/07/21	U-01
4,4'-DDT	ND	0.10	ug/l	1	05/07/21	U-01
Acenaphthene	ND	0.50	ug/l	1	05/07/21	U-01
Acenaphthylene	ND	0.50	ug/l	1	05/07/21	U-01
Acetochlor	ND	0.10	ug/l	1	05/07/21	U-01
Alachlor	ND	0.10	ug/l	1	05/07/21	U-01
Aldrin	ND	0.10	ug/l	1	05/07/21	U-01
alpha-BHC	ND	0.10	ug/l	1	05/07/21	U-01
alpha-Chlordane	ND	0.10	ug/l	1	05/07/21	U-01
Anthracene	ND	0.50	ug/l	1	05/07/21	U-01
Atrazine	ND	0.10	ug/l	1	05/07/21	U-01
Benzo (a) anthracene	ND	0.50	ug/l	1	05/07/21	U-01
Benzo (a) pyrene	ND	0.10	ug/l	1	05/07/21	U-01
Benzo (b) fluoranthene	ND	0.50	ug/l	1	05/07/21	U-01
Benzo (g,h,i) perylene	ND	0.50	ug/l	1	05/07/21	U-01
Benzo (k) fluoranthene	ND	0.50	ug/l	1	05/07/21	U-01
beta-BHC	ND	0.20	ug/l	1	05/07/21	U-01
Bis(2-ethylhexyl)adipate	ND	5.0	ug/l	1	05/07/21	U-01
Bis(2-ethylhexyl)phthalate	ND	3.0	ug/l	1	05/07/21	U-01
Bromacil	ND	0.50	ug/l	1	05/07/21	U-01
Butachlor	ND	0.10	ug/l	1	05/07/21	U-01
Butyl benzyl phthalate	ND	2.0	ug/l	1	05/07/21	U-01
Caffeine	ND	0.10	ug/l	1	05/07/21	U-01
Captan	ND	1.0	ug/l	1	05/07/21	BS-03, U-01
Chlorpropham	ND	0.10	ug/l	1	05/07/21	U-01
Chrysene	ND	0.50	ug/l	1	05/07/21	U-01
Cyanazine	ND	0.10	ug/l	1	05/07/21	U-01
delta-BHC	ND	0.10	ug/l	1	05/07/21	U-01
Diazinon	ND	0.10	ug/l	1	05/07/21	U-01
Dibenzo (a,h) anthracene	ND	0.50	ug/l	1	05/07/21	U-01
Dieldrin	ND	0.20	ug/l	1	05/07/21	U-01
Diethyl phthalate	ND	2.0	ug/l	1	05/07/21	U-01

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APPL, Inc.
908 N. Temperance Avenue
Clovis, CA 93611

Project Number: 95917

Project Manager: Libby Cheeseborough

Reported: 05/17/2021 15:09

Sample Results

(Continued)

Sample: BA31079, Alias: ERH1356
1D27023-02 (Water)

Sampled: 04/21/21 9:45 by Client

(Continued)

Semivolatile Organic Compounds by GC/MS (Continued)

Method: EPA 525.2 **Instr:** GCMS16

Batch ID: W1E0023 **Preparation:** EPA 525.2/SPE **Prepared:** 05/03/21 08:27 **Analyst:** rmr

Analyte	Result	MRL	Units	Dil	Analyzed	Qualifier
Dimethoate	ND	0.20	ug/l	1	05/07/21	U-01
Dimethyl phthalate	ND	2.0	ug/l	1	05/07/21	U-01
Di-n-butyl phthalate	ND	2.0	ug/l	1	05/07/21	U-01
Di-n-octyl phthalate	ND	0.50	ug/l	1	05/07/21	U-01
Diphenamid	ND	0.10	ug/l	1	05/07/21	U-01
Disulfoton	ND	0.10	ug/l	1	05/07/21	U-01
Endosulfan I	ND	1.0	ug/l	1	05/07/21	U-01
Endosulfan II	ND	0.20	ug/l	1	05/07/21	U-01
Endosulfan sulfate	ND	0.20	ug/l	1	05/07/21	U-01
Endrin	ND	0.20	ug/l	1	05/07/21	U-01
Endrin aldehyde	ND	0.20	ug/l	1	05/07/21	U-01
Endrin ketone	ND	0.10	ug/l	1	05/07/21	U-01
EPTC	ND	0.10	ug/l	1	05/07/21	U-01
Ethion	ND	0.10	ug/l	1	05/07/21	U-01
Fluoranthene	ND	0.50	ug/l	1	05/07/21	U-01
Fluorene	ND	0.50	ug/l	1	05/07/21	U-01
gamma-BHC (Lindane)	ND	0.10	ug/l	1	05/07/21	U-01
gamma-Chlordane	ND	0.10	ug/l	1	05/07/21	U-01
Heptachlor	ND	0.10	ug/l	1	05/07/21	U-01
Heptachlor epoxide	ND	0.10	ug/l	1	05/07/21	U-01
Hexachlorobenzene	ND	0.10	ug/l	1	05/07/21	U-01
Hexachlorocyclopentadiene	ND	1.0	ug/l	1	05/07/21	U-01
Indeno (1,2,3-cd) pyrene	ND	0.50	ug/l	1	05/07/21	U-01
Methoxychlor	ND	0.20	ug/l	1	05/07/21	U-01
Metolachlor	ND	0.10	ug/l	1	05/07/21	U-01
Metribuzin	ND	0.10	ug/l	1	05/07/21	U-01
Molinate	ND	0.10	ug/l	1	05/07/21	U-01
Naphthalene	ND	0.50	ug/l	1	05/07/21	U-01
Pentachloronitrobenzene (PCNB)	ND	0.10	ug/l	1	05/07/21	U-01
Pentachlorophenol	ND	1.0	ug/l	1	05/07/21	BS-03, U-01
Phenanthrene	ND	0.50	ug/l	1	05/07/21	U-01
Prometon	ND	0.10	ug/l	1	05/07/21	U-01
Prometryn	ND	0.10	ug/l	1	05/07/21	U-01
Propachlor	ND	0.20	ug/l	1	05/07/21	U-01
Pyrene	ND	0.50	ug/l	1	05/07/21	U-01

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APPL, Inc.
908 N. Temperance Avenue
Clovis, CA 93611

Project Number: 95917

Project Manager: Libby Cheeseborough

Reported: 05/17/2021 15:09

Sample Results

(Continued)

Sample: BA31079, Alias: ERH1356

1D27023-02 (Water)

Sampled: 04/21/21 9:45 by Client

(Continued)

Analyte	Result		MRL	Units	Dil	Analyzed	Qualifier
Semivolatile Organic Compounds by GC/MS (Continued)							
Method: EPA 525.2				**Instr:** GCMS16			
Batch ID: W1E0023 **Preparation:** EPA 525.2/SPE				**Prepared:** 05/03/21 08:27			**Analyst:** rmr
Simazine	ND	UJ (h)	0.10	ug/l	1	05/07/21	U-01
Terbacil	ND		2.0	ug/l	1	05/07/21	U-01
Thiobencarb	ND		0.10	ug/l	1	05/07/21	U-01
Trifluralin	ND	(v)	0.10	ug/l	1	05/07/21	U-01
Trithion	ND		0.10	ug/l	1	05/07/21	U-01
Surrogate(s)							
1,3-Dimethyl-2-nitrobenzene	*105%*	*Conc: 5.24*	*70-130*			*05/07/21*	*U-01*
Perylene-d12	*93%*	*Conc: 4.67*	*50-120*			*05/07/21*	*U-01*
Triphenyl phosphate	*128%*	*Conc: 6.41*	*70-130*			*05/07/21*	*U-01*

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LDC #: 50747C2a **VALIDATION COMPLETENESS WORKSHEET** Date: 9/9/21
SDG #: 95917/1D27023 Stage 2B Page: 1 of 1
Laboratory: APPL, Inc./Weck Laboratories, Inc. Reviewer:
2nd Reviewer:

METHOD: GC/MS Semivolatiles (EPA Method 525.2)

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.	Sample receipt/Technical holding times	A / SW	
II.	GC/MS Instrument performance check	A	
III.	Initial calibration/ICV	A / SW	%RSD ≤ 30, r² ICV ≤ 30
IV.	Continuing calibration pending	SW	CCV ≤ 30/50
V.	Laboratory Blanks	A	
VI.	Field blanks	N	
VII.	Surrogate spikes	A	
VIII.	Matrix spike/Matrix spike duplicates	N	CS
IX.	Laboratory control samples	SW	LCS
X.	Field duplicates	N	
XI.	Internal standards	A	
XII.	Target analyte quantitation	N	
XIII.	Target analyte identification	N	
XIV.	System performance	N	
XV.	Overall assessment of data	A	

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; SB=Source blank; OTHER:

	Client ID	Lab ID	Matrix	Date
1	ERH1355 1D27023-01	BA31078	Water	04/21/21
2	ERH1356 1D27023-02	BA31079	Water	04/21/21
3				
4				
5				
6				
7				
8				
9				

Notes:

	WIE0023-BLK1						

VALIDATION FINDINGS WORKSHEET

METHOD: GC/MS SVOA

A. Phenol	CC. Dimethylphthalate	EEE. Bis(2-ethylhexyl)phthalate	GGGG. C30-Hopane	I1. Methyl methanesulfonate
B. Bis (2-chloroethyl) ether	DD. Acenaphthylene	FFF. Di-n-octylphthalate	HHHH. 1-Methylphenanthrene	J1. Ethyl methanesulfonate
C. 2-Chlorophenol	EE. 2,6-Dinitrotoluene	GGG. Benzo(b)fluoranthene	IIII. 1,4-Dioxane	K1. o,o',o"-Triethylphosphorothioate
D. 1,3-Dichlorobenzene	FF. 3-Nitroaniline	HHH. Benzo(k)fluoranthene	JJJJ. Acetophenone	L1. n-Phenylene diamine
E. 1,4-Dichlorobenzene	GG. Acenaphthene	III. Benzo(a)pyrene	KKKK. Atrazine	M1. 1,4-Naphthoquinone
F. 1,2-Dichlorobenzene	HH. 2,4-Dinitrophenol	JJJ. Indeno(1,2,3-cd)pyrene	LLLL. Benzaldehyde	N1. N-Nitro-o-toluidine
G. 2-Methylphenol	II. 4-Nitrophenol	KKK. Dibenz(a,h)anthracene	MMMM. Caprolactam	O1. 1,3,5-Trinitrobenzene
H. 2,2'-Oxybis(1-chloropropane)	JJ. Dibenzofuran	LLL. Benzo(g,h,i)perylene	NNNN. 2,6-Dichlorophenol	P1. Pentachlorobenzene
I. 4-Methylphenol	KK. 2,4-Dinitrotoluene	MMM. Bis(2-Chloroisopropyl)ether	OOOO. 1,2-Diphenylhydrazine	Q1. 4-Aminobiphenyl
J. N-Nitroso-di-n-propylamine	LL. Diethylphthalate	NNN. Aniline	PPPP. 3-Methylphenol	R1. 2-Naphthylamine
K. Hexachloroethane	MM. 4-Chlorophenyl-phenyl ether	OOO. N-Nitrosodimethylamine	QQQQ. 3&4-Methylphenol	S1. Triphenylene
L. Nitrobenzene	NN. Fluorene	PPP. Benzoic Acid	RRRR. 4-Dimethyldibenzothiophene (4MDT)	T1. Octachlorostyrene
M. Isophorone	OO. 4-Nitroaniline	QQQ. Benzyl alcohol	SSSS. 2/3-Dimethyldibenzothiophene (4MDT)	U1. Famphur
N. 2-Nitrophenol	PP. 4,6-Dinitro-2-methylphenol	RRR. Pyridine	TTTT. 1-Methyldibenzothiophene (1MDT)	V1. 1,4-phenylenediamine
O. 2,4-Dimethylphenol	QQ. N-Nitrosodiphenylamine	SSS. Benzidine	UUUU. 2,3,4,6-Tetrachlorophenol	W1. Methapyrilene
P. Bis(2-chloroethoxy)methane	RR. 4-Bromophenyl-phenylether	TTT. 1-Methylnaphthalene	VVVV. 1,2,4,5-Tetrachlorobenzene	X1. Pentachloroethane
Q. 2,4-Dichlorophenol	SS. Hexachlorobenzene	UUU.Benzo(b)thiophene	WWWW. 2-Picoline	Y1. 3,3'-Dimethylbenzidine
R. 1,2,4-Trichlorobenzene	TT. Pentachlorophenol	VVV.Benzonaphthothiophene	XXXX. 3-Methylcholanthrene	Z1. o-Toluidine
S. Naphthalene	UU. Phenanthrene	WWW.Benzo(e)pyrene	YYYY. a,a-Dimethylphenethylamine	A2. 1-Naphthylamine
T. 4-Chloroaniline	VV. Anthracene	XXX. 2,6-Dimethylnaphthalene	ZZZZ. Hexachloropropene	B2. 4-Aminobiphenyl
U. Hexachlorobutadiene	WW. Carbazole	YYY. 2,3,5-Trimethylnaphthalene	A1. N-Nitrosodiethylamine	C2. 4-Nitroquinoline-1-oxide
V. 4-Chloro-3-methylphenol	XX. Di-n-butylphthalate	ZZZ. Perylene	B1. N-Nitrosodi-n-butylamine	D2. Hexachloropene
W. 2-Methylnaphthalene	YY. Fluoranthene	AAAA. Dibenzothiophene	C1. N-Nitrosomethylethylamine	E2. Bis (2-chloro-1-methylethyl) ether
X. Hexachlorocyclopentadiene	ZZ. Pyrene	BBBB. Benzo(a)fluoranthene	D1. N-Nitrosomorpholine	F2. Bifenthrin
Y. 2,4,6-Trichlorophenol	AAA. Butylbenzylphthalate	CCCC. Benzo(b)fluorene	E1. N-Nitrosopyrrolidine	G2. Cyfluthrin
Z. 2,4,5-Trichlorophenol	BBB. 3,3'-Dichlorobenzidine	DDDD. cis/trans-Decalin	F1. Phenacetin	H2. Cypermethrin
AA. 2-Chloronaphthalene	CCC. Benzo(a)anthracene	EEEE. 1,1'-Biphenyl	G1. 2-Acetylaminofluorene	I2. Permethrin (cis/trans)
BB. 2-Nitroaniline	DDD. Chrysene	FFFF. Retene	H1. Pronamide	J2. 5-Nitro-o-toluidine

LDC #: 50147C2a

VALIDATION FINDINGS WORKSHEET
Technical Holding Times

Reviewer: F1

All circled dates have exceeded the technical holding times.
(Y) N N/A Were all cooler temperatures within validation criteria?

METHOD : GC/MS Semivolatile (EPA Method 525.2) (h)

Sample ID	Matrix	Preserved	Sampling Date	Extraction date	Analysis date	Total # of Days	Qualifier
All	W		4/21/21	5/3/21	5/7/21	12	J-/UJ/ all ND

TECHNICAL HOLDING TIME CRITERIA

Water: Extracted within 7 days, analyzed within 40 days.
Soil: Extracted within 14 days, analyzed within 40 days.

