

Chemical Analysis Report

SW-DIST-2020-07-24-01

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

Event Description: **Chaz, Bluebird, Highland**
Request ID: **RQ-2020-06-08-05**
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: 12-AUG-2020 11:37



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: Highland Lake

Collection Date/Time: 07/23/2020 10:30

Field ID: G5SW0153

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2185455	EPA 180.1 Rev. 2.0	Turbidity	0.90		NTU	P385133	
	EPA 300.0 Rev. 2.1	Chloride	4.9		mg Cl/L	P385624	
		Sulfate	0.20	U	mg SO4/L	P385628	
	SM 2120 B-2011	Color (true)	81	A	PCU	P385136	
	SM 2320 B-2011	Total Alkalinity	30		mg CaCO3/L	P385523	
	SM 2540 C-2011	TDS	78		mg/L	P385613	
	SM 2540 D-2011	TSS	2	I	mg/L	P385650	
	SM 4500 F-C-2011	Fluoride	0.035	U	mg F/L	P385225	
2185456	EPA 350.1 Rev. 2.0	Ammonia-N	0.018		mg N/L	P385149	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.3		mg N/L	P385372	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P385179	
	EPA 365.1 Rev. 2.0	Total-P	0.015		mg P/L	P385350	
	SM 5310 B-2011	Organic Carbon	16		mg C/L	P385290	
2185457	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P385130	

Ref. Method and Comment:

SM 2540 D-2011: 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: P385133

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P385624

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P385628

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P385149

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P385372

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P385179

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P385350

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P385130

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

Reference Method: SM 2120 B-2011
Batch ID: P385136

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Quality Assurance Report

Method Blank Results

Reference Method: SM 2320 B-2011
Batch ID: P385523

Component	Result	Code	Units
Total Alkalinity	0.65	U	mg CaCO ₃ /L

Reference Method: SM 2540 C-2011
Batch ID: P385613

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-2011
Batch ID: P385650

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-2011
Batch ID: P385225

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-2011
Batch ID: P385290

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: P385624

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

Reference Method: EPA 300.0 Rev. 2.1
 Batch ID: P385628

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Sulfate	103		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
 Batch ID: P385149

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	99.8		P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
 Batch ID: P385372

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: P385179

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
NO2NO3-N	99.5		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
 Batch ID: P385350

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total-P	106		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
 Batch ID: P385130

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

Reference Method: SM 2120 B-2011
 Batch ID: P385136

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

Reference Method: SM 2320 B-2011
 Batch ID: P385523

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	101		P	93 - 104

Quality Assurance Report

Laboratory Control Sample Accuracy

Reference Method: SM 4500 F-C-2011
Batch ID: P385225

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	97.7		P	90 - 106

Reference Method: SM 5310 B-2011
Batch ID: P385290

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

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P385624

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2185455	Chloride	101		P	90 - 110
2185482	Chloride	101		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P385628

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2185455	Sulfate	103		P	90 - 110
2185482	Sulfate	101		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P385149

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2185282	Ammonia-N	98.6	92.4	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P385372

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2185286	Kjeldahl Nitrogen	109	105	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P385179

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2185456	NO2NO3-N	101	101	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P385350

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2185197	Total-P	106	107	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P385130

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2185457	O-Phosphate-P	90.9	91.3	P/P	90 - 110

Reference Method: SM 4500 F-C-2011
Batch ID: P385225

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2185606	Fluoride	105	106	P/P	94 - 107

Reference Method: SM 5310 B-2011
Batch ID: P385290

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2185191	Organic Carbon	102	104	P/P	85 - 115

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P385133

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2185460	Turbidity	5.73	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P385624

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2185482	Chloride	0.374	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P385628

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2185482	Sulfate	0.795	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P385149

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2185282	Ammonia-N	5.63	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P385372

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2185286	Kjeldahl Nitrogen	3.39	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P385179

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2185456	NO2NO3-N	0.0	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P385350

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2185197	Total-P	0.0826	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P385130

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2185457	O-Phosphate-P	0.439	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: SM 2120 B-2011
Batch ID: P385136

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2185455	Color (true)	2.92	Sample	P	0 - 20

Reference Method: SM 2320 B-2011
Batch ID: P385523

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2186718	Total Alkalinity	0.594	Sample	P	0 - 8.1

Reference Method: SM 2540 C-2011
Batch ID: P385613

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2185460	TDS	2.96	Sample	P	0 - 10

Reference Method: SM 4500 F-C-2011
Batch ID: P385225

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2185606	Fluoride	0.988	Spike	P	0 - 2.8

Reference Method: SM 5310 B-2011
Batch ID: P385290

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2185191	Organic Carbon	1.83	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: A100070

