M67001.AR.006918
MCB CAMP LEJUENE
5090.3a

VALIDATED DATA PACKAGE, A407421, MCB CAMP LEJUENE NC
3/16/2015
DATAQUAL ENVIRONMENTAL SERVICES, LLC

DataQual

Environmental Services, LLC

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

March 16, 2015
SDG# A407421, ENCO
MCB Camp Lejeune-CTO-WE9A

Dear Ms. Kleist,

The following Data Validation report is provided as requested for the parameters noted in the table below for SDG #A407421. The data validation was performed in accordance with the SW846 Methods 8270D for semivolatiles, 8270D-SIM for PAHs, 8081B for pesticides, 8082 for PCB and 6020/6010/7470 for total and dissolved metals, 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) and the National Functional Guidelines for Inorganic Data Review (January, 2010) 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	PAH	Pesticides	PCB	Total Metals	Dissolved Metals
IR82-SW01-14D	A407421-01	water	X	X	X	X	X	X
IR82-SW01-14D RE	A407421-01 RE	water	X				X	X
IR82-SW01D-14D	A407421-02	water	X	X	X	X	X	X
IR82-SW01D-14D RE	A407421-02 RE	water	X				X	X
IR82-SW01-14D MS	A407421-01 MS	water	X	X	X	X	X	X
IR82-SW01-14D MSD	A407421-01 MSD	water	X	X	X	X	X	X

The following quality control samples were provided with this SDG: sample IR82-SW01D-14D – field duplicate of sample IR82-SW01-14D.

The samples were evaluated based on the following criteria:

- Data Completeness
- Technical Holding Times *
- GC/MS Tunes *
- ICP/MS Tunes *
- Initial/Continuing Calibrations
- CRI Standards *
- Interference Check Sample *

5830 Amberway Drive • St. Louis, MO 63128 • 314-330-1327 • Fax 314-849-6264

- Blanks *
- GC/MS Internal Standards
- ICP/MS Internal Standards *
- Surrogates *
- Laboratory Control Samples *
- Matrix Spike Recoveries
- Matrix Spike Duplicate RPDs *
- Post Digestion Spike Recoveries *
- Serial Dilutions *
- 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

Qualifications were required based on high %RSDs which were exhibited in the initial calibration.

Two samples were re-analyzed due to slightly exceeded retention time windows for two internal standards. All retention times were within criteria for the re-analyzed samples; therefore the initial analyses were excluded in favor of the re-analyses.

PAH

No qualifications were required.

Pesticides

The initial and calibration check exhibited a non-compliant %D values which resulted in data qualification.

PCB

No qualifications to the data were required.

Metals

Qualifications were required due to non-compliant MS/MSD recoveries in the dissolved metals analysis and in the total metals analysis.

Dilutions were required to accurately quantitate the analyte sodium in both the total & dissolved metals analysis.

Specific Evaluation of Data

Data Completeness

Resubmissions were required for the case narrative due to missing QC non-compliance information regarding the inorganics analyses. A corrected narrative was provided. A copy of all correspondence with the laboratory is included in the worksheet section of this report.

Technical Holding Times

According to chain of custody records, sampling was performed on 12/10-11/14 and samples were received at the laboratory between 12/15/14. All sample preparation and analysis was performed within method holding time requirements.

Initial/Continuing Calibration

SVOA

Calibration standards exhibited %RSDs that were non-compliant. A summary of these non-compliances and affected samples are noted in the following table. Sample results were qualified as indicated.

Standard ID	Compound(s)	RRF, %RSD, %D	Samples	Q Flag	Q Code
IC 1/5/15	hexachlorobutadiene	16.7	all samples	J/UJ	ICH
	n-nitrosodiphenylamine/ diphenylamine	18.4			

Pesticides

Calibration standards exhibited %RSDs and %Ds that were non-compliant. A summary of these non-compliances and affected samples are noted in the following table. Sample results were qualified as indicated.

Standard ID	Compound(s)	RRF, %RSD, %D	Samples	Q Flag	Q Code
IC 12/18/14	endosulfan II	36.95	all samples	J/UJ	ICH
CC 12/24/14	aldrin	24.3	all samples	J/UJ	CCH
	4,4'-DDE	41.0			

Matrix Spike Recoveries

Total Metals

The total matrix spike pair analyses exhibited non-compliant %Rs that resulted in qualification of analytical data. Specific action is noted in the following table.

MS/MSD	Analyte	Samples Affected	%R	PDS %R	Q Flag	Q Code
IR82-SW01-14D	beryllium	IR82-SW01-14D	81/80	OK	J-/UJ	MSL
	cadmium	IR82-SW01D-14D	86/84	OK		
	selenium		71/71	74		

Dissolved Metals

The dissolved matrix spike pair analyses exhibited non-compliant %Rs that resulted in qualification of analytical data. Specific action is noted in the following table.

MS/MSD	Analyte	Samples Affected	%R	PDS %R	Q Flag	Q Code
IR82-SW01-14D dissolved	cadmium	IR82-SW01-14D	84/84	OK	J-/UJ	MSL
	selenium	IR82-SW01D-14D	67/66	OK		

Identification/Quantitation

SVOA

The initial analysis of sample IR82SW01-14D and IR82-SW01D-14D slightly exceeded the retention time window for two internal standards. The samples were re-analyzed and all retention times were within criteria. Therefore the initial analyses were excluded in favor of the re-analyses.

Total Metals

Samples IR82-SW01-14D and IR82-SW01D-14D exhibited high concentrations of sodium. Dilutions were performed to accurately quantitate the target analyte. All E-flagged results for sodium were excluded in favor of the corresponding D-flagged results reported in the dilution analyses. All other results reported in the dilution analyses are

excluded in favor of the results from the undiluted analyses of the samples. The qualifier code is DL.

Dissolved Metals

Samples IR82-SW01-14D dissolved and IR82-SW01D-14D dissolved exhibited high concentrations of sodium. Dilutions were performed to accurately quantitate the target analyte. All E-flagged results for sodium were excluded in favor of the corresponding D-flagged results reported in the dilution analyses. All other results reported in the dilution analyses are excluded in favor of the results from the undiluted analyses of the samples. The qualifier code is DL.

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

Summary of Data Qualifications

SVOA

Sample ID	Compound	Results	Q-Flag	Q Code
all samples	hexachlorobutadiene n-nitrosodiphenylamine/ diphenylamine	+/-	J/UJ	ICH
IR82SW01-14D, IR82-SW01D-14D	all results	+/-	excluded	RE

PAH

Sample ID	Compound	Results	Q-Flag	Q Code
no qualifications				

Pesticides

Sample ID	Compound	Results	Q-Flag	Q Code
all samples	endosulfan II	+/-	J/UJ	ICH
all samples	aldrin	+/-	J/UJ	CCH
	4,4'-DDE			

PCB

Sample ID	Compound	Results	Q-Flag	Q Code
no qualifications				

Total Metals

Sample ID	Analyte	Results	Q-Flag	Q Code
IR82-SW01-14D, IR82-SW01D-14D	beryllium, cadmium, selenium	+/-	J-/UJ	MSL
IR82-SW01-14D IR82-SW01D-14D	sodium	+E	exclude	DL
IR82-SW01-14D RE1, RE2 IR82-SW01D-14D RE1	all analytes except D flagged sodium	+	exclude	DL

Dissolved Metals

Sample ID	Analyte	Results	Q-Flag	Q Code
IR82-SW01-14D dissolved, IR82-SW01D-14D dissolved	cadmium, selenium	+/-	J-/UJ	MSL
IR82-SW01-14D dissolved IR82-SW01D-14D dissolved	sodium	+E	exclude	DL
IR82-SW01-14D RE1 dissolved	all analytes except D flagged sodium	+	exclude	DL

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

ORGANIC ANALYSIS DATA SHEET

EPA 8270D

IR82-SW01-14D

Laboratory: ENCO Orlando
SDG: A407421-CTO-WE9A
Client: CH2M Hill, Inc. (CH031)
Project: CTO-WE9A, Camp Lejuene Site 82

Matrix: Surface Water
Laboratory ID: A407421-01
File ID: 1ac014.D
Sampled: 12/10/14 11:20
Prepared: 12/17/14 08:50
Analyzed: 01/08/15 12:20
Solids:
Preparation: EPA 3510C_MS
Initial/Final: 500 mL / 0.5 mL
Batch: 4L17006
Sequence: AA32069
Calibration: 1501007
Instrument: OSVGCMS1

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q	DL	LOD	LOQ
100-52-7	Benzaldehyde	1	<9.0	U	6.3	9.0	10
108-95-2	Phenol	1	<6.0	U	5.6	6.0	10
111-44-4	Bis(2-chloroethyl)ether	1	<6.0	U	3.8	6.0	10
95-57-8	2-Chlorophenol	1	<9.0	U	7.4	9.0	10
95-48-7	2-Methylphenol	1	<6.0	U	3.5	6.0	10
108-60-1	Bis(2-chloroisopropyl)ether	1	<6.0	U	3.5	6.0	10
98-86-2	Acetophenone	1	<6.0	U	3.8	6.0	10
108-39-4/106-44-5	3 & 4-Methylphenol	1	<9.0	U	8.2	9.0	10
621-64-7	N-Nitroso-di-n-propylamine	1	<6.0	U	4.5	6.0	10
67-72-1	Hexachloroethane	1	<3.0	U	3.0	3.0	10
98-95-3	Nitrobenzene	1	<6.0	U	3.2	6.0	10
78-59-1	Isophorone	1	<6.0	U	4.5	6.0	10
88-75-5	2-Nitrophenol	1	<6.0	U	5.2	6.0	10
105-67-9	2,4-Dimethylphenol	1	<9.0	U	6.4	9.0	10
111-91-1	Bis(2-chloroethoxy)methane	1	<6.0	U	3.3	6.0	10
120-83-2	2,4-Dichlorophenol	1	<9.0	U	6.5	9.0	10
106-47-8	4-Chloroaniline	1	<6.0	U	4.3	6.0	10
87-68-3	Hexachlorobutadiene	1	<6.0	U	4.1	6.0	10
105-60-2	Caprolactam	1	<3.0	U	2.7	3.0	10
59-50-7	4-Chloro-3-methylphenol	1	<9.0	U	7.3	9.0	10
77-47-4	Hexachlorocyclopentadiene	1	<6.0	UQ	3.8	6.0	10
88-06-2	2,4,6-Trichlorophenol	1	<9.0	U	6.4	9.0	10
95-95-4	2,4,5-Trichlorophenol	1	<6.0	U	3.9	6.0	10
92-52-4	1,1'-Biphenyl	1	<9.0	U	7.0	9.0	10
91-58-7	2-Chloronaphthalene	1	<6.0	U	3.2	6.0	10
88-74-4	2-Nitroaniline	1	<6.0	U	3.3	6.0	10
131-11-3	Dimethylphthalate	1	<3.0	U	3.0	3.0	10
606-20-2	2,6-Dinitrotoluene	1	<3.0	U	2.9	3.0	10
99-09-2	3-Nitroaniline	1	<6.0	U	3.3	6.0	10
51-28-5	2,4-Dinitrophenol	1	<9.0	U	7.7	9.0	10
100-02-7	4-Nitrophenol	1	<9.0	U	7.9	9.0	10
132-64-9	Dibenzofuran	1	<3.0	U	2.8	3.0	10
121-14-2	2,4-Dinitrotoluene	1	<6.0	U	3.2	6.0	10

X RE

VM 031015

ORGANIC ANALYSIS DATA SHEET

EPA 8270D

IR82-SW01-14D

Laboratory:	ENCO Orlando	SDG:	A407421-CTO-WE9A
Client:	CH2M Hill, Inc. (CH031)	Project:	CTO-WE9A, Camp Lejuene Site 82

Matrix:	Surface Water	Laboratory ID:	A407421-01	File ID:	1ac014.D
Sampled:	12/10/14 11:20	Prepared:	12/17/14 08:50	Analyzed:	01/08/15 12:20
Solids:		Preparation:	EPA 3510C_MS	Initial/Final:	500 mL / 0.5 mL

Batch: 4L17006 Sequence: AA32069 Calibration: 1501007 Instrument: OSVGCMS1

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q	DL	LOD	LOQ
84-66-2	Diethylphthalate	1	<3.0	U	3.0	3.0	10
7005-72-3	4-Chlorophenyl-phenylether	1	<6.0	U	3.2	6.0	10
100-01-6	4-Nitroaniline	1	<6.0	U	3.2	6.0	10
534-52-1	2-Methyl-4,6-dinitrophenol	1	<6.0	U	6.0	6.0	10
86-30-6/122-39-4	N-nitrosodiphenylamine/Diphenylamine	1	<6.0	U	5.4	6.0	10
101-55-3	4-Bromophenyl-phenylether	1	<6.0	U	3.3	6.0	10
118-74-1	Hexachlorobenzene	1	<6.0	U	3.0	6.0	10
1912-24-9	Atrazine	1	<3.0	U	2.9	3.0	10
87-86-5	Pentachlorophenol	1	<9.0	U	8.2	9.0	10
86-74-8	Carbazole	1	<6.0	U	3.3	6.0	10
84-74-2	Di-n-butylphthalate	1	<6.0	U	3.2	6.0	10
85-68-7	Butylbenzylphthalate	1	<6.0	U	5.1	6.0	10
91-94-1	3,3'-Dichlorobenzidine	1	<6.0	UQ	3.3	6.0	10
117-81-7	Bis(2-ethylhexyl)phthalate	1	<6.0	UQ	3.5	6.0	10
117-84-0	Di-n-octylphthalate	1	<6.0	UQ	3.6	6.0	10

XAE

SYSTEM MONITORING COMPOUND	ADDED (ug/L)	CONC (ug/L)	% REC	QC LIMITS	Q
2-Fluorophenol	50.0	22	43	19 - 119	
Phenol-d5	50.0	16	32	10 - 115	
Nitrobenzene-d5	50.0	33	65	44 - 120	
2-Fluorobiphenyl	50.0	36	73	44 - 119	
2,4,6-Tribromophenol	50.0	40	80	43 - 140	
Terphenyl-d14	50.0	57	114	50 - 134	

INTERNAL STANDARD	AREA	RT	REF AREA	REF RT	Q
1,4-Dichlorobenzene-d4	328718	6.826	312803	6.966	
Naphthalene-d8	1153185	8.397	1202138	8.546	
Acenaphthene-d10	594786	10.603	663746	10.753	
Phenanthrene-d10	909992	12.476	1098576	12.637	
Chrysene-d12	590687	16.032	565336	16.253	*
Perylene-d12	469339	18.972	404946	19.226	*

* Values outside of QC limits

MM 031015

010

ORGANIC ANALYSIS DATA SHEET

EPA 8270D

IR82-SW01-14D

Laboratory: ENCO Orlando
SDG: A407421-CTO-WE9A
Client: CH2M Hill, Inc. (CH031)
Project: CTO-WE9A, Camp Lejuene Site 82

Matrix: Surface Water
Laboratory ID: A407421-01RE1
File ID: 1al008.D
Sampled: 12/10/14 11:20
Prepared: 12/17/14 08:50
Analyzed: 01/19/15 19:34
Solids:
Preparation: EPA 3510C_MS
Initial/Final: 500 mL / 0.5 mL
Batch: 4L17006
Sequence: AA32210
Calibration: 1501007
Instrument: OSVGCMS1

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q	DL	LOD	LOQ
100-52-7	Benzaldehyde	1	<9.0	U	6.3	9.0	10
108-95-2	Phenol	1	<6.0	U	5.6	6.0	10
111-44-4	Bis(2-chloroethyl)ether	1	<6.0	U	3.8	6.0	10
95-57-8	2-Chlorophenol	1	<9.0	U	7.4	9.0	10
95-48-7	2-Methylphenol	1	<6.0	U	3.5	6.0	10
108-60-1	Bis(2-chloroisopropyl)ether	1	<6.0	U	3.5	6.0	10
98-86-2	Acetophenone	1	<6.0	U	3.8	6.0	10
108-39-4/106-44-5	3 & 4-Methylphenol	1	<9.0	U	8.2	9.0	10
621-64-7	N-Nitroso-di-n-propylamine	1	<6.0	U	4.5	6.0	10
67-72-1	Hexachloroethane	1	<3.0	U	3.0	3.0	10
98-95-3	Nitrobenzene	1	<6.0	U	3.2	6.0	10
78-59-1	Isophorone	1	<6.0	U	4.5	6.0	10
88-75-5	2-Nitrophenol	1	<6.0	U	5.2	6.0	10
105-67-9	2,4-Dimethylphenol	1	<9.0	U	6.4	9.0	10
111-91-1	Bis(2-chloroethoxy)methane	1	<6.0	UQ	3.3	6.0	10
120-83-2	2,4-Dichlorophenol	1	<9.0	U	6.5	9.0	10
106-47-8	4-Chloroaniline	1	<6.0	U	4.3	6.0	10
87-68-3	Hexachlorobutadiene	1	<6.0	UJ ICH U	4.1	6.0	10
105-60-2	Caprolactam	1	<3.0	UQ	2.7	3.0	10
59-50-7	4-Chloro-3-methylphenol	1	<9.0	U	7.3	9.0	10
77-47-4	Hexachlorocyclopentadiene	1	<6.0	UQ	3.8	6.0	10
88-06-2	2,4,6-Trichlorophenol	1	<9.0	U	6.4	9.0	10
95-95-4	2,4,5-Trichlorophenol	1	<6.0	U	3.9	6.0	10
92-52-4	1,1'-Biphenyl	1	<9.0	U	7.0	9.0	10
91-58-7	2-Chloronaphthalene	1	<6.0	U	3.2	6.0	10
88-74-4	2-Nitroaniline	1	<6.0	U	3.3	6.0	10
131-11-3	Dimethylphthalate	1	<3.0	U	3.0	3.0	10
606-20-2	2,6-Dinitrotoluene	1	<3.0	U	2.9	3.0	10
99-09-2	3-Nitroaniline	1	<6.0	U	3.3	6.0	10
51-28-5	2,4-Dinitrophenol	1	<9.0	U	7.7	9.0	10
100-02-7	4-Nitrophenol	1	<9.0	UQ	7.9	9.0	10
132-64-9	Dibenzofuran	1	<3.0	U	2.8	3.0	10
121-14-2	2,4-Dinitrotoluene	1	<6.0	U	3.2	6.0	10

UM 031015

ORGANIC ANALYSIS DATA SHEET

EPA 8270D

IR82-SW01-14D

Laboratory:	ENCO Orlando	SDG:	A407421-CTO-WE9A
Client:	CH2M Hill, Inc. (CH031)	Project:	CTO-WE9A, Camp Lejuene Site 82

Matrix:	Surface Water	Laboratory ID:	A407421-01RE1	File ID:	1al008.D
Sampled:	12/10/14 11:20	Prepared:	12/17/14 08:50	Analyzed:	01/19/15 19:34
Solids:		Preparation:	EPA 3510C_MS	Initial/Final:	500 mL / 0.5 mL

Batch: 4L17006 Sequence: AA32210 Calibration: 1501007 Instrument: OSVGCMS1

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q	DL	LOD	LOQ
84-66-2	Diethylphthalate	1	<3.0	U	3.0	3.0	10
7005-72-3	4-Chlorophenyl-phenylether	1	<6.0	U	3.2	6.0	10
100-01-6	4-Nitroaniline	1	<6.0	U	3.2	6.0	10
534-52-1	2-Methyl-4,6-dinitrophenol	1	<6.0	U	6.0	6.0	10
86-30-6/122-39-4	N-nitrosodiphenylamine/Diphenylamine	1	<6.0	UQ	5.4	6.0	10
101-55-3	4-Bromophenyl-phenylether	1	<6.0	U	3.3	6.0	10
118-74-1	Hexachlorobenzene	1	<6.0	U	3.0	6.0	10
1912-24-9	Atrazine	1	<3.0	U	2.9	3.0	10
87-86-5	Pentachlorophenol	1	<9.0	U	8.2	9.0	10
86-74-8	Carbazole	1	<6.0	U	3.3	6.0	10
84-74-2	Di-n-butylphthalate	1	<6.0	U	3.2	6.0	10
85-68-7	Butylbenzylphthalate	1	<6.0	U	5.1	6.0	10
91-94-1	3,3'-Dichlorobenzidine	1	<6.0	U	3.3	6.0	10
117-81-7	Bis(2-ethylhexyl)phthalate	1	<6.0	U	3.5	6.0	10
117-84-0	Di-n-octylphthalate	1	<6.0	UQ	3.6	6.0	10

