Chemical Analysis Report

CEN-DIST-2017-02-09-02

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

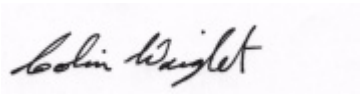
Event Description: **Dead River+HA**
Request ID: **RQ-2017-02-06-55**
Customer: **CEN-DIST**
Project ID: **SMP**

Send Reports to:
FL Dept. of Environmental Protection
FL Dept. of Environmental Protection
3319 Maguire Blvd., Suite 232
Orlando, FL 32803-3767
Attn: Mike Linger

For additional information please contact
Colin Wright, Ph.D.
Liang-Tsair Lin, Ph.D.
Thekkekalathil Chandrasekhar, PhD, QA Officer
Phone (850) 245-8085

Certified by: Colin Wright, Program Administrator

Date Certified: 27-FEB-2017 12:24



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: Dead River @ **Collection Date/Time: 02/08/2017 12:45**

Field ID: G1CE0056 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1871380	EPA 180.1 Rev. 2.0	Turbidity	2.9		NTU	P319623	
	EPA 300.0 Rev. 2.1	Chloride	26		mg Cl/L	P320122	
		Sulfate	6.4		mg SO4/L	P320123	
	SM 2120 B	Color (true)	14		PCU	P319627	
	SM 2320 B-97	Total Alkalinity	111		mg CaCO3/L	P320109	
	SM 2540 C-97	TDS	194		mg/L	P320290	
	SM 2540 D-97	TSS	8	I	mg/L	P320152	
	SM 4500 F-C-97	Fluoride	0.15		mg F/L	P319956	
1871381	EPA 350.1 Rev. 2.0	Ammonia-N	0.030		mg N/L	P319939	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.2		mg N/L	P319714	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.005	I	mg N/L	P320135	
	EPA 365.1 Rev. 2.0	Total-P	0.026		mg P/L	P319786	
	SM 5310 B-00	Organic Carbon	14		mg C/L	P319722	
1871382	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P319613	

Ref. Method and Comment:
SM 2540 D-97: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.

Quality Assurance Report
Method Blank Results

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P319623

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P320122

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P320123

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P319939

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P319714

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: P320135

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P319786

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P319613

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

Reference Method: SM 2120 B
Batch ID: P319627

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
Batch ID: P320109

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

Reference Method: SM 2540 C-97
Batch ID: P320290

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P320152

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P319956

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P319722

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: P320122

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P320123

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Sulfate	99.1		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P319939

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	99.0		P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P319714

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P320135

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P319786

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P319613

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

Reference Method: SM 2320 B-97
Batch ID: P320109

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	104		P	95 - 108

Reference Method: SM 4500 F-C-97
Batch ID: P319956

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

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: SM 5310 B-00
Batch ID: P319722

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	97.5		P	85 - 115

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P320122

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1871711	Chloride	104		P	90 - 110
1871713	Chloride	101		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P320123

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1871711	Sulfate	102		P	90 - 110
1871713	Sulfate	97.2		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P319939

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1871198	Ammonia-N	94.8	98.9	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P319714

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1871391	Kjeldahl Nitrogen	99.3	98.4	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P320135

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1871381	NO2NO3-N	102	102	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P319786

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1871201	Total-P	98.8	100	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P319613

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1871203	O-Phosphate-P	98.5	96.5	P/P	90 - 110

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: SM 4500 F-C-97
Batch ID: P319956

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1870833	Fluoride	101	99.6	P/P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P319722

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1871381	Organic Carbon	93.8	91.8	P/P	85 - 115

Quality Assurance Report
Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P319623

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1871148	Turbidity	0.329	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P320122

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1871711	Chloride	0.0518	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P320123

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1871711	Sulfate	0.201	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P319939

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1871198	Ammonia-N	3.84	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P319714

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1871391	Kjeldahl Nitrogen	0.612	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P320135

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits

Quality Assurance Report
Precision

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P320135

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1871381	NO2NO3-N	0.480	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P319786

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1871201	Total-P	1.08	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P319613

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1871203	O-Phosphate-P	2.05	Spike	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P319627

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1871192	Color (true)	0.549	Sample	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P320109

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1870833	Total Alkalinity	0.623	Sample	P	0 - 4.8

