

M67001.AR.006885  
MCB CAMP LEJUENE  
5090.3a

VALIDATED DATA PACKAGE, S11402, MCB CAMP LEJUENE NC  
4/22/2015  
DATAQUAL ENVIRONMENTAL SERVICES

# DataQual

## Environmental Services, LLC

CH2M HILL  
14120 Ballantyne Corporate Place  
Suite 200  
Charlotte, NC 28277

April 22, 2015  
SDG# SI1402, Katahdin  
MCB Camp Lejeune, CTO-WE2A SWMU177

Dear Ms. Kleist,

The following Data Validation report is provided as requested for the parameters noted in the table below for SDG #SI1402. The data validation was performed in accordance with the SW846 Methods 8270D for volatiles, and 8081B for pesticides, as well as good professional judgment. Also used in the validation of these samples were The National Functional Guidelines for Organic Data Review (June, 2008) as applicable. All areas of concern are discussed in the body of the report and a summary of data qualifications is provided.

Sample ID	Lab ID	Matrix	SVOA	Pesticides
SWMU177-EB-030315	SI1402-1	water	X	X
SWMU177-GW06-15A	SI1402-2	water	X	X
SWMU177-GW02-15A	SI1402-3	water	X	X
SWMU177-GW02D-15A	SI1402-4	water	X	X
SWMU177-GW06-15A MS	SI1402-2MS	water	X	X
SWMU177-GW06-15A MSD	SI1402-2MSD	water	X	X

The following quality control samples were provided with this SDG: sample SWMU177-GW02D-15A -field duplicate of sample, SWMU177-GW02D-15A; sample SWMU177-EB-030315- equipment blank.

The samples were evaluated based on the following criteria:

- Data Completeness \*
- Technical Holding Times \*
- GC/MS Tunes \*
- Instrument Performance \*
- Initial/Continuing Calibrations \*
- Blanks \*
- GC/MS Internal Standards \*
- Surrogates \*
- Laboratory Control Samples \*
- Matrix Spike Recoveries \*

- Matrix Spike Duplicate RPDs \*
- Field Duplicates
- Identification/Quantitation
- Reporting Limits \*

\* - indicates that no qualifications were required based on this criteria

### **Overall Evaluation of Data/Potential Usability Issues**

A summary of qualifications applied to the sample results are noted below for the fractions validated. Specific details regarding qualification of the data are addressed in the Specific Evaluation section of this narrative. If an issue is not addressed there were no actions required based on unmet quality criteria. When more than one qualifier is associated with a compound/analyte the validator has chosen the qualifier that best indicates possible bias in the results and flagged the data accordingly. However, information regarding all quality control issues is provided in the body of the report and on the qualification summary page. Please note that when a compound or analyte is flagged due to blank contamination the BL qualifier code takes precedence over all other qualifier codes except a code that explains rejected data.

### **SVOA**

No qualifications were required to the data.

### **Pesticides**

The field duplicate pair did not exhibit comparable results, qualifications were required.

Some results were qualified due to column quantitation %Ds greater than 40%.

### **Specific Evaluation of Data**

#### **Data Completeness**

The SDG was received complete and intact. Resubmissions were not required. Sample SWMU177-GW02D-15A was labeled incorrectly (SWMU177-GW02D-13A) throughout the report. The laboratory was contacted and corrected forms were supplied.

## Technical Holding Times

According to chain of custody records, sampling was performed on 3/3/15 and samples were received at the laboratory between 3/6/15. All sample preparation and analysis was performed within method holding time requirements.

## Field Duplicates

### Pesticides

The field duplicate pair exhibited non-compliant RPDs (>30%) that resulted in qualifications as noted in the following table.

Field Duplicate Pair	Compound	% RPD	Qualifier	Q Code
SWMU177-GW02-15A, SWMU177-GW02D-15A	gamma-chlordane	200	J/UJ	FD
	alpha-chlordane	200		

## Compound Identification/Quantitation

### Pesticides

The following samples exhibited positive results with column quantitation %Ds greater than 40%. These results were qualified as estimated J with a 2C qualifier code. Information is tabulated in the following table.

Sample ID	Compound	%D
SWMU177-GW06-15A	heptachlor epoxide	157.7
	gamma-chlordane	63.4
SWMU177-GW02-15A	heptachlor epoxide	43.5
SWMU177-GW02D-15A	heptachlor epoxide	40.9
	gamma-chlordane	61.1
	alpha-chlordane	60.2

A summary of qualifications required is provided on the following page. Please do not hesitate to contact DataQual ES with any questions regarding this validation report.

