Chemical Analysis Report

SW-DIST-2020-07-01-01

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

Event Description: **Bear Creek HA**
Request ID: **RQ-2020-06-29-37**
Customer: **SW-DIST**
Project ID: **SMP**

Send Reports to:
FL Dept. of Environmental Protection
FL Dept. of Environmental Protection
13051 N. Telecom Parkway
Temple Terrace, FL 33637-0926
Attn: Judy Ashton

For additional information please contact
Colin Wright, Ph.D.
Liang-Tsair Lin, Ph.D.
Kerry Tate, Ph.D.
Dr. rer. nat. Bettina Steinbock
Thekkekalathil Chandrasekhar, Ph.D, QA Officer
Phone (850) 245-8085

Certified by: Thekkekalathil Chandrasekhar, Chemist Administrator

Date Certified: 17-JUL-2020 10:50

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 by the Florida Department of Health Environmental Laboratory Certification Program 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: Bear Creek @ Beacon **Collection Date/Time: 06/30/2020 09:50**

Field ID: G5SW0102 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2180138	EPA 180.1 Rev. 2.0	Turbidity	2.6		NTU	P383943	
	EPA 300.0 Rev. 2.1	Chloride	140		mg Cl/L	P384102	
		Sulfate	35		mg SO4/L	P384106	
	SM 2120 B-2011	Color (true)	17		PCU	P383954	
	SM 2320 B-2011	Total Alkalinity	152		mg CaCO3/L	P384133	
	SM 2540 C-2011	TDS	471		mg/L	P384599	
	SM 2540 D-2011	TSS	5	I	mg/L	P384396	
	SM 4500 F-C-2011	Fluoride	0.13		mg F/L	P384140	
2180139	EPA 350.1 Rev. 2.0	Ammonia-N	0.016		mg N/L	P384034	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.86		mg N/L	P384188	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.016		mg N/L	P384071	
	EPA 365.1 Rev. 2.0	Total-P	0.061		mg P/L	P383999	
	SM 5310 B-2011	Organic Carbon	4.2		mg C/L	P384110	
2180140	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.013		mg P/L	P383947	

Ref. Method and Comment:
SM 2540 D-2011: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.
EPA 351.2 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: P383943

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P384102

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P384106

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P384034

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P384188

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P384071

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P383999

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P383947

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

Reference Method: SM 2120 B-2011
Batch ID: P383954

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Quality Assurance Report
Method Blank Results

Reference Method: SM 2320 B-2011
Batch ID: P384133

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

Reference Method: SM 2540 C-2011
Batch ID: P384599

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-2011
Batch ID: P384396

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-2011
Batch ID: P384140

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-2011
Batch ID: P384110

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: P384102

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P384106

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Sulfate	99.7		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P384034

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P384188

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P384071

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P383999

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total-P	95.7		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P383947

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

Reference Method: SM 2120 B-2011
Batch ID: P383954

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Color (true)	100		P	85 - 115

Reference Method: SM 2320 B-2011
Batch ID: P384133

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	95.7		P	93 - 104

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: SM 4500 F-C-2011
Batch ID: P384140

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	100		P	90 - 106

Reference Method: SM 5310 B-2011
Batch ID: P384110

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	100		P	85 - 115

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P384102

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2180035	Chloride	101		P	90 - 110
2180165	Chloride	98.3		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P384106

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2180035	Sulfate	99.4		P	90 - 110
2180165	Sulfate	96.8		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P384034

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2180139	Ammonia-N	109	107	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P384071

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2180040	NO2NO3-N	97.5	97.5	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P383999

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2180115	Total-P	98.7	99.9	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P383947

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2180063	O-Phosphate-P	99.5	101	P/P	90 - 110

Reference Method: SM 4500 F-C-2011
Batch ID: P384140

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2180125	Fluoride	101	102	P/P	94 - 107

Reference Method: SM 5310 B-2011
Batch ID: P384110

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2180114	Organic Carbon	98.5	98.6	P/P	85 - 115

Quality Assurance Report
Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P383943

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2180128	Turbidity	0.985	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P384102

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2180165	Chloride	0.406	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P384106

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2180165	Sulfate	0.149	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P384034

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2180139	Ammonia-N	1.18	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P384188

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2180166	Kjeldahl Nitrogen	13.4	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P384071

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2180040	NO2NO3-N	0.0	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P383999

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2180115	Total-P	1.13	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P383947

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2180063	O-Phosphate-P	1.10	Spike	P	0 - 20

Quality Assurance Report
Precision

Reference Method: SM 2120 B-2011
Batch ID: P383954

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2180061	Color (true)	2.08	Sample	P	0 - 20

Reference Method: SM 2320 B-2011
Batch ID: P384133

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2180125	Total Alkalinity	1.19	Sample	P	0 - 8.1

Reference Method: SM 2540 C-2011
Batch ID: P384599

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2180113	TDS	5.69	Sample	P	0 - 10

Reference Method: SM 4500 F-C-2011
Batch ID: P384140

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2180125	Fluoride	0.467	Spike	P	0 - 2.8

Reference Method: SM 5310 B-2011
Batch ID: P384110

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2180114	Organic Carbon	0.0875	Spike	P	0 - 20

* Sample, spike and/or laboratory control sample precision (LCS) is reported.