Reference Method: SM 2540 C-97
Batch ID: P320290

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1871195	TDS	0.669	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
Batch ID: P319956

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1870833	Fluoride	1.04	Spike	P	0 - 3.0

Reference Method: SM 5310 B-00
Batch ID: P319722

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1871381	Organic Carbon	1.29	Spike	P	0 - 20

Quality Assurance Report
Precision

* 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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Run ID: A74375
Included Lab Sample IDs: 1871382

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

Reference Method: EPA 180.1 Rev. 2.0
Run ID: A74381
Included Lab Sample IDs: 1871380

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Turbidity	98.5	99.0	P/P	95 - 105

Reference Method: SM 2120 B
Run ID: A74382
Included Lab Sample IDs: 1871380

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	99.0	102	P/P	85 - 115

Reference Method: SM 5310 B-00
Run ID: A74422
Included Lab Sample IDs: 1871381

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	96.2	96.0	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A74478
Included Lab Sample IDs: 1871381

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	98.6	99.0	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A74504
Included Lab Sample IDs: 1871381

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	98.8	98.5	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A74506
Included Lab Sample IDs: 1871381

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

Quality Assurance Report
Calibration Verification

Reference Method: SM 4500 F-C-97
Run ID: A74518
Included Lab Sample IDs: 1871380

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	105	101	P/P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Run ID: A74527
Included Lab Sample IDs: 1871380

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	102	105	P/P	90 - 110
Sulfate	98.4	92.5	P/P	90 - 110

Reference Method: SM 2320 B-97
Run ID: A74571
Included Lab Sample IDs: 1871380

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	104	105	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A74580
Included Lab Sample IDs: 1871381

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	97.5	97.5	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					0.329	
EPA 300.0 Rev. 2.1	Chloride	102	104	101		0.0518	
	Sulfate	99.1	102	97.2		0.201	
EPA 350.1 Rev. 2.0	Ammonia-N	99.0	94.8	98.9			3.84
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	102	99.3	98.4			0.612
EPA 353.2 Rev. 2.0	NO2NO3-N	102	102	102			0.480
EPA 365.1 Rev. 2.0	Total-P	99.4	98.8	100			1.08
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	102	98.5	96.5			2.05
SM 2120 B	Color (true)					0.549	
SM 2320 B-97	Total Alkalinity	104				0.623	
SM 2540 C-97	TDS					0.669	
SM 4500 F-C-97	Fluoride	103	101	99.6			1.04
SM 5310 B-00	Organic Carbon	97.5	93.8	91.8			1.29

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	1871380
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	1871380
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	1871380
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	1871381
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	1871381
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	1871381
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	1871381
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	1871382
SM 2120 B / E31780	True Color measured at 450 nm	1871380
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO3/L	1871380
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	1871380
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices	1871380
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	1871380
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	1871381

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	02/09/2017			02/09/2017 16:21	Julie Michelle Frank	1871380
EPA 300.0 Rev. 2.1	02/09/2017			02/16/2017	Ping Hua	1871380
EPA 350.1 Rev. 2.0	02/09/2017			02/15/2017	Sofia Elnemr	1871381
EPA 351.2 Rev. 2.0	02/09/2017	02/13/2017	Adrian Shelby	02/15/2017	Joseph Suarez	1871381
EPA 353.2 Rev. 2.0	02/09/2017			02/20/2017	Beverly Y. Sanders	1871381
EPA 365.1 Rev. 2.0	02/09/2017	02/14/2017	Adrian Shelby	02/15/2017	Lipi Saha	1871381
EPA 365.1 Rev. 2.0 dissolved	02/09/2017			02/09/2017 14:40	Lipi Saha	1871382
SM 2120 B	02/09/2017			02/09/2017 17:36	Julie Michelle Frank	1871380
SM 2320 B-97	02/09/2017			02/19/2017	Dale L. Simmons	1871380
SM 2540 C-97	02/09/2017			02/14/2017	Sima Feizi	1871380
SM 2540 D-97	02/09/2017			02/14/2017	Sima Feizi	1871380
SM 4500 F-C-97	02/09/2017			02/16/2017	Dale L. Simmons	1871380
SM 5310 B-00	02/09/2017			02/10/2017	Julie Michelle Frank	1871381