LDC #: 50747C2a

VALIDATION FINDINGS WORKSHEET
Initial Calibration Verification

Reviewer: FT

METHOD: GC/MS SVOA (EPA Method 525.2)
Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

(Y) N N/A Was an initial calibration verification standard analyzed after each ICAL for each instrument?
Y (N) N/A Were all %D within the validation criteria of ≤30 %D ?

(c)

#	Date	Standard ID	Compound	Finding %D (Limit: ≤30.0%)	Associated Samples	Qualifications
	3/13/21 1208	ICV	EE	40.27	All	J+ det/UJ/A ND

LDC #: 50747C2a

VALIDATION FINDINGS WORKSHEET
Continuing Calibration

Reviewer: FT

METHOD: GC/MS SVOA (EPA Method 525.2)

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

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

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

Y (N) N/A Were all %D and RRFs within the validation criteria of ≤30 %D and ≥0.05 RRF ?

(c)

#	Date	Standard ID	Compound	Finding %D (Limit: <30.0%)	Finding RRF (Limit: ≥0.05)	Associated Samples	Qualifications
0.1	5/6/21	CCV2	Diazinon	43		All	J+ dil /UJ/Δ MD
	2135		Metolachlor	38		↓	↓
			Metribuzin	39			
	5/6/21	CCV4	Endrin	40		All	J- /UJ/Δ MD
	2229		Methoxychlor	38		↓	J+ dil / UJ/Δ
0.5	5/7/21	CCV6- closing	*	53 (≤50)		All	J+ dil /UJ/Δ MD
	0855		EEE	56		↓	↓
			ΔΔΔ	52			
			FFF	64			
0.1	5/7/21	CCV7- closing	Acetochlor	54 (≤50)		All	J+ dil /UJ/Δ MD
	0923		Diazinon	65		↓	↓
			Metolachlor	60			
			Metribuzin	66			
			Prometryn	54			
	* Bis (2-ethylhexyl) Adipate						
		Note: Add text below					
		Although the percent difference was grossly exceeded (≥ 50%) for several analytes, using profeesional judgment, associated results were qualified as estimated instead of "X" since the percent difference were biased high and the associated results were not detected					

LDC #: 50747C2a

VALIDATION FINDINGS WORKSHEET
Laboratory Control Samples (LCS)

Page: 1 of 1
Reviewer: FT

METHOD: GC/MS SVOA (EPA Method 525.2)

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? (1)

#	LCS/LCSD ID	Compound	LCS %R (Limits)	LCSD %R (Limits)	RPD (Limits)	Associated Samples	Qualifications
	WIE0023-LCS	TT	22 (50-120)	( )	( )	All	J-/UJ/P ND
		Captan	1.09 (70-130)	( )	( )	↓	J-/X/P
			( )	( )	( )		
			( )	( )	( )		
	↓	ADP: Pesticides were not spiked in the				All	J/UJ/P and ND
		LCS mix analyzed for this SDG					
		Pesticides + (Hexachloroxydiopentadiene,					
		(Propachlor, + Trifluralin					
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
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			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: Red Hill Bulk Storage Facility, CTO 18F0126

LDC Report Date: September 14, 2021

Parameters: Semivolatiles

Validation Level: Stage 2B & 4

Laboratory: APPL, Inc./Weck Laboratories, Inc.

Sample Delivery Group (SDG): 96222/1E21031

Sample Identification	Laboratory Sample Identification	Matrix	Collection Date
ERH1359	BA32813/1E21031-01	Water	05/19/21
ERH1360**	BA32814/1E21031-02**	Water	05/19/21
ERH1361	BA32815/1E21031-03	Water	05/19/21

**Indicates sample underwent Stage 4 validation

Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with the Work Plan/Scope of Work, Investigation and Remediation of Releases and Groundwater Protection and Evaluation, Red Hill Bulk Fuel Storage Facility, Joint Base Pearl Harbor-Hickam, O'ahu, Hawai'i (Revision 02, January 2017), the Sampling and Analysis Plan, Investigation and Remediation of Releases and Groundwater Protection and Evaluation, Red Hill Bulk Fuel Storage Facility, Joint Base Pearl Harbor-Hickam, O'ahu, Hawai'i (Revision 01, April 2017), the Sampling and Analysis Plan, Addendum 01, Investigation and Remediation of Releases and Groundwater Protection and Evaluation, Red Hill Bulk Fuel Storage Facility, Joint Base Pearl Harbor-Hickam, O'ahu, Hawai'i (Revision 00, September 2017), the Sampling and Analysis Plan, Addendum 03, Investigation and Remediation of Releases and Groundwater Protection and Evaluation, Red Hill Bulk Fuel Storage Facility, Joint Base Pearl Harbor-Hickam, O'ahu, Hawai'i (Revision 00, June 2018), the U.S. Department of Defense (DoD) Quality Systems Manual (QSM) for Environmental Laboratories, Version 5.3 (2019), the DoD General Validation Guidelines (November 2019), and the U.S. Department of Defense (DoD) Data Validation Guidelines Module 1: Data Validation Procedure for Organic Analysis by GC/MS (May 2020). Where specific guidance was 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 method:

Semivolatile Organic Compounds (SVOCs) by Environmental Protection Agency (EPA) Method 525.2

All sample results were subjected to Stage 2B data validation, which comprises an evaluation of quality control (QC) summary results. Samples appended with a double asterisk on the cover page were subjected to Stage 4 data validation, which is comprised of the QC summary forms as well as the raw data, to confirm sample quantitation and identification.

The following are definitions of the data qualifiers utilized during data validation:

J+ (Estimated, High Bias): The analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated, displaying high bias, due to non-conformances discovered during data validation.

J- (Estimated, Low Bias): The analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated, displaying low bias, due to non-conformances discovered during data validation.

J (Estimated, Bias Indeterminate): The analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation. Bias is indeterminate.

U (Non-detected): The analyte was analyzed for and positively identified by the laboratory; however the analyte should be considered non-detected due to the presence of contaminants detected in the associated blank(s).

UJ (Non-detected estimated): The analyte was not detected and the associated numerical value is approximate.

X (Exclusion of data recommended): The sample results (including non-detects) were affected by serious deficiencies in the ability to analyze the sample and to meet published method and project quality control criteria. The presence or absence of the analyte cannot be substantiated by the data provided. Exclusion of the data is recommended.

NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

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.

Qualification Code Reference

a ICP Serial Dilution %D was not within control limits.

b Presumed contamination from preparation (method blank).

c Calibration %RSD, r, r^2, %D or %R was noncompliant.

d The analysis with this flag should not be used because another more technically sound analysis is available.

e MS/MSD or Duplicate RPD was high.

f Presumed contamination from FB or ER.

g ICP ICS results were unsatisfactory.

h Holding times were exceeded.

i Internal standard performance was unsatisfactory.

k Estimated Maximum Possible Concentration (HRGC/HRMS only)

l LCS/LCSD %R was not within control limits.

m Result exceeded the calibration range.

o Cooler temperature or temperature blank was noncompliant and/or sample custody problems.

p RPD between two columns was high (GC only).

q MS/MSD recovery was not within control limits.

s Surrogate recovery was not within control limits.

t Presumed contamination from trip blank.

v Unusual problems found with the data not defined elsewhere. Description of the problem can be found in the validation report.

w LCS/LCSD RPD was high.

y Chemical recovery was not within control limits (Radiochemistry only).

I. Sample Receipt and Technical Holding Times

All samples were received in good condition and cooler temperatures upon receipt met validation criteria.

All technical holding time requirements were met with the following exceptions:

Sample	Analyte	Total Days From Sample Collection Until Extraction	Required Holding Time (in Days) From Sample Collection Until Extraction	Flag	A or P
All samples in SDG 96222/1E21031	All analytes	13	7	UJ (all non-detects)	P

II. GC/MS Instrument Performance Check

A decafluorotriphenylphosphine (DFTPP) tune was performed at 12 hour intervals.

All ion abundance requirements were met.

III. Initial Calibration and Initial Calibration Verification

An initial calibration was performed as required by the method.

For analytes where average relative response factors (RRFs) were utilized, the percent relative standard deviations (%RSD) were less than or equal to 30.0%.

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

Average relative response factors (RRF) were within validation criteria.

The percent differences (%D) of the initial calibration verification (ICV) standard were less than or equal to 30.0% for all analytes with the following exceptions:

Date	Analyte	%D	Associated Samples	Flag	A or P
03/13/21	2,6-Dinitrotoluene	40.27	All samples in SDG 96222/1E21031	UJ (all non-detects)	A

IV. Continuing Calibration

Continuing calibration was performed at the required frequencies.

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

Date	Analyte	%D	Associated Samples	Flag	A or P
06/09/21 (1555)	Di-n-octylphthalate Terbacil	33 33	All samples in SDG 96222/1E21031	UJ (all non-detects) UJ (all non-detects)	A
06/09/21 (1622)	Metribuzin	36	All samples in SDG 96222/1E21031	UJ (all non-detects)	A

The percent differences (%D) of the ending continuing calibration verifications (CCVs) were less than or equal to 50.0% for all analytes.

All of the continuing calibration relative response factors (RRF) were within validation criteria.

V. Laboratory Blanks

Laboratory blanks were analyzed as required by the method. No contaminants were found in the laboratory blanks.

VI. Field Blanks

No field blanks were identified in this SDG.

VII. Surrogates

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

VIII. 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.

IX. Laboratory Control Samples

Laboratory control samples (LCS) and laboratory control samples duplicates (LCSD) were analyzed as required by the method with the following exceptions:

LCS ID	Analyte	Finding	Associated Samples	Flag	A or P
W1F20002-LCS/LCSD	4,4'-DDD	The laboratory indicated that these analytes were not spiked in the LCS mix analyzed for this SDG.	All samples in SDG 96222/1E21031	UJ (all non-detects)	P
	4,4'-DDE			UJ (all non-detects)	
	4,4'-DDT			UJ (all non-detects)	
	Aldrin			UJ (all non-detects)	
	alpha-BHC			UJ (all non-detects)	
	alpha-Chlordane			UJ (all non-detects)	
	beta-BHC			UJ (all non-detects)	
	delta-BHC			UJ (all non-detects)	
	Dieldrin			UJ (all non-detects)	
	Endosulfan I			UJ (all non-detects)	
	Endosulfan II			UJ (all non-detects)	
	Endosulfan sulfate			UJ (all non-detects)	
	Endrin			UJ (all non-detects)	
	Endrin aldehyde			UJ (all non-detects)	
	Endrin ketone			UJ (all non-detects)	
	gamma-BHC			UJ (all non-detects)	
	gamma-Chlordane			UJ (all non-detects)	
	Heptachlor			UJ (all non-detects)	
	Heptachlor epoxide			UJ (all non-detects)	
	Hexachlorobenzene			UJ (all non-detects)	
	Hexachlorocyclopentadiene			UJ (all non-detects)	
	Methoxychlor			UJ (all non-detects)	
	Propachlor			UJ (all non-detects)	
	Trifluralin			UJ (all non-detects)	

Percent recoveries (%R) were within QC limits. Relative percent differences (RPD) were within QC limits.

X. Field Duplicates

No field duplicates were identified in this SDG.

XI. Internal Standards

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

XII. Target Analyte Quantitation

All target analyte quantitations met validation criteria for samples which underwent Stage 4 validation. Raw data were not reviewed for Stage 2B validation.

XIII. Target Analyte Identification

All target analyte identifications met validation criteria for samples which underwent Stage 4 validation. Raw data were not reviewed for Stage 2B validation.

XIV. System Performance

The system performance was acceptable for samples which underwent Stage 4 validation. Raw data were not reviewed for Stage 2B validation.

XV. Overall Assessment of Data

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

Due to technical holding time, ICV %D, continuing calibration %D, and LCS not spiked, data were qualified as estimated in three samples.

Red Hill Bulk Storage Facility, CTO 18F0126
Semivolatiles - Data Qualification Summary - SDG 96222/1E21031

Sample	Analyte	Flag	A or P	Reason (Code)
ERH1359 ERH1360** ERH1361	All analytes	UJ (all non-detects)	P	Technical holding time (h)
ERH1359 ERH1360** ERH1361	2,6-Dinitrotoluene	UJ (all non-detects)	A	Initial calibration verification (%D) (c)
ERH1359 ERH1360** ERH1361	Di-n-octylphthalate Terbacil Metribuzin	UJ (all non-detects) UJ (all non-detects) UJ (all non-detects)	A	Continuing calibration (%D) (c)
ERH1359 ERH1360** ERH1361	4,4'-DDD 4,4'-DDE 4,4'-DDT Aldrin alpha-BHC alpha-Chlordane beta-BHC delta-BHC Dieldrin Endosulfan I Endosulfan II Endosulfan sulfate Endrin Endrin aldehyde Endrin ketone gamma-BHC gamma-Chlordane Heptachlor Heptachlor epoxide Hexachlorobenzene Hexachlorocyclopentadiene Methoxychlor Propachlor Trifluralin	UJ (all non-detects) UJ (all non-detects)	P	Laboratory control samples (not spiked) (v)

Red Hill Bulk Storage Facility, CTO 18F0126
Semivolatiles - Laboratory Blank Data Qualification Summary - SDG 96222/1E21031

No Sample Data Qualified in this SDG

Red Hill Bulk Storage Facility, CTO 18F0126
Semivolatiles - Field Blank Data Qualification Summary - SDG 96222/1E21031

No Sample Data Qualified in this SDG

WECK LABORATORIES, INC.