Sincerely,



Laura Maschhoff  
President

CH2M HILL  
MCB Camp Lejeune CTO-WE2A  
SWMU 177  
SDG# SI1402  
Page 3

## Summary of Data Qualifications

### SVOA

Sample ID	Compound	Results	Q-Flag	Q Code
no qualifications				

### Pesticides

Sample ID	Compound	Results	Q-Flag	Q Code
SWMU177-GW02-15A, SWMU177-GW02D-15A	gamma-chlordane alpha-chlordane	+/-	J/UJ	FD
SWMU177-GW06-15A	heptachlor epoxide gamma-chlordane	+P	J	2C
SWMU177-GW02-15A	heptachlor epoxide			
SWMU177-GW02D-15A	heptachlor epoxide gamma-chlordane* alpha-chlordane*			

*\*final qualifier due to non-comparable field duplicate recoveries*

## Glossary of Qualification Flags and Abbreviations

### Qualification Flags (Q-Flags)

U	not detected above the reported sample quantitation limit
J	estimated value
UJ	reported quantitation limit is qualified as estimated
R	result is rejected; the presence or absence of the analyte cannot be verified
NJ	analyte has been tentatively identified, estimated value
L/J-	analyte present, biased low
UL	not detected, quantitation limit is probably higher
K/J+	analyte present, biased high

### Inorganic Field/Lab Blank Qualification Flags (Q-Flags)

NA	The sample result for the blank contaminant is greater than the sample RL and is greater than 10X the blank value. The sample result for the blank contaminant is not qualified with any blank qualifiers.
RL-U	The sample result for the blank contaminant is less than the sample RL and the result is raised to the RL and flagged U.
R or J+	The blank contaminant concentration was greater than the RL and the sample result is greater than the RL but less than 10X the blank contaminant concentration. The reported results are flagged either as rejected R or biased high J+ based on the professional judgment of the validator.

### Organic Field/Lab Blank Qualification Flags (Q-Flags)

NA	The sample result for the blank contaminant is greater than the sample RL. The sample result for the blank contaminant is not qualified with any blank qualifiers.
RL-U	The sample result for the blank contaminant is less than the sample RL, so the result is raised to the RL and flagged U.

### General Abbreviations

RL	reporting limit
DL	detection limit
LOD	limit of detection
LOQ	limit of quantitation
Q Code	qualifier code
+ / -	positive result/non-detect result

## QUALIFIER CODE REFERENCE

Qualifier	Description
TN	Tune
BSL	Blank Spike/LCS - High Recovery
BSH	Blank Spike/LCS - Low Recovery
BD	Blank Spike/Blank Spike Duplicate (LCS/LCSD) Precision
BRL	Below Reporting Limit
ISL	Internal Standard - Low Recovery
ISH	Internal Standard - High Recovery
MSL	Matrix Spike and/or Matrix Spike Duplicate - Low Recovery
MSH	Matrix Spike and/or Matrix Spike Duplicate - High Recovery
MI	Matrix interference obscuring the raw data
MDP	Matrix Spike/Matrix Spike Duplicate Precision
2S	Second Source - Bad reproducibility between tandem detectors
SSL	Spiked Surrogate - Low Recovery
SSH	Spiked Surrogate - High Recovery
SD	Serial Dilution Reproducibility
ICL	Initial Calibration - Low Relative Response Factors (RRF)
ICH	Initial Calibration - High Relative Response Factors (RRF)
ICB	Initial Calibration - Bad Linearity or Curve Function
CCL	Continuing Calibration - Low Recovery or %Difference
CCH	Continuing Calibration - High Recovery or %Difference
CC	Continuing Calibration
LD	Lab Duplicate Reproducibility
HT	Holding Time
PD	Pesticide Degradation
2C	Second Column - Poor Dual Column Reproducibility
LR	Concentration Exceeds Linear Range
BL	Blank Contamination (MBL, EBL, FBL, TBL)
RE	Redundant Result - due to Re-analysis or Re-extraction
DL	Redundant Result - due to Dilution
FD	Field Duplicate
OT	Other - explained in data validation report
%SOL	High moisture content



### Report of Analytical Results

**Client:** CH2MHill  
**Lab ID:** SI1402-1  
**Client ID:** SWMU177-EB-030315  
**Project:** MCB Camp Lejeune CTO-WE2A SWM  
**SDG:** SI1402  
**Lab File ID:** U9644.D

**Sample Date:** 03-MAR-15  
**Received Date:** 06-MAR-15  
**Extract Date:** 10-MAR-15  
**Extracted By:** WAS  
**Extraction Method:** SW846 3510  
**Lab Prep Batch:** WG159394

**Analysis Date:** 10-MAR-15  
**Analyst:** JCG  
**Analysis Method:** SW846 8270D  
**Matrix:** AQ  
**% Solids:** NA  
**Report Date:** 11-MAR-15

Compound	Qualifier	Result	Units	Dilution	LOQ	ADJ LOQ	ADJ MDL	ADJ LOD
2-Methylnaphthalene	<del>UL</del>	14	ug/L	1	10	18.	5.8	14.
2-Fluorophenol		31.7						
Phenol-d6		18.8						
Nitrobenzene-d5		74.6						
2-Fluorobiphenyl		87.8						
2,4,6-Tribromophenol		85.6						
Terphenyl-d14		75.6						

*mm  
04/19/15*

## Report of Analytical Results

**Client:** CH2MHill  
**Lab ID:** SI1402-2  
**Client ID:** SWMU177-GW06-15A  
**Project:** MCB Camp Lejeune CTO-WE2A SWM  
**SDG:** SI1402  
**Lab File ID:** U9645.D

