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MCB CAMP LEJEUNE
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VALIDATED DATA PACKAGE, 1509087, MCB CAMP LEJEUNE NC
11/2/2015
ENVIRONMENTAL DATA SERVICES

**DATA VALIDATION SUMMARY REPORT
MCB CAMP LEJEUNE, NORTH CAROLINA**

Client: CH2M HILL, Inc., Virginia Beach, Virginia
SDG: 1509087
Laboratory: Empirical Laboratories, LLC, Nashville, Tennessee
Site: MCB Camp Lejeune, LTM FY2015 Q4, Site 89, CTO-WE86
Date: November 2, 2015

EDS ID	Client Sample ID	Laboratory Sample ID	Matrix
1	IR89-SW109-15C	1509087-01	Water
2	IR89-SW104-15C	1509087-02	Water
3	IR89-SW104D-15C	1509087-03	Water
4	IR89-SW102-15C	1509087-04	Water
4MS	IR89-SW102-15CMS	1509087-04MS	Water
4MSD	IR89-SW102-15CMSD	1509087-04MSD	Water
5	IR89-TB-090915	1509087-05	Water

Note - Per the client's request, the package was revised to update the sample IDs as those listed on the Chain-of-Custody were incorrect (from "-15D," to the correct "-15C").

A full data validation was performed on the analytical data for four water samples and one aqueous trip blank sample collected on September 8-9, 2015 by CH2M HILL at MCB Camp Lejeune in North Carolina. The samples were analyzed under the Environmental Protection Agency (USEPA) "Test Methods for the Evaluation of Solid Waste, USEPA SW-846, Third Edition, September 1986, with revisions".

Specific method references are as follows:

Analysis
VOCs

Method References
USEPA SW-846 Method 8260B

The data have been validated according to the protocols and quality control (QC) requirements of the analytical methods, the USEPA National Functional Guidelines for Organic Data Review as follows:

- The USEPA "Contract Laboratories Program National Functional Guidelines for Superfund Organic Methods Data Review," June 2008;
- and the reviewer's professional judgment.

The following items/criteria were reviewed for this report:

Organics

- Holding times and sample preservation
- Gas Chromatography/Mass Spectroscopy (GC/MS) Tuning
- Initial and continuing calibration summaries
- Method blank and field blank contamination
- Surrogate Spike recoveries
- Matrix Spike/Matrix Spike Duplicate (MS/MSD) recoveries
- Laboratory Control Sample (LCS) recoveries
- Internal standard area and retention time summary forms
- Target Compound Identification
- Compound Quantitation
- Tentatively Identified Compounds (TICs)
- Field Duplicate sample precision

A full (Level IV) data validation was performed with this review including a recalculation of 10% of the detected results in the samples.

Overall Usability Issues:

There were no rejections of data.

Overall the data is acceptable for the intended purposes as qualified for the deficiencies detailed in this report.

Please note that any results qualified (U) due to blank contamination may be then qualified (J) due to another action. Therefore, the results may be qualified (UJ) due to the culmination of the blank contaminations and actions from other exceedences of QC criteria.

Volatile Organic Compounds (VOC)

Holding Times

- All samples were analyzed within 14 days for preserved water samples.

GC/MS Tuning

- All criteria were met.

Initial Calibration

- All %RSD and/or correlation coefficients and mean RRF criteria were met.

Continuing Calibration

- All %D and RRF criteria were met.

Method Blank

- The method blanks were free of contamination.

Field Blank

- Field QC results are summarized below.

Blank ID	Compound	Conc. ug/L	Qualifier	Affected Samples
IR89-TB-090915	None - ND	-	-	-

Surrogate Spike Recoveries

- All samples exhibited acceptable surrogate %R values.

Matrix Spike/Matrix Spike Duplicate (MS/MSD) Recoveries

- The MS/MSD sample exhibited acceptable %R and RPD values.

Laboratory Control Samples

- The LCS samples exhibited acceptable percent recoveries (%R).

Internal Standard (IS) Area Performance

- All internal standards met response and retention time (RT) criteria.

Target Compound Identification

- All mass spectra and quantitation criteria were met.

Compound Quantitation

- EDS Sample ID #s 1-4 were analyzed at a 2X dilution due to foaming. The reporting limits were adjusted accordingly. No action was required.

Tentatively Identified Compounds (TICs)

- TICs were not reported.

Field Duplicate Sample Precision

- Field duplicate results are summarized below.

VOCs				
Compound	IR89-SW104-15C ug/L	IR89-SW104D-15C ug/L	RPD	Qualifier
cis-1,2-Dichloroethene	2.92	2.78	5%	None
trans-1,2-Dichloroethene	1.03	1.03	0%	
1,1,2,2-Tetrachloroethane	1.21	1.18	3%	
Vinyl chloride	1.00	1.04	4%	

Please contact the undersigned at (757) 564-0090 if you have any questions or need further information.

Signed: 
Nancy Weaver
Senior Chemist

Dated: 11/3/15

Data Qualifiers

- U = The analyte was analyzed for, but was not detected at a level greater than or equal to the level of the adjusted Contract Required Quantitation Limit (CRQL) for sample and method.
- UJ = The analyte was not detected at a level greater than or equal to the adjusted CRQL. However, the reported adjusted CRQL is approximate and may be inaccurate or imprecise.
- J = The analyte was positively identified and the associated numerical value is the approximate concentration of the analyte in the sample (due either to the quality of the data generated because certain quality control criteria were not met, or the concentration of the analyte was below the CRQL).
- J+ = The result is an estimated quantity, but the result may be biased high.
- J- = The result is an estimated quantity, but the result may be biased low.
- R = The sample results are unusable due to the quality of the data generated because certain criteria were not met. The analyte may or may not be present in the sample.
- NJ = The analysis indicates the presence of an analyte that has been "tentatively identified" and the associated numerical value represents its approximate concentration.