Certificate of Analysis

FINAL REPORT

APPL, Inc.
908 N. Temperance Avenue
Clovis, CA 93611

Project Number: 96222

Project Manager: Libby Cheeseborough

Reported:
06/15/2021 14:28

Sample Results

Sample: BA32813, Alias: ERH1359
1E21031-01 (Water)

Sampled: 05/19/21 8:05 by Client

Comments: Pre-Chlorination

Analyte	Result	MRL	Units	Dil	Analyzed	Qualifier
Semivolatile Organic Compounds by GC/MS						
Method: EPA 525.2		**Instr:** GCMS16				
Batch ID: W1F0002 **Preparation:** EPA 525.2/SPE		**Prepared:** 06/01/21 08:28				**Analyst:** rmr
2,4-Dinitrotoluene	ND	2.0	ug/l	1	06/09/21	U-01
2,6-Dinitrotoluene	ND	2.0	ug/l	1	06/09/21	U-01
4,4'-DDD	ND	0.10	ug/l	1	06/09/21	U-01
4,4'-DDE	ND	0.20	ug/l	1	06/09/21	U-01
4,4'-DDT	ND	0.10	ug/l	1	06/09/21	U-01
Acenaphthene	ND	0.50	ug/l	1	06/09/21	U-01
Acenaphthylene	ND	0.50	ug/l	1	06/09/21	U-01
Acetochlor	ND	0.10	ug/l	1	06/09/21	U-01
Alachlor	ND	0.10	ug/l	1	06/09/21	U-01
Aldrin	ND	0.10	ug/l	1	06/09/21	U-01
alpha-BHC	ND	0.10	ug/l	1	06/09/21	U-01
alpha-Chlordane	ND	0.10	ug/l	1	06/09/21	U-01
Anthracene	ND	0.50	ug/l	1	06/09/21	U-01
Atrazine	ND	0.10	ug/l	1	06/09/21	U-01
Benzo (a) anthracene	ND	0.50	ug/l	1	06/09/21	U-01
Benzo (a) pyrene	ND	0.10	ug/l	1	06/09/21	U-01
Benzo (b) fluoranthene	ND	0.50	ug/l	1	06/09/21	U-01
Benzo (g,h,i) perylene	ND	0.50	ug/l	1	06/09/21	U-01
Benzo (k) fluoranthene	ND	0.50	ug/l	1	06/09/21	U-01
beta-BHC	ND	0.20	ug/l	1	06/09/21	U-01
Bis(2-ethylhexyl)adipate	ND	5.0	ug/l	1	06/09/21	U-01
Bis(2-ethylhexyl)phthalate	ND	3.0	ug/l	1	06/09/21	U-01
Bromacil	ND	0.50	ug/l	1	06/09/21	U-01
Butachlor	ND	0.10	ug/l	1	06/09/21	U-01
Butyl benzyl phthalate	ND	2.0	ug/l	1	06/09/21	U-01
Caffeine	ND	0.10	ug/l	1	06/09/21	U-01
Captan	ND	1.0	ug/l	1	06/09/21	U-01
Chlorpropham	ND	0.10	ug/l	1	06/09/21	U-01
Chrysene	ND	0.50	ug/l	1	06/09/21	U-01
Cyanazine	ND	0.10	ug/l	1	06/09/21	U-01
delta-BHC	ND	0.10	ug/l	1	06/09/21	U-01
Diazinon	ND	0.10	ug/l	1	06/09/21	U-01
Dibenzo (a,h) anthracene	ND	0.50	ug/l	1	06/09/21	U-01
Dieldrin	ND	0.20	ug/l	1	06/09/21	U-01

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908 N. Temperance Avenue
Clovis, CA 93611

Project Number: 96222

Project Manager: Libby Cheeseborough

Reported: 06/15/2021 14:28

Sample Results

(Continued)

Sample: BA32813, Alias: ERH1359
1E21031-01 (Water)

Sampled: 05/19/21 8:05 by Client
(Continued)

Comments: Pre-Chlorination

Analyte	Result	MRL	Units	Dil	Analyzed	Qualifier
Semivolatile Organic Compounds by GC/MS (Continued)						
Method: EPA 525.2		**Instr:** GCMS16				
Batch ID: W1F0002 **Preparation:** EPA 525.2/SPE		**Prepared:** 06/01/21 08:28				**Analyst:** rmr
Diethyl phthalate	ND	2.0	ug/l	1	06/09/21	U-01
Dimethoate	ND	0.20	ug/l	1	06/09/21	U-01
Dimethyl phthalate	ND	2.0	ug/l	1	06/09/21	U-01
Di-n-butyl phthalate	ND	2.0	ug/l	1	06/09/21	U-01
Di-n-octyl phthalate	ND	0.50	ug/l	1	06/09/21	U-01
Diphenamid	ND	0.10	ug/l	1	06/09/21	U-01
Disulfoton	ND	0.10	ug/l	1	06/09/21	U-01
Endosulfan I	ND	1.0	ug/l	1	06/09/21	U-01
Endosulfan II	ND	0.20	ug/l	1	06/09/21	U-01
Endosulfan sulfate	ND	0.20	ug/l	1	06/09/21	U-01
Endrin	ND	0.20	ug/l	1	06/09/21	U-01
Endrin aldehyde	ND	0.20	ug/l	1	06/09/21	U-01
Endrin ketone	ND	0.10	ug/l	1	06/09/21	U-01
EPTC	ND	0.10	ug/l	1	06/09/21	U-01
Ethion	ND	0.10	ug/l	1	06/09/21	U-01
Fluoranthene	ND	0.50	ug/l	1	06/09/21	U-01
Fluorene	ND	0.50	ug/l	1	06/09/21	U-01
gamma-BHC (Lindane)	ND	0.10	ug/l	1	06/09/21	U-01
gamma-Chlordane	ND	0.10	ug/l	1	06/09/21	U-01
Heptachlor	ND	0.10	ug/l	1	06/09/21	U-01
Heptachlor epoxide	ND	0.10	ug/l	1	06/09/21	U-01
Hexachlorobenzene	ND	0.10	ug/l	1	06/09/21	U-01
Hexachlorocyclopentadiene	ND	1.0	ug/l	1	06/09/21	U-01
Indeno (1,2,3-cd) pyrene	ND	0.50	ug/l	1	06/09/21	U-01
Methoxychlor	ND	0.20	ug/l	1	06/09/21	U-01
Metolachlor	ND	0.10	ug/l	1	06/09/21	U-01
Metribuzin	ND	0.10	ug/l	1	06/09/21	U-01
Molinate	ND	0.10	ug/l	1	06/09/21	U-01
Naphthalene	ND	0.50	ug/l	1	06/09/21	U-01
Pentachloronitrobenzene (PCNB)	ND	0.10	ug/l	1	06/09/21	U-01
Pentachlorophenol	ND	1.0	ug/l	1	06/09/21	U-01
Phenanthrene	ND	0.50	ug/l	1	06/09/21	U-01
Prometon	ND	0.10	ug/l	1	06/09/21	U-01
Prometryn	ND	0.10	ug/l	1	06/09/21	U-01

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Project Number: 96222

Project Manager: Libby Cheeseborough

Reported:
06/15/2021 14:28

Sample Results

(Continued)

Sample: BA32813, Alias: ERH1359
1E21031-01 (Water)

Sampled: 05/19/21 8:05 by Client
(Continued)

Comments: Pre-Chlorination

Analyte	Result		MRL	Units	Dil	Analyzed	Qualifier
Semivolatile Organic Compounds by GC/MS (Continued)							
Method: EPA 525.2				**Instr:** GCMS16			
Batch ID: W1F0002 **Preparation:** EPA 525.2/SPE				**Prepared:** 06/01/21 08:28			**Analyst:** rmr
Propachlor	ND		0.20	ug/l	1	06/09/21	U-01
Pyrene	ND		0.50	ug/l	1	06/09/21	U-01
Simazine	ND		0.10	ug/l	1	06/09/21	U-01
Terbacil	ND		2.0	ug/l	1	06/09/21	U-01
Thiobencarb	ND		0.10	ug/l	1	06/09/21	U-01
Trifluralin	ND		0.10	ug/l	1	06/09/21	U-01
Trithion	ND		0.10	ug/l	1	06/09/21	U-01
Surrogate(s)							
1,3-Dimethyl-2-nitrobenzene	*102%*	*Conc: 5.00*	*70-130*			*06/09/21*	*U-01*
Perylene-d12	*101%*	*Conc: 4.98*	*50-120*			*06/09/21*	*U-01*
Triphenyl phosphate	*117%*	*Conc: 5.74*	*70-130*			*06/09/21*	*U-01*

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Project Number: 96222

Project Manager: Libby Cheeseborough

Reported: 06/15/2021 14:28

Sample Results

(Continued)

Sample: BA32814, Alias: ERH1360

1E21031-02 (Water)

Sampled: 05/19/21 8:55 by Client

Comments: Pre-Chlorination

Analyte	Result	MRL	Units	Dil	Analyzed	Qualifier
Semivolatile Organic Compounds by GC/MS						
Method: EPA 525.2		**Instr:** GCMS16				
Batch ID: W1F0002 **Preparation:** EPA 525.2/SPE		**Prepared:** 06/01/21 08:28				**Analyst:** rmr
2,4-Dinitrotoluene	ND	2.0	ug/l	1	06/10/21	U-01
2,6-Dinitrotoluene	ND	2.0	ug/l	1	06/10/21	U-01
4,4´-DDD	ND	0.10	ug/l	1	06/10/21	U-01
4,4´-DDE	ND	0.20	ug/l	1	06/10/21	U-01
4,4´-DDT	ND	0.10	ug/l	1	06/10/21	U-01
Acenaphthene	ND	0.50	ug/l	1	06/10/21	U-01
Acenaphthylene	ND	0.50	ug/l	1	06/10/21	U-01
Acetochlor	ND	0.10	ug/l	1	06/10/21	U-01
Alachlor	ND	0.10	ug/l	1	06/10/21	U-01
Aldrin	ND	0.10	ug/l	1	06/10/21	U-01
alpha-BHC	ND	0.10	ug/l	1	06/10/21	U-01
alpha-Chlordane	ND	0.10	ug/l	1	06/10/21	U-01
Anthracene	ND	0.50	ug/l	1	06/10/21	U-01
Atrazine	ND	0.10	ug/l	1	06/10/21	U-01
Benzo (a) anthracene	ND	0.50	ug/l	1	06/10/21	U-01
Benzo (a) pyrene	ND	0.10	ug/l	1	06/10/21	U-01
Benzo (b) fluoranthene	ND	0.50	ug/l	1	06/10/21	U-01
Benzo (g,h,i) perylene	ND	0.50	ug/l	1	06/10/21	U-01
Benzo (k) fluoranthene	ND	0.50	ug/l	1	06/10/21	U-01
beta-BHC	ND	0.20	ug/l	1	06/10/21	U-01
Bis(2-ethylhexyl)adipate	ND	5.0	ug/l	1	06/10/21	U-01
Bis(2-ethylhexyl)phthalate	ND	3.0	ug/l	1	06/10/21	U-01
Bromacil	ND	0.50	ug/l	1	06/10/21	U-01
Butachlor	ND	0.10	ug/l	1	06/10/21	U-01
Butyl benzyl phthalate	ND	2.0	ug/l	1	06/10/21	U-01
Caffeine	ND	0.10	ug/l	1	06/10/21	U-01
Captan	ND	1.0	ug/l	1	06/10/21	U-01
Chlorpropham	ND	0.10	ug/l	1	06/10/21	U-01
Chrysene	ND	0.50	ug/l	1	06/10/21	U-01
Cyanazine	ND	0.10	ug/l	1	06/10/21	U-01
delta-BHC	ND	0.10	ug/l	1	06/10/21	U-01
Diazinon	ND	0.10	ug/l	1	06/10/21	U-01
Dibenzo (a,h) anthracene	ND	0.50	ug/l	1	06/10/21	U-01
Dieldrin	ND	0.20	ug/l	1	06/10/21	U-01

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Project Number: 96222

Project Manager: Libby Cheeseborough

Reported: 06/15/2021 14:28

Sample Results

(Continued)

Sample: BA32814, Alias: ERH1360
1E21031-02 (Water)

Sampled: 05/19/21 8:55 by Client
(Continued)

Comments: Pre-Chlorination

Analyte	Result		MRL	Units	Dil	Analyzed	Qualifier
Semivolatile Organic Compounds by GC/MS (Continued)							
Method: EPA 525.2			**Instr:** GCMS16				
Batch ID: W1F0002	**Preparation:** EPA 525.2/SPE		**Prepared:** 06/01/21 08:28				**Analyst:** rmr
Diethyl phthalate	ND	(J) (h)	2.0	ug/l	1	06/10/21	U-01
Dimethoate	ND		0.20	ug/l	1	06/10/21	U-01
Dimethyl phthalate	ND		2.0	ug/l	1	06/10/21	U-01
Di-n-butyl phthalate	ND		2.0	ug/l	1	06/10/21	U-01
Di-n-octyl phthalate	ND	(c)	0.50	ug/l	1	06/10/21	U-01
Diphenamid	ND		0.10	ug/l	1	06/10/21	U-01
Disulfoton	ND		0.10	ug/l	1	06/10/21	U-01
Endosulfan I	ND	(V)	1.0	ug/l	1	06/10/21	U-01
Endosulfan II	ND		0.20	ug/l	1	06/10/21	U-01
Endosulfan sulfate	ND		0.20	ug/l	1	06/10/21	U-01
Endrin	ND		0.20	ug/l	1	06/10/21	U-01
Endrin aldehyde	ND		0.20	ug/l	1	06/10/21	U-01
Endrin ketone	ND		0.10	ug/l	1	06/10/21	U-01
EPTC	ND		0.10	ug/l	1	06/10/21	U-01
Ethion	ND		0.10	ug/l	1	06/10/21	U-01
Fluoranthene	ND		0.50	ug/l	1	06/10/21	U-01
Fluorene	ND		0.50	ug/l	1	06/10/21	U-01
gamma-BHC (Lindane)	ND	(V)	0.10	ug/l	1	06/10/21	U-01
gamma-Chlordane	ND		0.10	ug/l	1	06/10/21	U-01
Heptachlor	ND		0.10	ug/l	1	06/10/21	U-01
Heptachlor epoxide	ND		0.10	ug/l	1	06/10/21	U-01
Hexachlorobenzene	ND		0.10	ug/l	1	06/10/21	U-01
Hexachlorocyclopentadiene	ND		1.0	ug/l	1	06/10/21	U-01
Indeno (1,2,3-cd) pyrene	ND		0.50	ug/l	1	06/10/21	U-01
Methoxychlor	ND	(V)	0.20	ug/l	1	06/10/21	U-01
Metolachlor	ND		0.10	ug/l	1	06/10/21	U-01
Metribuzin	ND	(C)	0.10	ug/l	1	06/10/21	U-01
Molinate	ND		0.10	ug/l	1	06/10/21	U-01
Naphthalene	ND		0.50	ug/l	1	06/10/21	U-01
Pentachloronitrobenzene (PCNB)	ND		0.10	ug/l	1	06/10/21	U-01
Pentachlorophenol	ND		1.0	ug/l	1	06/10/21	U-01
Phenanthrene	ND		0.50	ug/l	1	06/10/21	U-01
Prometon	ND		0.10	ug/l	1	06/10/21	U-01
Prometryn	ND		0.10	ug/l	1	06/10/21	U-01

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908 N. Temperance Avenue
Clovis, CA 93611

Project Number: 96222

Project Manager: Libby Cheeseborough

Reported:
06/15/2021 14:28

Sample Results

(Continued)

Sample: BA32814, Alias: ERH1360
1E21031-02 (Water)

Sampled: 05/19/21 8:55 by Client
(Continued)

Comments: Pre-Chlorination

Semivolatile Organic Compounds by GC/MS (Continued)

Method: EPA 525.2 **Instr:** GCMS16

Batch ID: W1F0002 **Preparation:** EPA 525.2/SPE **Prepared:** 06/01/21 08:28 **Analyst:** rmr

Analyte	Result	MRL	Units	Dil	Analyzed	Qualifier
Propachlor	ND	0.20	ug/l	1	06/10/21	U-01
Pyrene	ND	0.50	ug/l	1	06/10/21	U-01
Simazine	ND	0.10	ug/l	1	06/10/21	U-01
Terbacil	ND	2.0	ug/l	1	06/10/21	U-01
Thiobencarb	ND	0.10	ug/l	1	06/10/21	U-01
Trifluralin	ND	0.10	ug/l	1	06/10/21	U-01
Trithion	ND	0.10	ug/l	1	06/10/21	U-01