SYSTEM MONITORING COMPOUND	ADDED (ug/L)	CONC (ug/L)	% REC	QC LIMITS	Q
2-Fluorophenol	50.0	18	36	19 - 119	
Phenol-d5	50.0	14	27	10 - 115	
Nitrobenzene-d5	50.0	29	57	44 - 120	
2-Fluorobiphenyl	50.0	32	64	44 - 119	
2,4,6-Tribromophenol	50.0	42	83	43 - 140	
Terphenyl-d14	50.0	55	111	50 - 134	

INTERNAL STANDARD	AREA	RT	REF AREA	REF RT	Q
1,4-Dichlorobenzene-d4	365296	6.936	312803	6.966	
Naphthalene-d8	1390788	8.499	1202138	8.546	
Acenaphthene-d10	752146	10.706	663746	10.753	
Phenanthrene-d10	1292816	12.588	1098576	12.637	
Chrysene-d12	784907	16.198	565336	16.253	
Perylene-d12	541779	19.158	404946	19.226	

* Values outside of QC limits

LM 031015

ORGANIC ANALYSIS DATA SHEET

EPA 8270D

IR82-SW01D-14D

Laboratory: ENCO Orlando
SDG: A407421-CTO-WE9A
Client: CH2M Hill, Inc. (CH031)
Project: CTO-WE9A, Camp Lejuene Site 82

Matrix: Surface Water
Laboratory ID: A407421-02
File ID: 1ac015.D
Sampled: 12/10/14 11:25
Prepared: 12/17/14 08:50
Analyzed: 01/08/15 12:48
Solids:
Preparation: EPA 3510C_MS
Initial/Final: 485 mL / 0.5 mL
Batch: 4L17006
Sequence: AA32069
Calibration: 1501007
Instrument: OSVGCMS1

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q	DL	LOD	LOQ
100-52-7	Benzaldehyde	1	<9.0	U	6.3	9.0	10
108-95-2	Phenol	1	<6.0	U	5.6	6.0	10
111-44-4	Bis(2-chloroethyl)ether	1	<6.0	U	3.8	6.0	10
95-57-8	2-Chlorophenol	1	<9.0	U	7.4	9.0	10
95-48-7	2-Methylphenol	1	<6.0	U	3.5	6.0	10
108-60-1	Bis(2-chloroisopropyl)ether	1	<6.0	U	3.5	6.0	10
98-86-2	Acetophenone	1	<6.0	U	3.8	6.0	10
108-39-4/106-44-5	3 & 4-Methylphenol	1	<9.0	U	8.2	9.0	10
621-64-7	N-Nitroso-di-n-propylamine	1	<6.0	U	4.5	6.0	10
67-72-1	Hexachloroethane	1	<3.0	U	3.0	3.0	10
98-95-3	Nitrobenzene	1	<6.0	U	3.2	6.0	10
78-59-1	Isophorone	1	<6.0	U	4.5	6.0	10
88-75-5	2-Nitrophenol	1	<6.0	U	5.2	6.0	10
105-67-9	2,4-Dimethylphenol	1	<9.0	U	6.4	9.0	10
111-91-1	Bis(2-chloroethoxy)methane	1	<6.0	U	3.3	6.0	10
120-83-2	2,4-Dichlorophenol	1	<9.0	U	6.5	9.0	10
106-47-8	4-Chloroaniline	1	<6.0	U	4.3	6.0	10
87-68-3	Hexachlorobutadiene	1	<6.0	U	4.1	6.0	10
105-60-2	Caprolactam	1	<3.0	U	2.7	3.0	10
59-50-7	4-Chloro-3-methylphenol	1	<9.0	U	7.3	9.0	10
77-47-4	Hexachlorocyclopentadiene	1	<6.0	UQ	3.8	6.0	10
88-06-2	2,4,6-Trichlorophenol	1	<9.0	U	6.4	9.0	10
95-95-4	2,4,5-Trichlorophenol	1	<6.0	U	3.9	6.0	10
92-52-4	1,1'-Biphenyl	1	<9.0	U	7.0	9.0	10
91-58-7	2-Chloronaphthalene	1	<6.0	U	3.2	6.0	10
88-74-4	2-Nitroaniline	1	<6.0	U	3.3	6.0	10
131-11-3	Dimethylphthalate	1	<3.0	U	3.0	3.0	10
606-20-2	2,6-Dinitrotoluene	1	<3.0	U	2.9	3.0	10
99-09-2	3-Nitroaniline	1	<6.0	U	3.3	6.0	10
51-28-5	2,4-Dinitrophenol	1	<9.0	U	7.7	9.0	10
100-02-7	4-Nitrophenol	1	<9.0	U	7.9	9.0	10
132-64-9	Dibenzofuran	1	<3.0	U	2.8	3.0	10
121-14-2	2,4-Dinitrotoluene	1	<6.0	U	3.2	6.0	10

XRE

LM 031015

ORGANIC ANALYSIS DATA SHEET

EPA 8270D

IR82-SW01D-14D

Laboratory:	ENCO Orlando	SDG:	A407421-CTO-WE9A
Client:	CH2M Hill, Inc. (CH031)	Project:	CTO-WE9A, Camp Lejuene Site 82

Matrix:	Surface Water	Laboratory ID:	A407421-02	File ID:	1ac015.D
Sampled:	12/10/14 11:25	Prepared:	12/17/14 08:50	Analyzed:	01/08/15 12:48
Solids:		Preparation:	EPA 3510C_MS	Initial/Final:	485 mL / 0.5 mL

Batch: 4L17006 Sequence: AA32069 Calibration: 1501007 Instrument: OSVGCMS1

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q	DL	LOD	LOQ
84-66-2	Diethylphthalate	1	<3.0	U	3.0	3.0	10
7005-72-3	4-Chlorophenyl-phenylether	1	<6.0	U	3.2	6.0	10
100-01-6	4-Nitroaniline	1	<6.0	U	3.2	6.0	10
534-52-1	2-Methyl-4,6-dinitrophenol	1	<6.0	U	6.0	6.0	10
86-30-6/122-39-4	N-nitrosodiphenylamine/Diphenylamine	1	<6.0	U	5.4	6.0	10
101-55-3	4-Bromophenyl-phenylether	1	<6.0	U	3.3	6.0	10
118-74-1	Hexachlorobenzene	1	<6.0	U	3.0	6.0	10
1912-24-9	Atrazine	1	<3.0	U	2.9	3.0	10
87-86-5	Pentachlorophenol	1	<9.0	U	8.2	9.0	10
86-74-8	Carbazole	1	<6.0	U	3.3	6.0	10
84-74-2	Di-n-butylphthalate	1	<6.0	U	3.2	6.0	10
85-68-7	Butylbenzylphthalate	1	<6.0	U	5.1	6.0	10
91-94-1	3,3'-Dichlorobenzidine	1	<6.0	UQ	3.3	6.0	10
117-81-7	Bis(2-ethylhexyl)phthalate	1	<6.0	UQ	3.5	6.0	10
117-84-0	Di-n-octylphthalate	1	<6.0	UQ	3.6	6.0	10

XRE

SYSTEM MONITORING COMPOUND	ADDED (ug/L)	CONC (ug/L)	% REC	QC LIMITS	Q
2-Fluorophenol	51.5	27	53	19 - 119	
Phenol-d5	51.5	22	42	10 - 115	
Nitrobenzene-d5	51.5	40	77	44 - 120	
2-Fluorobiphenyl	51.5	43	83	44 - 119	
2,4,6-Tribromophenol	51.5	42	81	43 - 140	
Terphenyl-d14	51.5	63	122	50 - 134	

INTERNAL STANDARD	AREA	RT	REF AREA	REF RT	Q
1,4-Dichlorobenzene-d4	343081	6.816	312803	6.966	
Naphthalene-d8	1265025	8.397	1202138	8.546	
Acenaphthene-d10	657250	10.603	663746	10.753	
Phenanthrene-d10	988732	12.476	1098576	12.637	
Chrysene-d12	678683	16.032	565336	16.253	*
Perylene-d12	475069	18.972	404946	19.226	*

* Values outside of QC limits

LM 03/10/15

ORGANIC ANALYSIS DATA SHEET

EPA 8270D

IR82-SW01D-14D

Laboratory: ENCO Orlando
SDG: A407421-CTO-WE9A
Client: CH2M Hill, Inc. (CH031)
Project: CTO-WE9A, Camp Lejuene Site 82

Matrix: Surface Water
Laboratory ID: A407421-02RE1
File ID: 1al009.D
Sampled: 12/10/14 11:25
Prepared: 12/17/14 08:50
Analyzed: 01/19/15 20:03
Solids:
Preparation: EPA 3510C_MS
Initial/Final: 485 mL / 0.5 mL
Batch: 4L17006
Sequence: AA32210
Calibration: 1501007
Instrument: OSVGCMS1

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q	DL	LOD	LOQ
100-52-7	Benzaldehyde	1	<9.0	U	6.3	9.0	10
108-95-2	Phenol	1	<6.0	U	5.6	6.0	10
111-44-4	Bis(2-chloroethyl)ether	1	<6.0	U	3.8	6.0	10
95-57-8	2-Chlorophenol	1	<9.0	U	7.4	9.0	10
95-48-7	2-Methylphenol	1	<6.0	U	3.5	6.0	10
108-60-1	Bis(2-chloroisopropyl)ether	1	<6.0	U	3.5	6.0	10
98-86-2	Acetophenone	1	<6.0	U	3.8	6.0	10
108-39-4/106-44-5	3 & 4-Methylphenol	1	<9.0	U	8.2	9.0	10
621-64-7	N-Nitroso-di-n-propylamine	1	<6.0	U	4.5	6.0	10
67-72-1	Hexachloroethane	1	<3.0	U	3.0	3.0	10
98-95-3	Nitrobenzene	1	<6.0	U	3.2	6.0	10
78-59-1	Isophorone	1	<6.0	U	4.5	6.0	10
88-75-5	2-Nitrophenol	1	<6.0	U	5.2	6.0	10
105-67-9	2,4-Dimethylphenol	1	<9.0	U	6.4	9.0	10
111-91-1	Bis(2-chloroethoxy)methane	1	<6.0	UQ	3.3	6.0	10
120-83-2	2,4-Dichlorophenol	1	<9.0	U	6.5	9.0	10
106-47-8	4-Chloroaniline	1	<6.0	U	4.3	6.0	10
87-68-3	Hexachlorobutadiene	1	<6.0	U	4.1	6.0	10
105-60-2	Caprolactam	1	<3.0	U	2.7	3.0	10
59-50-7	4-Chloro-3-methylphenol	1	<9.0	U	7.3	9.0	10
77-47-4	Hexachlorocyclopentadiene	1	<6.0	UQ	3.8	6.0	10
88-06-2	2,4,6-Trichlorophenol	1	<9.0	U	6.4	9.0	10
95-95-4	2,4,5-Trichlorophenol	1	<6.0	U	3.9	6.0	10
92-52-4	1,1'-Biphenyl	1	<9.0	U	7.0	9.0	10
91-58-7	2-Chloronaphthalene	1	<6.0	U	3.2	6.0	10
88-74-4	2-Nitroaniline	1	<6.0	U	3.3	6.0	10
131-11-3	Dimethylphthalate	1	<3.0	U	3.0	3.0	10
606-20-2	2,6-Dinitrotoluene	1	<3.0	U	2.9	3.0	10
99-09-2	3-Nitroaniline	1	<6.0	U	3.3	6.0	10
51-28-5	2,4-Dinitrophenol	1	<9.0	U	7.7	9.0	10
100-02-7	4-Nitrophenol	1	<9.0	UQ	7.9	9.0	10
132-64-9	Dibenzofuran	1	<3.0	U	2.8	3.0	10
121-14-2	2,4-Dinitrotoluene	1	<6.0	U	3.2	6.0	10

LM 031015

015

ORGANIC ANALYSIS DATA SHEET

EPA 8270D

IR82-SW01D-14D

Laboratory:	ENCO Orlando	SDG:	A407421-CTO-WE9A
Client:	CH2M Hill, Inc. (CH031)	Project:	CTO-WE9A, Camp Lejuene Site 82

Matrix:	Surface Water	Laboratory ID:	A407421-02RE1	File ID:	1al009.D
Sampled:	12/10/14 11:25	Prepared:	12/17/14 08:50	Analyzed:	01/19/15 20:03
Solids:		Preparation:	EPA 3510C_MS	Initial/Final:	485 mL / 0.5 mL

Batch: 4L17006 Sequence: AA32210 Calibration: 1501007 Instrument: OSVGCMS1

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q	DL	LOD	LOQ
84-66-2	Diethylphthalate	1	<3.0	U	3.0	3.0	10
7005-72-3	4-Chlorophenyl-phenylether	1	<6.0	U	3.2	6.0	10
100-01-6	4-Nitroaniline	1	<6.0	U	3.2	6.0	10
534-52-1	2-Methyl-4,6-dinitrophenol	1	<6.0	U	6.0	6.0	10
86-30-6/122-39-4	N-nitrosodiphenylamine/Diphenylamine	1	<6.0	UJCA UQ	5.4	6.0	10
101-55-3	4-Bromophenyl-phenylether	1	<6.0	U	3.3	6.0	10
118-74-1	Hexachlorobenzene	1	<6.0	U	3.0	6.0	10
1912-24-9	Atrazine	1	<3.0	U	2.9	3.0	10
87-86-5	Pentachlorophenol	1	<9.0	U	8.2	9.0	10
86-74-8	Carbazole	1	<6.0	U	3.3	6.0	10
84-74-2	Di-n-butylphthalate	1	<6.0	U	3.2	6.0	10
85-68-7	Butylbenzylphthalate	1	<6.0	U	5.1	6.0	10
91-94-1	3,3'-Dichlorobenzidine	1	<6.0	U	3.3	6.0	10
117-81-7	Bis(2-ethylhexyl)phthalate	1	<6.0	U	3.5	6.0	10
117-84-0	Di-n-octylphthalate	1	<6.0	UQ	3.6	6.0	10

SYSTEM MONITORING COMPOUND	ADDED (ug/L)	CONC (ug/L)	% REC	QC LIMITS	Q
2-Fluorophenol	51.5	25	48	19 - 119	
Phenol-d5	51.5	18	35	10 - 115	
Nitrobenzene-d5	51.5	38	75	44 - 120	
2-Fluorobiphenyl	51.5	42	82	44 - 119	
2,4,6-Tribromophenol	51.5	41	79	43 - 140	
Terphenyl-d14	51.5	56	109	50 - 134	

INTERNAL STANDARD	AREA	RT	REF AREA	REF RT	Q
1,4-Dichlorobenzene-d4	367644	6.936	312803	6.966	
Naphthalene-d8	1349273	8.499	1202138	8.546	
Acenaphthene-d10	669102	10.706	663746	10.753	
Phenanthrene-d10	1072129	12.588	1098576	12.637	
Chrysene-d12	632792	16.187	565336	16.253	
Perylene-d12	419275	19.158	404946	19.226	

* Values outside of QC limits

WM 031015

ORGANIC ANALYSIS DATA SHEET

EPA 8270D

IR82-SW01-14D

Laboratory:	ENCO Orlando	SDG:	A407421-CTO-WE9A
Client:	CH2M Hill, Inc. (CH031)	Project:	CTO-WE9A, Camp Lejuene Site 82

Matrix:	Surface Water	Laboratory ID:	A407421-01	File ID:	2aa015.D
Sampled:	12/10/14 11:20	Prepared:	12/17/14 11:10	Analyzed:	01/06/15 17:55
Solids:		Preparation:	EPA 3511_MS	Initial/Final:	35 mL / 2 mL

Batch: 4L17003 Sequence: AA32030 Calibration: 1405053 Instrument: OSVGCMS2

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q	DL	LOD	LOQ
91-57-6	2-Methylnaphthalene	1	<0.090	U	0.044	0.090	0.10
91-20-3	Naphthalene	1	<0.090	U	0.035	0.090	0.10
208-96-8	Acenaphthylene	1	<0.090	U	0.036	0.090	0.10
83-32-9	Acenaphthene	1	<0.090	U	0.037	0.090	0.10
86-73-7	Fluorene	1	<0.090	U	0.038	0.090	0.10
85-01-8	Phenanthrene	1	<0.090	U	0.039	0.090	0.10
120-12-7	Anthracene	1	<0.090	U	0.036	0.090	0.10
206-44-0	Fluoranthene	1	<0.090	U	0.051	0.090	0.10
129-00-0	Pyrene	1	<0.090	U	0.048	0.090	0.10
56-55-3	Benzo(a)anthracene	1	<0.090	U	0.037	0.090	0.10
218-01-9	Chrysene	1	<0.090	U	0.051	0.090	0.10
205-99-2	Benzo(b)fluoranthene	1	<0.090	U	0.059	0.090	0.10
207-08-9	Benzo(k)fluoranthene	1	<0.090	U	0.046	0.090	0.10
50-32-8	Benzo(a)pyrene	1	<0.090	U	0.043	0.090	0.10
193-39-5	Indeno(1,2,3-cd)pyrene	1	<0.090	U	0.037	0.090	0.10
53-70-3	Dibenzo(a,h)anthracene	1	<0.090	U	0.026	0.090	0.10
191-24-2	Benzo(g,h,i)perylene	1	<0.090	U	0.040	0.090	0.10

SYSTEM MONITORING COMPOUND	ADDED (ug/L)	CONC (ug/L)	% REC	QC LIMITS	Q
p-Terphenyl	5.71	4.2	74	58 - 132	

INTERNAL STANDARD	AREA	RT	REF AREA	REF RT	Q
Naphthalene-d8	229566	5.522	291841	5.595	
Acenaphthene-d10	193019	7.304	212305	7.371	
Phenanthrene-d10	368330	8.803	395591	8.855	
Chrysene-d12	356050	11.902	452622	11.957	
Perylene-d12	328699	14.197	364367	14.239	

* Values outside of QC limits

WM
030115

ORGANIC ANALYSIS DATA SHEET

EPA 8270D

IR82-SW01D-14D

Laboratory:	ENCO Orlando	SDG:	A407421-CTO-WE9A
Client:	CH2M Hill, Inc. (CH031)	Project:	CTO-WE9A, Camp Lejuene Site 82

Matrix:	Surface Water	Laboratory ID:	A407421-02	File ID:	2aa017.D
Sampled:	12/10/14 11:25	Prepared:	12/17/14 11:10	Analyzed:	01/06/15 18:39
Solids:		Preparation:	EPA 3511_MS	Initial/Final:	35 mL / 2 mL

Batch: 4L17003 Sequence: AA32030 Calibration: 1405053 Instrument: OSVGCMS2

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q	DL	LOD	LOQ
91-57-6	2-Methylnaphthalene	1	<0.090	U	0.044	0.090	0.10
91-20-3	Naphthalene	1	<0.090	U	0.035	0.090	0.10
208-96-8	Acenaphthylene	1	<0.090	U	0.036	0.090	0.10
83-32-9	Acenaphthene	1	<0.090	U	0.037	0.090	0.10
86-73-7	Fluorene	1	<0.090	U	0.038	0.090	0.10
85-01-8	Phenanthrene	1	<0.090	U	0.039	0.090	0.10
120-12-7	Anthracene	1	<0.090	U	0.036	0.090	0.10
206-44-0	Fluoranthene	1	<0.090	U	0.051	0.090	0.10
129-00-0	Pyrene	1	<0.090	U	0.048	0.090	0.10
56-55-3	Benzo(a)anthracene	1	<0.090	U	0.037	0.090	0.10
218-01-9	Chrysene	1	<0.090	U	0.051	0.090	0.10
205-99-2	Benzo(b)fluoranthene	1	<0.090	U	0.059	0.090	0.10
207-08-9	Benzo(k)fluoranthene	1	<0.090	U	0.046	0.090	0.10
50-32-8	Benzo(a)pyrene	1	<0.090	U	0.043	0.090	0.10
193-39-5	Indeno(1,2,3-cd)pyrene	1	<0.090	U	0.037	0.090	0.10
53-70-3	Dibenzo(a,h)anthracene	1	<0.090	U	0.026	0.090	0.10
191-24-2	Benzo(g,h,i)perylene	1	<0.090	U	0.040	0.090	0.10

SYSTEM MONITORING COMPOUND	ADDED (ug/L)	CONC (ug/L)	% REC	QC LIMITS	Q
p-Terphenyl	5.71	4.1	72	58 - 132	

INTERNAL STANDARD	AREA	RT	REF AREA	REF RT	Q
Naphthalene-d8	229767	5.522	291841	5.595	
Acenaphthene-d10	195685	7.305	212305	7.371	
Phenanthrene-d10	375629	8.802	395591	8.855	
Chrysene-d12	367382	11.902	452622	11.957	
Perylene-d12	338136	14.198	364367	14.239	

* Values outside of QC limits

WM 030115

Holding Times

Sampling Date: 12/10/14
Received Date: 12/15/14
Extraction Date: 12/17/14
Analysis Dates: 12/24/14

Receipt paperwork was in order. Cooler temperatures were acceptable at 2°C. 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 six-point curve for all single component pesticides & toxaphene. Response factors were calculated. %RSDs were within QC limits with the exception of two compounds. Continuing calibration standards were analyzed appropriately. All breakdown criteria were met. The CCVs exhibited high %Ds for two compounds. 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 or instrument blanks or the submitted field QC blanks.

