Chemical Analysis Report

CEN-DIST-2017-11-22-01

Florida Department of Environmental Protection
Central Laboratory
2600 Blair Stone Road
Tallahassee, FL 32399-2400
DOH Accreditation E31780

Event Description: **Dead River + HA**
Request ID: **RQ-2017-09-04-45**
Customer: **CEN-DIST**
Project ID: **SMP**

Send Reports to:
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FL Dept. of Environmental Protection
3319 Maguire Blvd., Suite 232
Orlando, FL 32803-3767
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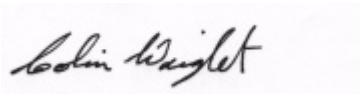
Certified by: Colin Wright, Program Administrator

Date Certified: 11-DEC-2017 11:42



Case Narrative

Unless otherwise noted, all samples included in this report were received in accordance with protocols referenced in Chapter 62-160, Florida Administrative Code (F.A.C.). Results published in this report pertain only to the samples as submitted to, and received by the laboratory. All times in this report are adjusted to the applicable Eastern Time Zone (EST or EDT).

Results for the following analytical group are included in this report: Nutrients.

Scientific notation may be used in reporting very large or small values. Values reported using scientific notation will take the form of the following example: 1.3E+03, which is equivalent to 1.3×10^3 or 1300.

Unless otherwise noted, analytical values for soil and sediment samples are reported on a dry weight basis, and analytical values for waste and tissue samples are reported on a wet weight basis.

Results for TNI accredited tests met requirements established by The NELAC Institute. A double asterisk (**) is used to indicate an analyte/matrix/method for which the laboratory is not TNI accredited or where accreditation for that field of testing is not applicable.

Any significant anomalies or deviations from established protocols are documented in Non-Conformance Reports, which, where appropriate, are included within this analytical report. Additional comments related to specific analytical tests may be included as remarks following the analytical results for each sample. Such comments and remarks are for informational purposes only and are not intended to convey judgement about the usability of the reported data.

A quality control report on the performance of the test method for the submitted samples is included. Uncertainty associated with the analytical results contained in this report can be estimated from the reported quality assurance results and from published quality control acceptance limits for each analytical test. Matrix quality control results (matrix spike recoveries and matrix sample precision) pertain only to the matrix sample tested and do not necessarily reflect test method performance for other samples.

Typical matrix quality control (QC) measurements may include matrix spike recovery, matrix spike duplicate recovery, matrix spike precision and matrix sample precision. Not all matrix QC results may be available or reportable; where they are not an explanation is provided. Typical reasons for unavailable QC results include, but are not limited to, a) insufficient matrix sample to perform some or all QC measurements; b) analyte concentration in the sample replicated was too low for a meaningful measurement of precision and c) analyte concentration in the matrix sample spiked was too high (relative to the amount of analyte spiked) for a meaningful measurement of recovery. Where matrix QC results are unavailable, other method performance metrics (e.g., LCS recovery, LCS precision, surrogate recovery) may be used to assess performance of the method. Comments explaining any missing QC measurements are not intended to convey any adverse conclusions about the quality of the reported data.

Precision is reported as relative percent difference unless otherwise noted.

Quality Control codes as defined below may be used in this report to indicate results that are associated with one or more quality control elements which did not fall within established test method criteria. Such results may be qualified as estimates using a J qualifier as required by 62-160 F.A.C. Explanations are included in the report for any results that were reported as estimates for other reasons.

QC Codes used in this report may include:

LCS – Recovery for the batch Laboratory Control Sample (LCS) was outside existing control limits;
MS – Recovery for the batch matrix spike (MS) was outside existing control limits;
CCV – Recovery for a continuing calibration verification (CCV) standard was outside existing control limits;
SUR – Recovery of a surrogate (SUR) for associated analytes was outside existing control limits;
RPD – The precision, measured as relative percent difference (RPD), of batch replicate measurements was outside existing control limits;
RSD – The precision, measured as relative standard deviation (RSD), of batch replicate measurements was outside existing control limits;
SMP – Sample - used precision derived from replicate analyses of a sample;

The following data qualifiers are used, where applicable, in this report as specified in 62-160 F.A.C.

A - Value reported is the mean of two or more determinations.
B - Results based on colony counts outside the acceptable range.
I - The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit.
J - Estimated value and/or the analysis did not meet established quality control criteria.
K - Actual value is known to be less than value given.
L - Actual value is known to be greater than value given.
N - Presumptive evidence of presence of material.
O - Sampled, but analysis lost or not performed.
Q - Sample held beyond normal holding time.
T - Value reported is less than the criterion of detection.
U - Material was analyzed for but not detected. The reported value is the method detection limit for the sample analyzed.
V - Analyte was detected in both sample and method blank.
X - Too few individuals to calculate SCI value.
Y - The laboratory analysis was from an unpreserved or improperly preserved sample. The data may not be accurate.
Z - Colonies were too numerous to count (TNTC).