**Sample Date:** 03-MAR-15  
**Received Date:** 06-MAR-15  
**Extract Date:** 10-MAR-15  
**Extracted By:** WAS  
**Extraction Method:** SW846 3510  
**Lab Prep Batch:** WG159394

**Analysis Date:** 10-MAR-15  
**Analyst:** JCG  
**Analysis Method:** SW846 8270D  
**Matrix:** AQ  
**% Solids:** NA  
**Report Date:** 11-MAR-15

Compound	Qualifier	Result	Units	Dilution	LOQ	ADJ LOQ	ADJ MDL	ADJ LOD
2-Methylnaphthalene	<del>ULMM</del>	7.1	ug/L	1	10	9.4	3.0	7.1
2-Fluorophenol		29.7						
Phenol-d6		19.9						
Nitrobenzene-d5		73.2						
2-Fluorobiphenyl		85.5						
2,4,6-Tribromophenol		76.8						
Terphenyl-d14		67.5						

*LM*  
*04/19/15*

## Report of Analytical Results

**Client:** CH2MHill

**Lab ID:** SI1402-3

**Client ID:** SWMU177-GW02-15A

**Project:** MCB Camp Lejeune CTO-WE2A SWM

**SDG:** SI1402

**Lab File ID:** U9646.D

**Sample Date:** 03-MAR-15

**Received Date:** 06-MAR-15

**Extract Date:** 10-MAR-15

**Extracted By:** WAS

**Extraction Method:** SW846 3510

**Lab Prep Batch:** WG159394

**Analysis Date:** 10-MAR-15

**Analyst:** JCG

**Analysis Method:** SW846 8270D

**Matrix:** AQ

**% Solids:** NA

**Report Date:** 11-MAR-15

Compound	Qualifier	Result	Units	Dilution	LOQ	ADJ LOQ	ADJ MDL	ADJ LOD
2-Methylnaphthalene	UL	7.1	ug/L	1	10	9.4	3.0	7.1
2-Fluorophenol		29.3						
Phenol-d6		18.7						
Nitrobenzene-d5		63.2						
2-Fluorobiphenyl		82.8						
2,4,6-Tribromophenol		80.2						
Terphenyl-d14		68.6						

*MM  
04/19/15*

## Report of Analytical Results

**Client:** CH2MHill

**Lab ID:** SI1402-4

**Client ID:** SWMU177-GW02D-15A

**Project:** MCB Camp Lejeune CTO-WE2A SWM

**SDG:** SI1402

**Lab File ID:** U9647.D

**Sample Date:** 03-MAR-15

**Received Date:** 06-MAR-15

**Extract Date:** 10-MAR-15

**Extracted By:** WAS

**Extraction Method:** SW846 3510

**Lab Prep Batch:** WG159394

**Analysis Date:** 10-MAR-15

**Analyst:** JCG

**Analysis Method:** SW846 8270D

**Matrix:** AQ

**% Solids:** NA

**Report Date:** 20-APR-15

Compound	Qualifier	Result	Units	Dilution	LOQ	ADJ LOQ	ADJ MDL	ADJ LOD
2-Methylnaphthalene	UL	7.1	ug/L	1	10	9.4	3.0	7.1
2-Fluorophenol		27.4						
Phenol-d6		17.4						
Nitrobenzene-d5		78.0						
2-Fluorobiphenyl		88.9						
2,4,6-Tribromophenol		76.0						
Terphenyl-d14		63.2						

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### Report of Analytical Results

**Client:** CH2MHill

**Lab ID:** SI1402-1

**Client ID:** SWMU177-EB-030315

**Project:** MCB Camp Lejeune CTO-WE2A SWM

**SDG:** SI1402

**Lab File ID:** 11C00163.D

**Sample Date:** 03-MAR-15

**Received Date:** 06-MAR-15

**Extract Date:** 09-MAR-15

**Extracted By:** WAS

**Extraction Method:** SW846 3510

**Lab Prep Batch:** WG159333

**Analysis Date:** 11-MAR-15

**Analyst:** JLP

**Analysis Method:** SW846 8081B

**Matrix:** AQ

**% Solids:** NA

**Report Date:** 26-MAR-15

Compound	Qualifier	Result	Units	Dilution	LOQ	ADJ LOQ	ADJ MDL	ADJ LOD
Heptachlor Epoxide	U	0.0050	ug/L	1	.05	0.010	0.0015	0.0050
Gamma-Chlordane	U	0.0050	ug/L	1	.05	0.010	0.0012	0.0050
Alpha-Chlordane	U	0.0050	ug/L	1	.05	0.010	0.0015	0.0050
Tetrachloro-M-Xylene		60.5	%					
Decachlorobiphenyl		61.5	%					