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

Surrogate Recoveries

All surrogate recoveries were acceptable. No qualifications based on surrogate recoveries were required.

Matrix Spike/Matrix Spike Duplicates

Samples IR82-SW01-14D were submitted as MS/MSD pairs for pesticides. No qualifications were required.

Laboratory Control Samples

All criteria were met.

Field Duplicate Sample Summary

A field duplicate was submitted for sample IR82-SW01-14D-no qualifications were required.

Sample Result Verification

Reported sample results were verified. Raw data was verified. There were no positive results reported in the samples. Quantitation calculations were verified.

Reviewer _____ **Date:** 2/28/15

ANALYSIS BATCH (SEQUENCE) SUMMARY

EPA 8081B

Laboratory:	ENCO Orlando	SDG:	A407421-CTO-WE9A
Client:	CH2M Hill, Inc. (CH031)	Project:	CTO-WE9A, Camp Lejuene Site 82
Sequence:	AA31769	Instrument:	OSVGCECD2
		Calibration:	1412079

Sample Name	Lab Sample ID	Lab File ID	Analysis Date/Time
Performance Mix	AA31769-PEM1	2LM011.D	12/18/14 11:34
Cal Standard	AA31769-CAL1	2LM012.D	12/18/14 11:45
Cal Standard	AA31769-CAL2	2LM013.D	12/18/14 11:57
Cal Standard	AA31769-CAL3	2LM014.D	12/18/14 12:08
Cal Standard	AA31769-CAL4	2LM015.D	12/18/14 12:19
Cal Standard	AA31769-CAL6	2LM017.D	12/18/14 12:42
Secondary Cal Check	AA31769-SCV1	2LM018.D	12/18/14 13:08

INITIAL CALIBRATION DATA (Continued)

EPA 8081B

Laboratory: ENCO Orlando
SDG: A407421-CTO-WE9A
Client: CH2M Hill, Inc. (CH031)
Project: CTO-WE9A, Camp Lejuene Site 82

Calibration: 1412079
Instrument: OSVGCECD2
Matrix: Water
Calibration Date: 12/18/14 13:54

Compound	Mean RF	RF RSD	Mean RT	RT RSD	Linear r	Quad COD	LIMIT	Q
alpha-BHC	2.563697	18.56342	2.816	5.625411E-02			20	
gamma-BHC	2.187151	11.59013	3.056	5.009917E-02			20	
beta-BHC	0.8753336	6.388998	3.1194	3.880068E-02			20	
delta-BHC	2.203223	15.27516	3.2646	3.899351E-02			20	
Heptachlor	2.22814	5.519353	3.4434	4.216544E-02			20	
Aldrin	2.462597	17.72083	3.7004	2.691744E-02			20	
Heptachlor epoxide	2.286511	8.699021	4.2132	1.087799E-02			20	
Chlordane-gamma	2.076299	7.107958	4.31	2.094493E-02			20	
Chlordane-alpha	2.025168	11.14372	4.4152	2.010994E-02			20	
4,4'-DDE	2.101738	11.93625	4.4704	1.498953E-02			20	
Endosulfan I	1.963348	11.30136	4.5264	1.496321E-02			20	
Dieldrin	1.99499	9.813165	4.7082	1.721143E-02			20	
Endrin	1.728961	9.161618	4.881	1.621922E-02			20	
4,4'-DDD	1.513847	5.542139	4.9222	1.605192E-02			20	
Endosulfan II	2.475191	36.94645	5.0466	3.460363E-02	0.9999015		0.99	
4,4'-DDT	1.338827	14.3991	5.1238	5.247825E-02			20	
Endrin aldehyde	1.608864	19.10416	5.3452	3.242888E-02			20	
Methoxychlor	1.111629	11.08475	5.5728	2.334464E-02			20	
Endosulfan sulfate	1.550767	4.479625	5.6472	3.246292E-02			20	
Endrin ketone	1.787732	14.62856	5.8384	2.971909E-02			20	
Toxaphene	1.137976E+08	9.654769	5.6945	6.962493E-02			20	
2,4,5,6-TCMX	2.304971	10.79316	2.4188	3.701374E-02			20	
Decachlorobiphenyl	1.591934	22.22122	6.4818	5.318471E-02	0.9984882		0.99	

ANALYSIS BATCH (SEQUENCE) SUMMARY

EPA 8081B

Laboratory:	ENCO Orlando	SDG:	A407421-CTO-WE9A
Client:	CH2M Hill, Inc. (CH031)	Project:	CTO-WE9A, Camp Lejuene Site 82
Sequence:	AA31896	Instrument:	OSVGCECD2
		Calibration:	1412079

Sample Name	Lab Sample ID	Lab File ID	Analysis Date/Time
Performance Mix	AA31896-PEM1	2LS004.D	12/24/14 09:14
Calibration Check	AA31896-CCV1	2LS005.D	12/24/14 09:25
Blank	4L17002-BLK1	2LS008.D	12/24/14 10:01
LCS	4L17002-BS1	2LS009.D	12/24/14 10:12
IR82-SW01-14D	4L17002-MS1	2LS010.D	12/24/14 10:24
IR82-SW01-14D	4L17002-MSD1	2LS011.D	12/24/14 10:35
IR82-SW01-14D	A407421-01	2LS012.D	12/24/14 10:47
IR82-SW01D-14D	A407421-02	2LS013.D	12/24/14 10:59
Low Cal Check	AA31896-LCV1	2LS021.D	12/24/14 12:31

CONTINUING CALIBRATION CHECK

EPA 8081B

Laboratory:	ENCO Orlando	SDG:	A407421-CTO-WE9A
Client:	CH2M Hill, Inc. (CH031)	Project:	CTO-WE9A, Camp Lejuene Site 82
Instrument ID:	OSVGCECD2	Calibration:	1412079
Lab File ID:	2LS005.D	Calibration Date:	12/18/14 13:54
Sequence:	AA31896	Injection Date:	12/24/14
Lab Sample ID:	AA31896-CCV1	Injection Time:	09:25

		CONC. (ug/mL)		RESPONSE FACTOR			% DIFF / DRIFT	
COMPOUND	TYPE	STD	CCV	ICAL	CCV	MIN (#)	CCV	LIMIT (#)
alpha-BHC	A	0.100	0.12	2.563697	3.058883		19.3	20
gamma-BHC	A	0.100	0.10	2.187151	2.34655		7.3	20
beta-BHC	A	0.100	0.092	0.8753336	0.8311119		-5.1	20
delta-BHC	A	0.100	0.11	2.203223	2.420955		9.9	20
Heptachlor	A	0.100	0.10	2.22814	2.314156		3.9	20
Aldrin	A	0.100	0.12	2.462597	3.061245		24.3	20 *
Heptachlor epoxide	A	0.100	0.11	2.286511	2.502446		9.4	20
Chlordane-gamma	A	0.100	0.099	2.076299	2.076936		0.03	20
Chlordane-alpha	A	0.100	0.10	2.025168	2.160621		6.7	20
4,4'-DDE	A	0.100	0.14	2.101738	2.962713		41.0	20 *
Endosulfan I	A	0.100	0.11	1.963348	2.194027		11.7	20
Dieldrin	A	0.100	0.11	1.99499	2.15151		7.8	20
Endrin	A	0.100	0.11	1.728961	1.88544		9.1	20
4,4'-DDD	A	0.100	0.096	1.513847	1.482706		-2.1	20
Endosulfan II	L	0.100	0.092	2.475191	1.752489		-8.3	20
4,4'-DDT	A	0.100	0.11	1.338827	1.462797		9.3	20
Endrin aldehyde	A	0.100	0.091	1.608864	1.443563		-10.3	20
Methoxychlor	A	0.100	0.083	1.111629	0.9274506		-16.6	20
Endosulfan sulfate	A	0.100	0.091	1.550767	1.420955		-8.4	20
Endrin ketone	A	0.100	0.090	1.787732	1.588325		-11.2	20

Column to be used to flag Response Factor and %Diff/Drift values with an asterisk

* Values outside of QC limits

Holding Times

Sampling Date: 12/10/14
Received Date: 12/15/14
Extraction Date: 12/17/14
Analysis Dates: 12/26/14

The samples in this SDG were validated according to the recommendations in the Method SW 846 8082 and the QC limits published in the project specific SAP.

Receipt paperwork was in order. Cooler temperatures were acceptable. 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

8082 PCB: Initial calibrations were performed according to the method with a multi-point curve. Response factors were calculated. %RSDs were within QC limits. All ICV criteria were met (avg. %Ds were met). Continuing calibration standards were analyzed appropriately. All CCVs exhibited acceptable %Ds (avg. %Ds were met). Column resolution was acceptable. Standard retention times were stable throughout the analytical sequences. The correct analytical sequences were run. Raw data and calculations were 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 or instrument blanks or the submitted field QC blanks.

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

Surrogate Recoveries

Surrogate recoveries met criteria in all samples in this SDG. No qualifications were required.

Matrix Spike/Matrix Spike Duplicates

The MS/MSD samples analyzed for this SDG were acceptable for all recoveries and RPDs in the original runs. No qualifications were required.

Laboratory Control Samples

The LCS samples exhibited acceptable recoveries and RPDs. No qualifications were required.

Field Duplicate Sample Summary

There was a field duplicate pair in this SDG. No qualifications were necessary as no positive results were exhibited.

Sample Result Verification

Reported sample results were verified. Raw data and calculations were verified.

Reviewer L Mascuatz **Date:** 3/1/15

INORGANIC ANALYSIS DATA SHEET

EPA 6020A

IR82-SW01-14D

Laboratory: ENCO Orlando
SDG: A407421-CTO-WE9A
Client: CH2M Hill, Inc. (CH031)
Project: CTO-WE9A, Camp Lejuene Site 82

Matrix: Surface Water
Laboratory ID: A407421-01
File ID: 122914_RP1_DOD-022
Sampled: 12/10/14 11:20
Prepared: 12/22/14 12:00
Analyzed: 12/29/14 11:31
Solids: 0.00
Preparation: EPA 3005A
Initial/Final: 50 mL / 50 mL
Batch: 4L22016
Sequence: AA31918
Calibration: 1412107
Instrument: OMICPMS1

CAS NO.	Analyte	Concentration (ug/L)	Dilution Factor	Q	DL	LOD	LOQ	Method
7440-36-0	Antimony	<0.440	1	U	0.110	0.440	0.500	EPA 6020A
7440-38-2	Arsenic	<10.0	1	U	0.610	10.0	15.0	EPA 6020A
7440-39-3	Barium	15.9	1		2.00	8.00	10.0	EPA 6020A
7440-41-7	Beryllium	<0.370 UJ	1 MSL	~~UJQ~~	0.0940	0.370	0.800	EPA 6020A
7440-43-9	Cadmium	<4.00 UJ	1 MSL	~~UJQ~~	0.110	4.00	8.00	EPA 6020A
7440-47-3	Chromium	0.689	1	J	0.450	3.00	5.00	EPA 6020A
7440-50-8	Copper	0.758	1	J	0.220	0.880	1.50	EPA 6020A
7439-92-1	Lead	0.289	1	J	0.160	0.600	1.00	EPA 6020A
7440-02-0	Nickel	0.657	1	J	0.320	1.20	2.00	EPA 6020A
7782-49-2	Selenium	<2.60 UJ	1 MSL	~~UJQ~~	0.650	2.60	4.00	EPA 6020A
7440-22-4	Silver	<0.116	1	U	0.0290	0.116	0.225	EPA 6020A
7440-28-0	Thallium	<0.230	1	U	0.0580	0.230	0.400	EPA 6020A

JAC
3/15

INORGANIC ANALYSIS DATA SHEET

EPA 6020A

IR82-SW01-14D

Laboratory: ENCO Orlando
SDG: A407421-CTO-WE9A
Client: CH2M Hill, Inc. (CH031)
Project: CTO-WE9A, Camp Lejuene Site 82

Matrix: Surface Water
Laboratory ID: A407421-01RE1
File ID: 123014_RP1_DOD-015
Sampled: 12/10/14 11:20
Prepared: 12/22/14 12:00
Analyzed: 12/30/14 09:14
Solids: 0.00
Preparation: EPA 3005A
Initial/Final: 50 mL / 50 mL
Batch: 4L22016
Sequence: AA31941
Calibration: 1412111
Instrument: OMICPMS1

CAS NO.	Analyte	Concentration (ug/L)	Dilution Factor	Q	DL	LOD	LOQ	Method
7440-48-4	Cobalt	<0.840	1	U	0.210	0.840	1.00	EPA 6020A
7440-62-2	Vanadium	0.512	1	J	0.200	0.800	1.00	EPA 6020A

JAC
3/15

INORGANIC ANALYSIS DATA SHEET

EPA 6020A

IR82-SW01D-14D

Laboratory: ENCO Orlando
SDG: A407421-CTO-WE9A
Client: CH2M Hill, Inc. (CH031)
Project: CTO-WE9A, Camp Lejuene Site 82

Matrix: Surface Water
Laboratory ID: A407421-02
File ID: 122914_RP1_DOD-025
Sampled: 12/10/14 11:25
Prepared: 12/22/14 12:00
Analyzed: 12/29/14 11:45
Solids: 0.00
Preparation: EPA 3005A
Initial/Final: 50 mL / 50 mL
Batch: 4L22016
Sequence: AA31918
Calibration: 1412107
Instrument: OMICPMS1

CAS NO.	Analyte	Concentration (ug/L)	Dilution Factor	Q	DL	LOD	LOQ	Method
7440-36-0	Antimony	<0.440	1	U	0.110	0.440	0.500	EPA 6020A
7440-38-2	Arsenic	<10.0	1	U	0.610	10.0	15.0	EPA 6020A
7440-39-3	Barium	15.6	1		2.00	8.00	10.0	EPA 6020A
7440-41-7	Beryllium	<0.370 UJ	1 MSL	~~U~~	0.0940	0.370	0.800	EPA 6020A
7440-43-9	Cadmium	<4.00 UJ	1 MSL	~~U~~	0.110	4.00	8.00	EPA 6020A
7440-47-3	Chromium	0.658	1	J	0.450	3.00	5.00	EPA 6020A
7440-50-8	Copper	0.838	1	J	0.220	0.880	1.50	EPA 6020A
7439-92-1	Lead	0.278	1	J	0.160	0.600	1.00	EPA 6020A
7440-02-0	Nickel	0.644	1	J	0.320	1.20	2.00	EPA 6020A
7782-49-2	Selenium	<2.60 UJ	1 MSL	~~U~~	0.650	2.60	4.00	EPA 6020A
7440-22-4	Silver	<0.116	1	U	0.0290	0.116	0.225	EPA 6020A
7440-28-0	Thallium	<0.230	1	U	0.0580	0.230	0.400	EPA 6020A

JMC 3/15

INORGANIC ANALYSIS DATA SHEET

EPA 6020A

IR82-SW01D-14D

Laboratory: ENCO Orlando

Client: CH2M Hill, Inc. (CH031)

SDG: A407421-CTO-WE9A

Project: CTO-WE9A, Camp Lejuene Site 82

Matrix: Surface Water

Laboratory ID: A407421-02RE1

File ID: 123014_RP1_DOD-029

Sampled: 12/10/14 11:25

Prepared: 12/22/14 12:00

Analyzed: 12/30/14 09:49

Solids: 0.00

Preparation: EPA 3005A

Initial/Final: 50 mL / 50 mL

Batch: 4L22016

Sequence: AA31941

Calibration: 1412111

Instrument: OMICPMS1

CAS NO.	Analyte	Concentration (ug/L)	Dilution Factor	Q	DL	LOD	LOQ	Method
7440-48-4	Cobalt	<0.840	1	U	0.210	0.840	1.00	EPA 6020A
7440-62-2	Vanadium	0.542	1	J	0.200	0.800	1.00	EPA 6020A

JAC 3/15

INORGANIC ANALYSIS DATA SHEET

EPA 6020A

IR82-SW01-14D

Laboratory: ENCO Orlando

SDG: A407421-CTO-WE9A

Client: CH2M Hill, Inc. (CH031)

Project: CTO-WE9A, Camp Lejuene Site 82

Matrix: Surface Water

Laboratory ID: A407421-01

File ID: 122914_RP1_DOD-016

Sampled: 12/10/14 11:20

Prepared: 12/22/14 12:00

Analyzed: 12/29/14 10:55

Solids: 0.00

Preparation: EPA 3005A

Initial/Final: 50 mL / 50 mL

Batch: 4L22017

Sequence: AA31918

Calibration: 1412107

Instrument: OMICPMS1

CAS NO.	Analyte	Concentration (ug/L)	Dilution Factor	Q	DL	LOD	LOQ	Method
7440-36-0	Antimony (dissolved)	0.145	1	J	0.110	0.440	0.500	EPA 6020A
7440-38-2	Arsenic (dissolved)	<10.0	1	U	0.610	10.0	15.0	EPA 6020A
7440-39-3	Barium (dissolved)	16.2	1		2.00	8.00	10.0	EPA 6020A
7440-41-7	Beryllium (dissolved)	<0.370	1	UJQ	0.0940	0.370	0.800	EPA 6020A
7440-43-9	Cadmium (dissolved)	<4.00	1	UJQ UJ MSL	0.110	4.00	8.00	EPA 6020A
7440-47-3	Chromium (dissolved)	0.610	1	J	0.450	3.00	5.00	EPA 6020A
7440-50-8	Copper (dissolved)	0.762	1	J	0.220	0.880	1.50	EPA 6020A
7439-92-1	Lead (dissolved)	0.184	1	JQ	0.160	0.600	1.00	EPA 6020A
7440-02-0	Nickel (dissolved)	0.792	1	J	0.320	1.20	2.00	EPA 6020A
7782-49-2	Selenium (dissolved)	<2.60	1	UJQ UJ MSL	0.650	2.60	4.00	EPA 6020A
7440-22-4	Silver (dissolved)	<0.116	1	U	0.0290	0.116	0.225	EPA 6020A
7440-28-0	Thallium (dissolved)	<0.230	1	U	0.0580	0.230	0.400	EPA 6020A

JLC
3/15

INORGANIC ANALYSIS DATA SHEET

EPA 6020A

IR82-SW01-14D

Laboratory: ENCO Orlando

SDG: A407421-CTO-WE9A

Client: CH2M Hill, Inc. (CH031)

Project: CTO-WE9A, Camp Lejuene Site 82

Matrix: Surface Water

Laboratory ID: A407421-01RE1

File ID: 123014_RP1_DOD-022

Sampled: 12/10/14 11:20

Prepared: 12/22/14 12:00

Analyzed: 12/30/14 09:33

Solids: 0.00

Preparation: EPA 3005A

Initial/Final: 50 mL / 50 mL

Batch: 4L22017

Sequence: AA31941

Calibration: 1412111

Instrument: OMICPMS1

CAS NO.	Analyte	Concentration (ug/L)	Dilution Factor	Q	DL	LOD	LOQ	Method
7440-48-4	Cobalt (dissolved)	<0.840	1	U	0.210	0.840	1.00	EPA 6020A
7440-62-2	Vanadium (dissolved)	0.384	1	J	0.200	0.800	1.00	EPA 6020A

QAC 3715

INORGANIC ANALYSIS DATA SHEET

EPA 6020A

IR82-SW01D-14D

Laboratory: ENCO Orlando

Client: CH2M Hill, Inc. (CH031)