Quality control information from overflow laboratories may not be included in this report. Please refer to the associated report from the overflow laboratory for additional information.

Sample Location: Bugg Spring Run @ 475m Upstream of Helena Run **Collection Date/Time: 11/21/2017 12:00**

Field ID: G1CE0037 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1948312	EPA 180.1 Rev. 2.0	Turbidity	0.50		NTU	P335822	
	EPA 300.0 Rev. 2.1	Chloride	17		mg Cl/L	P336265	
		Sulfate	8.6		mg SO4/L	P336269	
	SM 2120 B	Color (true)	14		PCU	P335817	
	SM 2320 B-97	Total Alkalinity	141	A	mg CaCO3/L	P336243	
	SM 2540 C-97	TDS	187	A	mg/L	P336348	
	SM 2540 D-97	TSS	3	IA	mg/L	P336298	
	SM 4500 F-C-97	Fluoride	0.060	I	mg F/L	P336247	
1948313	EPA 350.1 Rev. 2.0	Ammonia-N	0.028		mg N/L	P336340	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.28		mg N/L	P336182	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.21		mg N/L	P336060	
	EPA 365.1 Rev. 2.0	Total-P	0.074		mg P/L	P336203	
	SM 5310 B-00	Organic Carbon	2.0		mg C/L	P336196	
1948314	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.063		mg P/L	P335819	

Ref. Method and Comment:
SM 2540 D-97: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.
EPA 350.1 Rev. 2.0: Batch matrix spike recoveries are unavailable because of high analyte concentration in the QC sample.

Quality Assurance Report
Method Blank Results

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P335822

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P336265

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P336269

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P336340

Component	Result	Code	Units
Ammonia-N	0.002	U	mg N/L

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P336182

Component	Result	Code	Units
Kjeldahl Nitrogen	0.080	U	mg N/L

Quality Assurance Report
Method Blank Results

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P336060

Component	Result	Code	Units
NO2NO3-N	0.004	U	mg N/L

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P336203

Component	Result	Code	Units
Total-P	0.002	U	mg P/L

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P335819

Component	Result	Code	Units
O-Phosphate-P	0.004	U	mg P/L

Reference Method: SM 2120 B
Batch ID: P335817

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
Batch ID: P336243

Component	Result	Code	Units
Total Alkalinity	0.65	U	mg CaCO3/L

Reference Method: SM 2540 C-97
Batch ID: P336348

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P336298

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P336247

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P336196

Component	Result	Code	Units
Organic Carbon	0.50	U	mg C/L

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P336265

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Chloride	95.0		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P336269

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Sulfate	95.4		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P336340

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	99.9		P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P336182

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Kjeldahl Nitrogen	99.4		P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P336060

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
NO2NO3-N	104		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P336203

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total-P	101		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P335819

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
O-Phosphate-P	97.7		P	90 - 110

Reference Method: SM 2320 B-97
Batch ID: P336243

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	103		P	95 - 108

Reference Method: SM 4500 F-C-97
Batch ID: P336247

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	97.1		P	92 - 103

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: SM 5310 B-00
Batch ID: P336196

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	99.8		P	85 - 115

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P336265

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1948312	Chloride	93.7		P	90 - 110
1948318	Chloride	94.8		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P336269

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1948312	Sulfate	94.8		P	90 - 110
1948318	Sulfate	95.7		P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P336182

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1948265	Kjeldahl Nitrogen	94.3	94.0	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P336060

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1948264	NO2NO3-N	103	102	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P336203

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1948313	Total-P	99.1	100	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P335819

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1948267	O-Phosphate-P	97.2	99.3	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Batch ID: P336247

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1948312	Fluoride	96.8	97.9	P/P	91 - 105

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: SM 5310 B-00
Batch ID: P336196

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1948250	Organic Carbon	99.8	99.8	P/P	85 - 115

Quality Assurance Report
Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P335822

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1948248	Turbidity	3.97	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P336265

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1948318	Chloride	0.844	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P336269

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1948318	Sulfate	0.820	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P336340

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1948264	Ammonia-N	0.293	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P336182

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1948265	Kjeldahl Nitrogen	0.157	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P336060

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1948264	NO2NO3-N	0.554	Spike	P	0 - 20

Quality Assurance Report
Precision

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P336203

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1948313	Total-P	1.04	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P335819

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1948267	O-Phosphate-P	1.31	Spike	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P335817

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1948272	Color (true)	2.79	Sample	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P336243

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1948312	Total Alkalinity	0.323	Sample	P	0 - 4.8

Reference Method: SM 2540 C-97
Batch ID: P336348

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1948312	TDS	0.0	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
Batch ID: P336247

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1948312	Fluoride	0.953	Spike	P	0 - 3.0

Reference Method: SM 5310 B-00
Batch ID: P336196

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1948250	Organic Carbon	0.0467	Spike	P	0 - 20

* Sample, spike and/or laboratory control sample precision (LCS) is reported.
Replicate spike precision may be reported when sample results are below quantifiable levels.