Included Lab Sample IDs: 2185457

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	97.7	96.9	P/P	90 - 110

Reference Method: EPA 180.1 Rev. 2.0

Run ID: A100071

Included Lab Sample IDs: 2185455

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

Reference Method: SM 2120 B-2011

Run ID: A100072

Included Lab Sample IDs: 2185455

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

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A100074

Included Lab Sample IDs: 2185456

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	99.8	100	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A100089

Included Lab Sample IDs: 2185456

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

Reference Method: SM 4500 F-C-2011

Run ID: A100116

Included Lab Sample IDs: 2185455

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

Reference Method: SM 5310 B-2011

Run ID: A100142

Included Lab Sample IDs: 2185456

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

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A100209

Included Lab Sample IDs: 2185456

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	96.2	99.8	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: SM 2320 B-2011

Run ID: A100227

Included Lab Sample IDs: 2185455

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	98.4	101	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A100252

Included Lab Sample IDs: 2185456

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	93.2	92.5	P/P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A100267

Included Lab Sample IDs: 2185455

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	101	101	P/P	90 - 110
Sulfate	101	101	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		LCS	Precision	MS
						SMP	
EPA 180.1 Rev. 2.0	Turbidity					5.73	
EPA 300.0 Rev. 2.1	Chloride	102	101	101		0.374	
	Sulfate	103	101	103		0.795	
EPA 350.1 Rev. 2.0	Ammonia-N	99.8	98.6	92.4			5.63
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	101	109	105			3.39
EPA 353.2 Rev. 2.0	NO ₂ NO ₃ -N	99.5	101	101			0.0
EPA 365.1 Rev. 2.0	Total-P	106	106	107			0.0826
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	99.1	90.9	91.3			0.439
SM 2120 B-2011	Color (true)	102				2.92	
SM 2320 B-2011	Total Alkalinity	101				0.594	
SM 2540 C-2011	TDS					2.96	
SM 4500 F-C-2011	Fluoride	97.7	105	106			0.988
SM 5310 B-2011	Organic Carbon	98.5	102	104			1.83

Reference Method Descriptions

Method	Description	Associated Samples
EPA 180.1 Rev. 2.0	Turbidity in aqueous matrices	2185455
EPA 300.0 Rev. 2.1	Chloride in aqueous matrices	2185455
EPA 300.0 Rev. 2.1	Sulfate in aqueous matrices	2185455
EPA 350.1 Rev. 2.0	Ammonia in aqueous matrices as mg N/L	2185456
EPA 351.2 Rev. 2.0	Total Kjeldahl Nitrogen in aqueous matrices	2185456
EPA 353.2 Rev. 2.0	Nitrite/Nitrate in aqueous matrices as mg N/L	2185456
EPA 365.1 Rev. 2.0	Total Phosphorus in aqueous matrices as mg P/L	2185456
EPA 365.1 Rev. 2.0 dissolved	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2185457
SM 2120 B-2011	True Color measured at 450 nm (not valid for NPDES monitoring)	2185455
SM 2320 B-2011	Alkalinity in aqueous matrices as mg CaCO ₃ /L	2185455
SM 2540 C-2011	Total Dissolved Solids in aqueous matrices	2185455
SM 2540 D-2011	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2185455
SM 4500 F-C-2011	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2185455
SM 5310 B-2011	Nonpurgeable Organic Carbon in aqueous matrices	2185456

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	07/24/2020			07/24/2020 15:04	Samantha Davila	2185455
EPA 300.0 Rev. 2.1	07/24/2020			07/31/2020 20:27	Julia Storbeck	2185455
EPA 350.1 Rev. 2.0	07/24/2020			07/26/2020 12:37	Ping Hua	2185456
EPA 351.2 Rev. 2.0	07/24/2020	07/30/2020 12:15	Jhamieka S. Greenwood	07/31/2020 13:52	Jhamieka S. Greenwood	2185456
EPA 353.2 Rev. 2.0	07/24/2020			07/27/2020 08:36	Beverly Y. Sanders	2185456
EPA 365.1 Rev. 2.0	07/24/2020	07/30/2020 11:20	Lipi Saha	08/04/2020 11:34	Benjamin T. Nordmann	2185456
EPA 365.1 Rev. 2.0 dissolved	07/24/2020			07/24/2020 15:16	Carlos Miranda	2185457
SM 2120 B-2011	07/24/2020			07/24/2020 15:37	Blanca Fach	2185455
SM 2320 B-2011	07/24/2020			08/01/2020 06:54	Dale L. Simmons	2185455
SM 2540 C-2011	07/24/2020			07/29/2020 15:16	Yijie Li	2185455
SM 2540 D-2011	07/24/2020			07/29/2020 15:16	Yijie Li	2185455
SM 4500 F-C-2011	07/24/2020			07/27/2020 18:23	Lauren Lees	2185455
SM 5310 B-2011	07/24/2020			07/28/2020 21:10	David Boose	2185456