SDG: A407421-CTO-WE9A

Project: CTO-WE9A, Camp Lejuene Site 82

Matrix: Surface Water

Laboratory ID: A407421-02

File ID: 122914_RP1_DOD-019

Sampled: 12/10/14 11:25

Prepared: 12/22/14 12:00

Analyzed: 12/29/14 11:09

Solids: 0.00

Preparation: EPA 3005A

Initial/Final: 50 mL / 50 mL

Batch: 4L22017

Sequence: AA31918

Calibration: 1412107

Instrument: OMICPMS1

CAS NO.	Analyte	Concentration (ug/L)	Dilution Factor	Q	DL	LOD	LOQ	Method
7440-36-0	Antimony (dissolved)	<0.440	1	U	0.110	0.440	0.500	EPA 6020A
7440-38-2	Arsenic (dissolved)	<10.0	1	U	0.610	10.0	15.0	EPA 6020A
7440-39-3	Barium (dissolved)	15.8	1		2.00	8.00	10.0	EPA 6020A
7440-41-7	Beryllium (dissolved)	<0.370	1	U	0.0940	0.370	0.800	EPA 6020A
7440-43-9	Cadmium (dissolved)	<4.00	1	UJ ~~U~~ MSL	0.110	4.00	8.00	EPA 6020A
7440-47-3	Chromium (dissolved)	0.607	1	J	0.450	3.00	5.00	EPA 6020A
7440-50-8	Copper (dissolved)	1.31	1	J	0.220	0.880	1.50	EPA 6020A
7439-92-1	Lead (dissolved)	<0.600	1	U	0.160	0.600	1.00	EPA 6020A
7440-02-0	Nickel (dissolved)	0.807	1	J	0.320	1.20	2.00	EPA 6020A
7782-49-2	Selenium (dissolved)	<2.60	1	UJ ~~U~~ MSL	0.650	2.60	4.00	EPA 6020A
7440-22-4	Silver (dissolved)	<0.116	1	U	0.0290	0.116	0.225	EPA 6020A
7440-28-0	Thallium (dissolved)	<0.230	1	U	0.0580	0.230	0.400	EPA 6020A

JRC 3/15

INORGANIC ANALYSIS DATA SHEET

EPA 6020A

IR82-SW01D-14D

Laboratory: ENCO Orlando

Client: CH2M Hill, Inc. (CH031)

SDG: A407421-CTO-WE9A

Project: CTO-WE9A, Camp Lejuene Site 82

Matrix: Surface Water

Laboratory ID: A407421-02RE1

File ID: 123014_RP1_DOD-030

Sampled: 12/10/14 11:25

Prepared: 12/22/14 12:00

Analyzed: 12/30/14 09:52

Solids: 0.00

Preparation: EPA 3005A

Initial/Final: 50 mL / 50 mL

Batch: 4L22017

Sequence: AA31941

Calibration: 1412111

Instrument: OMICPMS1

CAS NO.	Analyte	Concentration (ug/L)	Dilution Factor	Q	DL	LOD	LOQ	Method
7440-48-4	Cobalt (dissolved)	<0.840	1	U	0.210	0.840	1.00	EPA 6020A
7440-62-2	Vanadium (dissolved)	0.413	1	J	0.200	0.800	1.00	EPA 6020A

JAC
3/15

INORGANIC ANALYSIS DATA SHEET

EPA 6010C

A407421-01 (IR82-SW01-14D)

Laboratory: ENCO Jacksonville

SDG: A407421-CTO-WE9A

Client: ENCO Orlando

Project: CTO-WE9A, Camp Lejuene Site 82

Matrix: Surface Water

Laboratory ID: B405549-01

File ID: 123114a-016

Sampled: 12/10/14 11:20

Prepared: 12/30/14 09:03

Analyzed: 12/31/14 10:38

Solids: 0.00

Preparation: EPA 3005A

Initial/Final: 50 mL / 50 mL

Batch: 4L30004

Sequence: BA16290

Calibration: 1412009

Instrument: JMICP2

CAS NO.	Analyte	Concentration (ug/L)	Dilution Factor	Q	DL	LOD	LOQ	Method
7429-90-5	Aluminum	297	1	J	86.0	200	400	EPA 6010C
7440-70-2	Calcium	33000	1		32.0	250	500	EPA 6010C
7439-89-6	Iron	578	1		5.60	50.0	100	EPA 6010C
7439-95-4	Magnesium	57100	1	~~Q~~	58.0	250	500	EPA 6010C
7439-96-5	Manganese	10.1	1	J	0.180	10.0	20.0	EPA 6010C
7440-09-7	Potassium	20200	1		130	500	1000	EPA 6010C
7440-23-5	Sodium	~~489000~~	1 X	~~EQ~~ DL	56.0	250	500	EPA 6010C
7440-66-6	Zinc	<10.0	1	U	5.20	10.0	20.0	EPA 6010C

JAC
3/4/15

INORGANIC ANALYSIS DATA SHEET

EPA 6010C

A407421-01 (IR82-SW01-14D)

Laboratory: ENCO Jacksonville

Client: ENCO Orlando

SDG: A407421-CTO-WE9A

Project: CTO-WE9A, Camp Lejuene Site 82

Matrix: Surface Water

Laboratory ID: B405549-01RE1

File ID: 010515aRP1-017

Sampled: 12/10/14 11:20

Prepared: 12/30/14 09:03

Analyzed: 01/05/15 11:13

Solids: 0.00

Preparation: EPA 3005A

Initial/Final: 50 mL / 50 mL

Batch: 4L30004

Sequence: BA16295

Calibration: 1501001

Instrument: JMICP2

CAS NO.	Analyte	Concentration (ug/L)	Dilution Factor	Q	DL	LOD	LOQ	Method
7439-95-4	Magnesium	~~57700~~	5	~~D~~ DL	290	1250	2500	EPA 6010C
7440-23-5	Sodium	~~483000~~	5	~~DE~~ DL	280	1250	2500	EPA 6010C

JJC
3/15

INORGANIC ANALYSIS DATA SHEET

EPA 6010C

A407421-01 (IR82-SW01-14D)

Laboratory: ENCO Jacksonville

Client: ENCO Orlando

SDG: A407421-CTO-WE9A

Project: CTO-WE9A, Camp Lejuene Site 82

Matrix: Surface Water

Laboratory ID: B405549-01RE2

File ID: 010515aRP1-018

Sampled: 12/10/14 11:20

Prepared: 12/30/14 09:03

Analyzed: 01/05/15 11:16

Solids: 0.00

Preparation: EPA 3005A

Initial/Final: 50 mL / 50 mL

Batch: 4L30004

Sequence: BA16295

Calibration: 1501001

Instrument: JMICP2

CAS NO.	Analyte	Concentration (ug/L)	Dilution Factor	Q	DL	LOD	LOQ	Method
7440-23-5	Sodium	519000	25	~~D~~	1400	6250	12500	EPA 6010C

JAC
3/15

INORGANIC ANALYSIS DATA SHEET

EPA 6010C

A407421-02 (IR82-SW01D-14D)

Laboratory: ENCO Jacksonville
Client: ENCO Orlando

SDG: A407421-CTO-WE9A
Project: CTO-WE9A, Camp Lejuene Site 82

Matrix: Surface Water
Laboratory ID: B405549-02
File ID: 123114a-017
Sampled: 12/10/14 11:25
Prepared: 12/30/14 09:03
Analyzed: 12/31/14 10:41
Solids: 0.00
Preparation: EPA 3005A
Initial/Final: 50 mL / 50 mL
Batch: 4L30004
Sequence: BA16290
Calibration: 1412009
Instrument: JMICP2

CAS NO.	Analyte	Concentration (ug/L)	Dilution Factor	Q	DL	LOD	LOQ	Method
7429-90-5	Aluminum	282	1	J	86.0	200	400	EPA 6010C
7440-70-2	Calcium	32400	1		32.0	250	500	EPA 6010C
7439-89-6	Iron	573	1		5.60	50.0	100	EPA 6010C
7439-95-4	Magnesium	55200	1		58.0	250	500	EPA 6010C
7439-96-5	Manganese	10.0	1	J	0.180	10.0	20.0	EPA 6010C
7440-09-7	Potassium	20100	1		130	500	1000	EPA 6010C
7440-23-5	Sodium	~~476000~~	1	X ~~E~~ DL	56.0	250	500	EPA 6010C
7440-66-6	Zinc	<10.0	1	U	5.20	10.0	20.0	EPA 6010C

JLC
3/15

INORGANIC ANALYSIS DATA SHEET

EPA 6010C

A407421-02 (IR82-SW01D-14D)

Laboratory: ENCO Jacksonville
Client: ENCO Orlando

SDG: A407421-CTO-WE9A
Project: CTO-WE9A, Camp Lejuene Site 82

Matrix: Surface Water
Laboratory ID: B405549-02RE1
File ID: 010515aRP1-020
Sampled: 12/10/14 11:25
Prepared: 12/30/14 09:03
Analyzed: 01/05/15 11:22
Solids: 0.00
Preparation: EPA 3005A
Initial/Final: 50 mL / 50 mL
Batch: 4L30004
Sequence: BA16295
Calibration: 1501001
Instrument: JMICP2

CAS NO.	Analyte	Concentration (ug/L)	Dilution Factor	Q	DL	LOD	LOQ	Method
7440-23-5	Sodium	477000	20	~~D~~	1120	5000	10000	EPA 6010C

JC
3/15

INORGANIC ANALYSIS DATA SHEET

EPA 6010C

A407421-01 (IR82-SW01-14D)

Laboratory: ENCO Jacksonville
Client: ENCO Orlando

SDG: A407421-CTO-WE9A
Project: CTO-WE9A, Camp Lejuene Site 82

Matrix: Surface Water
Laboratory ID: B405549-01
File ID: 123114a-026
Sampled: 12/10/14 11:20
Prepared: 12/30/14 09:04
Analyzed: 12/31/14 11:19
Solids: 0.00
Preparation: EPA 3005A
Initial/Final: 50 mL / 50 mL
Batch: 4L30006
Sequence: BA16290
Calibration: 1412009
Instrument: JMICP2

CAS NO.	Analyte	Concentration (ug/L)	Dilution Factor	Q	DL	LOD	LOQ	Method
7429-90-5	Aluminum (dissolved)	155	1	J	86.0	200	400	EPA 6010C
7440-70-2	Calcium (dissolved)	41200	1	~~Q~~	32.0	250	500	EPA 6010C
7439-89-6	Iron (dissolved)	357	1		5.60	50.0	100	EPA 6010C
7439-95-4	Magnesium (dissolved)	80600	1	~~Q~~	58.0	250	500	EPA 6010C
7439-96-5	Manganese (dissolved)	11.6	1	J	0.180	10.0	20.0	EPA 6010C
7440-09-7	Potassium (dissolved)	30100	1		130	500	1000	EPA 6010C
7440-23-5	Sodium (dissolved)	~~710000~~	X 1 DL	~~BEQ~~	56.0	250	500	EPA 6010C
7440-66-6	Zinc (dissolved)	<10.0	1	U	5.20	10.0	20.0	EPA 6010C

JAC
3/15

INORGANIC ANALYSIS DATA SHEET

EPA 6010C

A407421-01 (IR82-SW01-14D)

Laboratory: ENCO Jacksonville
Client: ENCO Orlando

SDG: A407421-CTO-WE9A
Project: CTO-WE9A, Camp Lejuene Site 82

Matrix: Surface Water
Laboratory ID: B405549-01RE1
File ID: 010515aRP1-013
Sampled: 12/10/14 11:20
Prepared: 12/30/14 09:04
Analyzed: 01/05/15 11:02
Solids: 0.00
Preparation: EPA 3005A
Initial/Final: 50 mL / 50 mL
Batch: 4L30006
Sequence: BA16295
Calibration: 1501001
Instrument: JMICP2

CAS NO.	Analyte	Concentration (ug/L)	Dilution Factor	Q	DL	LOD	LOQ	Method
7440-70-2	Calcium (dissolved)	~~43500~~	5	X ~~D~~ DL	160	1250	2500	EPA 6010C
7439-95-4	Magnesium (dissolved)	~~86900~~	5	X ~~D~~ DL	290	1250	2500	EPA 6010C
7440-23-5	Sodium (dissolved)	~~737000~~	5	X ~~BDE~~ DL	280	1250	2500	EPA 6010C

JAC
3/15

INORGANIC ANALYSIS DATA SHEET

EPA 6010C

A407421-01 (IR82-SW01-14D)

Laboratory: ENCO Jacksonville
Client: ENCO Orlando

SDG: A407421-CTO-WE9A
Project: CTO-WE9A, Camp Lejuene Site 82

Matrix: Surface Water
Laboratory ID: B405549-01RE2
File ID: 010515aRP1-014
Sampled: 12/10/14 11:20
Prepared: 12/30/14 09:04
Analyzed: 01/05/15 11:05
Solids: 0.00
Preparation: EPA 3005A
Initial/Final: 50 mL / 50 mL
Batch: 4L30006
Sequence: BA16295
Calibration: 1501001
Instrument: JMICP2

CAS NO.	Analyte	Concentration (ug/L)	Dilution Factor	Q	DL	LOD	LOQ	Method
7440-23-5	Sodium (dissolved)	764000	25	~~BD~~	1400	6250	12500	EPA 6010C

JAC
3715

INORGANIC ANALYSIS DATA SHEET

EPA 6010C

A407421-02 (IR82-SW01D-14D)
IR82-SW01D-14D

Laboratory: ENCO Jacksonville
Client: ENCO Orlando

SDG: A407421-CTO-WE9A
Project: CTO-WE9A, Camp Lejuene Site 82

Matrix: Surface Water
Laboratory ID: B405549-02
File ID: 123114a-027
Sampled: 12/10/14 11:25
Prepared: 12/30/14 09:04
Analyzed: 12/31/14 11:22
Solids: 0.00
Preparation: EPA 3005A
Initial/Final: 50 mL / 50 mL
Batch: 4L30006
Sequence: BA16290
Calibration: 1412009
Instrument: JMICP2

CAS NO.	Analyte	Concentration (ug/L)	Dilution Factor	Q	DL	LOD	LOQ	Method
7429-90-5	Aluminum (dissolved)	166	1	J	86.0	200	400	EPA 6010C
7440-70-2	Calcium (dissolved)	39300	1		32.0	250	500	EPA 6010C
7439-89-6	Iron (dissolved)	324	1		5.60	50.0	100	EPA 6010C
7439-95-4	Magnesium (dissolved)	75400	1		58.0	250	500	EPA 6010C
7439-96-5	Manganese (dissolved)	10.5	1	J	0.180	10.0	20.0	EPA 6010C
7440-09-7	Potassium (dissolved)	27800	1		130	500	1000	EPA 6010C
7440-23-5	Sodium (dissolved)	~~660000~~	1	X ~~BE~~ DL	56.0	250	500	EPA 6010C
7440-66-6	Zinc (dissolved)	<10.0	1	U	5.20	10.0	20.0	EPA 6010C

JAC
3/15

INORGANIC ANALYSIS DATA SHEET

EPA 6010C

A407421-02 (IR82-SW01D-14D)

Laboratory: ENCO Jacksonville
Client: ENCO Orlando

SDG: A407421-CTO-WE9A
Project: CTO-WE9A, Camp Lejuene Site 82

Matrix: Surface Water
Laboratory ID: B405549-02RE1
File ID: 010515aRP1-016
Sampled: 12/10/14 11:25
Prepared: 12/30/14 09:04
Analyzed: 01/05/15 11:11
Solids: 0.00
Preparation: EPA 3005A
Initial/Final: 50 mL / 50 mL
Batch: 4L30006
Sequence: BA16295
Calibration: 1501001
Instrument: JMICP2

CAS NO.	Analyte	Concentration (ug/L)	Dilution Factor	Q	DL	LOD	LOQ	Method
7440-23-5	Sodium (dissolved)	663000	20	~~BD~~	1120	5000	10000	EPA 6010C

JLC
3/15

INORGANIC ANALYSIS DATA SHEET

EPA 7470A

IR82-SW01-14D

Laboratory: ENCO Orlando

SDG: A407421-CTO-WE9A

Client: CH2M Hill, Inc. (CH031)

Project: CTO-WE9A, Camp Lejuene Site 82

Matrix: Surface Water

Laboratory ID: A407421-01

File ID: Hg 4L22019 18 3063 w-028

Sampled: 12/10/14 11:20

Prepared: 12/30/14 11:48

Analyzed: 12/31/14 07:46

Solids: 0.00

Preparation: EPA 7470A

Initial/Final: 30 mL / 30 mL

Batch: 4L22018

Sequence: AA31966

Calibration: 1412117

Instrument: OMHG1

CAS NO.	Analyte	Concentration (ug/L)	Dilution Factor	Q	DL	LOD	LOQ	Method
7439-97-6	Mercury	<0.0690	1	U	0.0230	0.0690	0.200	EPA 7470A

JC 3/15

043

INORGANIC ANALYSIS DATA SHEET

EPA 7470A

IR82-SW01D-14D

Laboratory: ENCO Orlando

SDG: A407421-CTO-WE9A

Client: CH2M Hill, Inc. (CH031)

Project: CTO-WE9A, Camp Lejuene Site 82

Matrix: Surface Water

Laboratory ID: A407421-02

File ID: Hg 4L22019 18 3063 w-035

Sampled: 12/10/14 11:25

Prepared: 12/30/14 11:48

Analyzed: 12/31/14 08:07

Solids: 0.00

Preparation: EPA 7470A

Initial/Final: 30 mL / 30 mL

Batch: 4L22018

Sequence: AA31966

Calibration: 1412117

Instrument: OMHG1

CAS NO.	Analyte	Concentration (ug/L)	Dilution Factor	Q	DL	LOD	LOQ	Method
7439-97-6	Mercury	<0.0690	1	U	0.0230	0.0690	0.200	EPA 7470A

JAC
3/15

INORGANIC ANALYSIS DATA SHEET

EPA 7470A

IR82-SW01-14D

Laboratory: ENCO Orlando
SDG: A407421-CTO-WE9A
Client: CH2M Hill, Inc. (CH031)
Project: CTO-WE9A, Camp Lejuene Site 82

Matrix: Surface Water
Laboratory ID: A407421-01
File ID: Hg 4L22019 18 3063 w-017
Sampled: 12/10/14 11:20
Prepared: 12/30/14 11:48
Analyzed: 12/31/14 07:11
Solids: 0.00
Preparation: EPA 7470A
Initial/Final: 30 mL / 30 mL
Batch: 4L22019
Sequence: AA31965
Calibration: 1412117
Instrument: OMHG1

CAS NO.	Analyte	Concentration (ug/L)	Dilution Factor	Q	DL	LOD	LOQ	Method
7439-97-6	Mercury (dissolved)	<0.069	1	U	0.023	0.069	0.200	EPA 7470A

JAC
3/15

INORGANIC ANALYSIS DATA SHEET

EPA 7470A

IR82-SW01D-14D

Laboratory: ENCO Orlando

SDG: A407421-CTO-WE9A

Client: CH2M Hill, Inc. (CH031)

Project: CTO-WE9A, Camp Lejuene Site 82

Matrix: Surface Water

Laboratory ID: A407421-02

File ID: Hg 4L22019 18 3063 w-023

Sampled: 12/10/14 11:25

Prepared: 12/30/14 11:48

Analyzed: 12/31/14 07:30

Solids: 0.00

Preparation: EPA 7470A

Initial/Final: 30 mL / 30 mL

Batch: 4L22019

Sequence: AA31965

Calibration: 1412117

Instrument: OMHG1

CAS NO.	Analyte	Concentration (ug/L)	Dilution Factor	Q	DL	LOD	LOQ	Method
7439-97-6	Mercury (dissolved)	<0.069	1	U	0.023	0.069	0.200	EPA 7470A

JAC
3/15

www.encolabs.com

PROJECT NARRATIVE

Client: CH2M Hill, Inc.
Project: CTO-WE9A Camp Lejuene Site 82
Project Number: 495027
ENCO Project ID: A407421
SDG: A407421-CTO-WE9A

Overview

All samples submitted were analyzed by Environmental Conservation Laboratories, Inc. in accordance with the methods referenced in the laboratory report. Any particular difficulties encountered during sample handling and processing will be discussed in the Remarks section below.