Quality Assurance Report
Calibration Verification

Quality Assurance Report
Calibration Verification

Reference Method: SM 2120 B
Run ID: A80477
Included Lab Sample IDs: 1948312

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	99.9	102	P/P	85 - 115

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Run ID: A80478
Included Lab Sample IDs: 1948314

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	98.6	100	P/P	90 - 110

Reference Method: EPA 180.1 Rev. 2.0
Run ID: A80479
Included Lab Sample IDs: 1948312

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Turbidity	99.5	100	P/P	95 - 105

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A80582
Included Lab Sample IDs: 1948313

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	100	100	P/P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Run ID: A80632
Included Lab Sample IDs: 1948312

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	99.8	100	P/P	90 - 110
Sulfate	99.6	98.7	P/P	90 - 110

Reference Method: SM 5310 B-00
Run ID: A80633
Included Lab Sample IDs: 1948313

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	100	102	P/P	90 - 110

Reference Method: SM 2320 B-97
Run ID: A80654
Included Lab Sample IDs: 1948312

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	103	101	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Run ID: A80654
Included Lab Sample IDs: 1948312

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	100	101	P/P	90 - 110

Quality Assurance Report
Calibration Verification

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A80667
Included Lab Sample IDs: 1948313

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	102	102	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A80695
Included Lab Sample IDs: 1948313

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	101	98.5	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A80705
Included Lab Sample IDs: 1948313

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	94.4	93.5	P/P	90 - 110

* Pass/Fail determinations are made for each bracketing calibration verification check.
Control limits for initial calibration checks may be different from those for continuing checks, depending on method requirements.
Where they are different, both control limits are provided.

Quality Assurance Report
Summary

Ref. Method	Analyte	LCS % Recovery	MS % Recovery		Precision		
					LCS	SMP	MS
EPA 180.1 Rev. 2.0	Turbidity					3.97	
EPA 300.0 Rev. 2.1	Chloride	95.0	94.8	93.7		0.844	
	Sulfate	95.4	95.7	94.8		0.820	
EPA 350.1 Rev. 2.0	Ammonia-N	99.9					0.293
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	99.4	94.3	94.0			0.157
EPA 353.2 Rev. 2.0	NO2NO3-N	104	103	102			0.554
EPA 365.1 Rev. 2.0	Total-P	101	99.1	100			1.04
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	97.7	97.2	99.3			1.31
SM 2120 B	Color (true)					2.79	
SM 2320 B-97	Total Alkalinity	103				0.323	
SM 2540 C-97	TDS					0.0	
SM 4500 F-C-97	Fluoride	97.1	96.8	97.9			0.953
SM 5310 B-00	Organic Carbon	99.8	99.8	99.8			0.0467

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	1948312
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	1948312
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	1948312
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	1948313

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	1948313
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	1948313
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	1948313
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	1948314
SM 2120 B / E31780	True Color measured at 450 nm	1948312
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO3/L	1948312
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	1948312
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices	1948312
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	1948312
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	1948313

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
EPA 180.1 Rev. 2.0	11/22/2017			11/22/2017 15:02	DeAsia Armster	1948312
EPA 300.0 Rev. 2.1	11/22/2017			12/02/2017	Julia Storbeck	1948312
EPA 350.1 Rev. 2.0	11/22/2017			12/04/2017	Sofia Elnemr	1948313
EPA 351.2 Rev. 2.0	11/22/2017	12/01/2017	Adrian Shelby	12/05/2017	Joseph Suarez	1948313
EPA 353.2 Rev. 2.0	11/22/2017			11/29/2017	Lauren Bottorf	1948313
EPA 365.1 Rev. 2.0	11/22/2017	12/01/2017	Sima Feizi	12/04/2017	Lipi Saha	1948313
EPA 365.1 Rev. 2.0 dissolved	11/22/2017			11/22/2017 14:40	Megan Treadwell	1948314
SM 2120 B	11/22/2017			11/22/2017 15:53	Tanya Welborn	1948312
SM 2320 B-97	11/22/2017			12/02/2017	Dale L. Simmons	1948312
SM 2540 C-97	11/22/2017			11/25/2017	Yijie Li	1948312
SM 2540 D-97	11/22/2017			11/25/2017	Yijie Li	1948312
SM 4500 F-C-97	11/22/2017			12/02/2017	Dale L. Simmons	1948312
SM 5310 B-00	11/22/2017			11/30/2017	Ping Hua	1948313