*MM*  
*04/19/15*

## Report of Analytical Results

**Client:** CH2MHill  
**Lab ID:** SI1402-2DL  
**Client ID:** SWMU177-GW06-15A  
**Project:** MCB Camp Lejeune CTO-WE2A SWM  
**SDG:** SI1402  
**Lab File ID:** 11C00167.D

**Sample Date:** 03-MAR-15  
**Received Date:** 06-MAR-15  
**Extract Date:** 09-MAR-15  
**Extracted By:** WAS  
**Extraction Method:** SW846 3510  
**Lab Prep Batch:** WG159333

**Analysis Date:** 11-MAR-15  
**Analyst:** JLP  
**Analysis Method:** SW846 8081B  
**Matrix:** AQ  
**% Solids:** NA  
**Report Date:** 26-MAR-15

Compound	Qualifier	Result	Units	Dilution	LOQ	ADJ LOQ	ADJ MDL	ADJ LOD
Heptachlor Epoxide	<del>JMM</del> J, 2C	1.8	ug/L	50	.05	0.24	0.035	0.12
Gamma-Chlordane	<del>JMM</del> J, 2C	4.6	ug/L	50	.05	0.24	0.028	0.12
Alpha-Chlordane	<del>JMM</del>	3.4	ug/L	50	.05	0.24	0.036	0.12
Tetrachloro-M-Xylene	D	0.00	%					
Decachlorobiphenyl	D	0.00	%					

MM  
 04/19/15

### Report of Analytical Results

**Client:** CH2MHill  
**Lab ID:** SI1402-3  
**Client ID:** SWMU177-GW02-15A  
**Project:** MCB Camp Lejeune CTO-WE2A SWM  
**SDG:** SI1402  
**Lab File ID:** 11C00165.D

**Sample Date:** 03-MAR-15  
**Received Date:** 06-MAR-15  
**Extract Date:** 09-MAR-15  
**Extracted By:** WAS  
**Extraction Method:** SW846 3510  
**Lab Prep Batch:** WG159333

**Analysis Date:** 11-MAR-15  
**Analyst:** JLP  
**Analysis Method:** SW846 8081B  
**Matrix:** AQ  
**% Solids:** NA  
**Report Date:** 26-MAR-15

Compound	Qualifier	Result	Units	Dilution	LOQ	ADJ LOQ	ADJ MDL	ADJ LOD
Heptachlor Epoxide	JJ,2C	0.016	ug/L	1	.05	0.0050	0.00073	0.0025
Gamma-Chlordane	UJFD	0.0025	ug/L	1	.05	0.0050	0.00059	0.0025
Alpha-Chlordane	UJFD	0.0025	ug/L	1	.05	0.0050	0.00075	0.0025
Tetrachloro-M-Xylene		77.0	%					
Decachlorobiphenyl		82.6	%					

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04/9/15

## Report of Analytical Results

**Client:** CH2MHill

**Lab ID:** SI1402-4

**Client ID:** SWMU177-GW02D-15A

**Project:** MCB Camp Lejeune CTO-WE2A SWM

**SDG:** SI1402

**Lab File ID:** IIC00166.D

**Sample Date:** 03-MAR-15

**Received Date:** 06-MAR-15

**Extract Date:** 09-MAR-15

**Extracted By:** WAS

**Extraction Method:** SW846 3510

**Lab Prep Batch:** WG159333

**Analysis Date:** 11-MAR-15

**Analyst:** JLP

**Analysis Method:** SW846 8081B

**Matrix:** AQ

**% Solids:** NA

**Report Date:** 20-APR-15

Compound	Qualifier	Result	Units	Dilution	LOQ	ADJ LOQ	ADJ MDL	ADJ LOD
Heptachlor Epoxide	J	0.013	ug/L	1	.05	0.0047	0.00070	0.0024
Gamma-Chlordane	J JFD	0.0053	ug/L	1	.05	0.0047	0.00057	0.0024
Alpha-Chlordane	J JFD	0.0067	ug/L	1	.05	0.0047	0.00072	0.0024
Tetrachloro-M-Xylene		64.6	%					
Decachlorobiphenyl		68.6	%					

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SDG NARRATIVE  
KATAHDIN ANALYTICAL SERVICES  
CH2MHILL  
MCB CAMP LEJEUNE CTO-WE2A SWMU 177  
SI1402

Sample Receipt

The following samples were received on March 06, 2015 and were logged in under Katahdin Analytical Services work order number SI1402 for a hardcopy due date of April 01, 2015.

<u>Sample No.</u>	<u>Sample Identification</u>
KATAHDIN CH2MHILL SI1402-1	SWMU177-EB-030315
SI1402-2	SWMU177-GW06-15A
SI1402-3	SWMU177-GW02-15A
SI1402-4	SWMU177-GW02D-13A

The samples were logged in for the analyses specified on the chain of custody form. All problems encountered and resolved during sample receipt have been documented on the applicable chain of custody forms.

We certify that the test results provided in this report meet all the requirements of the NELAC standards unless otherwise noted in this narrative or in the Report of Analysis.

Sample analyses have been performed by the methods as noted herein.