Surrogate(s)

1,3-Dimethyl-2-nitrobenzene	*100%*	*Conc: 5.12*	*70-130*	*06/10/21*	*U-01*
Perylene-d12	*99%*	*Conc: 5.11*	*50-120*	*06/10/21*	*U-01*
Triphenyl phosphate	*118%*	*Conc: 6.06*	*70-130*	*06/10/21*	*U-01*

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Project Number: 96222

Project Manager: Libby Cheeseborough

Reported: 06/15/2021 14:28

Sample Results

(Continued)

Sample: BA32815, Alias: ERH1361

1E21031-03 (Water)

Sampled: 05/19/21 9:10 by Client

Comments: Field Blank

Semivolatile Organic Compounds by GC/MS

Method: EPA 525.2 **Instr:** GCMS16

Batch ID: W1F0002 **Preparation:** EPA 525.2/SPE **Prepared:** 06/01/21 08:28 **Analyst:** rmr

Analyte	Result	MRL	Units	Dil	Analyzed	Qualifier
2,4-Dinitrotoluene	ND	2.0	ug/l	1	06/10/21	U-01
2,6-Dinitrotoluene	ND	2.0	ug/l	1	06/10/21	U-01
4,4'-DDD	ND	0.10	ug/l	1	06/10/21	U-01
4,4'-DDE	ND	0.20	ug/l	1	06/10/21	U-01
4,4'-DDT	ND	0.10	ug/l	1	06/10/21	U-01
Acenaphthene	ND	0.50	ug/l	1	06/10/21	U-01
Acenaphthylene	ND	0.50	ug/l	1	06/10/21	U-01
Acetochlor	ND	0.10	ug/l	1	06/10/21	U-01
Alachlor	ND	0.10	ug/l	1	06/10/21	U-01
Aldrin	ND	0.10	ug/l	1	06/10/21	U-01
alpha-BHC	ND	0.10	ug/l	1	06/10/21	U-01
alpha-Chlordane	ND	0.10	ug/l	1	06/10/21	U-01
Anthracene	ND	0.50	ug/l	1	06/10/21	U-01
Atrazine	ND	0.10	ug/l	1	06/10/21	U-01
Benzo (a) anthracene	ND	0.50	ug/l	1	06/10/21	U-01
Benzo (a) pyrene	ND	0.10	ug/l	1	06/10/21	U-01
Benzo (b) fluoranthene	ND	0.50	ug/l	1	06/10/21	U-01
Benzo (g,h,i) perylene	ND	0.50	ug/l	1	06/10/21	U-01
Benzo (k) fluoranthene	ND	0.50	ug/l	1	06/10/21	U-01
beta-BHC	ND	0.20	ug/l	1	06/10/21	U-01
Bis(2-ethylhexyl)adipate	ND	5.0	ug/l	1	06/10/21	U-01
Bis(2-ethylhexyl)phthalate	ND	3.0	ug/l	1	06/10/21	U-01
Bromacil	ND	0.50	ug/l	1	06/10/21	U-01
Butachlor	ND	0.10	ug/l	1	06/10/21	U-01
Butyl benzyl phthalate	ND	2.0	ug/l	1	06/10/21	U-01
Caffeine	ND	0.10	ug/l	1	06/10/21	U-01
Captan	ND	1.0	ug/l	1	06/10/21	U-01
Chlorpropham	ND	0.10	ug/l	1	06/10/21	U-01
Chrysene	ND	0.50	ug/l	1	06/10/21	U-01
Cyanazine	ND	0.10	ug/l	1	06/10/21	U-01
delta-BHC	ND	0.10	ug/l	1	06/10/21	U-01
Diazinon	ND	0.10	ug/l	1	06/10/21	U-01
Dibenzo (a,h) anthracene	ND	0.50	ug/l	1	06/10/21	U-01
Dieldrin	ND	0.20	ug/l	1	06/10/21	U-01

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APPL, Inc.
908 N. Temperance Avenue
Clovis, CA 93611

Project Number: 96222

Project Manager: Libby Cheeseborough

Reported: 06/15/2021 14:28

Sample Results

(Continued)

Sample: BA32815, Alias: ERH1361
1E21031-03 (Water)

Sampled: 05/19/21 9:10 by Client
(Continued)

Comments: Field Blank

Semivolatile Organic Compounds by GC/MS (Continued)

Method: EPA 525.2 **Instr:** GCMS16

Batch ID: W1F0002 **Preparation:** EPA 525.2/SPE **Prepared:** 06/01/21 08:28 **Analyst:** rmr

Analyte	Result	MRL	Units	Dil	Analyzed	Qualifier
Diethyl phthalate	ND	2.0	ug/l	1	06/10/21	U-01
Dimethoate	ND	0.20	ug/l	1	06/10/21	U-01
Dimethyl phthalate	ND	2.0	ug/l	1	06/10/21	U-01
Di-n-butyl phthalate	ND	2.0	ug/l	1	06/10/21	U-01
Di-n-octyl phthalate	ND	0.50	ug/l	1	06/10/21	U-01
Diphenamid	ND	0.10	ug/l	1	06/10/21	U-01
Disulfoton	ND	0.10	ug/l	1	06/10/21	U-01
Endosulfan I	ND	1.0	ug/l	1	06/10/21	U-01
Endosulfan II	ND	0.20	ug/l	1	06/10/21	U-01
Endosulfan sulfate	ND	0.20	ug/l	1	06/10/21	U-01
Endrin	ND	0.20	ug/l	1	06/10/21	U-01
Endrin aldehyde	ND	0.20	ug/l	1	06/10/21	U-01
Endrin ketone	ND	0.10	ug/l	1	06/10/21	U-01
EPTC	ND	0.10	ug/l	1	06/10/21	U-01
Ethion	ND	0.10	ug/l	1	06/10/21	U-01
Fluoranthene	ND	0.50	ug/l	1	06/10/21	U-01
Fluorene	ND	0.50	ug/l	1	06/10/21	U-01
gamma-BHC (Lindane)	ND	0.10	ug/l	1	06/10/21	U-01
gamma-Chlordane	ND	0.10	ug/l	1	06/10/21	U-01
Heptachlor	ND	0.10	ug/l	1	06/10/21	U-01
Heptachlor epoxide	ND	0.10	ug/l	1	06/10/21	U-01
Hexachlorobenzene	ND	0.10	ug/l	1	06/10/21	U-01
Hexachlorocyclopentadiene	ND	1.0	ug/l	1	06/10/21	U-01
Indeno (1,2,3-cd) pyrene	ND	0.50	ug/l	1	06/10/21	U-01
Methoxychlor	ND	0.20	ug/l	1	06/10/21	U-01
Metolachlor	ND	0.10	ug/l	1	06/10/21	U-01
Metribuzin	ND	0.10	ug/l	1	06/10/21	U-01
Molinate	ND	0.10	ug/l	1	06/10/21	U-01
Naphthalene	ND	0.50	ug/l	1	06/10/21	U-01
Pentachloronitrobenzene (PCNB)	ND	0.10	ug/l	1	06/10/21	U-01
Pentachlorophenol	ND	1.0	ug/l	1	06/10/21	U-01
Phenanthrene	ND	0.50	ug/l	1	06/10/21	U-01
Prometon	ND	0.10	ug/l	1	06/10/21	U-01
Prometryn	ND	0.10	ug/l	1	06/10/21	U-01

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Project Number: 96222

Project Manager: Libby Cheeseborough

Reported:
06/15/2021 14:28

Sample Results

(Continued)

Sample: BA32815, Alias: ERH1361
1E21031-03 (Water)

Sampled: 05/19/21 9:10 by Client
(Continued)

Comments: Field Blank

Analyte	Result		MRL	Units	Dil	Analyzed	Qualifier
Semivolatile Organic Compounds by GC/MS (Continued)							
Method: EPA 525.2				**Instr:** GCMS16			
Batch ID: W1F0002	**Preparation:** EPA 525.2/SPE			**Prepared:** 06/01/21 08:28			**Analyst:** rmr
Propachlor	ND		0.20	ug/l	1	06/10/21	U-01
Pyrene	ND		0.50	ug/l	1	06/10/21	U-01
Simazine	ND		0.10	ug/l	1	06/10/21	U-01
Terbacil	ND		2.0	ug/l	1	06/10/21	U-01
Thiobencarb	ND		0.10	ug/l	1	06/10/21	U-01
Trifluralin	ND		0.10	ug/l	1	06/10/21	U-01
Trithion	ND		0.10	ug/l	1	06/10/21	U-01
Surrogate(s)							
1,3-Dimethyl-2-nitrobenzene	*100%*	*Conc: 4.98*	*70-130*			*06/10/21*	*U-01*
Perylene-d12	*102%*	*Conc: 5.08*	*50-120*			*06/10/21*	*U-01*
Triphenyl phosphate	*113%*	*Conc: 5.60*	*70-130*			*06/10/21*	*U-01*

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LDC #: 50747D2a

VALIDATION COMPLETENESS WORKSHEET

SDG #: 96222/1E21031

Stage 2B/4

Laboratory: APPL, Inc./Weck Laboratories, Inc.

Date: 9/9/21
Page: 1 of 1
Reviewer: KJ
2nd Reviewer: AL

METHOD: GC/MS Semivolatiles (EPA Method 525.2)

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.	Sample receipt/Technical holding times	A / SW	
II.	GC/MS Instrument performance check	A	
III.	Initial calibration/ICV	A / SW	%RSD ≤ 30, r² ICV ≤ 30
IV.	Continuing calibration pending CCV	SW	CCV ≤ 30/50
V.	Laboratory Blanks	A	
VI.	Field blanks	N	
VII.	Surrogate spikes	A	
VIII.	Matrix spike/Matrix spike duplicates	N	cs
IX.	Laboratory control samples	SW	LCS/D
X.	Field duplicates	N	
XI.	Internal standards	A	
XII.	Target analyte quantitation	A	Not reviewed for Stage 2B validation.
XIII.	Target analyte identification	A	Not reviewed for Stage 2B validation.
XIV.	System performance	A	Not reviewed for Stage 2B validation.
XV.	Overall assessment of data	A	

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; SB=Source blank; OTHER:

** Indicates sample underwent Stage 4 validation

	Client ID		Lab ID	Matrix	Date
1	ERH1359	1E21031-01	BA32813	Water	05/19/21
2	ERH1360**	1E21031-02	BA32814**	Water	05/19/21
3	ERH1361	1E21031-03	BA32815	↓	↓
4					
5					
6					
7					
8					
9					

Notes:

	WIF0002-BLK1						

LDC #: 50747P2a

VALIDATION FINDINGS CHECKLIST

Reviewer: FT

Method: Semivolatiles (EPA Method 525.2)

Validation Area	Yes	No	NA	Findings/Comments
I. Technical holding times				
Were all technical holding times met? FT	~~✓~~	✓		
Was cooler temperature criteria met?.	✓			
II. GC/MS Instrument performance check				
Was a tune check performed prior to establishing and /or re-establishing an initial calbration?	✓			
Were the DFTPP performance results reviewed and found to be within the specified criteria?	✓			
IIIa. Initial calibration				
Did the laboratory perform a 5 point calibration prior to sample analysis?	✓			
Was a curve fit used for evaluation? If yes, did the initial calibration meet the curve fit acceptance criteria of > 0.990?	✓			
Were all percent relative standard deviations (%RSD) ≤ 30% ?	✓			
IIIb. Initial Calibration Verification				
Was an initial calibration verification standard analyzed after each ICAL for each instrument?	✓			
Were all percent difference (%D) ≤30%?		✓		
IV. Continuing calibration				
Was a continuing calibration standard analyzed at the beginning of each analysis batch?	✓			
Were all percent differences (%D) of continuing calibration ≤ 30% ?		✓		
V. Laboratory Blanks				
Was a laboratory blank associated with every sample in this SDG?	✓			
Was a laboratory blank analyzed at least once every 12 hours for each matrix and concentration?	✓			
Was there contamination in the laboratory blanks?		✓		
VI. Field blanks				
Were field blanks identified in this SDG?		✓		
Were target compounds detected in the field blanks?			✓	
VII. 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 percent recoveries (%R) was less than 10 percent, was a reanalysis performed to confirm %R?			✓	
VIII. Matrix spike/Matrix spike duplicates				
Were matrix spike (MS) and matrix spike duplicate (MSD) analyzed in this SDG?			✓	

Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?			✓	
IX. Laboratory control samples				
Was an LCS analyzed per extraction batch?	✓			
Were the LCS percent recoveries (%R) and relative percent difference (RPD) within the QC limits?		✓		
X. Field duplicates				
Were field duplicate pairs identified in this SDG?		✓		
Were target compounds detected in the field duplicates?			✓	
XI. Internal standards				
Were internal standard area counts within +/-30% of the area of the most recent continuing calibration standard and +/-50% of the average peak area in the initial calbration? calibration standard?	✓			
Were retention times within ± 30 seconds of the associated calibration standard?	✓			
XII. Target analyte quantitation				
Did the laboratory LOQs/RLs meet the QAPP LOQs/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. Target analyte 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?	✓			
XIV. System performance				
System performance was found to be acceptable.	✓			
XV. Overall assessment of data				
Overall assessment of data was found to be acceptable.	✓			