Remarks

List of instruments used:

Analytical and Preparation Method	SOP Reference Instrument
EPA 8270D	OSVGCMS1
EPA 8270D PAH SIM	OSVGCMS2
EPA 8081B	OSVGCECD2
EPA 8082A	OSVGCECD2
EPA 6020A (total) Data Summary Package	OMICPMS1
EPA 6020A (dissolved) Data Summary Package	OMICPMS1
EPA 7470A (total) Data Summary Package	OMHG1
EPA 7470A (dissolved) Data Summary Package	OMHG1
EPA 6010C (total) Data Summary Package	JMICP1
EPA 6010C (dissolved) Data Summary Package	JMICP1

Analysis: EPA 8270D
Sequence: AA31981
Affected Sample(s): AA31981-CAL7, AA31981-CAL8
Nonconformance: Manual integrations
The following manual integrations were performed in the sample(s) AA31981-CAL7, AA31981-CAL8 due to incorrect peak selection/peak not found: Benzo(k)fluoranthene.
The following manual integrations were performed in the sample(s) AA31981-CAL8 due to incorrect peak selection/peak not found: Benzoic Acid.

Analysis: EPA 8081B
Sequence: AA31769-CAL1
Affected Sample(s): AA31769-CAL1, AA31769-CAL2, AA31769-CAL3, AA31769-CAL4, AA31769-CAL5, AA31769-CAL6, AA31769-SCV1
Nonconformance: Manual integrations
The following manual integrations were performed in the sample(s) AA31769-CAL1, AA31769-CAL2. AA31769-CAL3 due to poor integration (peak tailing, baseline selection): 4,4'-DDD, 4,4'-DDT.
The following manual integrations were performed in the sample(s) AA31769-CAL4, AA31769-CAL5, AA31769-CAL6, AA31769-SCV1 due to poor integration (peak tailing, baseline selection): 4,4'-DDT.

PROJECT NARRATIVE

Analysis: EPA 8082A
Sequence: AA31909-CCV2
Affected Sample(s): AA31909-CCV2
Nonconformance: Manual integrations
The following manual integrations were performed in the sample(s) AA31909-CCV2 due to incorrect peak selection/peak not found: PCB1260#9, PCB1260#10

Analysis: EPA 8270D
Affected Samples: IR82-SW01-14D [A407421-01], IR82-SW01-14D [A407421-01RE1], IR82-SW01D-14D [A407421-02], IR82-SW01D-14D [A407421-02RE1], AA32069-CCV1, AA32069-CCV2, 4L17006-BLK1, 4L17006-BS1, 4L17006-MS1, 4L17006-MSD1, AA32069-LCV1, AA32069-LCV2
The internal standards, Chrysene-d12 and Perylene-d12, were outside the retention time limits for DOD QSM 5.0. The samples were re-analyzed for confirmation. In the rerun the internal standards were within acceptable limits, all data is reported.

Analysis: EPA 8270D
Affected Samples: AA32210-CCV1, IR82-SW01-14D [A407421-01RE1], IR82-SW01D-14D [A407421-02RE1]
The associated calibration verification standard exhibited high bias for 4-Nitrophenol, Bis(2-chloroethyoxy)methane, Di-n-octylphthalate, N-nitrosodiphenylamine; since the result is ND, the impact on data quality is minimal.

Analysis: EPA 8270D
Affected Samples: AA32069-CCV1, IR82-SW01-14D [A407421-01], IR82-SW01D-14D [A407421-02], AA32210-CCV1, IR82-SW01-14D [A407421-01RE1], IR82-SW01D-14D [A407421-02RE1]
The associated calibration verification standard exhibited low bias for Hexachlorocyclopentadiene. The sample was re-analyzed for confirmation. In the re-run the CCV failed with low bias. The reported results are ND, all data was reported.

Analysis: EPA 8270D
Affected Samples: IR82-SW01-14D [A407421-01], 4L17006-MS2, 4L17006-MSD2
The spike recovery was outside acceptance limits for Carolactam in the MS and/or MSD. The batch was accepted based on acceptable LCS recovery.

Analysis: EPA 8081B
Affected Samples: IR82-SW01-14D [A407421-01], 4L17002-MS1, 4L17002-MSD1
The spike recovery was outside acceptance limits for 4,4'-DDE in the MS and/or MSD. The batch was accepted based on acceptable LCS recovery.

Analysis: EPA 8081B
Affected Samples: 4L17002-MS1
The surrogate recoveries were outside the acceptance limits for 2,4,5,6-TCMX and Decachlorobiphenyl. The surrogates failed with high bias.

Analysis: EPA 8081B
Affected Samples: IR82-SW01-14D [A407421-01], 4L17002-MS1, 4L17002-MSD1
Precision between duplicate matrix spikes of the same sample were outside acceptance limits for 4,4'-DDD, 4,4'-DDE, Aldrin, alpha-BHC, beta-BHC, Chlordane-alpha, Chlordane-gamma, delta-BHC, Dieldrin, Endosulfan I, Endosulfan II, Endosulfan sulfate, Endrin, Endrin aldehyde, Endrin Ketone, gamma-BHC, Heptachlor, Heptachlor epoxide, and Methoxychlor. The batch was accepted based on acceptable LCS recovery.

Analysis: EPA 8081B
Affected Samples: AA31769-CCV1, IR82-SW01-14D [A407421-01], IR82-SW01D-14D [A407421-02]
The associated calibration verification standard exhibited high bias for 4,4'-DDE and Aldrin; since the result is ND, the impact on data quality is minimal.

---

www.encolabs.com

PROJECT NARRATIVE

Analysis: EPA 6020A
Affected Samples: AA31918-CCV, IR82-SW01-14D [A407421-01], IR82-SW01D-14D [A407421-02], AA31941-CCV1,IR82-SW01-14D [A407421-01RE1], IR82-SW01D-14D [A407421-02RE1]
The associated closing calibration verification standard exhibited low bias for Cobalt and Vanadium. The sample was re-analyzed for confirmation. In the rerun the closing CCV was within acceptable limits. The rerun results confirmed the original results. The re-analyzed data is reported in the data package.

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 package and in computer-readable data submitted on diskette has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signatures.

Marcia Colon
March 13, 2015
Project Manager

ENVIRONMENTAL CONSERVATION LABORATORIES **CHAIN-OF-CUSTODY RECORD**

10775 Central Port Dr. Orlando, FL 32824 (407) 826-5314 Fax (407) 850-6945

4810 Executive Park Court, Suite 111 Jacksonville, FL 32216-6069 (904) 296-3007 Fax (904) 296-6210

102-A Woodwinds Industrial Ct. Cary, NC 27511 (919) 467-3090 Fax (919) 467-3515

www.encolabs.com

Page 1 of 1

Client Name: CH2M Hill, Inc. (CH029)	Project Number: ~~486519~~ 495027
Address: 15010 Conference Center Drive, Suite 200	Project Name/Desc: CTO-WE~~66~~ 9A MCB Camp Lejeune Site ~~98~~ 82
City/ST/Zip: Chantilly, VA 20151	PO # / Billing Info: ~~964934~~
Tel: 757-671-6335 Fax:	Reporting Contact: ~~Charlotte Campbell~~ Bianca Klost
Sampler(s) Name, Affiliation (Print): Bridget Berglund CH2M	Billing Contact: Accounts Payable
Sampler(s) Signature:	Site Location / Time Zone: Site 82

Requested Analyses: ~~8260B DOD Extended GSM 5.0~~; 8270D SVOCs; 8270D PAHs; 8081B Pest; 8082A PCBs; 6010C/7470A Metals; 6010C/7470A Metals Filtered

Requested Turnaround Times: Note: Rush requests subject to acceptance by the facility. Re-SOW; ___ Standard; ___ Expedited; Due ___/___/___

Lab Workorder: A407421 ~~A406849~~ LC

Preservation (See Codes) (Combine as necessary): I, I, I, I, N, N

Item #	Sample ID (Field Identification)	Collection Date	Collection Time	Comp / Grab	Matrix (see codes)	Total # of Containers	8260B DOD Extended GSM 5.0	8270D SVOCs	8270D PAHs	8081B Pest	8082A PCBs	6010C/7470A Metals	6010C/7470A Metals Filtered				Sample Comments
	IR82-SW01-14D	12-10-14	1120		SW	6		X	X	X	X	X	X				12/15/2014
	IR82-SW01-14D-MS	↓	1120		↓	6		X	X	X	X	X	X				
	IR82-SW01-14D-SD		1120			6		X	X	X	X	X	X				
	IR82-SW01D-14D		1125			6		X	X	X	X	X	X				

<-- Total # of Containers

Sample Kit Prepared By: BNH	Date/Time: 11-21-14 1030	Relinquished By: Brandy Heep	Date/Time: 11-21-14 1030	Received By:	Date/Time:
Comments/Special Reporting Requirements:		Relinquished By: [signature]	Date/Time: 12/1/14 1730	Received By: R. Cole	Date/Time: 12/15/2014 9:15
		Relinquished By:	Date/Time:	Received By:	Date/Time:

Cooler #'s & Temps on Receipt: LG-307 2°C

Condition Upon Receipt: ☑ Acceptable ___ Unacceptable

Matrix: GW-Groundwater SO-Soil DW-Drinking Water SE-Sediment SW-Surface Water WW-Wastewater A-Air O-Other (detail in comments) Preservation: Ice H-HCl N-HNO3 S-H2SO4 NO-NaOH O-Other (detail in comments).

Note: All samples submitted to ENCO Labs are in accordance with the terms and conditions listed on the reverse of this form, unless prior written agreements exist.

050

Data Completeness

The data package was received complete and intact. Resubmissions were not required. (SW846 Method 8270D)

Laboratory: ENCO

Holding Times

Sampling Date: 12/10/14
Received Date: 12/15/14
Extraction Date: 12/17/14
Analysis Dates: 1/8-19/15
Cooler Temp: 2.0°C
All holding time requirements were met.

Calibrations

Mass assignments were verified by the injection of DFTPP.

Qualifications were required for the initial calibration due to high %RSDs, see attached Form VI.

Internal Standards

The initial analysis of sample IR82SW01-14D and IR82-SW01D-14D slightly exceeded the retention time window for two internal standards. The samples were re-analyzed and all retention times were within criteria. Therefore the initial analyses were excluded in favor of the re-analyses.

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. Associated QC blanks: IR82-EB121114- equipment blank (no positive results, found in SDG# A407175).

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

All criteria were in.

Matrix Spike/Spike Duplicate Samples

An MS/MSD was submitted for IR82-SW01-14D- all criteria were met.

Field Duplicate Sample

A field duplicate was submitted for sample IR82-SW01D-14D - no positive results were exhibited, 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:** 2/28/15

ANALYSIS BATCH (SEQUENCE) SUMMARY

EPA 8270D

Laboratory:	ENCO Orlando	SDG:	A407421-CTO-WE9A
Client:	CH2M Hill, Inc. (CH031)	Project:	CTO-WE9A, Camp Lejuene Site 82
Sequence:	AA31944	Instrument:	OSVGCMS1
		Calibration:	1501007

Sample Name	Lab Sample ID	Lab File ID	Analysis Date/Time
MS Tune	AA31944-TUN1	1ly001.D	12/30/14 17:08
Cal Standard	AA31944-CAL1	1ly002.D	12/30/14 17:21
Cal Standard	AA31944-CAL2	1ly003.D	12/30/14 17:50
Cal Standard	AA31944-CAL3	1ly004.D	12/30/14 18:18
Cal Standard	AA31944-CAL4	1ly005.D	12/30/14 18:50
Cal Standard	AA31944-CAL5	1ly006.D	12/30/14 19:18
Cal Standard	AA31944-CAL6	1ly007.D	12/30/14 19:46
Secondary Cal Check	AA31944-SCV1	1ly008.D	12/30/14 20:14
Cal Standard	AA31944-CAL7	1ly009.D	12/30/14 20:42
Cal Standard	AA31944-CAL8	1ly010.D	12/30/14 21:10
Cal Standard	AA31944-CAL9	1ly011.D	12/30/14 21:38
Cal Standard	AA31944-CALA	1ly012.D	12/30/14 22:06
Cal Standard	AA31944-CALB	1ly013.D	12/30/14 22:34
Cal Standard	AA31944-CALC	1ly014.D	12/30/14 23:02
Secondary Cal Check	AA31944-SCV2	1ly015.D	12/30/14 23:30

ANALYSIS BATCH (SEQUENCE) SUMMARY

EPA 8270D

Laboratory: ENCO Orlando

SDG: A407421-CTO-WE9A

Client: CH2M Hill, Inc. (CH031)

Project: CTO-WE9A, Camp Lejuene Site 82

Sequence: AA31981

Instrument: OSVGCMS1

Calibration: 1501007

Sample Name	Lab Sample ID	Lab File ID	Analysis Date/Time
MS Tune	AA31981-TUN1	1lz001.D	12/31/14 09:25
Cal Standard	AA31981-CAL1	1lz002.D	12/31/14 09:48
Cal Standard	AA31981-CAL2	1lz003.D	12/31/14 10:16
Cal Standard	AA31981-CAL3	1lz004.D	12/31/14 10:44
Cal Standard	AA31981-CAL4	1lz005.D	12/31/14 11:13
Cal Standard	AA31981-CAL5	1lz006.D	12/31/14 11:41
Cal Standard	AA31981-CAL6	1lz007.D	12/31/14 12:09
Cal Standard	AA31981-CAL7	1lz008.D	12/31/14 12:37
Cal Standard	AA31981-CAL8	1lz009.D	12/31/14 13:13
Secondary Cal Check	AA31981-SCV1	1lz010.D	12/31/14 13:41

INITIAL CALIBRATION DATA (Continued)

EPA 8270D

Laboratory: ENCO Orlando
SDG: A407421-CTO-WE9A
Client: CH2M Hill, Inc. (CH031)
Project: CTO-WE9A, Camp Lejuene Site 82
Calibration: 1501007
Instrument: OSVGCMS1
Matrix: Water
Calibration Date: 01/05/15 16:26

Compound	Mean RF	RF RSD	Mean RT	RT RSD	Linear r	Quad COD	LIMIT	Q
Benzaldehyde	1.129025	4.884758	6.437667	6.023095E-02			15	
Phenol	1.863828	8.770667	6.49975	0.2312993			CCC (30)	
Bis(2-chloroethyl)ether	1.423868	11.22217	6.614572	0.103981			15	
2-Chlorophenol	1.390984	5.244004	6.71725	0.1467444			15	
2-Methylphenol	1.196741	5.87799	7.236	0.1469857			15	
Bis(2-chloroisopropyl)ether	2.719061	11.18604	7.273143	6.939141E-02			15	
Acetophenone	1.740925	14.88005	7.449333	0.1385067			15	
3 & 4-Methylphenol	1.309036	14.40057	7.421	0.1414903			15	
N-Nitroso-di-n-propylamine	0.9570617	12.40167	7.442	0.153025			SPCC (0.05)	
Hexachloroethane	0.5986878	8.466966	7.60475	8.384402E-02			15	
Nitrobenzene	0.3937672	10.87629	7.66725	0.1295064			15	
Isophorone	0.8076711	9.293357	7.95475	0.1569247			15	
2-Nitrophenol	0.1841365	6.228976	8.058	8.746903E-02			CCC (30)	
2,4-Dimethylphenol	0.332229	10.42759	8.081375	0.1568643			15	
Bis(2-chloroethoxy)methane	0.4461676	8.010408	8.1955	0.102748			15	
2,4-Dichlorophenol	0.2625954	9.41385	8.353625	0.1440492			CCC (30)	
4-Chloroaniline	0.4113378	13.74855	8.61675	0.1271115			15	
Hexachlorobutadiene	0.1061867	16.69184	8.720375	0.0784233			CCC (30)	
Caprolactam	0.1098135	6.936594	9.022167	0.2361848			15	
4-Chloro-3-methylphenol	0.2946448	9.884417	9.19725	0.1095297			CCC (30)	
Hexachlorocyclopentadiene	0.1059839	8.902443	9.636125	3.238705E-02			SPCC (0.05)	
2,4,6-Trichlorophenol	0.3438594	9.999232	9.775875	9.575712E-02			CCC (30)	
2,4,5-Trichlorophenol	0.3760439	12.00133	9.822375	9.466207E-02			15	
1,1'-Biphenyl	1.325104	13.7846	10.00917	3.786766E-02			15	
2-Chloronaphthalene	1.153463	12.19418	10.05143	4.459359E-02			15	
2-Nitroaniline	0.4070853	10.6622	10.15738	9.276633E-02			15	
Dimethylphthalate	1.2401	12.28098	10.37163	0.1235731			15	
2,6-Dinitrotoluene	0.2920889	10.20987	10.45313	0.1107649			15	
3-Nitroaniline	0.3223253	8.314944	10.67213	0.1325274			15	
2,4-Dinitrophenol	0.1540571	9.53215	10.80275	0.1299852			SPCC (0.05)	
4-Nitrophenol	0.129553	6.80154	10.85887	0.1659485			SPCC (0.05)	
Dibenzofuran	1.507255	12.81566	11.01	4.831155E-02			15	

INITIAL CALIBRATION DATA (Continued)

EPA 8270D

Laboratory: ENCO Orlando

SDG: A407421-CTO-WE9A

Client: CH2M Hill, Inc. (CH031)

Project: CTO-WE9A, Camp Lejuene Site 82

Calibration: 1501007

Instrument: OSVGCMS1

Matrix: Water

Calibration Date: 01/05/15 16:26

Compound	Mean RF	RF RSD	Mean RT	RT RSD	Linear r	Quad COD	LIMIT	Q
2,4-Dinitrotoluene	0.3413958	14.80311	10.96329	8.132777E-02			15	
Diethylphthalate	1.194944	11.86035	11.25275	9.728121E-02			15	
4-Chlorophenyl-phenylether	0.5882607	12.21139	11.42014	4.627873E-02			15	
4-Nitroaniline	0.2945871	8.951097	11.45425	0.1891658			15	
2-Methyl-4,6-dinitrophenol	0.2231748	8.763822	11.4905	0.1522326			15	
N-nitrosodiphenylamine/Diphenylamine	0.8816216	18.38443	11.56914	8.408416E-02		0.9938616	0.99	
4-Bromophenyl-phenylether	0.1900885	10.95233	12.04214	6.176318E-02			15	
Hexachlorobenzene	0.1904821	11.54192	12.15383	6.608286E-02			15	
Atrazine	0.3423981	7.393346	12.21167	5.699072E-02			15	
Pentachlorophenol	0.1167471	13.84592	12.39075	9.956419E-02			CCC (30)	
Carbazole	0.8895947	12.02979	12.91014	0.0535064			15	
Di-n-butylphthalate	1.148205	12.11013	13.295	2.191013E-02			15	
Butylbenzylphthalate	0.319502	14.07862	15.24443	2.349009E-02			15	
3,3'-Dichlorobenzidine	0.3163823	12.82922	16.15488	6.856351E-02			15	
Bis(2-ethylhexyl)phthalate	0.7022095	12.77963	16.16875	5.003889E-02			15	
Di-n-octylphthalate	1.090703	10.77981	17.48862	6.742393E-02			CCC (30)	
2-Fluorophenol	1.494	4.424746	5.39325	0.2608275			15	
Phenol-d5	1.855792	6.470863	6.48225	0.2169039			15	
Nitrobenzene-d5	0.4408403	9.009178	7.646	0.140026			15	
2-Fluorobiphenyl	1.27389	12.78626	9.878286	2.730319E-02			15	
2,4,6-Tribromophenol	0.140038	12.2495	11.74788	7.911884E-02			15	
Terphenyl-d14	0.4850037	10.99863	14.61133	4.151099E-02			15	

ANALYSIS BATCH (SEQUENCE) SUMMARY

EPA 8270D

Laboratory:	ENCO Orlando	SDG:	A407421-CTO-WE9A
Client:	CH2M Hill, Inc. (CH031)	Project:	CTO-WE9A, Camp Lejuene Site 82
Sequence:	AA32210	Instrument:	OSVGCMS1
		Calibration:	1501007

Sample Name	Lab Sample ID	Lab File ID	Analysis Date/Time
MS Tune	AA32210-TUN1	1al001.D	01/19/15 16:22
Calibration Check	AA32210-CCV1	1al002.D	01/19/15 16:37
Calibration Check	AA32210-CCV2	1al003.D	01/19/15 17:06
Blank	4L17006-BLK2	1al004.D	01/19/15 17:36
LCS	4L17006-BS2	1al005.D	01/19/15 18:06
IR82-SW01-14D	4L17006-MS2	1al006.D	01/19/15 18:35
IR82-SW01-14D	4L17006-MSD2	1al007.D	01/19/15 19:04
IR82-SW01-14D	A407421-01RE1	1al008.D	01/19/15 19:34
IR82-SW01D-14D	A407421-02RE1	1al009.D	01/19/15 20:03
Low Cal Check	AA32210-LCV1	1al011.D	01/19/15 21:03
Low Cal Check	AA32210-LCV2	1al012.D	01/19/15 21:33