Should you have any questions or comments concerning this Report of Analysis, please do not hesitate to contact your Katahdin Analytical Services Project Manager, **Ms. Jennifer Obrin**. This narrative is an integral part of the Report of Analysis.

Organics Analysis

The samples of Work Order SI1402 were analyzed in accordance with "Test Methods for Evaluating Solid Wastes: Physical/Chemical Methods." SW-846, 2nd edition, 1982 (revised 1984), 3rd edition, 1986, and Updates I, II, IIA, III, IIIA, and IIIB 1996, 1998 & 2004, Office of Solid Waste and Emergency Response, U.S. EPA, and/or for the specific methods listed below or on the Report of Analysis.

Sample SI1402-2 was used for the matrix spike (MS) and matrix spike duplicate (MSD), as requested by the client.

8270D Analysis

The LCSD WG159394-3 and MS/MSD had high recoveries for the spiked target analyte 2-methylnaphthalene, which were outside of the laboratory established acceptance limits. A high recovery would indicate a high bias and this target analyte was not detected above the MDL in the associated samples. The LCS WG159394-2 had an acceptable recovery for 2-methylnaphthalene. For these reasons, the samples were not reextracted.

8081B Analysis

Samples SI1402-2DL, 3 and 4 had RPD's for heptachlor epoxide, alpha-chlordane and/or gamma-chlordane that were outside of the method acceptance limits of 40%. These analytes are flagged with a "J" qualifier on the report of analysis (ROA).

The MS WG159333-7 and MSD WG159333-8 had three spiked target analytes with recoveries that were non-calculable and reported as 0% recovery due to the concentration in the native sample being higher than in the MS and MSD. This is likely due to a non-homogeneous sample. The associated LCS/LCSD were acceptable. For these reasons, no further action was taken.

The closing CV (file 11C00172) had a high response for the surrogate TCX on channel B, which resulted in a %D that was outside of the DoD QSM acceptance limits of 20%. Since the responses on channel A were acceptable, no further action was taken.

There were no other protocol deviations or observations noted by the organics laboratory staff.

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hardcopy data package has been authorized by the Operations Manager or the Quality Assurance Officer as verified by the following signature.

Leslie Dimond  
03.27.15

Leslie Dimond  
Quality Assurance Officer

## Katahdin Analytical Services, Inc.

### Manual Integration Codes For GC/MS, GC, HPLC and/or IC

M1	Peak splitting.
M2	Well defined peaks on the shoulders of the other peaks.
M3	There is additional area due to a coeluting interferant.
M4	There are negative spikes in the baseline.
M5	There are rising or falling baselines.
M6	The software has failed to detect a peak or misidentified a peak.
M7	Excessive peak tailing.
M8	Analysis such as GRO, DRO and TPH require a baseline hold.
M9	Peak was not completely integrated as in GC/MS.
M10	Primary ion was correctly integrated, but secondary or tertiary ion needed manual integration as in GC/MS.
M11	For GC analysis, when a sample is diluted by 1:10 or more, the surrogate is set to undetected and then the area under the surrogate is manually integrated.
M12	Manual integration saved in method due to TurboChrom floating point error.

**Jennifer Obrin**

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**From:** Bianca.Kleist@CH2M.com  
**Sent:** Thursday, March 05, 2015 11:32 AM  
**To:** jobrin@katahdinlab.com  
**Subject:** FW: CTO-WEZA SWMU 177 samples

Hi Jen,

Could you log in the EB as SWMU177-EB-030315? On the COC the dash is missing between EB and the date.

Thanks!

Bianca

**From:** Kleist, Bianca/CLT  
**Sent:** Thursday, March 05, 2015 10:13 AM  
**To:** 'Jennifer Obrin'  
**Subject:** CTO-WEZA SWMU 177 samples  
**Importance:** High

Hi Jen,

Attached is the COC for the SWMU 177 samples that were shipped yesterday. Please let me know if these arrived in good condition. *Could you also please make sure that the samples are logged in for only the select analytes listed below? It is imperative that only the analytes below are reported.* Thank you!

- Select Pesticides – Gamma Chlordane, Alpha Chlordane, and Heptachlor Epoxide (8081B)
- Select SVOC - 2-Methylnaphthalene (8270D Scan)

Thanks!  
Bianca

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020



Client: CHAMPA	KAS PM: Jo	Sampled By: Clint
Project:	KIMS Entry By: Gw	Delivered By: FedEx
KAS Work Order#: SJ 1402	KIMS Review By:	Received By: Gw
SDG #:	Cooler: 1 of 1	Date/Time Rec.: 3/6/15/12:00