VALIDATION FINDINGS WORKSHEET

METHOD: GC/MS SVOA

A. Phenol	CC. Dimethylphthalate	EEE. Bis(2-ethylhexyl)phthalate	GGGG. C30-Hopane	I1. Methyl methanesulfonate
B. Bis (2-chloroethyl) ether	DD. Acenaphthylene	FFF. Di-n-octylphthalate	HHHH. 1-Methylphenanthrene	J1. Ethyl methanesulfonate
C. 2-Chlorophenol	EE. 2,6-Dinitrotoluene	GGG. Benzo(b)fluoranthene	IIII. 1,4-Dioxane	K1. o,o',o"-Triethylphosphorothioate
D. 1,3-Dichlorobenzene	FF. 3-Nitroaniline	HHH. Benzo(k)fluoranthene	JJJJ. Acetophenone	L1. n-Phenylene diamine
E. 1,4-Dichlorobenzene	GG. Acenaphthene	III. Benzo(a)pyrene	KKKK. Atrazine	M1. 1,4-Naphthoquinone
F. 1,2-Dichlorobenzene	HH. 2,4-Dinitrophenol	JJJ. Indeno(1,2,3-cd)pyrene	LLLL. Benzaldehyde	N1. N-Nitro-o-toluidine
G. 2-Methylphenol	II. 4-Nitrophenol	KKK. Dibenz(a,h)anthracene	MMMM. Caprolactam	O1. 1,3,5-Trinitrobenzene
H. 2,2'-Oxybis(1-chloropropane)	JJ. Dibenzofuran	LLL. Benzo(g,h,i)perylene	NNNN. 2,6-Dichlorophenol	P1. Pentachlorobenzene
I. 4-Methylphenol	KK. 2,4-Dinitrotoluene	MMM. Bis(2-Chloroisopropyl)ether	OOOO. 1,2-Diphenylhydrazine	Q1. 4-Aminobiphenyl
J. N-Nitroso-di-n-propylamine	LL. Diethylphthalate	NNN. Aniline	PPPP. 3-Methylphenol	R1. 2-Naphthylamine
K. Hexachloroethane	MM. 4-Chlorophenyl-phenyl ether	OOO. N-Nitrosodimethylamine	QQQQ. 3&4-Methylphenol	S1. Triphenylene
L. Nitrobenzene	NN. Fluorene	PPP. Benzoic Acid	RRRR. 4-Dimethyldibenzothiophene (4MDT)	T1. Octachlorostyrene
M. Isophorone	OO. 4-Nitroaniline	QQQ. Benzyl alcohol	SSSS. 2/3-Dimethyldibenzothiophene (4MDT)	U1. Famphur
N. 2-Nitrophenol	PP. 4,6-Dinitro-2-methylphenol	RRR. Pyridine	TTTT. 1-Methyldibenzothiophene (1MDT)	V1. 1,4-phenylenediamine
O. 2,4-Dimethylphenol	QQ. N-Nitrosodiphenylamine	SSS. Benzidine	UUUU.. 2,3,4,6-Tetrachlorophenol	W1. Methapyrilene
P. Bis(2-chloroethoxy)methane	RR. 4-Bromophenyl-phenylether	TTT. 1-Methylnaphthalene	VVVV. 1,2,4,5-Tetrachlorobenzene	X1. Pentachloroethane
Q. 2,4-Dichlorophenol	SS. Hexachlorobenzene	UUU.Benzo(b)thiophene	WWWW.. 2-Picoline	Y1. 3,3'-Dimethylbenzidine
R. 1,2,4-Trichlorobenzene	TT. Pentachlorophenol	VVV.Benzonaphthothiophene	XXXX. 3-Methylcholanthrene	Z1. o-Toluidine
S. Naphthalene	UU. Phenanthrene	WWW.Benzo(e)pyrene	YYYY. a,a-Dimethylphenethylamine	A2. 1-Naphthylamine
T. 4-Chloroaniline	VV. Anthracene	XXX. 2,6-Dimethylnaphthalene	ZZZZ. Hexachloropropene	B2. 4-Aminobiphenyl
U. Hexachlorobutadiene	WW. Carbazole	YYY. 2,3,5-Trimethylnaphthalene	A1. N-Nitrosodiethylamine	C2. 4-Nitroquinoline-1-oxide
V. 4-Chloro-3-methylphenol	XX. Di-n-butylphthalate	ZZZ. Perylene	B1. N-Nitrosodi-n-butylamine	D2. Hexachloropene
W. 2-Methylnaphthalene	YY. Fluoranthene	AAAA. Dibenzothiophene	C1. N-Nitrosomethylethylamine	E2. Bis (2-chloro-1-methylethyl) ether
X. Hexachlorocyclopentadiene	ZZ. Pyrene	BBBB. Benzo(a)fluoranthene	D1. N-Nitrosomorpholine	F2. Bifenthrin
Y. 2,4,6-Trichlorophenol	AAA. Butylbenzylphthalate	CCCC. Benzo(b)fluorene	E1. N-Nitrosopyrrolidine	G2. Cyfluthrin
Z. 2,4,5-Trichlorophenol	BBB. 3,3'-Dichlorobenzidine	DDDD. cis/trans-Decalin	F1. Phenacetin	H2. Cypermethrin
AA. 2-Chloronaphthalene	CCC. Benzo(a)anthracene	EEEE. 1,1'-Biphenyl	G1. 2-Acetylaminofluorene	I2. Permethrin (cis/trans)
BB. 2-Nitroaniline	DDD. Chrysene	FFFF. Retene	H1. Pronamide	J2. 5-Nitro-o-toluidine

LDC #: 50747D2a

VALIDATION FINDINGS WORKSHEET
Technical Holding Times

Reviewer: P

All circled dates have exceeded the technical holding times.
Y N N/A Were all cooler temperatures within validation criteria?

METHOD : GC/MA SVOA EPA 525.2 (M)

Sample ID	Matrix	Preserved	Sampling Date	Extraction date	Analysis date	Total # of Days	Qualifier
All	W	no	5/19/21	6/1/21	6/9/21	13	J-/UJ/P all ND

TECHNICAL HOLDING TIME CRITERIA

Water: Extracted within 7 days, analyzed within 40 days.
Soil: Extracted within 14 days, analyzed within 40 days.

LDC #: 50747O2a

VALIDATION FINDINGS WORKSHEET
Initial Calibration Verification

Page: 1 of 1
Reviewer: FT

METHOD: GC/MS SVOA (EPA Method 525.2)

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

Y N N/A Was an initial calibration verification standard analyzed after each ICAL for each instrument?

Y N N/A Were all %D within the validation criteria of ≤30 %D ?

(c)

#	Date	Standard ID	Compound	Finding %D (Limit: <30.0%)	Associated Samples	Qualifications
	3/13/21 1208	ICV	EE	40.27	All	J+ dū /UJ/A ND

ICVsvoa.wpd

LDC #: 50747D2a

VALIDATION FINDINGS WORKSHEET
Continuing Calibration

Page: 1 of 1
Reviewer: FT

METHOD: GC/MS SVOA (EPA Method 525.2)

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

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

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

Y N N/A Were all %D and RRFs within the validation criteria of ≤30 %D and ≥0.05 RRF ?

(c)

#	Date	Standard ID	Compound	Finding %D (Limit: ≤30.0%)	Finding RRF (Limit: ≥0.05)	Associated Samples	Qualifications
all	6/9/21 1555	ccv 1	FFF	33		all	J+/UJ/A ND
			Terbacil	33		↓	↓
all	6/9/21 1622	ccv 2	Metribuzin	36		all	J+/UJ/A ND

CONCAL.wpd

LDC #: 50747D2a

VALIDATION FINDINGS WORKSHEET
Laboratory Control Samples (LCS)

Page: 1 of 1
Reviewer: FT

METHOD: GC/MS SVOA (EPA Method 525.2)

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? (1)

#	LCS/LCSD ID	Compound	LCS %R (Limits)	LCSD %R (Limits)	RPD (Limits)	Associated Samples	Qualifications
	WIF0002-LCS1D	Pesticides + Hexachlorocyclopentadiene, Propachlor, + Trifluralin were not spiked in the LCS mix analyzed for this SDG			( )	All	J/UJ/P all ND
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		

LDC #: 50747D2a

VALIDATION FINDINGS WORKSHEET
Initial Calibration Calculation Verification

Reviewer: ____FT____

METHOD: GCMS SVOA EPA Method 525.2

The calibration factors (RRFF), average RRFF, and relative standard deviation (%RSD) were recalculated for compounds identified below using the following calculations:

RRF = (Ax)(Cis)/(Ais)(Cx)
average RRF = sum of the RRFs/number of standards
%RSD = 100 * (S/X)

Where:
Ax = Area of compound
Cx = Concentration of compound
S = Standard deviation of the RRFs
X = Mean of the RRFs
Ais = Area of associated internal standard
Cis = Concentration of internal Standard

#	Standard ID	Calibration Date	Compound	Reported 0.5 mg/L	Recalculated 0.5 mg/L	Reported AverageRRF (Initial)	Recalculated Average RRF (Initial)	Reported %RSD	Recalculated %RSD
	ICAL GCMS16	6/2/2021	S (IS acenaphthene)	2.255200	2.2552	2.199206	2.199	8.096651	8.0967
			UU (IS phenanthrene)						
			DDD (IS Chrysene)1.34	1.343700	1.3437	1.364008	1.364	5.681690	5.6817

VALIDATION FINDINGS WORKSHEET
Initial Calibration Calculation Verification

METHOD: GCMS SVOA EPA Method 525.2

The calibration factors (RRFF), average RRFF, and relative standard deviation (%RSD) were recalculated for compounds identified below using the following calculations:

RRF = (Ax)(Cis)/(Ais)(Cx)
average RRF = sum of the RRFs/number of standards
%RSD = 100 * (S/X)

Where:
Ax = Area of compound
Cx = Concentration of compound
S = Standard deviation of the RRFs
X = Mean of the RRFs
Ais = Area of associated internal standard
Cis = Concentration of internal Standard

#	Standard ID	Calibration Date	Compound	Reported 0.5 mg/L	Recalculated 0.5 mg/L	Reported AverageRRF (Initial)	Recalculated Average RRF (Initial)	Reported %RSD	Recalculated %RSD
	ICAL GCMS16	2/2/2021	SS (IS acenaphthene)	0.433100	0.4331	0.436927	0.43693	4.128809	4.1288

LDC #: 50747D2a

VALIDATION FINDINGS WORKSHEET
Initial Calibration Calculation Verification

Reviewer: ____FT____

METHOD: GCMS SVOA EPA Method 525.2

The calibration factors (RRFF), average RRFF, and relative standard deviation (%RSD) were recalculated for compounds identified below using the following calculations:

RRF = (Ax)(Cis)/(Ais)(Cx)
average RRF = sum of the RRFs/number of standards
%RSD = 100 * (S/X)

Where:
Ax = Area of compound
Cx = Concentration of compound
S = Standard deviation of the RRFs
X = Mean of the RRFs
Ais = Area of associated internal standard
Cis = Concentration of internal Standard

#	Standard ID	Calibration Date	Compound	Reported 0.5 mg/L	Recalculated 0.5 mg/L	Reported AverageRRF (Initial)	Recalculated Average RRF (Initial)	Reported %RSD	Recalculated %RSD
	ICAL GCMS16	5/24/2021	alpha BHC (IS acenaphthene)	0.2354	0.2354	0.258724	0.258724	7.723941	7.72394
			delta-BHC (IS phenanthrene)	0.1156	0.1156	0.112666	0.112666	9.620711	9.62071

Method: GCMS SVOA 525.2

Calibration Date	System	Compound	Standard	(Y) Response	weighted (X) Concentration
6/2/2021	GCMS-16	UU (IS phenanthrene)	1	0.0124	0.01
			2	0.024466	0.02
			3	0.11243	0.1
			4	0.23502	0.2
			5	0.46852	0.4
			6	1.064	1
			7	2.0662	2

Regression Output		*Reported*
Constant	*0.020055*	*0.003575*
Std Err of Y Est		
R Squared	*0.999272*	*0.997909*
Degrees of Freedom		
X Coefficient(s)	*1.030201*	*1.061141*
Std Err of Coef.		
Correlation Coefficient	*0.999636*	
Coefficient of Determination (r^2)	*0.999272*	*0.997909*

Method: GCMS SVOA 525.2

Calibration Date	System	Compound	Standard	(Y) Response	weighted (X) Concentration
3/12/2021	GCMS-16	EE (IS acenaphthene)	1	0.00936	0.1
			2	0.02218	0.2
			3	0.05208	0.4
			4	0.13624	0.8
			5	0.3296	1.6
			7	0.4156	2

Regression Output		*Reported*
Constant	*-0.025315*	*-0.016898*
Std Err of Y Est		
R Squared	*0.996648*	*0.991022*
Degrees of Freedom		
X Coefficient(s)	*0.219010*	*0.209107*
Std Err of Coef.		
Correlation Coefficient	*0.998323*	
Coefficient of Determination (r^2)	*0.996648*	*0.991022*

LDC #: 50747D2a

VALIDATION FINDINGS WORKSHEET
Continuing Calibration Results Verification

Reviewer: FT

METHOD: GC/MS SVOA (EPA Method 525.2)
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 (Internal Standard)	(Amount) Average RRF (Initial)	Reported RRF (CC) (Amt)	Recalculated RRF (CC) (Amt)	Reported %R	Recalculated %R
1	CCV1 6/9/21 1555	6/9/21	S (1st IS)	0.500	0.511	0.511	102	102
			UU (2nd IS)	↓	0.539	0.539	108	108
			DDD (3rd IS)	↓	0.526	0.526	105	105
			(4th IS)					
			(5th IS)					
			(6th IS)					
2	CCV3 1649	6/9/21	SS (1st IS)	0.04	0.0354	0.0354	88	88
			(2nd IS)					
			(3rd IS)					
			(4th IS)					
			(5th IS)					
			(6th IS)					
3	CCV4 1716	6/9/21	Alpha BHC (1st IS)	0.1	0.102	0.102	102	102
			Delta BHC (2nd IS)	0.1	0.0873	0.0873	87	87
			(3rd IS)					
			(4th IS)					
			(5th IS)					
	CCV5 1743	6/9/21	EE (6th IS)	1.0	1.05	1.05	105	105

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 #: 50747D2a

VALIDATION FINDINGS WORKSHEET
Surrogate Results Verification

Reviewer: FT

METHOD: GC/MS SVOA (EPA Method 525.2)

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

% Recovery: SF/SS * 100

Where: SF = Surrogate Found
SS = Surrogate Spiked

Sample ID: #2

	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
1,3-Dimethyl-2-nitrobenzene	5.0	4.98-5.0	100	100	0
Perylene-d12	5.0	4.967	99	99	0
Triphenyl Phosphate	5.0	~~6.1532~~ FT 5.8920	118	118	0

Sample ID:

	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference

Sample ID:

	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference

LDC #: 50747D2a

VALIDATION FINDINGS WORKSHEET

Laboratory Control Sample/Laboratory Control Sample Duplicates Results Verification

Reviewer: FT

METHOD: GC/MS SVOA (EPA Method 525.2)

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

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

RPD = I LCSC - LCSDC I * 2/(LCSC + LCSDC) LCSC = Laboratory control sample concentration LCSDC = Laboratory control sample duplicate concentration

LCS/LCSD samples: WIF6002 - LCS/D

Compound	Spike Added (ng/L)		Spike Concentration (ng/L)		LCS Percent Recovery		LCSD Percent Recovery		LCS/LCSD RPD	
	LCS	LCSD	LCS	LCSD	Reported	Recalc	Reported	Recalc	Reported	Recalculated
GG	5.0	5.0	4.84	4.89	97	97	98	98	1	1
111	5.0	↓	5.53	5.48	111	111	110	110	0.9	0.9
TT	5.0	↓	5.31	5.53	106	106	111	111	4	4
ZZ	5.0	↓	5.24	5.21	105	105	104	104	0.6	0.6
Trithion	5.0	↓	5.63	5.76	113	113	115	115	2	2

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

LDC #: 50147D2a

VALIDATION FINDINGS WORKSHEET
Sample Calculation Verification

Reviewer: FT

METHOD: GC/MS SVOA (EPA Method 525.2)

(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?

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

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. WIF0002 LCS : S

Conc. = $\frac{3007598}{1437181}$ (S) = 2.19926

= 4.7578 mg/L

#	Sample ID	Compound	Reported Concentration (mg/L)	Calculated Concentration (mg/L)	Qualification
	LCS	S	4.7579	4.7578	

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: Red Hill Bulk Storage Facility, CTO 18F0126

LDC Report Date: September 14, 2021

Parameters: Semivolatiles

Validation Level: Stage 2B

Laboratory: APPL, Inc./Weck Laboratories, Inc.