CONTINUING CALIBRATION CHECK

EPA 8270D

Laboratory:	ENCO Orlando	SDG:	A407421-CTO-WE9A
Client:	CH2M Hill, Inc. (CH031)	Project:	CTO-WE9A, Camp Lejuene Site 82
Instrument ID:	OSVGCMS1	Calibration:	1501007
Lab File ID:	1al002.D	Calibration Date:	01/05/15 16:26
Sequence:	AA32210	Injection Date:	01/19/15
Lab Sample ID:	AA32210-CCV1	Injection Time:	16:37

COMPOUND	TYPE	CONC. (ug/mL)		RESPONSE FACTOR			% DIFF / DRIFT	
		STD	CCV	ICAL	CCV	MIN (#)	CCV	LIMIT (#)
Phenol	A	50.0	51	1.863828	1.906124		2.3	20
Bis(2-chloroethyl)ether	A	50.0	52	1.423868	1.473269		3.5	20
2-Chlorophenol	A	50.0	52	1.390984	1.43889		3.4	20
2-Methylphenol	A	50.0	51	1.196741	1.223839		2.3	20
Bis(2-chloroisopropyl)ether	A	50.0	50	2.719061	2.703083		-0.6	20
Acetophenone	A	50.0	53	1.740925	1.839992		5.7	20
3 & 4-Methylphenol	A	100	93	1.309036	1.21184		-7.4	20
N-Nitroso-di-n-propylamine	A	50.0	51	0.9570617	0.9760442	0.05	2.0	20
Hexachloroethane	A	50.0	53	0.5986878	0.6391342		6.8	20
Nitrobenzene	A	50.0	52	0.3937672	0.409909		4.1	20
Isophorone	A	50.0	54	0.8076711	0.8742009		8.2	20
2-Nitrophenol	A	50.0	50	0.1841365	0.1850057		0.5	20
2,4-Dimethylphenol	A	50.0	54	0.332229	0.3558472		7.1	20
Bis(2-chloroethoxy)methane	A	50.0	66	0.4461676	0.5890172		32.0	20 *
2,4-Dichlorophenol	A	50.0	53	0.2625954	0.2767371		5.4	20
4-Chloroaniline	A	50.0	52	0.4113378	0.4282738		4.1	20
Hexachlorobutadiene	A	50.0	52	0.1061867	0.1139028		7.3	20
4-Chloro-3-methylphenol	A	50.0	58	0.2946448	0.3414809		15.9	20
Hexachlorocyclopentadiene	A	50.0	39	0.1059839	8.264852E-02	0.05	-22.0	20 *
2,4,6-Trichlorophenol	A	50.0	53	0.3438594	0.3615962		5.2	20
2,4,5-Trichlorophenol	A	50.0	52	0.3760439	0.3880304		3.2	20
2-Chloronaphthalene	A	50.0	48	1.153463	1.11291		-3.5	20
2-Nitroaniline	A	50.0	54	0.4070853	0.4362551		7.2	20
Dimethylphthalate	A	50.0	54	1.2401	1.350778		8.9	20
2,6-Dinitrotoluene	A	50.0	54	0.2920889	0.3174774		8.7	20
3-Nitroaniline	A	50.0	54	0.3223253	0.3473909		7.8	20
2,4-Dinitrophenol	A	50.0	58	0.1540571	0.1782093	0.05	15.7	20
4-Nitrophenol	A	50.0	68	0.129553	0.1770624	0.05	36.7	20 *
Dibenzofuran	A	50.0	50	1.507255	1.515879		0.6	20

CONTINUING CALIBRATION CHECK

EPA 8270D

Laboratory:	ENCO Orlando	SDG:	A407421-CTO-WE9A
Client:	CH2M Hill, Inc. (CH031)	Project:	CTO-WE9A, Camp Lejuene Site 82
Instrument ID:	OSVGCMS1	Calibration:	1501007
Lab File ID:	1al002.D	Calibration Date:	01/05/15 16:26
Sequence:	AA32210	Injection Date:	01/19/15
Lab Sample ID:	AA32210-CCV1	Injection Time:	16:37

COMPOUND	TYPE	CONC. (ug/mL)		RESPONSE FACTOR			% DIFF / DRIFT	
		STD	CCV	ICAL	CCV	MIN (#)	CCV	LIMIT (#)
2,4-Dinitrotoluene	A	50.0	54	0.3413958	0.3658873		7.2	20
Diethylphthalate	A	50.0	57	1.194944	1.351057		13.1	20
4-Chlorophenyl-phenylether	A	50.0	52	0.5882607	0.6093927		3.6	20
4-Nitroaniline	A	50.0	59	0.2945871	0.3503739		18.9	20
2-Methyl-4,6-dinitrophenol	A	50.0	57	0.2231748	0.2556734		14.6	20
N-nitrosodiphenylamine/Diphenylam	Q	100	120	0.8816216	0.921808		22.5	20 *
4-Bromophenyl-phenylether	A	50.0	49	0.1900885	0.1856218		-2.3	20
Hexachlorobenzene	A	50.0	52	0.1904821	0.1975531		3.7	20
Pentachlorophenol	A	50.0	58	0.1167471	0.1364724		16.9	20
Carbazole	A	50.0	51	0.8895947	0.9102463		2.3	20
Di-n-butylphthalate	A	50.0	52	1.148205	1.185053		3.2	20
Butylbenzylphthalate	A	50.0	51	0.319502	0.3246594		1.6	20
3,3'-Dichlorobenzidine	A	50.0	54	0.3163823	0.3418504		8.0	20
Bis(2-ethylhexyl)phthalate	A	50.0	55	0.7022095	0.7737663		10.2	20
Di-n-octylphthalate	A	50.0	60	1.090703	1.314541		20.5	20 *

Column to be used to flag Response Factor and %Diff/Drift values with an asterisk

* Values outside of QC limits

CONTINUING CALIBRATION CHECK

EPA 8270D

Laboratory:	ENCO Orlando	SDG:	A407421-CTO-WE9A
Client:	CH2M Hill, Inc. (CH031)	Project:	CTO-WE9A, Camp Lejuene Site 82
Instrument ID:	OSVGCMS1	Calibration:	1501007
Lab File ID:	1al003.D	Calibration Date:	01/05/15 16:26
Sequence:	AA32210	Injection Date:	01/19/15
Lab Sample ID:	AA32210-CCV2	Injection Time:	17:06

COMPOUND	TYPE	CONC. (ug/mL)		RESPONSE FACTOR			% DIFF / DRIFT	
		STD	CCV	ICAL	CCV	MIN (#)	CCV	LIMIT (#)
Benzaldehyde	A	50.0	47	1.129025	1.060968		-6.0	20
Caprolactam	A	50.0	41	0.1098135	9.018533E-02		-17.9	20
1,1'-Biphenyl	A	50.0	50	1.325104	1.320298		-0.4	20
Atrazine	A	50.0	52	0.3423981	0.3584974		4.7	20

Column to be used to flag Response Factor and %Diff/Drift values with an asterisk

* Values outside of QC limits

INTERNAL STANDARD AREA AND RT SUMMARY
EPA 8270D

Laboratory: ENCO Orlando
SDG: A407421-CTO-WE9A
Client: CH2M Hill, Inc. (CH031)
Project: CTO-WE9A, Camp Lejuene Site 82

Sequence: AA32069
Instrument: OSVGCMS1
Matrix: Water
Calibration: 1501007

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
Matrix Spike Dup (4L17006-MSD1)			Lab File ID: 1ac013.D			Analyzed: 01/08/15 11:52			
1,4-Dichlorobenzene-d4	398454	6.826	312803	6.966	127	50 - 200	-0.1400	+/-0.20	
Naphthalene-d8	1502800	8.397	1202138	8.546	125	50 - 200	-0.1490	+/-0.20	
Acenaphthene-d10	776319	10.603	663746	10.753	117	50 - 200	-0.1500	+/-0.20	
Phenanthrene-d10	1233160	12.476	1098576	12.637	112	50 - 200	-0.1610	+/-0.20	
Chrysene-d12	772824	16.043	565336	16.253	137	50 - 200	-0.2100	+/-0.20	*
Perylene-d12	635431	18.989	404946	19.226	157	50 - 200	-0.2370	+/-0.20	*
IR82-SW01-14D (A407421-01)			Lab File ID: 1ac014.D			Analyzed: 01/08/15 12:20			
1,4-Dichlorobenzene-d4	328718	6.826	312803	6.966	105	50 - 200	-0.1400	+/-0.20	
Naphthalene-d8	1153185	8.397	1202138	8.546	96	50 - 200	-0.1490	+/-0.20	
Acenaphthene-d10	594786	10.603	663746	10.753	90	50 - 200	-0.1500	+/-0.20	
Phenanthrene-d10	909992	12.476	1098576	12.637	83	50 - 200	-0.1610	+/-0.20	
Chrysene-d12	590687	16.032	565336	16.253	104	50 - 200	-0.2210	+/-0.20	*
Perylene-d12	469339	18.972	404946	19.226	116	50 - 200	-0.2540	+/-0.20	*
IR82-SW01D-14D (A407421-02)			Lab File ID: 1ac015.D			Analyzed: 01/08/15 12:48			
1,4-Dichlorobenzene-d4	343081	6.816	312803	6.966	110	50 - 200	-0.1500	+/-0.20	
Naphthalene-d8	1265025	8.397	1202138	8.546	105	50 - 200	-0.1490	+/-0.20	
Acenaphthene-d10	657250	10.603	663746	10.753	99	50 - 200	-0.1500	+/-0.20	
Phenanthrene-d10	988732	12.476	1098576	12.637	90	50 - 200	-0.1610	+/-0.20	
Chrysene-d12	678683	16.032	565336	16.253	120	50 - 200	-0.2210	+/-0.20	*
Perylene-d12	475069	18.972	404946	19.226	117	50 - 200	-0.2540	+/-0.20	*
Low Cal Check (AA32069-LCV1)			Lab File ID: 1ac024.D			Analyzed: 01/08/15 17:04			
1,4-Dichlorobenzene-d4	464225	6.826	312803	6.966	148	50 - 200	-0.1400	+/-0.20	
Naphthalene-d8	1726950	8.406	1202138	8.546	144	50 - 200	-0.1400	+/-0.20	
Acenaphthene-d10	934475	10.613	663746	10.753	141	50 - 200	-0.1400	+/-0.20	
Phenanthrene-d10	1449995	12.489	1098576	12.637	132	50 - 200	-0.1480	+/-0.20	
Chrysene-d12	903276	16.054	565336	16.253	160	50 - 200	-0.1990	+/-0.20	
Perylene-d12	637044	18.989	404946	19.226	157	50 - 200	-0.2370	+/-0.20	*
Low Cal Check (AA32069-LCV2)			Lab File ID: 1ac025.D			Analyzed: 01/08/15 17:32			
1,4-Dichlorobenzene-d4	491883	6.816	312803	6.966	157	50 - 200	-0.1500	+/-0.20	
Naphthalene-d8	1708556	8.397	1202138	8.546	142	50 - 200	-0.1490	+/-0.20	
Acenaphthene-d10	843664	10.604	663746	10.753	127	50 - 200	-0.1490	+/-0.20	
Phenanthrene-d10	1187803	12.476	1098576	12.637	108	50 - 200	-0.1610	+/-0.20	
Chrysene-d12	759414	16.032	565336	16.253	134	50 - 200	-0.2210	+/-0.20	*
Perylene-d12	576430	18.98	404946	19.226	142	50 - 200	-0.2460	+/-0.20	*

INTERNAL STANDARD AREA AND RT SUMMARY
EPA 8270D

Laboratory: ENCO Orlando
SDG: A407421-CTO-WE9A
Client: CH2M Hill, Inc. (CH031)
Project: CTO-WE9A, Camp Lejuene Site 82

Sequence: AA32210
Instrument: OSVGCMS1
Matrix: Water
Calibration: 1501007

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
Matrix Spike Dup (4L17006-MSD2)			Lab File ID: 1al007.D			Analyzed: 01/19/15 19:04			
1,4-Dichlorobenzene-d4	371313	6.936	312803	6.966	119	50 - 200	-0.0300	+/-0.20	
Naphthalene-d8	1449685	8.508	1202138	8.546	121	50 - 200	-0.0380	+/-0.20	
Acenaphthene-d10	797785	10.715	663746	10.753	120	50 - 200	-0.0380	+/-0.20	
Phenanthrene-d10	1355706	12.588	1098576	12.637	123	50 - 200	-0.0490	+/-0.20	
Chrysene-d12	862117	16.209	565336	16.253	152	50 - 200	-0.0440	+/-0.20	
Perylene-d12	616010	19.167	404946	19.226	152	50 - 200	-0.0590	+/-0.20	
IR82-SW01-14D (A407421-01RE1)			Lab File ID: 1al008.D			Analyzed: 01/19/15 19:34			
1,4-Dichlorobenzene-d4	365296	6.936	312803	6.966	117	50 - 200	-0.0300	+/-0.20	
Naphthalene-d8	1390788	8.499	1202138	8.546	116	50 - 200	-0.0470	+/-0.20	
Acenaphthene-d10	752146	10.706	663746	10.753	113	50 - 200	-0.0470	+/-0.20	
Phenanthrene-d10	1292816	12.588	1098576	12.637	118	50 - 200	-0.0490	+/-0.20	
Chrysene-d12	784907	16.198	565336	16.253	139	50 - 200	-0.0550	+/-0.20	
Perylene-d12	541779	19.158	404946	19.226	134	50 - 200	-0.0680	+/-0.20	
IR82-SW01D-14D (A407421-02RE1)			Lab File ID: 1al009.D			Analyzed: 01/19/15 20:03			
1,4-Dichlorobenzene-d4	367644	6.936	312803	6.966	118	50 - 200	-0.0300	+/-0.20	
Naphthalene-d8	1349273	8.499	1202138	8.546	112	50 - 200	-0.0470	+/-0.20	
Acenaphthene-d10	669102	10.706	663746	10.753	101	50 - 200	-0.0470	+/-0.20	
Phenanthrene-d10	1072129	12.588	1098576	12.637	98	50 - 200	-0.0490	+/-0.20	
Chrysene-d12	632792	16.187	565336	16.253	112	50 - 200	-0.0660	+/-0.20	
Perylene-d12	419275	19.158	404946	19.226	104	50 - 200	-0.0680	+/-0.20	
Low Cal Check (AA32210-LCV1)			Lab File ID: 1al011.D			Analyzed: 01/19/15 21:03			
1,4-Dichlorobenzene-d4	393571	6.936	312803	6.966	126	50 - 200	-0.0300	+/-0.20	
Naphthalene-d8	1508739	8.509	1202138	8.546	126	50 - 200	-0.0370	+/-0.20	
Acenaphthene-d10	881528	10.716	663746	10.753	133	50 - 200	-0.0370	+/-0.20	
Phenanthrene-d10	1523332	12.6	1098576	12.637	139	50 - 200	-0.0370	+/-0.20	
Chrysene-d12	877138	16.209	565336	16.253	155	50 - 200	-0.0440	+/-0.20	
Perylene-d12	650143	19.167	404946	19.226	161	50 - 200	-0.0590	+/-0.20	
Low Cal Check (AA32210-LCV2)			Lab File ID: 1al012.D			Analyzed: 01/19/15 21:33			
1,4-Dichlorobenzene-d4	330741	6.936	312803	6.966	106	50 - 200	-0.0300	+/-0.20	
Naphthalene-d8	1179849	8.499	1202138	8.546	98	50 - 200	-0.0470	+/-0.20	
Acenaphthene-d10	607903	10.706	663746	10.753	92	50 - 200	-0.0470	+/-0.20	
Phenanthrene-d10	1007702	12.588	1098576	12.637	92	50 - 200	-0.0490	+/-0.20	
Chrysene-d12	696189	16.187	565336	16.253	123	50 - 200	-0.0660	+/-0.20	
Perylene-d12	487644	19.158	404946	19.226	120	50 - 200	-0.0680	+/-0.20	

DataQual

From: Marcia Colon <mcolon@encolabs.com>
Sent: Monday, March 2, 2015 1:13 PM
To: 'DataQual'
Cc: Bianca.Kleist@CH2M.com; 'Jacqueline Cleveland'
Subject: RE: CTO-WE9A

Hi Laura-
For the sequence AA32069 we found that the internal standard time was off on the instrument thus that sequence of data was unusable. The samples were re-analyzed, all data was reported. There is a narration explaining about the internal standard failure.

The calibration curves were analyzed on the 30th and 31st but the analyst didn't upload the curve to our LIMS until the 5th , I see on the form1 that the time says 01/05/15 16:26. If you see on page 798/799 you will see the analysis date/time.

Marcia

Marcia Colon
Project Manager

Environmental Conservation Laboratories, Inc.
10775 Central Port Drive
Orlando, FL 32824
(407)826-5314 ph
(407)850-6945 fax
mcolon@encolabs.com

Confidentiality Notice: The information contained in this message is intended only for the use of the addressee, and may be confidential and/or privileged. If the reader of this message is not the intended recipient, you are hereby notified that any dissemination, distribution or copying of this communication is strictly prohibited. If you have received this communication in error, please notify the sender immediately.

ENCO is an eco-friendly lab offering paperless service options, please contact me anytime with questions.

From: DataQual [mailto:dataqual@charter.net]
Sent: Sunday, March 01, 2015 5:13 PM
To: Marcia Colon
Cc: Bianca.Kleist@CH2M.com; Jacqueline Cleveland
Subject: CTO-WE9A

Hi Marcia,

The following items are requested:

SDG# A407175

SVOA fraction:

- Please review Continuing Calibration Check on page 785 and re-submit with RRF and %D values.
- An Analysis Sequence Summary was submitted for initial calibration curves ran on 12/30 and 12/31 however the Initial Calibration Data submitted was for a curve ran on 1/5/15. Please review and submit correct curves if required.

SDG# A407421

SVOA fraction:

- Please review Continuing Calibration Check on page 111 and re-submit with RRF and %D values.
- An Analysis Sequence Summary was submitted for initial calibration curves ran on 12/30 and 12/31 however the Initial Calibration Data submitted was for a curve ran on 1/5/15. Please review and submit correct curves if required.

If there are any questions please let me know,
Laura

Laura Maschhoff
DataQual Environmental Services, LLC
dataqual@charter.net

Data Completeness

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

Laboratory: ENCO

Holding Times

Sampling Date: 12/10/14
Received Date: 12/15/14
Extraction Date: 12/17/14
Analysis Dates: 1/6/15
Cooler Temp: 2°C

All holding time requirements were met.

Calibrations

Mass assignments were verified by the injection of DFTPP.

No qualifications were required.

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. Associated QC blanks: IR82-EB-121114 - equipment blanks (no positive results, from SDG# A407175).

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

All criteria were met.

Matrix Spike/Spike Duplicate Samples

An MS/MSD was submitted for IR82-SW01-14D -no qualifications required.