Receipt Criteria	Y	N	EX*	NA	Comments and/or Resolution
1. Custody seals present / intact?	✓				
2. Chain of Custody present in cooler?	✓				
3. Chain of Custody signed by client?	✓				
4. Chain of Custody matches samples?	✓				
5. Temperature Blanks present? If not, take temperature of any sample w/ IR gun.	✓				Temp (°C): -0.3
Samples received at <6 °C w/o freezing?	✓				Note: Not required for metals analysis.
Ice packs or ice present?	✓				The lack of ice or ice packs (i.e. no attempt to begin cooling process) or insufficient ice may not meet certain regulatory requirements and may invalidate certain data.
If yes, was there sufficient ice to meet temperature requirements?	✓				
If temp. out, has the cooling process begun (i.e. ice or packs present) and sample collection times <6hrs., but samples are not yet cool?				✓	
6. Volatiles:				✓	
<b>Aqueous:</b> No bubble larger than a pea?				✓	
<b>Soil/Sediment:</b>				✓	
Received in airtight container?				✓	
Received in methanol?				✓	
Methanol covering soil?				✓	
D.I. Water - Received within 48 hour HT?				✓	
<b>Air:</b> Refer to KAS COC for canister/flow controller requirements.	✓ if air included				
7. Trip Blank present in cooler?				✓	
8. Proper sample containers and volume?	✓				
9. Samples within hold time upon receipt?	✓				
10. Aqueous samples properly preserved?				✓	
Metals, COD, NH3, TKN, O/G, phenol, TPO4, N+N, TOC, DRO, TPH - pH <2				✓	
Sulfide - >9				✓	
Cyanide - pH >12				✓	

\* Log-In Notes to Exceptions: document any problems with samples or discrepancies or pH adjustments

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## DataQual

## Worksheets - SVOA

### Data Completeness

The data package was received complete and intact. Resubmissions were not required. (SW846 Method 8270D, 2-methylnaphthalene only)

Laboratory: Katahdin

### Holding Times

Sampling Date: 3/3/15  
Received Date: 3/6/15  
Extraction Date: 3/10/15  
Analysis Dates: 3/10/15  
Cooler Temp: 0.3°C

All holding time requirements were met.

### Calibrations

Mass assignments were verified by the injection of DFTPP.

No qualifications were required for the initial calibration or continuing calibrations.

### Internal Standards

All criteria were met.

### Blank Summary

Blank qualification guidelines:

- No action is taken if a compound is found in the blank but not in the sample.
- Sample weight, volume or dilution factor must be taken into consideration when applying criteria.
- Qualification/Action codes where applied as stated in table below:

Blank Type	Blank Result	Sample Result	Action for Samples
Method, Field	Detects	Not detected	No qualifications
	< LOD*	< LOD*	Report LOD value with a U
		≥ LOD*	Use professional judgment
	> LOD*	< LOD*	Report LOD value with a U
		≥ LOD* and < blank concentration	Report the concentration for the sample with a U, or qualify the data as unusable R
		≥ LOD* and ≥ blank concentration	Use professional judgment
	= LOD*	< LOD*	Report LOD value with a U
		≥ LOD*	Use professional judgment
Gross contamination	Detects	Qualify results as unusable R	

\*2x the LOD for common phthalates

No contamination was exhibited in the method blank-no qualifications required. Associated QC blanks: SWMU177-GW02-15A (no positive results)- equipment blank.

Blank Contamination and Qualification Summaries

Blank ID	Compound	Concentration	Reporting Limit (LOD)

Associated samples and required qualifications are noted in the following table.

Sample ID	Compound	Q Flag	Qual Code
no qualifications			

**Surrogates**

All criteria were met.

**Laboratory Control Sample**

The LCSD sample each exhibited a slightly high recovery for 2-methylnaphthalene at 107% (QC limit 45-105%. The associated LCS was within QC criteria for this compound. None of the associated samples exhibited positive results for 2-methylnaphthalene, no qualifications were applied to the data.

**Matrix Spike/Spike Duplicate Samples**

An MS/MSD was submitted for sample SWMU177-GW06-15A. Both the MS and MSD exhibited high recoveries at 121% and 121% (QC limits 45-105%); however there was no positive result exhibited in the associated sample therefore no qualifications were applied.

**Field Duplicate Sample**

A field duplicate was submitted for sample SMWU177-GW02-15A- no positive results exhibited in either sample, no qualifications.

**Specific Comments:**

All sample results were reported within the calibration range of the instruments.

Detection limits were acceptable. Raw data and calculations were verified.

We have limited the supporting documentation, found with these worksheets, to those forms that indicate qualifications were required.

Validator Signature:  Date: 4/19/25

SDG# SI1402  
MCB Camp Lejeune, CTO-WE2A SWMU177  
SVOA  
Page 2

**MS/MSD Recovery Report**

**MS ID:** WG159394-5  
**MSD ID:** WG159394-6  
**Sample ID:** SI1402-2  
**Client ID:** SWMU177-GW06-15A  
**Project:**  
**SDG:** SI1402  
**MS File ID:** U9648.D

**Received Date:**  
**Extract Date:** 10-MAR-15  
**Extracted By:** WAS  
**Extraction Method:** SW846 3510  
**Lab Prep Batch:** WG159394  
**Report Date:** 11-MAR-15  
**MSD File ID:** U9649.D