Sample Delivery Group (SDG): 96681/1F29037

Sample Identification	Laboratory Sample Identification	Matrix	Collection Date
ERH1434	BA35287/1F29037-01	Water	06/24/21
ERH1435	BA35288/1F29037-02	Water	06/24/21
ERH1436	BA35289/1F29037-03	Water	06/24/21

Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with the Work Plan/Scope of Work, Investigation and Remediation of Releases and Groundwater Protection and Evaluation, Red Hill Bulk Fuel Storage Facility, Joint Base Pearl Harbor-Hickam, O'ahu, Hawai'i (Revision 02, January 2017), the Sampling and Analysis Plan, Investigation and Remediation of Releases and Groundwater Protection and Evaluation, Red Hill Bulk Fuel Storage Facility, Joint Base Pearl Harbor-Hickam, O'ahu, Hawai'i (Revision 01, April 2017), the Sampling and Analysis Plan, Addendum 01, Investigation and Remediation of Releases and Groundwater Protection and Evaluation, Red Hill Bulk Fuel Storage Facility, Joint Base Pearl Harbor-Hickam, O'ahu, Hawai'i (Revision 00, September 2017), the Sampling and Analysis Plan, Addendum 03, Investigation and Remediation of Releases and Groundwater Protection and Evaluation, Red Hill Bulk Fuel Storage Facility, Joint Base Pearl Harbor-Hickam, O'ahu, Hawai'i (Revision 00, June 2018), the U.S. Department of Defense (DoD) Quality Systems Manual (QSM) for Environmental Laboratories, Version 5.3 (2019), the DoD General Validation Guidelines (November 2019), and the U.S. Department of Defense (DoD) Data Validation Guidelines Module 1: Data Validation Procedure for Organic Analysis by GC/MS (May 2020). Where specific guidance was 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 method:

Semivolatile Organic Compounds (SVOCs) by Environmental Protection Agency (EPA) Method 525.2

All sample results were subjected to Stage 2B data validation, which comprises an evaluation of quality control (QC) summary results.

The following are definitions of the data qualifiers utilized during data validation:

J+ (Estimated, High Bias): The analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated, displaying high bias, due to non-conformances discovered during data validation.

J- (Estimated, Low Bias): The analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated, displaying low bias, due to non-conformances discovered during data validation.

J (Estimated, Bias Indeterminate): The analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation. Bias is indeterminate.

U (Non-detected): The analyte was analyzed for and positively identified by the laboratory; however the analyte should be considered non-detected due to the presence of contaminants detected in the associated blank(s).

UJ (Non-detected estimated): The analyte was not detected and the associated numerical value is approximate.

X (Exclusion of data recommended): The sample results (including non-detects) were affected by serious deficiencies in the ability to analyze the sample and to meet published method and project quality control criteria. The presence or absence of the analyte cannot be substantiated by the data provided. Exclusion of the data is recommended.

NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

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.

Qualification Code Reference

a ICP Serial Dilution %D was not within control limits.

b Presumed contamination from preparation (method blank).

c Calibration %RSD, r, r^2, %D or %R was noncompliant.

d The analysis with this flag should not be used because another more technically sound analysis is available.

e MS/MSD or Duplicate RPD was high.

f Presumed contamination from FB or ER.

g ICP ICS results were unsatisfactory.

h Holding times were exceeded.

i Internal standard performance was unsatisfactory.

k Estimated Maximum Possible Concentration (HRGC/HRMS only)

l LCS/LCSD %R was not within control limits.

m Result exceeded the calibration range.

o Cooler temperature or temperature blank was noncompliant and/or sample custody problems.

p RPD between two columns was high (GC only).

q MS/MSD recovery was not within control limits.

s Surrogate recovery was not within control limits.

t Presumed contamination from trip blank.

v Unusual problems found with the data not defined elsewhere. Description of the problem can be found in the validation report.

w LCS/LCSD RPD was high.

y Chemical recovery was not within control limits (Radiochemistry only).

I. Sample Receipt and Technical Holding Times

All samples were received in good condition and cooler temperatures upon receipt met validation criteria.

All technical holding time requirements were met.

II. GC/MS Instrument Performance Check

A decafluorotriphenylphosphine (DFTPP) tune was performed at 12 hour intervals.

All ion abundance requirements were met.

III. Initial Calibration and Initial Calibration Verification

An initial calibration was performed as required by the method.

For compounds where average relative response factors (RRFs) were utilized, the percent relative standard deviations (%RSD) were less than or equal to 30.0%.

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 analytes were within validation criteria.

The percent differences (%D) of the initial calibration verification (ICV) standard were less than or equal to 30.0% for all analytes with the following exceptions:

Date	Analyte	%D	Associated Samples	Flag	A or P
03/13/21	2,6-Dinitrotoluene	40.27	All samples in SDG 96681/1F29037	UJ (all non-detects)	-

IV. Continuing Calibration

Continuing calibration was performed at the required frequencies.

The percent differences (%D) were less than or equal to 30.0% for all analytes with the following exceptions:

Date	Analyte	%D	Associated Samples	Flag	A or P
07/14/21 (2050)	Butachlor	35	All samples in SDG 96681/1F29037	UJ (all non-detects)	A
07/14/21 (2117)	Trifluralin	88	All samples in SDG 96681/1F29037	UJ (all non-detects)	A
07/14/21 (2144)	Aldrin	47	All samples in SDG 96681/1F29037	UJ (all non-detects)	A

The percent differences (%D) of the ending continuing calibration verifications (CCVs) were less than or equal to 50.0% for all analytes with the following exceptions:

Date	Analyte	%D	Associated Samples	Flag	A or P
07/15/21 (1053)	Trifluralin	86	All samples in SDG 96681/1F29037	UJ (all non-detects)	A

Although the percent difference was grossly exceeded (>50%) for several analytes, using professional judgment, associated results were qualified as estimated instead of "X", since the percent differences were biased high and the associated results were not detected.

All of the continuing calibration relative response factors (RRF) were within validation criteria.

V. Laboratory Blanks

Laboratory blanks were analyzed as required by the method. No contaminants were found in the laboratory blanks.

VI. Field Blanks

No field blanks were identified in this SDG.

VII. Surrogates

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

VIII. 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.

IX. Laboratory Control Samples

Laboratory control samples (LCS) and laboratory control samples duplicates (LCSD) were analyzed as required by the method with the following exceptions:

LCS ID	Analyte	Finding	Flag	A or P
WIF1708-LCS/LCSD (All samples in SDG 96681/1F29037)	4,4'-DDD 4,4'-DDE 4,4'-DDT Aldrin alpha-BHC alpha-Chlordane beta-BHC delta-BHC Dieldrin Endosulfan I Endosulfan II Endosulfan sulfate Endrin Endrin aldehyde Endrin ketone gamma-BHC gamma-Chlordane Heptachlor Heptachlor epoxide Hexachlorobenzene Hexachlorocyclopentadiene Methoxychlor Propachlor Trifluralin	The laboratory indicated that these analytes were not spiked in the LCS mix analyzed for this SDG.	UJ (all non-detects) UJ (all non-detects)	P

Percent recoveries (%R) were within QC limits with the following exceptions:

LCS ID (Associated Samples)	Analyte	LCS %R (Limits)	LCSD %R (Limits)	Flag	A or P
WIF1708-LCS/LCSD (All samples in SDG 96681/1F29037)	Acetochlor Bis(2-ethylhexyl)adipate Chlorpropham Metribuzin Pentachlorophenol Bis(2-ethylhexyl)phthalate	131 (70-130) 138 (70-130) 132 (70-130) 131 (50-120) 128 (50-120) -	- 168 (70-130) - 130 (50-120) 132 (50-120) 133 (70-130)	NA	-

Relative percent differences (RPD) were within QC limits.

X. Field Duplicates

No field duplicates were identified in this SDG.

XI. Internal Standards

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

XII. Target Analyte Quantitation

Raw data were not reviewed for Stage 2B validation.

XIII. Target Analyte Identification

Raw data were not reviewed for Stage 2B validation.

XIV. System Performance

Raw data were not reviewed for Stage 2B validation.

XV. Overall Assessment of Data

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

Due to ICV and continuing calibration %D and LCS not spiked, data were qualified as estimated in three samples.

Red Hill Bulk Storage Facility, CTO 18F0126
Semivolatiles - Data Qualification Summary - SDG 96681/1F29037

Sample	Analyte	Flag	A or P	Reason (Code)
ERH1434 ERH1435 ERH1436	2,6-Dinitrotoluene	UJ (all non-detects)	A	Initial calibration verification (%D) (c)
ERH1434 ERH1435 ERH1436	Butachlor Trifluralin Aldrin	UJ (all non-detects) UJ (all non-detects) UJ (all non-detects)	A	Continuing calibration (%D) (c)
ERH1434 ERH1435 ERH1436	Trifluralin	UJ (all non-detects)	A	Continuing calibration (ending CCV %D) (c)
ERH1434 ERH1435 ERH1436	4,4'-DDD 4,4'-DDE 4,4'-DDT Aldrin alpha-BHC alpha-Chlordane beta-BHC delta-BHC Dieldrin Endosulfan I Endosulfan II Endosulfan sulfate Endrin Endrin aldehyde Endrin ketone gamma-BHC gamma-Chlordane Heptachlor Heptachlor epoxide Hexachlorobenzene Hexachlorocyclopentadiene Methoxychlor Propachlor Trifluralin	UJ (all non-detects) UJ (all non-detects)	P	Laboratory control samples (not spiked) (v)

Red Hill Bulk Storage Facility, CTO 18F0126
Semivolatiles - Laboratory Blank Data Qualification Summary - SDG 96681/1F29037

No Sample Data Qualified in this SDG

Red Hill Bulk Storage Facility, CTO 18F0126
Semivolatiles - Field Blank Data Qualification Summary - SDG 96681/1F29037

No Sample Data Qualified in this SDG

APPL, Inc.
908 N. Temperance Avenue
Clovis, CA 93611

Project Number: 96681

Project Manager: Libby Cheeseborough

Reported:
07/16/2021 15:45

Sample Results

Sample: BA35287, Alias: ERH1434
1F29037-01 (Water)

Sampled: 06/24/21 9:15 by Client

Comments: Pre-Chlorination

Analyte	Result	MRL	Units	Dil	Analyzed	Qualifier
Semivolatile Organic Compounds by GC/MS						
Method: EPA 525.2		**Instr:** GCMS16				
Batch ID: W1F1708 **Preparation:** EPA 525.2/SPE		**Prepared:** 06/30/21 08:20				**Analyst:** rmr
2,4-Dinitrotoluene	ND	2.0	ug/l	1	07/15/21	U-01
2,6-Dinitrotoluene	ND UJ (c)	2.0	ug/l	1	07/15/21	U-01
4,4'-DDD	ND (v)	0.10	ug/l	1	07/15/21	U-01
4,4'-DDE	ND	0.20	ug/l	1	07/15/21	U-01
4,4'-DDT	ND	0.10	ug/l	1	07/15/21	U-01
Acenaphthene	ND	0.50	ug/l	1	07/15/21	U-01
Acenaphthylene	ND	0.50	ug/l	1	07/15/21	U-01
Acetochlor	ND	0.10	ug/l	1	07/15/21	U-01
Alachlor	ND	0.10	ug/l	1	07/15/21	U-01
Aldrin	ND UJ (v) (c)	0.10	ug/l	1	07/15/21	U-01
alpha-BHC	ND	0.10	ug/l	1	07/15/21	U-01
alpha-Chlordane	ND	0.10	ug/l	1	07/15/21	U-01
Anthracene	ND	0.50	ug/l	1	07/15/21	U-01
Atrazine	ND	0.10	ug/l	1	07/15/21	U-01
Benzo (a) anthracene	ND	0.50	ug/l	1	07/15/21	U-01
Benzo (a) pyrene	ND	0.10	ug/l	1	07/15/21	U-01
Benzo (b) fluoranthene	ND	0.50	ug/l	1	07/15/21	U-01
Benzo (g,h,i) perylene	ND	0.50	ug/l	1	07/15/21	U-01
Benzo (k) fluoranthene	ND	0.50	ug/l	1	07/15/21	U-01
beta-BHC	ND UJ (v)	0.20	ug/l	1	07/15/21	U-01
Bis(2-ethylhexyl)adipate	ND	5.0	ug/l	1	07/15/21	U-01
Bis(2-ethylhexyl)phthalate	ND	3.0	ug/l	1	07/15/21	U-01
Bromacil	ND	0.50	ug/l	1	07/15/21	U-01
Butachlor	ND UJ (c)	0.10	ug/l	1	07/15/21	U-01
Butyl benzyl phthalate	ND	2.0	ug/l	1	07/15/21	U-01
Caffeine	ND	0.10	ug/l	1	07/15/21	U-01
Captan	ND	1.0	ug/l	1	07/15/21	U-01
Chlorpropham	ND	0.10	ug/l	1	07/15/21	U-01
Chrysene	ND	0.50	ug/l	1	07/15/21	U-01
Cyanazine	ND	0.10	ug/l	1	07/15/21	U-01
delta-BHC	ND UJ (v)	0.10	ug/l	1	07/15/21	U-01
Diazinon	ND	0.10	ug/l	1	07/15/21	U-01
Dibenzo (a,h) anthracene	ND	0.50	ug/l	1	07/15/21	U-01
Dieldrin	ND UJ (v)	0.20	ug/l	1	07/15/21	U-01

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www.wecklabs.com

APPL, Inc.
908 N. Temperance Avenue
Clovis, CA 93611

Project Number: 96681

Project Manager: Libby Cheeseborough

Reported:
07/16/2021 15:45

Sample Results

(Continued)

Sample: BA35287, Alias: ERH1434
1F29037-01 (Water)

Sampled: 06/24/21 9:15 by Client

(Continued)