ANALYSIS DATA SHEET

IR89-SW104D-15C

Laboratory: Empirical Laboratories, LLC SDG: 1509087
 Client: ENCO Project: Lejeune CTO-WE86
 Matrix: Water Laboratory ID: 1509087-03 File ID: 0908703B.D
 Sampled: 09/08/15 15:40 Prepared: 09/18/15 14:16 Analyzed: 09/18/15 14:16
 Solids: Preparation: 5030B Dilution: 2
 Batch: 5I18004 Sequence: 5I26901 Calibration: 5103002 Instrument: MS-VOA4

CAS NO.	COMPOUND	CONC. (ug/L)	DL	LOD	LOQ	Q
156-59-2	cis-1,2-Dichloroethene	2.78	0.500	1.00	2.00	U
156-60-5	trans-1,2-Dichloroethene	1.03	0.500	1.00	2.00	U
79-34-5	1,1,2,2-Tetrachloroethane	1.18	0.500	1.00	2.00	U
127-18-4	Tetrachloroethene		0.500	1.00	2.00	U
79-00-5	1,1,2-Trichloroethane		0.500	1.00	2.00	U
79-01-6	Trichloroethene		0.500	1.00	2.00	U
75-01-4	Vinyl chloride	1.04	0.500	1.00	2.00	U

Total Target Analytes Reported 7 Project Analytes: 7

SYSTEM MONITORING COMPOUND	ADDED (ug/L)	CONC (ug/L)	% REC	QC LIMITS	Q
Bromofluorobenzene	30.00	29.34	97.8	85 - 114	
Dibromofluoromethane	30.00	28.10	93.7	80 - 119	
1,2-Dichloroethane-d4	30.00	28.03	93.4	81 - 118	
Toluene-d8	30.00	30.86	103	89 - 112	

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ANALYSIS DATA SHEET

IR89-SW102-15C

Laboratory: Empirical Laboratories, LLC SDG: 1509087
 Client: ENCO Project: Lejeune CTO-WE86
 Matrix: Water Laboratory ID: 1509087-04 File ID: 0908704B.D
 Sampled: 09/08/15 16:50 Prepared: 09/18/15 14:45 Analyzed: 09/18/15 14:45
 Solids: Preparation: 5030B Dilution: 2
 Batch: 5118004 Sequence: 5126901 Calibration: 5103002 Instrument: MS-VOA4

CAS NO.	COMPOUND	CONC. (ug/L)	DL	LOD	LOQ	Q
156-59-2	cis-1,2-Dichloroethene	11.1	0.500	1.00	2.00	∅
156-60-5	trans-1,2-Dichloroethene	6.99	0.500	1.00	2.00	∅
79-34-5	1,1,2,2-Tetrachloroethane	2.71	0.500	1.00	2.00	∅
127-18-4	Tetrachloroethene		0.500	1.00	2.00	U
79-00-5	1,1,2-Trichloroethane		0.500	1.00	2.00	U
79-01-6	Trichloroethene	0.514	0.500	1.00	2.00	J∅
75-01-4	Vinyl chloride	8.45	0.500	1.00	2.00	∅

Total Target Analytes Reported 7 Project Analytes: 7

SYSTEM MONITORING COMPOUND	ADDED (ug/L)	CONC (ug/L)	% REC	QC LIMITS	Q
Bromofluorobenzene	30.00	29.68	98.9	85 - 114	
Dibromofluoromethane	30.00	27.90	93.0	80 - 119	
1,2-Dichloroethane-d4	30.00	26.49	88.3	81 - 118	
Toluene-d8	30.00	32.28	108	89 - 112	

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ANALYSIS DATA SHEET

IR89-TB-090915

Laboratory: Empirical Laboratories, LLC SDG: 1509087
 Client: ENCO Project: Lejeune CTO-WE86
 Matrix: Water Laboratory ID: 1509087-05 File ID: 0908705B.D
 Sampled: 09/09/15 16:50 Prepared: 09/18/15 11:50 Analyzed: 09/18/15 11:50
 Solids: Preparation: 5030B Dilution: 1
 Batch: 5118004 Sequence: 5126901 Calibration: 5103002 Instrument: MS-VOA4

CAS NO.	COMPOUND	CONC. (ug/L)	DL	LOD	LOQ	Q
156-59-2	cis-1,2-Dichloroethene		0.250	0.500	1.00	U
156-60-5	trans-1,2-Dichloroethene		0.250	0.500	1.00	U
79-34-5	1,1,2,2-Tetrachloroethane		0.250	0.500	1.00	U
127-18-4	Tetrachloroethene		0.250	0.500	1.00	U
79-00-5	1,1,2-Trichloroethane		0.250	0.500	1.00	U
79-01-6	Trichloroethene		0.250	0.500	1.00	U
75-01-4	Vinyl chloride		0.250	0.500	1.00	U

Total Target Analytes Reported 7 Project Analytes: 7

SYSTEM MONITORING COMPOUND	ADDED (ug/L)	CONC (ug/L)	% REC	QC LIMITS	Q
Bromofluorobenzene	30.00	30.11	100	85 - 114	
Dibromofluoromethane	30.00	27.49	91.6	80 - 119	
1,2-Dichloroethane-d4	30.00	27.86	92.9	81 - 118	
Toluene-d8	30.00	31.68	106	89 - 112	

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