**Analysis Date:** 10-MAR-15  
**Analyst:** JCG  
**Analysis Method:** SW846 8270D  
**Matrix:** AQ  
**% Solids:** NA

Compound	MS Spike	MSD Spike	Conc Units	Samp Conc	MS Conc	MSD Conc	MS Rec (%)	MSD Rec (%)	RPD (%)	RPD Limit	Limits
2-Methylnaphthalene	47.2	47.2	ug/L	ULMM7.	57.	57.	121.*	121.*	0	30	45-105
2-Fluorophenol							32.0	27.5			20-110
Phenol-d6							24.4	21.5			10-115
Nitrobenzene-d5							74.3	72.6			40-110
2-Fluorobiphenyl							86.9	85.0			50-110
2,4,6-Tribromophenol							87.3	79.0			40-125
Terphenyl-d14							92.4	87.0			50-135

*J⊕ recoveries however there were  
no⊕ results for this compds  
- no qual required.*

**DataQual**

SVOA

Initial Calibration Date: 1/12/2015

**RRF and %RSD Calculations:**Compound Name: 2-methylnaphthalene  
Lab Value: 0.696

Area of Compound	2833208
Area of Internal STD	1302096
Conc. of Internal STD	40
Conc. of Compound	125
Calculated RRF	0.696

Compound Name: 2-methylnaphthalene  
Lab Value: 13.2

RRF of STD 1	0.725
RRF of STD 2	0.75639
RRF of STD 3	0.66809
RRF of STD 4	0.58145
RRF of STD 5	0.53107
RRF of STD 6	0.69628
Calculated % RSD	13.2

Continuing Calibration File ID: 3/10/2015

**RRF and %D Calculations:**Compound Name: 2-methylnaphthalene  
Lab Value: 0.627

Area of Compound	996049
Area of Internal STD	1271023
Conc. of Internal STD	40
Conc. of Compound	50
Calculated RRF	0.627

Compound Name: 2-methylnaphthalene  
Lab Value: 5.0

Average RRF	0.660
Calibration Check RRF	0.62693
Calculated % D	5.0

**Holding Times**

Sampling Date: 3/3/15  
 Received Date: 3/6/15  
 Extraction Date: 3/9/15  
 Analysis Dates: 3/11/15  
 Temp: 0.3 °C

Receipt paperwork was in order. A seven-day holding time was used for the water samples and a fourteen-day holding time was used for the soil samples. The analysis holding time of 40 days was used. Based on this, all extraction and analysis holding times were met.

**Calibrations**

Initial calibrations were performed according to the method with a 6-point curve. Response factors were calculated. %RSDs were within QC limits. Continuing calibration standards were analyzed appropriately. All breakdown criteria were met. Column resolution was acceptable. Retention times were stable throughout the analytical sequence. The correct analytical sequence was run. Raw data was verified.

**Blank Summary**

Blank qualification guidelines:

- No action is taken if a compound is found in the blank but not in the sample.
- Any compound detected in the sample, and the associated blank, must be qualified by reporting the result in the sample as non-detect at the LOD when the sample concentration is less than LOD.
- Sample weight, volume or dilution factor must be taken into consideration when applying the qualification criteria.
- Apply the same data validation guidelines to any associated rinse and field blanks and all associated samples.
- Qualification/Action codes:

No Action - The sample result is greater than the LOD and greater than five times (5X) the blank value.  
 U at LOD- The sample result is less than the LOD when the blank contamination level is less than the LOD.

Professional judgment is applied when blank concentrations are >LOD. Results may be flagged as U at the reported concentration or rejected. No contamination that resulted in qualification of the data was noted in the associated method blank. Associated QC blanks: SWMU177-EB-030315A-equipment blank—no positive results exhibited.

Blank ID	Compound	Concentration	Action Level	Q Flag
no contamination was noted				

**Surrogate Recoveries**

All surrogate recoveries were acceptable- no qualification.

**Matrix Spike/Matrix Spike Duplicates**

An MS/MSD was submitted for sample SWMU177-GW06-15A. The three spiked target analytes exhibited recoveries that were non-calculable and reported as 0% recovery due to concentrations in the native sample being higher than in the MS/MSD. The associated LCS/LCSD exhibited results within the QC limits so no further action was taken. No qualifications are required.

**Laboratory Control Samples**

All LCS samples exhibited results within criteria, no qualifications required.

**Field Duplicate Sample Summary**

A field duplicate was submitted for sample SWMU177-GW02-15A- qualifications required, see attached worksheet.

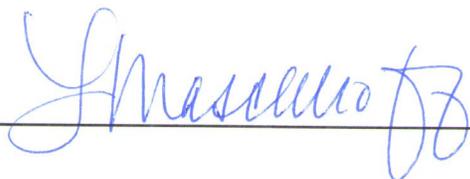
Sample Result Verification

Reported sample results were verified. Raw data was verified. Quantitation calculations were verified.

The following samples exhibited positive results with column quantitation %Ds greater than 40%. These results were qualified as estimated J with a 2C qualifier code. Information is tabulated in the following table.