Field Duplicate Sample

A field duplicate was submitted for sample IR82-SW01-14D-no positive results 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:** 2/28/15

ORGANIC ANALYSIS DATA SHEET

EPA 8081B

IR82-SW01-14D

Laboratory:	ENCO Orlando	SDG:	A407421-CTO-WE9A
Client:	CH2M Hill, Inc. (CH031)	Project:	CTO-WE9A, Camp Lejuene Site 82

Matrix:	Surface Water	Laboratory ID:	A407421-01	File ID:	2LS012.D
Sampled:	12/10/14 11:20	Prepared:	12/17/14 06:45	Analyzed:	12/24/14 10:47
Solids:		Preparation:	EPA 3510C	Initial/Final:	100 mL / 1 mL

Batch: 4L17002 Sequence: AA31896 Calibration: 1412079 Instrument: OSVGCECD2

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q	DL	LOD	LOQ
319-84-6	alpha-BHC	1	<0.050	UQ	0.026	0.050	0.10
58-89-9	gamma-BHC	1	<0.050	UQ	0.020	0.050	0.10
319-85-7	beta-BHC	1	<0.050	UQ	0.022	0.050	0.10
319-86-8	delta-BHC	1	<0.050	UQ	0.019	0.050	0.10
76-44-8	Heptachlor	1	<0.050	UQ	0.018	0.050	0.10
309-00-2	Aldrin	1	<0.050	UJ CH UQ	0.032	0.050	0.10
1024-57-3	Heptachlor epoxide	1	<0.050	UQ	0.018	0.050	0.10
5566-34-7	Chlordane-gamma	1	<0.050	UQ	0.018	0.050	0.10
5103-71-9	Chlordane-alpha	1	<0.050	UQ	0.022	0.050	0.10
72-55-9	4,4'-DDE	1	<0.050	UJ CH UQ	0.036	0.050	0.10
959-98-8	Endosulfan I	1	<0.050	UQ	0.016	0.050	0.10
60-57-1	Dieldrin	1	<0.050	UQ	0.017	0.050	0.10
72-20-8	Endrin	1	<0.050	UQ	0.014	0.050	0.10
72-54-8	4,4'-DDD	1	<0.050	UQ	0.018	0.050	0.10
33213-65-9	Endosulfan II	1	<0.050	UJ CH UQ	0.017	0.050	0.10
50-29-3	4,4'-DDT	1	<0.050	U	0.025	0.050	0.10
7421-93-4	Endrin aldehyde	1	<0.050	UQ	0.020	0.050	0.10
72-43-5	Methoxychlor	1	<0.050	UQ	0.020	0.050	0.10
1031-07-8	Endosulfan sulfate	1	<0.050	UQ	0.016	0.050	0.10
53494-70-5	Endrin ketone	1	<0.050	UQ	0.017	0.050	0.10
8001-35-2	Toxaphene	1	<0.50	U	0.48	0.50	1.0

SYSTEM MONITORING COMPOUND	ADDED (ug/L)	CONC (ug/L)	% REC	QC LIMITS	Q
2,4,5,6-TCMX	1.00	1.1	110	44 - 124	
Decachlorobiphenyl	1.00	1.2	116	30 - 135	

INTERNAL STANDARD	AREA	RT	REF AREA	REF RT	Q
DBC	625300000	5.7	5.959E+08	5.758	

* Values outside of QC limits

UM 130115

ORGANIC ANALYSIS DATA SHEET

EPA 8081B

IR82-SW01D-14D

Laboratory:	ENCO Orlando	SDG:	A407421-CTO-WE9A
Client:	CH2M Hill, Inc. (CH031)	Project:	CTO-WE9A, Camp Lejuene Site 82

Matrix:	Surface Water	Laboratory ID:	A407421-02	File ID:	2LS013.D
Sampled:	12/10/14 11:25	Prepared:	12/17/14 06:45	Analyzed:	12/24/14 10:59
Solids:		Preparation:	EPA 3510C	Initial/Final:	100 mL / 1 mL

Batch: 4L17002 Sequence: AA31896 Calibration: 1412079 Instrument: OSVGCECD2

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q	DL	LOD	LOQ
319-84-6	alpha-BHC	1	<0.050	U	0.026	0.050	0.10
58-89-9	gamma-BHC	1	<0.050	U	0.020	0.050	0.10
319-85-7	beta-BHC	1	<0.050	U	0.022	0.050	0.10
319-86-8	delta-BHC	1	<0.050	U	0.019	0.050	0.10
76-44-8	Heptachlor	1	<0.050	U	0.018	0.050	0.10
309-00-2	Aldrin	1	<0.050	UJ UQ	0.032	0.050	0.10
1024-57-3	Heptachlor epoxide	1	<0.050	U	0.018	0.050	0.10
5566-34-7	Chlordane-gamma	1	<0.050	U	0.018	0.050	0.10
5103-71-9	Chlordane-alpha	1	<0.050	U	0.022	0.050	0.10
72-55-9	4,4'-DDE	1	<0.050	UJ UQ	0.036	0.050	0.10
959-98-8	Endosulfan I	1	<0.050	U	0.016	0.050	0.10
60-57-1	Dieldrin	1	<0.050	U	0.017	0.050	0.10
72-20-8	Endrin	1	<0.050	U	0.014	0.050	0.10
72-54-8	4,4'-DDD	1	<0.050	U	0.018	0.050	0.10
33213-65-9	Endosulfan II	1	<0.050	UJ U	0.017	0.050	0.10
50-29-3	4,4'-DDT	1	<0.050	U	0.025	0.050	0.10
7421-93-4	Endrin aldehyde	1	<0.050	U	0.020	0.050	0.10
72-43-5	Methoxychlor	1	<0.050	U	0.020	0.050	0.10
1031-07-8	Endosulfan sulfate	1	<0.050	U	0.016	0.050	0.10
53494-70-5	Endrin ketone	1	<0.050	U	0.017	0.050	0.10
8001-35-2	Toxaphene	1	<0.50	U	0.48	0.50	1.0

SYSTEM MONITORING COMPOUND	ADDED (ug/L)	CONC (ug/L)	% REC	QC LIMITS	Q
2,4,5,6-TCMX	1.00	0.94	94	44 - 124	
Decachlorobiphenyl	1.00	1.2	118	30 - 135	

INTERNAL STANDARD	AREA	RT	REF AREA	REF RT	Q
DBC	722100000	5.701	5.959E+08	5.758	

* Values outside of QC limits

WM 030115

ORGANIC ANALYSIS DATA SHEET

EPA 8082A

IR82-SW01-14D

Laboratory:	ENCO Orlando	SDG:	A407421-CTO-WE9A
Client:	CH2M Hill, Inc. (CH031)	Project:	CTO-WE9A, Camp Lejuene Site 82

Matrix:	Surface Water	Laboratory ID:	A407421-01	File ID:	2LU014.D
Sampled:	12/10/14 11:20	Prepared:	12/17/14 06:45	Analyzed:	12/26/14 10:39
Solids:		Preparation:	EPA 3510C	Initial/Final:	100 mL / 1 mL

Batch: 4L17007 Sequence: AA31909 Calibration: 1412109 Instrument: OSVGCECD2

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q	DL	LOD	LOQ
12674-11-2	PCB-1016	1	<1.0	U	0.32	1.0	1.0
53469-21-9	PCB-1242	1	<1.0	U	0.49	1.0	1.0
12674-11-2/53469-21-9	PCB-1016/1242	1	<1.0	U	0.49	1.0	1.0
11104-28-2	PCB-1221	1	<1.0	U	0.46	1.0	1.0
11141-16-5	PCB-1232	1	<1.0	U	0.47	1.0	1.0
12672-29-6	PCB-1248	1	<1.0	U	0.49	1.0	1.0
11097-69-1	PCB-1254	1	<1.0	U	0.50	1.0	1.0
11096-82-5	PCB-1260	1	<1.0	U	0.48	1.0	1.0

SYSTEM MONITORING COMPOUND	ADDED (ug/L)	CONC (ug/L)	% REC	QC LIMITS	Q
2,4,5,6-TCMX	1.00	0.93	93	38 - 142	
Decachlorobiphenyl	1.00	1.3	127	40 - 135	

* Values outside of QC limits

WM 030115

ORGANIC ANALYSIS DATA SHEET

EPA 8082A

IR82-SW01D-14D

Laboratory:	ENCO Orlando	SDG:	A407421-CTO-WE9A
Client:	CH2M Hill, Inc. (CH031)	Project:	CTO-WE9A, Camp Lejuene Site 82

Matrix:	Surface Water	Laboratory ID:	A407421-02	File ID:	2LU015.D
Sampled:	12/10/14 11:25	Prepared:	12/17/14 06:45	Analyzed:	12/26/14 10:50
Solids:		Preparation:	EPA 3510C	Initial/Final:	100 mL / 1 mL

Batch: 4L17007 Sequence: AA31909 Calibration: 1412109 Instrument: OSVGCECD2

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q	DL	LOD	LOQ
12674-11-2	PCB-1016	1	<1.0	U	0.32	1.0	1.0
53469-21-9	PCB-1242	1	<1.0	U	0.49	1.0	1.0
12674-11-2/53469-21-9	PCB-1016/1242	1	<1.0	U	0.49	1.0	1.0
11104-28-2	PCB-1221	1	<1.0	U	0.46	1.0	1.0
11141-16-5	PCB-1232	1	<1.0	U	0.47	1.0	1.0
12672-29-6	PCB-1248	1	<1.0	U	0.49	1.0	1.0
11097-69-1	PCB-1254	1	<1.0	U	0.50	1.0	1.0
11096-82-5	PCB-1260	1	<1.0	U	0.48	1.0	1.0

SYSTEM MONITORING COMPOUND	ADDED (ug/L)	CONC (ug/L)	% REC	QC LIMITS	Q
2,4,5,6-TCMX	1.00	0.80	80	38 - 142	
Decachlorobiphenyl	1.00	1.1	109	40 - 135	

* Values outside of QC limits

LM 030115

This SDG contains total & dissolved metals analysis using SW-846 method 6020A/6010C/7470A.

HOLDING TIMES

Sampling Date: 12/10/14 Cooler temps: acceptable
Received Date: 12/15/14
Prep. Dates: 12/30 6010; 12/22, 12/29 6020; 12/30 7470A
Analysis Dates: 12/31 & 1/5 6010; 12/29-12/30 6020; 12/31 7470A

All holding time requirements were met. (6 mos. for ICP, 28 days for Hg) Receipt documentation is in order.

CALIBRATIONS

All initial calibration criteria were met. Calibration verification criteria were met for all associated CCV standards for the ICP & Hg analyses. All necessary check standards were analyzed and met method criteria for all analytes, were non-compliant in a direction that was did not require qualification, or associated any samples necessary were re-analyzed on acceptable sequences. Interference check standards were analyzed and met criteria. Raw data was verified.

BLANK SUMMARY

Blank qualification guidelines:

- No action is taken if an analyte is found in the blank but not in the sample.
- Sample weight, volume or dilution factor must be taken into consideration when applying the criteria.
- Apply the same data validation guidelines to any associated calibration, preparation, and field QC blanks and all associated samples.
- Qualification/Action codes:
  - No Action - The sample result is greater than the LOD.
  - U - The sample result is greater than or equal to the MDL but less than or equal to the LOD, result is reported as non-detect at the LOD.
  - J+ The blank contaminant concentration was greater than the LOD and the sample result is greater than the LOD but less than 10X the blank contaminant concentration. The reported result is flagged as biased high J+.

Blank Contamination and Qualification Summaries

Blank ID	Analyte	Concentration	Action Level	Q Flag

The concentration noted for the CCBs is the highest concentration in all the CCBs. However, when qualifying samples for CCB contamination, associated samples are those just prior to or just following a CCB. Therefore, not all analytes in all samples are flagged for noted CCB contamination. See worksheets for associations. Samples are qualified for field QC blank contamination based on QC tracking provided by CH2M HILL. Negative contamination in a prep blank or CCB, if less than the analyte LOD, is qualified based on professional judgment.

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

Sample ID	Analyte	Q Flag	Q Code

MATRIX SPIKE/DUPLICATE SUMMARY

The MS/MSD pair of sample IR82-SW01-14D exhibited acceptable non-compliant recoveries as noted in the following paragraphs.

For total metals: the MS/MSD pair of sample IR82-SW01-14D exhibited low recoveries requiring qualification in the native sample and field duplicate for Be (81/80), Cd (86/84) and Se (71/71) as biased low J-/UJ. The associated RPDs were acceptable. The PDS for Se was also low.

For dissolved metals: the MS/MSD pair of sample IR82-SW01-14D exhibited low recoveries requiring qualification in the native sample and field duplicate for Cd (84/84) and Se (67/66) as biased low J-/UJ. The associated RPDs were acceptable. The PDS for Se was also low.

LABORATORY CONTROL SAMPLES

All LCS samples were acceptable for all analytes. No qualifications were required.

SERIAL DILUTIONS

Serial dilution analyses were acceptable.

FIELD DUPLICATE SAMPLE SUMMARY

Note: Field duplicate results are assessed only if both results are above the LOQ.

The field duplicate pair analyzed in this SDG exhibited acceptable RPDs for all analytes that were above the LOQ. No qualifications were required. See the following page for details. .

SAMPLE RESULT VERIFICATION

Specific Comments:

All sample results were reported within the calibration/linear range of the instruments. Dilutions were required to accurately quantitate the target analyte sodium. All E-flagged results were excluded in favor of D-flagged results reported in the dilution analyses. Detection limits were acceptable. Raw data was verified. Calculation verification was performed. Bench sheets were provided. All positive results reported at concentrations between the DL and the LOQ were qualified as estimated, J by the laboratory.

Reviewer D Cleveland **Date:** 3-10-15

LOW-CONCENTRATION CALIBRATION VERIFICATION

EPA 6020A

Laboratory: ENCO Orlando

SDG: A407421-CTO-WE9A

Client: CH2M Hill, Inc. (CH031)

Project: CTO-WE9A, Camp Lejuene Site 82

Calibration: 1412107

Laboratory ID: AA31918-LCV1

Sequence: AA31918

Standard ID: A4J0136

ANALYTE	EXPECTED (ug/L)	FOUND (ug/L)	% DRIFT	QC LIMIT
Antimony	0.500	0.536	7.2	20.00
Arsenic	15.0	15.2	1.3	20.00
Barium	10.0	10.0	-0.04	20.00
Beryllium	0.800	0.815	1.8	20.00
Cadmium	8.00	8.06	0.7	20.00
Chromium	5.00	5.04	0.7	20.00
Cobalt	1.00	0.728	-27.2 *	20.00
Copper	1.50	1.48	-1.3	20.00
Lead	1.00	1.07	6.9	20.00
Nickel	2.00	2.03	1.5	20.00
Selenium	4.00	3.98	-0.5	20.00
Silver	0.225	0.207	-7.9	20.00
Thallium	0.400	0.424	6.0	20.00
Vanadium	1.00	0.632	-36.8 *	20.00

NQ

NQ

* Values outside of QC limits

Note: Samples were re-extracted & re-analyzed for Co & V due to decrease in response noted on this sequence. 2nd analysis met all criteria

INITIAL AND CONTINUING CALIBRATION CHECK

EPA 6020A

Laboratory: ENCO Orlando

SDG: A407421-CTO-WE9A

Client: CH2M Hill, Inc. (CH031)

Project: CTO-WE9A, Camp Lejuene Site 82

Instrument ID: OMICPMS1

Calibration: 1412107

Control Limt: +/- 10.00%

Sequence: AA31918

Lab Sample ID	Analyte	True	Found	%R	Units	Method	
AA31918-CCV1	Antimony	5.00	4.72	94	ug/L	EPA 6020A	
	Arsenic	50.0	53.2	106	ug/L	EPA 6020A	
	Barium	50.0	50.4	101	ug/L	EPA 6020A	
	Beryllium	5.00	5.45	109	ug/L	EPA 6020A	
	Cadmium	5.00	5.00	100	ug/L	EPA 6020A	
	Chromium	50.0	51.1	102	ug/L	EPA 6020A	
	Cobalt	50.0	52.4	105	ug/L	EPA 6020A	
	Copper	50.0	51.2	102	ug/L	EPA 6020A	
	Lead	50.0	50.3	101	ug/L	EPA 6020A	
	Nickel	50.0	50.9	102	ug/L	EPA 6020A	
	Selenium	50.0	52.6	105	ug/L	EPA 6020A	
	Silver	5.00	5.03	101	ug/L	EPA 6020A	
	Thallium	5.00	5.05	101	ug/L	EPA 6020A	
	Vanadium	50.0	51.9	104	ug/L	EPA 6020A	
AA31918-CCV2	Antimony	5.00	4.70	94	ug/L	EPA 6020A	
	Arsenic	50.0	51.8	104	ug/L	EPA 6020A	
	Barium	50.0	48.9	98	ug/L	EPA 6020A	
	Beryllium	5.00	5.57	111 *	ug/L	EPA 6020A	NQ
	Cadmium	5.00	4.93	99	ug/L	EPA 6020A	
	Chromium	50.0	49.1	98	ug/L	EPA 6020A	
	Cobalt	50.0	51.3	103	ug/L	EPA 6020A	
	Copper	50.0	51.4	103	ug/L	EPA 6020A	
	Lead	50.0	50.4	101	ug/L	EPA 6020A	
	Nickel	50.0	50.6	101	ug/L	EPA 6020A	
	Selenium	50.0	51.3	103	ug/L	EPA 6020A	
	Silver	5.00	5.01	100	ug/L	EPA 6020A	
	Thallium	5.00	5.10	102	ug/L	EPA 6020A	
	Vanadium	50.0	50.4	101	ug/L	EPA 6020A	
AA31918-CCV4	Beryllium	5.00	5.51	110	ug/L	EPA 6020A	
AA31918-CCV5	Beryllium	5.00	5.46	109	ug/L	EPA 6020A	
AA31918-CCV3	Antimony	5.00	4.67	93	ug/L	EPA 6020A	
	Arsenic	50.0	54.2	108	ug/L	EPA 6020A	
	Barium	50.0	49.7	99	ug/L	EPA 6020A	
	Beryllium	5.00	5.59	112 *	ug/L	EPA 6020A	NQ
	Cadmium	5.00	4.92	98	ug/L	EPA 6020A	
	Chromium	50.0	49.0	98	ug/L	EPA 6020A	
	Cobalt	50.0	49.4	99	ug/L	EPA 6020A	

MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY

EPA 6020A

IR82-SW01-14D

Laboratory:	ENCO Orlando	SDG:	A407421-CTO-WE9A
Client:	CH2M Hill, Inc. (CH031)	Project:	CTO-WE9A, Camp Lejuene Site 82
Matrix:	Water		
Batch:	4L22016	Laboratory ID:	4L22016-MS1
Preparation:	EPA 3005A	Initial/Final:	50 mL / 50 mL

Source Sample Name: IR82-SW01-14D

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (ug/L)	MS CONCENTRATION (ug/L)	MS % REC. #	QC LIMITS REC.	
Antimony	5.00	ND	4.88	98	85 - 117	
Arsenic	50.0	ND	48.8	98	84 - 116	
Barium	50.0	15.9	69.3	107	86 - 114	
Beryllium	5.00	ND	4.03	81 *	83 - 121	J-/UJ
Cadmium	5.00	ND	4.29	86 *	87 - 115	
Chromium	50.0	0.689	53.6	106	85 - 116	
Copper	50.0	0.758	49.0	96	85 - 118	
Lead	50.0	0.289	45.6	91	88 - 115	
Nickel	50.0	0.657	49.4	97	85 - 117	
Selenium	50.0	ND	35.5	71 *	80 - 120	J-/UJ
Silver	5.00	ND	4.53	91	85 - 116	
Thallium	5.00	ND	4.56	91	82 - 116	

COMPOUND	SPIKE ADDED (ug/L)	MSD CONCENTRATION (ug/L)	MSD % REC. #	% RPD #	QC LIMITS RPD	QC LIMITS REC.	
Antimony	5.00	4.80	96	2	20	85 - 117	
Arsenic	50.0	49.5	99	1	20	84 - 116	
Barium	50.0	68.8	106	0.7	20	86 - 114	
Beryllium	5.00	4.01	80 *	0.7	20	83 - 121	J-/UJ
Cadmium	5.00	4.18	84 *	3	20	87 - 115	
Chromium	50.0	50.3	99	6	20	85 - 116	
Copper	50.0	49.1	97	0.2	20	85 - 118	
Lead	50.0	45.2	90	1	20	88 - 115	
Nickel	50.0	48.3	95	2	20	85 - 117	
Selenium	50.0	35.5	71 *	0.2	20	80 - 120	J/UJ
Silver	5.00	4.48	90	1	20	85 - 116	
Thallium	5.00	4.57	91	0.4	20	82 - 116	

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

assoc. with total metals

POST DIGEST SPIKE SAMPLE RECOVERY

EPA 6020A

IR82-SW01-14D

Laboratory: ENCO Orlando

SDG: A407421-CTO-WE9A

Client: CH2M Hill, Inc. (CH031)

Project: CTO-WE9A, Camp Lejuene Site 82

Matrix: Water

Laboratory ID: 4L22016-PS1

Batch: 4L22016

Lab Source ID: A407421-01

Preparation: EPA 3005A

Initial/Final: 10 mL / 10.2 mL

Source Sample Name: IR82-SW01-14D

% Solids:

Analyte	Control Limit %R	Spike Sample Result (SSR) (ug/L)	Sample Result (SR) (ug/L)	Spike Added (SA) (ug/L)	%R
Antimony	80 - 120	4.47	0.0821	4.90	90
Arsenic	80 - 120	49.8	0.201	49.0	101
Barium	80 - 120	68.9	15.6	49.0	109
Beryllium	80 - 120	3.98	-0.0209	4.90	81
Cadmium	80 - 120	4.30	-0.105	4.90	88
Chromium	80 - 120	52.5	0.675	49.0	106
Copper	80 - 120	49.7	0.744	49.0	100
Lead	80 - 120	46.1	0.284	49.0	94
Nickel	80 - 120	48.7	0.644	49.0	98
Selenium	80 - 120	36.3	-6.03	49.0	74 *
Silver	80 - 120	4.24	-0.0114	4.90	87
Thallium	80 - 120	4.62	0.0134	4.90	94

* Values outside of QC limits

Se MS/MSD for flags

MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY

EPA 6010C

A407421-01 (IR82-SW01-14D)

Laboratory:	ENCO Jacksonville	SDG:	A407421-CTO-WE9A
Client:	ENCO Orlando	Project:	CTO-WE9A, Camp Lejuene Site 82
Matrix:	Water		
Batch:	4L30004	Laboratory ID:	4L30004-MS1
Preparation:	EPA 3005A	Initial/Final:	50 mL / 50 mL

Source Sample Name: A407421-01 (IR82-SW01-14D)

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (ug/L)	MS CONCENTRATION (ug/L)	MS % REC. #	QC LIMITS REC.	
Aluminum	5000	297	5200	98	86 - 115	
Calcium	5000	33000	37600	93	87 - 113	
Iron	2500	578	3050	99	87 - 115	
Magnesium	5000	57100	61900	96	85 - 113	
Manganese	500	10.1	508	100	90 - 114	
Potassium	25000	20200	45800	102	86 - 114	
Sodium	25000	489000	505000	65 *	87 - 115	NQ
Zinc	500	ND	520	104	87 - 115	

COMPOUND	SPIKE ADDED (ug/L)	MSD CONCENTRATION (ug/L)	MSD % REC. #	% RPD #	QC LIMITS RPD	QC LIMITS REC.	
Aluminum	5000	5150	97	1	20	86 - 115	
Calcium	5000	37600	92	0.1	20	87 - 113	
Iron	2500	3020	98	1	20	87 - 115	
Magnesium	5000	61200	82 *	1	20	85 - 113	NQ
Manganese	500	503	99	0.9	20	90 - 114	
Potassium	25000	46100	103	0.6	20	86 - 114	
Sodium	25000	507000	72 *	0.3	20	87 - 115	NQ
Zinc	500	520	104	0.07	20	87 - 115	

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

* Note - analytes out due to the abundance of target in native sample.