Quality Assurance Report
Calibration Verification

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Run ID: A99631
Included Lab Sample IDs: 2180140

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	97.7	96.4	P/P	90 - 110

Reference Method: EPA 180.1 Rev. 2.0
Run ID: A99632
Included Lab Sample IDs: 2180138

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Turbidity	101	101	P/P	95 - 105

Reference Method: SM 2120 B-2011
Run ID: A99633
Included Lab Sample IDs: 2180138

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	101	102	P/P	90 - 115

Reference Method: EPA 300.0 Rev. 2.1
Run ID: A99659
Included Lab Sample IDs: 2180138

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	99.7	102	P/P	90 - 110
Sulfate	99.2	100	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A99667
Included Lab Sample IDs: 2180139

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	101	108	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A99684
Included Lab Sample IDs: 2180139

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	101	102	P/P	90 - 110

Reference Method: SM 5310 B-2011
Run ID: A99701
Included Lab Sample IDs: 2180139

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	101	98.6	P/P	90 - 110

Reference Method: SM 2320 B-2011
Run ID: A99709
Included Lab Sample IDs: 2180138

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	94.7	92.4	P/P	90 - 110

Quality Assurance Report
Calibration Verification

Reference Method: SM 4500 F-C-2011
Run ID: A99709
Included Lab Sample IDs: 2180138

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

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A99717
Included Lab Sample IDs: 2180139

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	96.9	98.2	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A99770
Included Lab Sample IDs: 2180139

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	99.4	95.8	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					0.985	
EPA 300.0 Rev. 2.1	Chloride	101	98.3	101		0.406	
	Sulfate	99.7	96.8	99.4		0.149	
EPA 350.1 Rev. 2.0	Ammonia-N	102	109	107			1.18
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	101					13.4
EPA 353.2 Rev. 2.0	NO2NO3-N	100	97.5	97.5			0.0
EPA 365.1 Rev. 2.0	Total-P	95.7	98.7	99.9			1.13
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	101	99.5	101			1.10
SM 2120 B-2011	Color (true)	100				2.08	
SM 2320 B-2011	Total Alkalinity	95.7				1.19	
SM 2540 C-2011	TDS					5.69	
SM 4500 F-C-2011	Fluoride	100	101	102			0.467
SM 5310 B-2011	Organic Carbon	100	98.5	98.6			0.0875

Reference Method Descriptions

Method	Description	Associated Samples
EPA 180.1 Rev. 2.0	Turbidity in aqueous matrices	2180138
EPA 300.0 Rev. 2.1	Chloride in aqueous matrices	2180138
EPA 300.0 Rev. 2.1	Sulfate in aqueous matrices	2180138
EPA 350.1 Rev. 2.0	Ammonia in aqueous matrices as mg N/L	2180139
EPA 351.2 Rev. 2.0	Total Kjeldahl Nitrogen in aqueous matrices	2180139
EPA 353.2 Rev. 2.0	Nitrite/Nitrate in aqueous matrices as mg N/L	2180139
EPA 365.1 Rev. 2.0	Total Phosphorus in aqueous matrices as mg P/L	2180139
EPA 365.1 Rev. 2.0 dissolved	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2180140
SM 2120 B-2011	True Color measured at 450 nm (not valid for NPDES monitoring)	2180138
SM 2320 B-2011	Alkalinity in aqueous matrices as mg CaCO3/L	2180138
SM 2540 C-2011	Total Dissolved Solids in aqueous matrices	2180138
SM 2540 D-2011	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2180138
SM 4500 F-C-2011	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2180138
SM 5310 B-2011	Nonpurgeable Organic Carbon in aqueous matrices	2180139

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	07/01/2020			07/01/2020 15:56	Yen Ta	2180138
EPA 300.0 Rev. 2.1	07/01/2020			07/03/2020 07:55	Jhamieka S. Greenwood	2180138
EPA 350.1 Rev. 2.0	07/01/2020			07/05/2020 11:21	Ping Hua	2180139
EPA 351.2 Rev. 2.0	07/01/2020	07/08/2020 11:05	Elliott Rodriguez	07/09/2020 09:50	Jhamieka S. Greenwood	2180139
EPA 353.2 Rev. 2.0	07/01/2020			07/06/2020 10:24	Beverly Y. Sanders	2180139
EPA 365.1 Rev. 2.0	07/01/2020	07/02/2020 11:42	Yen Ta	07/07/2020 13:06	Benjamin T. Nordmann	2180139
EPA 365.1 Rev. 2.0 dissolved	07/01/2020			07/01/2020 16:04	Jhamieka S. Greenwood	2180140
SM 2120 B-2011	07/01/2020			07/01/2020 17:20	Benjamin T. Nordmann	2180138
SM 2320 B-2011	07/01/2020			07/07/2020 00:49	Dale L. Simmons	2180138
SM 2540 C-2011	07/01/2020			07/06/2020 14:02	Yijie Li	2180138
SM 2540 D-2011	07/01/2020			07/06/2020 14:02	Yijie Li	2180138
SM 4500 F-C-2011	07/01/2020			07/07/2020 00:49	Dale L. Simmons	2180138
SM 5310 B-2011	07/01/2020			07/06/2020 22:00	Lauren Lees	2180139