Sample ID	Compound	%D
SWMU177-GW06-15A	heptachlor epoxide	157.7
	gamma-chlordane	63.4
SWMU177-GW02-15A	heptachlor epoxide	43.5
SWMU177-GW02D-15A	gamma-chlordane	61.1
	alpha-chlordane	60.2

Reviewer



Date:

4/19/15

### MS/MSD Recovery Report

**MS ID:** WG159333-7  
**MSD ID:** WG159333-8  
**Sample ID:** SI1402-2  
**Client ID:** SWMU177-GW06-15A  
**Project:**  
**SDG:** SI1402  
**MS File ID:** IIC00161.D

**Received Date:**  
**Extract Date:** 09-MAR-15  
**Extracted By:** WAS  
**Extraction Method:** SW846 3510  
**Lab Prep Batch:** WG159333  
**Report Date:** 26-MAR-15  
**MSD File ID:** IIC00162.D

**Analysis Date:** 11-MAR-15  
**Analyst:** JLP  
**Analysis Method:** SW846 8081B  
**Matrix:** AQ  
**% Solids:** NA

Compound	MS Spike	MSD Spike	Conc Units	Samp Conc	MS Conc	MSD Conc	MS Rec (%)	MSD Rec (%)	RPD (%)	RPD Limit	Limits
Heptachlor Epoxide	0.0472	0.0472	ug/L	JMM1.8	*J1.5	*J1.4	0*J	0*J	3	30	60-130
Gamma-Chlordane	0.0472	0.0472	ug/L	JMM4.6	*J2.7	*J2.6	0*J	0*J	3	30	60-125
Alpha-Chlordane	0.0472	0.0472	ug/L	MM3.4	2.3	2.3	0*	0*	0	30	65-125
Tetrachloro-M-Xylene							69.2	60.4			25-140
Decachlorobiphenyl							77.5	56.4			30-135

*No qual as results in native sample higher than spiked amt. - LCS in*

**FIELD DUPLICATE SAMPLE SUMMARY**

**Sample ID:** SWMU177-GW02-15A  
**Duplicate Sample ID:** SWMU177-GW02D-15A

Water: RPD>30%  
 Soil: RPD>30%

Compound	Sample Conc.	Dup. Sample Conc.	%RPD
heptachlor epoxide	0.016	0.013	21
gamma-chlordane		0.0053	200
alpha-chlordane		0.0067	200
			#DIV/0!

COMMENTS: Qualify all compounds with RPD > 30% as estimated (J/UJ)

\* one of the results below the LOD  
 if both results are below the LOD the results are not compared

## Form 10

### Pesticide Identification Summary

**Lab Name :** Katahdin Analytical Services

**SDG :** SI1402

**Project :** MCB Camp Lejeune CTO-WE2A SWMU 1:

**Lab Sample ID :** SI1402-2DL

**Client Sample ID :** SWMU177-GW06-15A

**Column A**

**Instrument ID :** GC01  
**Date Analyzed :** 03/11/15  
**Time Analyzed :** 14:41

**Column B**

**Instrument ID :** GC01  
**Date Analyzed :** 03/11/15  
**Time Analyzed :** 14:41

Analyte	Column	RT	Concentration	RPD
Heptachlor Epoxide	A	6.97	1.82	
	B	6.88	.215	157.7
Gamma-Chlordane	A	7.36	4.57	
	B	7.26	2.37	63.4
Alpha-Chlordane	A	7.47	3.38	
	B	7.35	2.78	19.5

 J  
 J

## Form 10

### Pesticide Identification Summary

**Lab Name :** Katahdin Analytical Services

**SDG :** SI1402

**Project :** MCB Camp Lejeune CTO-WE2A SWMU 17

**Lab Sample ID :** SI1402-3

**Client Sample ID :** SWMU177-GW02-15A

**Column A**

**Instrument ID :** GC01  
**Date Analyzed :** 03/11/15  
**Time Analyzed :** 14:01

**Column B**

**Instrument ID :** GC01  
**Date Analyzed :** 03/11/15  
**Time Analyzed :** 14:01

Analyte	Column	RT	Concentration	RPD
Heptachlor Epoxide	A	6.98	.0165	
	B	6.88	.0106	43.5 <span style="color: red; font-size: 2em;">J</span>

## Form 10 Pesticide Identification Summary

**Lab Name :** Katahdin Analytical Services

**SDG :** SI1402

**Project :** MCB Camp Lejeune CTO-WE2A SWMU 17

**Lab Sample ID :** SI1402-4

**Client Sample ID :** SWMU177-GW02D-15A

**Column A**

**Instrument ID :** GC01  
**Date Analyzed :** 03/11/15  
**Time Analyzed :** 14:18

**Column B**

**Instrument ID :** GC01  
**Date Analyzed :** 03/11/15  
**Time Analyzed :** 14:18

Analyte	Column	RT	Concentration	RPD
Heptachlor Epoxide	A	6.98	.0134	
	B	6.88	.00885	40.9
Gamma-Chlordane	A	7.36	.0053	
	B	7.26	.00282	61.1
Alpha-Chlordane	A	7.47	.0067	
	B	7.36	.0036	60.2