INITIAL AND CONTINUING CALIBRATION CHECK

EPA 6020A

Laboratory: ENCO Orlando
SDG: A407421-CTO-WE9A
Client: CH2M Hill, Inc. (CH031)
Project: CTO-WE9A, Camp Lejuene Site 82

Instrument ID: OMICPMS1
Calibration: 1412107
Control Limt: +/- 10.00%
Sequence: AA31918

Lab Sample ID	Analyte	True	Found	%R	Units	Method	
AA31918-CCV1	Antimony (dissolved)	5.00	4.72	94	ug/L	EPA 6020A	
	Arsenic (dissolved)	50.0	53.2	106	ug/L	EPA 6020A	
	Barium (dissolved)	50.0	50.4	101	ug/L	EPA 6020A	
	Beryllium (dissolved)	5.00	5.45	109	ug/L	EPA 6020A	
	Cadmium (dissolved)	5.00	5.00	100	ug/L	EPA 6020A	
	Chromium (dissolved)	50.0	51.1	102	ug/L	EPA 6020A	
	Cobalt (dissolved)	50.0	52.4	105	ug/L	EPA 6020A	
	Copper (dissolved)	50.0	51.2	102	ug/L	EPA 6020A	
	Lead (dissolved)	50.0	50.3	101	ug/L	EPA 6020A	
	Nickel (dissolved)	50.0	50.9	102	ug/L	EPA 6020A	
	Selenium (dissolved)	50.0	52.6	105	ug/L	EPA 6020A	
	Silver (dissolved)	5.00	5.03	101	ug/L	EPA 6020A	
	Thallium (dissolved)	5.00	5.05	101	ug/L	EPA 6020A	
	Vanadium (dissolved)	50.0	51.9	104	ug/L	EPA 6020A	
AA31918-CCV2	Antimony (dissolved)	5.00	4.70	94	ug/L	EPA 6020A	
	Arsenic (dissolved)	50.0	51.8	104	ug/L	EPA 6020A	
	Barium (dissolved)	50.0	48.9	98	ug/L	EPA 6020A	
	Beryllium (dissolved)	5.00	5.57	111 *	ug/L	EPA 6020A	NQ- none accpc.
	Cadmium (dissolved)	5.00	4.93	99	ug/L	EPA 6020A	
	Chromium (dissolved)	50.0	49.1	98	ug/L	EPA 6020A	
	Cobalt (dissolved)	50.0	51.3	103	ug/L	EPA 6020A	
	Copper (dissolved)	50.0	51.4	103	ug/L	EPA 6020A	
	Lead (dissolved)	50.0	50.4	101	ug/L	EPA 6020A	
	Nickel (dissolved)	50.0	50.6	101	ug/L	EPA 6020A	
	Selenium (dissolved)	50.0	51.3	103	ug/L	EPA 6020A	
	Silver (dissolved)	5.00	5.01	100	ug/L	EPA 6020A	
	Thallium (dissolved)	5.00	5.10	102	ug/L	EPA 6020A	
	Vanadium (dissolved)	50.0	50.4	101	ug/L	EPA 6020A	
AA31918-CCV4	Beryllium (dissolved)	5.00	5.51	110	ug/L	EPA 6020A	
AA31918-CCV5	Beryllium (dissolved)	5.00	5.46	109	ug/L	EPA 6020A	
AA31918-CCV3	Antimony (dissolved)	5.00	4.67	93	ug/L	EPA 6020A	
	Arsenic (dissolved)	50.0	54.2	108	ug/L	EPA 6020A	
	Barium (dissolved)	50.0	49.7	99	ug/L	EPA 6020A	
	Beryllium (dissolved)	5.00	5.59	112 *	ug/L	EPA 6020A	NQ- no FS accpc.
	Cadmium (dissolved)	5.00	4.92	98	ug/L	EPA 6020A	
	Chromium (dissolved)	50.0	49.0	98	ug/L	EPA 6020A	
	Cobalt (dissolved)	50.0	49.4	99	ug/L	EPA 6020A	

LOW-CONCENTRATION CALIBRATION VERIFICATION

EPA 6020A

Laboratory: ENCO Orlando

SDG: A407421-CTO-WE9A

Client: CH2M Hill, Inc. (CH031)

Project: CTO-WE9A, Camp Lejuene Site 82

Calibration: 1412107

Laboratory ID: AA31918-LCV1

Sequence: AA31918

Standard ID: A4J0136

ANALYTE	EXPECTED (ug/L)	FOUND (ug/L)	% DRIFT	QC LIMIT	
Antimony (dissolved)	0.500	0.536	7.2	20.00	
Arsenic (dissolved)	15.0	15.2	1.3	20.00	
Barium (dissolved)	10.0	10.0	-0.04	20.00	
Beryllium (dissolved)	0.800	0.815	1.8	20.00	
Cadmium (dissolved)	8.00	8.06	0.7	20.00	
Chromium (dissolved)	5.00	5.04	0.7	20.00	
Cobalt (dissolved)	1.00	0.728	-27.2 *	20.00	NQ*
Copper (dissolved)	1.50	1.48	-1.3	20.00	
Lead (dissolved)	1.00	1.07	6.9	20.00	
Nickel (dissolved)	2.00	2.03	1.5	20.00	
Selenium (dissolved)	4.00	3.98	-0.5	20.00	
Silver (dissolved)	0.225	0.207	-7.9	20.00	
Thallium (dissolved)	0.400	0.424	6.0	20.00	
Vanadium (dissolved)	1.00	0.632	-36.8 *	20.00	NQ*

* Values outside of QC limits

* All assoc samples were reanalyzed on an acceptable sequence for Co & V (dissolved)

MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY

EPA 6020A

IR82-SW01-14D

Laboratory:	ENCO Orlando	SDG:	A407421-CTO-WE9A
Client:	CH2M Hill, Inc. (CH031)	Project:	CTO-WE9A, Camp Lejuene Site 82
Matrix:	Water		
Batch:	4L22017	Laboratory ID:	4L22017-MS1
Preparation:	EPA 3005A	Initial/Final:	50 mL / 50 mL

Source Sample Name: IR82-SW01-14D

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (ug/L)	MS CONCENTRATION (ug/L)	MS % REC. #	QC LIMITS REC.	
Antimony (dissolved)	5.00	0.145	4.86	94	85 - 117	
Arsenic (dissolved)	50.0	ND	48.9	98	84 - 116	
Barium (dissolved)	50.0	16.2	70.2	108	86 - 114	
Beryllium (dissolved)	5.00	ND	4.21	84	83 - 121	
Cadmium (dissolved)	5.00	ND	4.19	84 *	87 - 115	J- UJ
Chromium (dissolved)	50.0	0.610	51.4	102	85 - 116	
Copper (dissolved)	50.0	0.762	49.5	98	85 - 118	
Lead (dissolved)	50.0	0.184	44.7	89	88 - 115	
Nickel (dissolved)	50.0	0.792	48.5	95	85 - 117	
Selenium (dissolved)	50.0	ND	33.6	67 *	80 - 120	J- UJ
Silver (dissolved)	5.00	ND	4.43	89	85 - 116	
Thallium (dissolved)	5.00	ND	4.48	90	82 - 116	

COMPOUND	SPIKE ADDED (ug/L)	MSD CONCENTRATION (ug/L)	MSD % REC. #	% RPD #	QC LIMITS RPD	QC LIMITS REC.	
Antimony (dissolved)	5.00	4.83	94	0.7	20	85 - 117	
Arsenic (dissolved)	50.0	48.1	96	2	20	84 - 116	
Barium (dissolved)	50.0	69.9	108	0.5	20	86 - 114	
Beryllium (dissolved)	5.00	4.11	82 *	3	20	83 - 121	NQ*
Cadmium (dissolved)	5.00	4.20	84 *	0.2	20	87 - 115	J- UJ
Chromium (dissolved)	50.0	51.3	101	0.06	20	85 - 116	
Copper (dissolved)	50.0	49.5	98	0.01	20	85 - 118	
Lead (dissolved)	50.0	43.8	87 *	2	20	88 - 115	NQ*
Nickel (dissolved)	50.0	48.0	94	0.9	20	85 - 117	
Selenium (dissolved)	50.0	33.2	66 *	1	20	80 - 120	J- UJ
Silver (dissolved)	5.00	4.40	88	0.8	20	85 - 116	
Thallium (dissolved)	5.00	4.40	88	2	20	82 - 116	

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

* Be & Pb only MSD is out; MS is OK & so is PDS - so analyte is not flagged

POST DIGEST SPIKE SAMPLE RECOVERY

EPA 6020A

IR82-SW01-14D

Laboratory: ENCO Orlando

SDG: A407421-CTO-WE9A

Client: CH2M Hill, Inc. (CH031)

Project: CTO-WE9A, Camp Lejuene Site 82

Matrix: Water

Laboratory ID: 4L22017-PS1

Batch: 4L22017

Lab Source ID: A407421-01

Preparation: EPA 3005A

Initial/Final: 10 mL / 10.2 mL

Source Sample Name: IR82-SW01-14D

% Solids:

Analyte	Control Limit %R	Spike Sample Result (SSR) (ug/L)	Sample Result (SR) (ug/L)	Spike Added (SA) (ug/L)	%R
Antimony (dissolved)	80 - 120	4.44	0.142	4.90	88
Arsenic (dissolved)	80 - 120	44.6	0.106	49.0	91
Barium (dissolved)	80 - 120	69.5	15.8	49.0	109
Beryllium (dissolved)	80 - 120	4.08	-0.0223	4.90	83
Cadmium (dissolved)	80 - 120	4.16	-0.120	4.90	85
Chromium (dissolved)	80 - 120	52.0	0.598	49.0	105
Copper (dissolved)	80 - 120	49.6	0.747	49.0	100
Lead (dissolved)	80 - 120	43.5	0.181	49.0	88
Nickel (dissolved)	80 - 120	48.8	0.777	49.0	98
Selenium (dissolved)	80 - 120	30.5	-7.41	49.0	62 *
Silver (dissolved)	80 - 120	4.18	-0.0105	4.90	85
Thallium (dissolved)	80 - 120	4.30	0.0146	4.90	87

see MS/MSD for flags

* Values outside of QC limits

METHOD BLANK DATA SHEET
EPA 6010C

Laboratory:	ENCO Jacksonville	SDG:	A407421-CTO-WE9A
Client:	ENCO Orlando	Project:	CTO-WE9A, Camp Lejuene Site 82

Matrix:	Water	Laboratory ID:	4L30006-BLK1	File ID:	123114a-019
Prepared:	12/30/14 09:04	Preparation:	EPA 3005A	Initial/Final:	50 mL / 50 mL
Analyzed:	12/31/14 10:54	Instrument:	JMICP2		
Batch:	4L30006	Sequence:	BA16290	Calibration:	1412009

CAS NO.	COMPOUND	CONC. (ug/L)	Q
7429-90-5	Aluminum (dissolved)	<200	U
7440-70-2	Calcium (dissolved)	<250	U
7439-89-6	Iron (dissolved)	<50.0	U
7439-95-4	Magnesium (dissolved)	<250	U
7439-96-5	Manganese (dissolved)	<10.0	U
7440-09-7	Potassium (dissolved)	<500	U
7440-23-5	Sodium (dissolved)	288	J
7440-66-6	Zinc (dissolved)	<10.0	U

NQ

all results were >> action level

MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY

EPA 6010C

A407421-01 (IR82-SW01-14D)

Laboratory:	ENCO Jacksonville	SDG:	A407421-CTO-WE9A
Client:	ENCO Orlando	Project:	CTO-WE9A, Camp Lejuene Site 82
Matrix:	Water		
Batch:	4L30006	Laboratory ID:	4L30006-MS1
Preparation:	EPA 3005A	Initial/Final:	50 mL / 50 mL

Source Sample Name: A407421-01 (IR82-SW01-14D)

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (ug/L)	MS CONCENTRATION (ug/L)	MS % REC. #	QC LIMITS REC.	
Aluminum (dissolved)	5000	155	4900	95	86 - 115	
Calcium (dissolved)	5000	41200	47800	132 *	87 - 113	NQ
Iron (dissolved)	2500	357	2750	96	87 - 115	
Magnesium (dissolved)	5000	80600	87700	143 *	85 - 113	NQ
Manganese (dissolved)	500	11.6	496	97	90 - 114	
Potassium (dissolved)	25000	30100	57300	109	86 - 114	
Sodium (dissolved)	25000	710000	760000	201 *	87 - 115	NQ
Zinc (dissolved)	500	ND	498	100	87 - 115	

COMPOUND	SPIKE ADDED (ug/L)	MSD CONCENTRATION (ug/L)	MSD % REC. #	% RPD #	QC LIMITS RPD	QC LIMITS REC.	
Aluminum (dissolved)	5000	4860	94	0.8	20	86 - 115	
Calcium (dissolved)	5000	46300	102	3	20	87 - 113	
Iron (dissolved)	2500	2670	93	3	20	87 - 115	
Magnesium (dissolved)	5000	85300	94	3	20	85 - 113	
Manganese (dissolved)	500	482	94	3	20	90 - 114	
Potassium (dissolved)	25000	55600	102	3	20	86 - 114	
Sodium (dissolved)	25000	739000	118 *	3	20	87 - 115	NQ
Zinc (dissolved)	500	490	98	2	20	87 - 115	

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

All non-compliance is due to the abundance of target analytes in the native samples.

CH2M HILL LEJEUNE CTO-WE~~9~~0 x2 con JAC
SDG A407421-CTO-WE9A 3/015

METALS CALCULATIONS

ICP - MS	
SAMPLE ID	IR82-SW01D-14D
ANALYTE	barium
Lab Value CONCENTRATION (mg/L)	15.6
AMOUNT FROM RAW DATA (ug/L)	15.6028
SAMPLE SIZE (ml)	50
FINAL VOLUME (ml)	50
DILUTION FACTOR	1
CONVERSION FACTOR	1
CALCULATED CONCENTRATION (mg/L)	15.6

ICP-AES	
SAMPLE ID	IR82-SW01-14D
ANALYTE	calcium
Lab Value CONCENTRATION (mg/L)	33000
AMOUNT FROM RAW DATA (ug/L)	32.99
SAMPLE SIZE (ml)	50
FINAL VOLUME (ml)	50
DILUTION FACTOR	1
DRYNESS FACTOR	1
CONVERSION FACTOR	1000
CALCULATED CONCENTRATION (mg/L)	32990

CVAA	
SAMPLE ID	LCS - 4L22019-BS1
ANALYTE	mercury
Lab Value CONCENTRATION (mg/L)	5.08
AMOUNT FROM RAW DATA (ug/L)	5.078
SAMPLE SIZE (ml)	30
FINAL VOLUME (ml)	30
DILUTION FACTOR	1
DRYNESS FACTOR	1
CONVERSION FACTOR	1
CALCULATED CONCENTRATION (mg/L)	5.078000

Metals Calculations

CH2MHILL Lejeune CTO-WE09

SDG A407421-CTO-WE9A

Reporting Limit Calcs

ICP - MS	
SAMPLE ID	ir82-sw01-14d
ANALYTE	dissolved chromium
Form 1 LOD or LOQ Value (mg/Kg)	3
Analyte LOD or LOQ	3
SAMPLE SIZE INITIAL (ML)	50
SAMPLE SIZE FINAL (ML)	50
DRYNESS FACTOR	NA
Corrected LOD or LOQ (ug/L)	3.000

ICP - AES	
SAMPLE ID	IR82-SW01D-14D
ANALYTE	dissolved sodium
Form 1 LOD or LOQ Value (mg/Kg)	5000
Analyte LOD or LOQ	250
SAMPLE SIZE INITIAL (ML)	50
SAMPLE SIZE FINAL (ML)	50
dilution factor	20
Corrected LOD or LOQ (ug/L)	5000.000

ICP - CVAA	
SAMPLE ID	IR82-SW01-14D
ANALYTE	mercury
Form 1 LOD or LOQ Value (mg/Kg)	0.069
Analyte LOD or LOQ	0.069
SAMPLE SIZE INITIAL (ML)	30
SAMPLE SIZE FINAL (ML)	30
dilution factor	1
Corrected LOD or LOQ (ug/L)	0.069

DataQual Total Metals

FIELD DUPLICATE SAMPLE SUMMARY

Sample ID: IR82-SW01-14D
Duplicate Sample ID: IR82-SW01D-14D

COMMENTS:
6020A/6010C/7470A

Analyte		Sample Conc.	Dup. Sample Conc.	%RPD
antimony				#DIV/0!
arsenic				#DIV/0!
barium		15.9	15.6	2
beryllium				#DIV/0!
cadmium				#DIV/0!
chromium	*	0.689	0.658	5
cobalt				#DIV/0!
copper	*	0.758	0.838	10
lead	*	0.289	0.278	4
nickel	*	0.657	0.644	2
selenium				#DIV/0!
silver				#DIV/0!
thallium				#DIV/0!
vanadium	*	0.512	0.542	6
aluminum		297	282	5
calcium		33000	32400	2
iron		578	573	1
magnesium		57100	55200	3
manganese	*	10.1	10	1
potassium		20200	20100	0
sodium		519000	477000	8
zinc				#DIV/0!
mercury				#DIV/0!

COMMENTS: * less than LOQ - no action required.
No qualifications were required.

DataQual Dissolved Metals

FIELD DUPLICATE SAMPLE SUMMARY

Sample ID: IR82-SW01-14D
Duplicate Sample ID: IR82-SW01D-14D

COMMENTS:
6020A/6010C/7470A

Analyte		Sample Conc.	Dup. Sample Conc.	%RPD
antimony	*	0.145		200
arsenic				#DIV/0!
barium		16.2	15.8	2
beryllium				#DIV/0!
cadmium				#DIV/0!
chromium		0.61	0.607	0
cobalt				#DIV/0!
copper	*	0.762	1.31	53
lead	*	0.184		200
nickel		0.792	0.807	2
selenium				#DIV/0!
silver				#DIV/0!
thallium				#DIV/0!
vanadium		0.384	0.413	7
aluminum		155	166	7
calcium		41200	39300	5
iron		357	324	10
magnesium		80600	75400	7
manganese	*	11.6	10.5	10
potassium		30100	27800	8
sodium		764000	663000	14
zinc				#DIV/0!
mercury				#DIV/0!

COMMENTS: * less than LOQ - no action required.
No qualifications were required.