Comments: Pre-Chlorination

Analyte	Result	MRL	Units	Dil	Analyzed	Qualifier
Semivolatile Organic Compounds by GC/MS (Continued)						
Method: EPA 525.2		**Instr:** GCMS16				
Batch ID: W1F1708 **Preparation:** EPA 525.2/SPE		**Prepared:** 06/30/21 08:20				**Analyst:** rmr
Diethyl phthalate	ND	2.0	ug/l	1	07/15/21	U-01
Dimethoate	ND	0.20	ug/l	1	07/15/21	U-01
Dimethyl phthalate	ND	2.0	ug/l	1	07/15/21	U-01
Di-n-butyl phthalate	ND	2.0	ug/l	1	07/15/21	U-01
Di-n-octyl phthalate	ND	0.50	ug/l	1	07/15/21	U-01
Diphenamid	ND	0.10	ug/l	1	07/15/21	U-01
Disulfoton	ND	0.10	ug/l	1	07/15/21	U-01
Endosulfan I	ND	1.0	ug/l	1	07/15/21	U-01
Endosulfan II	ND	0.20	ug/l	1	07/15/21	U-01
Endosulfan sulfate	ND	0.20	ug/l	1	07/15/21	U-01
Endrin	ND	0.20	ug/l	1	07/15/21	U-01
Endrin aldehyde	ND	0.20	ug/l	1	07/15/21	U-01
Endrin ketone	ND	0.10	ug/l	1	07/15/21	U-01
EPTC	ND	0.10	ug/l	1	07/15/21	U-01
Ethion	ND	0.10	ug/l	1	07/15/21	U-01
Fluoranthene	ND	0.50	ug/l	1	07/15/21	U-01
Fluorene	ND	0.50	ug/l	1	07/15/21	U-01
gamma-BHC (Lindane)	ND	0.10	ug/l	1	07/15/21	U-01
gamma-Chlordane	ND	0.10	ug/l	1	07/15/21	U-01
Heptachlor	ND	0.10	ug/l	1	07/15/21	U-01
Heptachlor epoxide	ND	0.10	ug/l	1	07/15/21	U-01
Hexachlorobenzene	ND	0.10	ug/l	1	07/15/21	U-01
Hexachlorocyclopentadiene	ND	1.0	ug/l	1	07/15/21	U-01
Indeno (1,2,3-cd) pyrene	ND	0.50	ug/l	1	07/15/21	U-01
Methoxychlor	ND	0.20	ug/l	1	07/15/21	U-01
Metolachlor	ND	0.10	ug/l	1	07/15/21	U-01
Metribuzin	ND	0.10	ug/l	1	07/15/21	U-01
Molinate	ND	0.10	ug/l	1	07/15/21	U-01
Naphthalene	ND	0.50	ug/l	1	07/15/21	U-01
Pentachloronitrobenzene (PCNB)	ND	0.10	ug/l	1	07/15/21	U-01
Pentachlorophenol	ND	1.0	ug/l	1	07/15/21	U-01
Phenanthrene	ND	0.50	ug/l	1	07/15/21	U-01
Prometon	ND	0.10	ug/l	1	07/15/21	U-01
Prometryn	ND	0.10	ug/l	1	07/15/21	U-01

UJ (V)

UJ (V)

UJ (V)

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Project Number: 96681

Project Manager: Libby Cheeseborough

Reported:
07/16/2021 15:45

Sample Results

(Continued)

Sample: BA35287, Alias: ERH1434
1F29037-01 (Water)

Sampled: 06/24/21 9:15 by Client

(Continued)

Comments: Pre-Chlorination

Analyte	Result		MRL	Units	Dil	Analyzed	Qualifier
Semivolatile Organic Compounds by GC/MS (Continued)							
Method: EPA 525.2			**Instr:** GCMS16				
Batch ID: W1F1708 **Preparation:** EPA 525.2/SPE			**Prepared:** 06/30/21 08:20				**Analyst:** rmr
Propachlor	ND	UJ (V)	0.20	ug/l	1	07/15/21	U-01
Pyrene	ND		0.50	ug/l	1	07/15/21	U-01
Simazine	ND		0.10	ug/l	1	07/15/21	U-01
Terbacil	ND		2.0	ug/l	1	07/15/21	U-01
Thiobencarb	ND		0.10	ug/l	1	07/15/21	U-01
Trifluralin	ND	UJ (C) (V)	0.10	ug/l	1	07/15/21	U-01
Trithion	ND		0.10	ug/l	1	07/15/21	U-01
Surrogate(s)							
1,3-Dimethyl-2-nitrobenzene	*104%*	*Conc: 5.11*	*70-130*			*07/15/21*	*U-01*
Perylene-d12	*100%*	*Conc: 4.95*	*50-120*			*07/15/21*	*U-01*
Triphenyl phosphate	*108%*	*Conc: 5.31*	*70-130*			*07/15/21*	*U-01*

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Project Number: 96681

Project Manager: Libby Cheeseborough

Reported: 07/16/2021 15:45

Sample Results

(Continued)

Sample: BA35288, Alias: ERH1435

1F29037-02 (Water)

Sampled: 06/24/21 9:45 by Client

Comments: Pre-Chlorination

Analyte	Result	MRL	Units	Dil	Analyzed	Qualifier
Semivolatile Organic Compounds by GC/MS						
Method: EPA 525.2		**Instr:** GCMS16				
Batch ID: W1F1708 **Preparation:** EPA 525.2/SPE		**Prepared:** 06/30/21 08:20				**Analyst:** rmr
2,4-Dinitrotoluene	ND	2.0	ug/l	1	07/15/21	U-01
2,6-Dinitrotoluene	ND UJ (c)	2.0	ug/l	1	07/15/21	U-01
4,4'-DDD	ND (v)	0.10	ug/l	1	07/15/21	U-01
4,4'-DDE	ND	0.20	ug/l	1	07/15/21	U-01
4,4'-DDT	ND	0.10	ug/l	1	07/15/21	U-01
Acenaphthene	ND	0.50	ug/l	1	07/15/21	U-01
Acenaphthylene	ND	0.50	ug/l	1	07/15/21	U-01
Acetochlor	ND	0.10	ug/l	1	07/15/21	U-01
Alachlor	ND	0.10	ug/l	1	07/15/21	U-01
Aldrin	ND UJ (v)(c)	0.10	ug/l	1	07/15/21	U-01
alpha-BHC	ND	0.10	ug/l	1	07/15/21	U-01
alpha-Chlordane	ND	0.10	ug/l	1	07/15/21	U-01
Anthracene	ND	0.50	ug/l	1	07/15/21	U-01
Atrazine	ND	0.10	ug/l	1	07/15/21	U-01
Benzo (a) anthracene	ND	0.50	ug/l	1	07/15/21	U-01
Benzo (a) pyrene	ND	0.10	ug/l	1	07/15/21	U-01
Benzo (b) fluoranthene	ND	0.50	ug/l	1	07/15/21	U-01
Benzo (g,h,i) perylene	ND	0.50	ug/l	1	07/15/21	U-01
Benzo (k) fluoranthene	ND	0.50	ug/l	1	07/15/21	U-01
beta-BHC	ND UJ (v)	0.20	ug/l	1	07/15/21	U-01
Bis(2-ethylhexyl)adipate	ND	5.0	ug/l	1	07/15/21	U-01
Bis(2-ethylhexyl)phthalate	ND	3.0	ug/l	1	07/15/21	U-01
Bromacil	ND	0.50	ug/l	1	07/15/21	U-01
Butachlor	ND UJ (c)	0.10	ug/l	1	07/15/21	U-01
Butyl benzyl phthalate	ND	2.0	ug/l	1	07/15/21	U-01
Caffeine	ND	0.10	ug/l	1	07/15/21	U-01
Captan	ND	1.0	ug/l	1	07/15/21	U-01
Chlorpropham	ND	0.10	ug/l	1	07/15/21	U-01
Chrysene	ND	0.50	ug/l	1	07/15/21	U-01
Cyanazine	ND	0.10	ug/l	1	07/15/21	U-01
delta-BHC	ND UJ (v)	0.10	ug/l	1	07/15/21	U-01
Diazinon	ND	0.10	ug/l	1	07/15/21	U-01
Dibenzo (a,h) anthracene	ND	0.50	ug/l	1	07/15/21	U-01
Dieldrin	ND UJ (v)	0.20	ug/l	1	07/15/21	U-01

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Project Manager: Libby Cheeseborough

Reported:
07/16/2021 15:45

Sample Results

(Continued)

Sample: BA35288, Alias: ERH1435
1F29037-02 (Water)

Sampled: 06/24/21 9:45 by Client
(Continued)

Comments: Pre-Chlorination

Analyte	Result	MRL	Units	Dil	Analyzed	Qualifier
Semivolatile Organic Compounds by GC/MS (Continued)						
Method: EPA 525.2		**Instr:** GCMS16				
Batch ID: W1F1708 **Preparation:** EPA 525.2/SPE		**Prepared:** 06/30/21 08:20				**Analyst:** rmr
Diethyl phthalate	ND	2.0	ug/l	1	07/15/21	U-01
Dimethoate	ND	0.20	ug/l	1	07/15/21	U-01
Dimethyl phthalate	ND	2.0	ug/l	1	07/15/21	U-01
Di-n-butyl phthalate	ND	2.0	ug/l	1	07/15/21	U-01
Di-n-octyl phthalate	ND	0.50	ug/l	1	07/15/21	U-01
Diphenamid	ND	0.10	ug/l	1	07/15/21	U-01
Disulfoton	ND	0.10	ug/l	1	07/15/21	U-01
Endosulfan I	ND	1.0	ug/l	1	07/15/21	U-01
Endosulfan II	ND	0.20	ug/l	1	07/15/21	U-01
Endosulfan sulfate	ND	0.20	ug/l	1	07/15/21	U-01
Endrin	ND	0.20	ug/l	1	07/15/21	U-01
Endrin aldehyde	ND	0.20	ug/l	1	07/15/21	U-01
Endrin ketone	ND	0.10	ug/l	1	07/15/21	U-01
EPTC	ND	0.10	ug/l	1	07/15/21	U-01
Ethion	ND	0.10	ug/l	1	07/15/21	U-01
Fluoranthene	ND	0.50	ug/l	1	07/15/21	U-01
Fluorene	ND	0.50	ug/l	1	07/15/21	U-01
gamma-BHC (Lindane)	ND	0.10	ug/l	1	07/15/21	U-01
gamma-Chlordane	ND	0.10	ug/l	1	07/15/21	U-01
Heptachlor	ND	0.10	ug/l	1	07/15/21	U-01
Heptachlor epoxide	ND	0.10	ug/l	1	07/15/21	U-01
Hexachlorobenzene	ND	0.10	ug/l	1	07/15/21	U-01
Hexachlorocyclopentadiene	ND	1.0	ug/l	1	07/15/21	U-01
Indeno (1,2,3-cd) pyrene	ND	0.50	ug/l	1	07/15/21	U-01
Methoxychlor	ND	0.20	ug/l	1	07/15/21	U-01
Metolachlor	ND	0.10	ug/l	1	07/15/21	U-01
Metribuzin	ND	0.10	ug/l	1	07/15/21	U-01
Molinate	ND	0.10	ug/l	1	07/15/21	U-01
Naphthalene	ND	0.50	ug/l	1	07/15/21	U-01
Pentachloronitrobenzene (PCNB)	ND	0.10	ug/l	1	07/15/21	U-01
Pentachlorophenol	ND	1.0	ug/l	1	07/15/21	U-01
Phenanthrene	ND	0.50	ug/l	1	07/15/21	U-01
Prometon	ND	0.10	ug/l	1	07/15/21	U-01
Prometryn	ND	0.10	ug/l	1	07/15/21	U-01

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Project Number: 96681

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Reported:
07/16/2021 15:45

Sample Results

(Continued)

Sample: BA35288, Alias: ERH1435
1F29037-02 (Water)

Sampled: 06/24/21 9:45 by Client
(Continued)

Comments: Pre-Chlorination

Analyte	Result		MRL	Units	Dil	Analyzed	Qualifier
Semivolatile Organic Compounds by GC/MS (Continued)							
Method: EPA 525.2			**Instr:** GCMS16				
Batch ID: W1F1708 **Preparation:** EPA 525.2/SPE			**Prepared:** 06/30/21 08:20				**Analyst:** rmr
Propachlor	ND	UJ(V)	0.20	ug/l	1	07/15/21	U-01
Pyrene	ND		0.50	ug/l	1	07/15/21	U-01
Simazine	ND		0.10	ug/l	1	07/15/21	U-01
Terbacil	ND		2.0	ug/l	1	07/15/21	U-01
Thiobencarb	ND		0.10	ug/l	1	07/15/21	U-01
Trifluralin	ND		0.10	ug/l	1	07/15/21	U-01
Trithion	ND	UJ(C)(V)	0.10	ug/l	1	07/15/21	U-01
Surrogate(s)							
1,3-Dimethyl-2-nitrobenzene	*100%*	*Conc: 4.86*	*70-130*			*07/15/21*	*U-01*
Perylene-d12	*100%*	*Conc: 4.88*	*50-120*			*07/15/21*	*U-01*
Triphenyl phosphate	*110%*	*Conc: 5.34*	*70-130*			*07/15/21*	*U-01*

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Project Number: 96681

Project Manager: Libby Cheeseborough

Reported:
07/16/2021 15:45

Sample Results

(Continued)

Sample: BA35289, Alias: ERH1435
1F29037-03 (Water)

Sampled: 06/24/21 9:55 by Client

Comments: Field Blank

Analyte	Result	MRL	Units	Dil	Analyzed	Qualifier
Semivolatile Organic Compounds by GC/MS						
Method: EPA 525.2		**Instr:** GCMS16				
Batch ID: W1F1708 **Preparation:** EPA 525.2/SPE		**Prepared:** 06/30/21 08:20				**Analyst:** rmr
2,4-Dinitrotoluene	ND	2.0	ug/l	1	07/15/21	U-01
2,6-Dinitrotoluene	ND UJ (c)	2.0	ug/l	1	07/15/21	U-01
4,4'-DDD	ND (v)	0.10	ug/l	1	07/15/21	U-01
4,4'-DDE	ND	0.20	ug/l	1	07/15/21	U-01
4,4'-DDT	ND	0.10	ug/l	1	07/15/21	U-01
Acenaphthene	ND	0.50	ug/l	1	07/15/21	U-01
Acenaphthylene	ND	0.50	ug/l	1	07/15/21	U-01
Acetochlor	ND	0.10	ug/l	1	07/15/21	U-01
Alachlor	ND	0.10	ug/l	1	07/15/21	U-01
Aldrin	ND UJ (v) (c)	0.10	ug/l	1	07/15/21	U-01
alpha-BHC	ND	0.10	ug/l	1	07/15/21	U-01
alpha-Chlordane	ND	0.10	ug/l	1	07/15/21	U-01
Anthracene	ND	0.50	ug/l	1	07/15/21	U-01
Atrazine	ND	0.10	ug/l	1	07/15/21	U-01
Benzo (a) anthracene	ND	0.50	ug/l	1	07/15/21	U-01
Benzo (a) pyrene	ND	0.10	ug/l	1	07/15/21	U-01
Benzo (b) fluoranthene	ND	0.50	ug/l	1	07/15/21	U-01
Benzo (g,h,i) perylene	ND	0.50	ug/l	1	07/15/21	U-01
Benzo (k) fluoranthene	ND	0.50	ug/l	1	07/15/21	U-01
beta-BHC	ND UJ (v)	0.20	ug/l	1	07/15/21	U-01
Bis(2-ethylhexyl)adipate	ND	5.0	ug/l	1	07/15/21	U-01
Bis(2-ethylhexyl)phthalate	ND	3.0	ug/l	1	07/15/21	U-01
Bromacil	ND	0.50	ug/l	1	07/15/21	U-01
Butachlor	ND UJ (c)	0.10	ug/l	1	07/15/21	U-01
Butyl benzyl phthalate	ND	2.0	ug/l	1	07/15/21	U-01
Caffeine	ND	0.10	ug/l	1	07/15/21	U-01
Captan	ND	1.0	ug/l	1	07/15/21	U-01
Chlorpropham	ND	0.10	ug/l	1	07/15/21	U-01
Chrysene	ND	0.50	ug/l	1	07/15/21	U-01
Cyanazine	ND	0.10	ug/l	1	07/15/21	U-01
delta-BHC	ND UJ (v)	0.10	ug/l	1	07/15/21	U-01
Diazinon	ND	0.10	ug/l	1	07/15/21	U-01
Dibenzo (a,h) anthracene	ND	0.50	ug/l	1	07/15/21	U-01
Dieldrin	ND UJ (v)	0.20	ug/l	1	07/15/21	U-01

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Project Number: 96681

Project Manager: Libby Cheeseborough

Reported: 07/16/2021 15:45

Sample Results

(Continued)

Sample: BA35289, Alias: ERH1435

1F29037-03 (Water)

Sampled: 06/24/21 9:55 by Client

(Continued)

Comments: Field Blank

Analyte	Result	MRL	Units	Dil	Analyzed	Qualifier
Semivolatile Organic Compounds by GC/MS (Continued)						
Method: EPA 525.2		**Instr:** GCMS16				
Batch ID: W1F1708 **Preparation:** EPA 525.2/SPE		**Prepared:** 06/30/21 08:20				**Analyst:** rmr
Diethyl phthalate	ND	2.0	ug/l	1	07/15/21	U-01
Dimethoate	ND	0.20	ug/l	1	07/15/21	U-01
Dimethyl phthalate	ND	2.0	ug/l	1	07/15/21	U-01
Di-n-butyl phthalate	ND	2.0	ug/l	1	07/15/21	U-01
Di-n-octyl phthalate	ND	0.50	ug/l	1	07/15/21	U-01
Diphenamid	ND	0.10	ug/l	1	07/15/21	U-01
Disulfoton	ND	0.10	ug/l	1	07/15/21	U-01
Endosulfan I	ND	1.0	ug/l	1	07/15/21	U-01
Endosulfan II	ND	0.20	ug/l	1	07/15/21	U-01
Endosulfan sulfate	ND	0.20	ug/l	1	07/15/21	U-01
Endrin	ND	0.20	ug/l	1	07/15/21	U-01
Endrin aldehyde	ND	0.20	ug/l	1	07/15/21	U-01
Endrin ketone	ND	0.10	ug/l	1	07/15/21	U-01
EPTC	ND	0.10	ug/l	1	07/15/21	U-01
Ethion	ND	0.10	ug/l	1	07/15/21	U-01
Fluoranthene	ND	0.50	ug/l	1	07/15/21	U-01
Fluorene	ND	0.50	ug/l	1	07/15/21	U-01
gamma-BHC (Lindane)	ND	0.10	ug/l	1	07/15/21	U-01
gamma-Chlordane	ND	0.10	ug/l	1	07/15/21	U-01
Heptachlor	ND	0.10	ug/l	1	07/15/21	U-01
Heptachlor epoxide	ND	0.10	ug/l	1	07/15/21	U-01
Hexachlorobenzene	ND	0.10	ug/l	1	07/15/21	U-01
Hexachlorocyclopentadiene	ND	1.0	ug/l	1	07/15/21	U-01
Indeno (1,2,3-cd) pyrene	ND	0.50	ug/l	1	07/15/21	U-01
Methoxychlor	ND	0.20	ug/l	1	07/15/21	U-01
Metolachlor	ND	0.10	ug/l	1	07/15/21	U-01
Metribuzin	ND	0.10	ug/l	1	07/15/21	U-01
Molinate	ND	0.10	ug/l	1	07/15/21	U-01
Naphthalene	ND	0.50	ug/l	1	07/15/21	U-01
Pentachloronitrobenzene (PCNB)	ND	0.10	ug/l	1	07/15/21	U-01
Pentachlorophenol	ND	1.0	ug/l	1	07/15/21	U-01
Phenanthrene	ND	0.50	ug/l	1	07/15/21	U-01
Prometon	ND	0.10	ug/l	1	07/15/21	U-01
Prometryn	ND	0.10	ug/l	1	07/15/21	U-01

UJ (V)

UJ (V)

UJ (V)

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Project Number: 96681

Project Manager: Libby Cheeseborough

Reported:
07/16/2021 15:45

Sample Results

(Continued)

Sample: 8A35289, Alias: ERH1435
1F29037-03 (Water)

Sampled: 06/24/21 9:55 by Client
(Continued)

Comments: Field Blank

Analyte	Result		MRL	Units	Dil	Analyzed	Qualifier
Semivolatile Organic Compounds by GC/MS (Continued)							
Method: EPA 525.2			**Instr:** GCMS16				
Batch ID: W1F1708 **Preparation:** EPA 525.2/SPE			**Prepared:** 06/30/21 08:20				**Analyst:** rmr
Propachlor	ND	UJ (V)	0.20	ug/l	1	07/15/21	U-01
Pyrene	ND		0.50	ug/l	1	07/15/21	U-01
Simazine	ND		0.10	ug/l	1	07/15/21	U-01
Terbacil	ND		2.0	ug/l	1	07/15/21	U-01
Thiobencarb	ND		0.10	ug/l	1	07/15/21	U-01
Trifluralin	ND		0.10	ug/l	1	07/15/21	U-01
Trithion	ND	UJ (C) (V)	0.10	ug/l	1	07/15/21	U-01
Surrogates:							
1,3-Dimethyl-2-nitrobenzene	*104%*	*Conc: 5.07*	*70-130*			*07/15/21*	*U-01*
Perylene-d12	*102%*	*Conc: 4.98*	*50-120*			*07/15/21*	*U-01*
Triphenyl phosphate	*107%*	*Conc: 5.24*	*70-130*			*07/15/21*	*U-01*

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LDC #: 50747E2a

SDG #: 95681/1F29037

Laboratory: APPL, Inc./Weck Laboratories, Inc.

VALIDATION COMPLETENESS WORKSHEET

Stage 2B

Date: 8/16/21

Page: 1 of 1

Reviewer:

2nd Reviewer:

METHOD: GC/MS Semivolatiles (EPA Method 525.2)

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.	Sample receipt/Technical holding times	A/Δ	
II.	GC/MS Instrument performance check	Δ	
III.	Initial calibration/ICV	A/A	%RSD ≤30, ✓ ICV ≤30
IV.	Continuing calibration	SW	CCV ≤30 /50
V.	Laboratory Blanks	Δ	
VI.	Field blanks	N	
VII.	Surrogate spikes	A	
VIII.	Matrix spike/Matrix spike duplicates	N	
IX.	Laboratory control samples	SW	LCS ID
X.	Field duplicates	N	
XI.	Internal standards		
XII.	Target analyte quantitation	N	
XIII.	Target analyte identification	N	
XIV.	System performance	N	
XV.	Overall assessment of data	A	

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; SB=Source blank; OTHER:

	Client ID		Lab ID	Matrix	Date
1	ERH1434	1F29037-01	BA35287	Water	06/24/21
2	ERH1435	-02	BA35288	Water	06/24/21
3	ERH1436	-03	BA35289	Water	06/24/21
4					
5					
6					
7					
8					
9					

Notes:

	WIF1708-BLK1						

VALIDATION FINDINGS WORKSHEET

METHOD: GC/MS SVOA

A. Phenol	CC. Dimethylphthalate	EEE. Bis(2-ethylhexyl)phthalate	GGGG. C30-Hopane	I1. Methyl methanesulfonate
B. Bis (2-chloroethyl) ether	DD. Acenaphthylene	FFF. Di-n-octylphthalate	HHHH. 1-Methylphenanthrene	J1. Ethyl methanesulfonate
C. 2-Chlorophenol	EE. 2,6-Dinitrotoluene	GGG. Benzo(b)fluoranthene	IIII. 1,4-Dioxane	K1. o,o',o"-Triethylphosphorothioate
D. 1,3-Dichlorobenzene	FF. 3-Nitroaniline	HHH. Benzo(k)fluoranthene	JJJJ. Acetophenone	L1. n-Phenylene diamine
E. 1,4-Dichlorobenzene	GG. Acenaphthene	III. Benzo(a)pyrene	KKKK. Atrazine	M1. 1,4-Naphthoquinone
F. 1,2-Dichlorobenzene	HH. 2,4-Dinitrophenol	JJJ. Indeno(1,2,3-cd)pyrene	LLLL. Benzaldehyde	N1. N-Nitro-o-toluidine
G. 2-Methylphenol	II. 4-Nitrophenol	KKK. Dibenz(a,h)anthracene	MMMM. Caprolactam	O1. 1,3,5-Trinitrobenzene
H. 2,2'-Oxybis(1-chloropropane)	JJ. Dibenzofuran	LLL. Benzo(g,h,i)perylene	NNNN. 2,6-Dichlorophenol	P1. Pentachlorobenzene
I. 4-Methylphenol	KK. 2,4-Dinitrotoluene	MMM. Bis(2-Chloroisopropyl)ether	OOOO. 1,2-Diphenylhydrazine	Q1. 4-Aminobiphenyl
J. N-Nitroso-di-n-propylamine	LL. Diethylphthalate	NNN. Aniline	PPPP. 3-Methylphenol	R1. 2-Naphthylamine
K. Hexachloroethane	MM. 4-Chlorophenyl-phenyl ether	OOO. N-Nitrosodimethylamine	QQQQ. 3&4-Methylphenol	S1. Triphenylene
L. Nitrobenzene	NN. Fluorene	PPP. Benzoic Acid	RRRR. 4-Dimethyldibenzothiophene (4MDT)	T1. Octachlorostyrene
M. Isophorone	OO. 4-Nitroaniline	QQQ. Benzyl alcohol	SSSS. 2/3-Dimethyldibenzothiophene (4MDT)	U1. Famphur
N. 2-Nitrophenol	PP. 4,6-Dinitro-2-methylphenol	RRR. Pyridine	TTTT. 1-Methyldibenzothiophene (1MDT)	V1. 1,4-phenylenediamine
O. 2,4-Dimethylphenol	QQ. N-Nitrosodiphenylamine	SSS. Benzidine	UUUU.. 2,3,4,6-Tetrachlorophenol	W1. Methapyrilene
P. Bis(2-chloroethoxy)methane	RR. 4-Bromophenyl-phenylether	TTT. 1-Methylnaphthalene	VVVV. 1,2,4,5-Tetrachlorobenzene	X1. Pentachloroethane
Q. 2,4-Dichlorophenol	SS. Hexachlorobenzene	UUU.Benzo(b)thiophene	WWWW.. 2-Picoline	Y1. 3,3'-Dimethylbenzidine
R. 1,2,4-Trichlorobenzene	TT. Pentachlorophenol	VVV.Benzonaphthothiophene	XXXX. 3-Methylcholanthrene	Z1. o-Toluidine
S. Naphthalene	UU. Phenanthrene	WWW.Benzo(e)pyrene	YYYY. a,a-Dimethylphenethylamine	A2. 1-Naphthylamine
T. 4-Chloroaniline	VV. Anthracene	XXX. 2,6-Dimethylnaphthalene	ZZZZ. Hexachloropropene	B2. 4-Aminobiphenyl
U. Hexachlorobutadiene	WW. Carbazole	YYY. 2,3,5-Trimethylnaphthalene	A1. N-Nitrosodiethylamine	C2. 4-Nitroquinoline-1-oxide
V. 4-Chloro-3-methylphenol	XX. Di-n-butylphthalate	ZZZ. Perylene	B1. N-Nitrosodi-n-butylamine	D2. Hexachloropene
W. 2-Methylnaphthalene	YY. Fluoranthene	AAAA. Dibenzothiophene	C1. N-Nitrosomethylethylamine	E2. Bis (2-chloro-1-methylethyl) ether
X. Hexachlorocyclopentadiene	ZZ. Pyrene	BBBB. Benzo(a)fluoranthene	D1. N-Nitrosomorpholine	F2. Bifenthrin
Y. 2,4,6-Trichlorophenol	AAA. Butylbenzylphthalate	CCCC. Benzo(b)fluorene	E1. N-Nitrosopyrrolidine	G2. Cyfluthrin
Z. 2,4,5-Trichlorophenol	BBB. 3,3'-Dichlorobenzidine	DDDD. cis/trans-Decalin	F1. Phenacetin	H2. Cypermethrin
AA. 2-Chloronaphthalene	CCC. Benzo(a)anthracene	EEEE. 1,1'-Biphenyl	G1. 2-Acetylaminofluorene	I2. Permethrin (cis/trans)
BB. 2-Nitroaniline	DDD. Chrysene	FFFF. Retene	H1. Pronamide	J2. 5-Nitro-o-toluidine

LDC #: 50747E2a

VALIDATION FINDINGS WORKSHEET
Initial Calibration Verification

METHOD: GC/MS BNA (EPA Method 525.2)

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

Y N N/A Was an initial calibration verification standard analyzed after each ICAL for each instrument?

Y N N/A Were all %D within the validation criteria of ≤30 %D ?

#	Date	Standard ID	Compound	Finding %D (Limit: <30.0%)	Associated Samples	Qualifications
	3/13/21 1208	ICV	2,6-Dinitrotoluene	40.27	All	J+/UJ Edit/A ND

LDC #: 50747E2a

VALIDATION FINDINGS WORKSHEET
Continuing Calibration

Reviewer: FT

METHOD: GC/MS SVOA (EPA Method 525.2)

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

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

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

Y N N/A Were all %D and RRFs within the validation criteria of ≤30%D and ≥0.05 RRF ? (c)

#	Date	Standard ID	Compound	Finding %D (Limit: ≤30.0%)	Finding RRF (Limit: ≥0.05)	Associated Samples	Qualifications
	7/14/21	CCV2	Butachlor	35		All	J+/UJ/A ND
	2050						
	7/14/21	CCV3	Trifluralin	88		All	J+/UJ/A ND
	2117						
	7/14/21	CCV4	Aldrin	47		All	J+/UJ/A ND
	2144						
	7/15/21	CCV-8 closing	Trifluralin	86 (≤ 50%)		All	J+/UJ/A ND
	1053						
		ADD TEXT BELOW					
		Although the percent difference was grossly exceeded (≥50%) for some analytes, using professional judgment, associated results were qualified estimated instead of "X" since the percent difference were biased high and the associated results were not detected.					

LDC #: 50747E2a

VALIDATION FINDINGS WORKSHEET
Laboratory Control Samples (LCS)

Reviewer: FT

METHOD: GC/MS BNA (EPA Method 525.2)

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?

#	LCS/LCSD ID	Compound	LCS %R (Limits)	LCSD %R (Limits)	RPD (Limits)	Associated Samples	Qualifications
	WIF1708-LCSD	Acetochlor	131 (70-130)	( )	( )	All	J/UJ/P all ND
		Bis(2-ethylhexyl)adipate	138 ( )	168 (70-130)	( )		
		Chlorpropham	132 ( )	( )	( )		
		Metribuzin	131 (50-120)	130 (50-120)	( )		
		TT	128 (50-120)	132 (50-120)	( )		
		EEE	( )	133 (70-130)	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
		Pesticides not spiked in LCS/D	( )	( )	( )	All	J/UJ+det/P
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
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