Chemical Analysis Report

CEN-DIST-2016-07-15-01

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

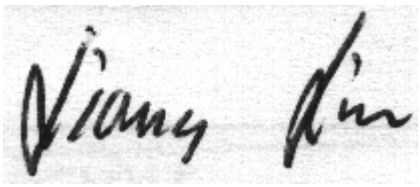
Event Description: **Apopka Beauclair+HA X2**
Request ID: **RQ-2016-07-11-49**
Customer: **CEN-DIST**
Project ID: **SMP**

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
Timothy W. Fitzpatrick
Liang-Tsair Lin, Ph.D.
Colin Wright, Ph.D.
Thekkekalathil Chandrasekhar, PhD, QA Officer
Phone (850) 245-8085

Certified by: Liang Lin, Environmental Administrator

Date Certified: 08-AUG-2016 14:51



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: APOPKA BEAUCLAIR CANAL @ 400M DOWNSTREAM OF CR 448 **Collection Date/Time: 07/14/2016 11:06**

Field ID: G1CE0026 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1816294	EPA 180.1 Rev. 2.0	Turbidity	0.65		NTU	P308069	
	EPA 300.0 Rev. 2.1	Chloride	38		mg Cl/L	P308999	
		Sulfate	21		mg SO4/L	P308998	
	SM 2120 B	Color (true)	40	A	PCU	P308045	
	SM 2320 B-97	Total Alkalinity	121		mg CaCO3/L	P308750	
	SM 2540 C-97	TDS	235		mg/L	P308630	
	SM 2540 D-97	TSS	2	I	mg/L	P308596	
	SM 4500 F-C-97	Fluoride	0.29		mg F/L	P308754	
1816295	EPA 350.1 Rev. 2.0	Ammonia-N	0.014		mg N/L	P308309	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.2		mg N/L	P308248	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.006	I	mg N/L	P308717	
	EPA 365.1 Rev. 2.0	Total-P	0.019		mg P/L	P308133	
	SM 5310 B-00	Organic Carbon	19		mg C/L	P309106	
1816296	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P308050	

Ref. Method and Comment:
SM 2540 D-97: The precision data is unavailable due to the low analyte concentration in the QC sample.
EPA 365.1 Rev. 2.0 dissolved: O-Phosphate-P: Matrix spike recovery data is unavailable due to high analyte concentration in the QC sample.

Quality Assurance Report
Method Blank Results

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P308069

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P308998

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P308999

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P308309

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P308248

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: P308717

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P308133

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P308050

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

Reference Method: SM 2120 B
Batch ID: P308045

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
Batch ID: P308750

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

Reference Method: SM 2540 C-97
Batch ID: P308630

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P308596

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P308754

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P309106

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: P308998

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Sulfate	96.3		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P308999

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P308309

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P308248

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P308717

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: P308133

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total-P	97.9		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P308050

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

Reference Method: SM 2320 B-97
Batch ID: P308750

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

Reference Method: SM 4500 F-C-97
Batch ID: P308754

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	98.3		P	92 - 103

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: SM 5310 B-00
Batch ID: P309106

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: P308998

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1816472	Sulfate	97.4		P	90 - 110
1816533	Sulfate	97.9		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P308999

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1816472	Chloride	99.9		P	90 - 110
1816533	Chloride	98.9		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P308309

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1816217	Ammonia-N	99.0	101	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P308248

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1816219	Kjeldahl Nitrogen	95.7	94.2	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P308717

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1816219	NO2NO3-N	102	102	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P308133

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1816189	Total-P	97.0	96.6	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Batch ID: P308754

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1817651	Fluoride	95.3	97.4	P/P	91 - 105

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: SM 5310 B-00
Batch ID: P309106

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1818014	Organic Carbon	96.4	96.2	P/P	85 - 115

Quality Assurance Report
Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P308069

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1816461	Turbidity	2.17	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P308998

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1816472	Sulfate	1.33	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P308999

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1816472	Chloride	0.200	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P308309

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1816217	Ammonia-N	1.68	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P308248

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1816219	Kjeldahl Nitrogen	1.42	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P308717

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1816219	NO2NO3-N	0.0	Spike	P	0 - 20

Quality Assurance Report
Precision

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P308133

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1816189	Total-P	0.345	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P308050

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1816430	O-Phosphate-P	0.0979	Spike	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P308045

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1816294	Color (true)	1.79	Sample	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P308750

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1817651	Total Alkalinity	0.666	Sample	P	0 - 4.8

Reference Method: SM 2540 C-97
Batch ID: P308630

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1815850	TDS	3.95	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
Batch ID: P308754

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1817651	Fluoride	1.93	Spike	P	0 - 3.0

Reference Method: SM 5310 B-00
Batch ID: P309106

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1818014	Organic Carbon	0.286	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: A70582
Included Lab Sample IDs: 1816294

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	98.3	97.9	P/P	90 - 115

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Run ID: A70584
Included Lab Sample IDs: 1816296

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	95.9	95.7	P/P	90 - 110

Reference Method: EPA 180.1 Rev. 2.0
Run ID: A70588
Included Lab Sample IDs: 1816294

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

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A70648
Included Lab Sample IDs: 1816295

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	99.5	99.2	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A70655
Included Lab Sample IDs: 1816295

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

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A70732
Included Lab Sample IDs: 1816295

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	93.7	95.7	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A70789
Included Lab Sample IDs: 1816295

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	100	101	P/P	90 - 110

Reference Method: SM 2320 B-97
Run ID: A70797
Included Lab Sample IDs: 1816294

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

Quality Assurance Report
Calibration Verification

Reference Method: SM 4500 F-C-97
Run ID: A70797
Included Lab Sample IDs: 1816294

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

Reference Method: EPA 300.0 Rev. 2.1
Run ID: A70885
Included Lab Sample IDs: 1816294

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	102	100	P/P	90 - 110
Sulfate	98.7	96.3	P/P	90 - 110

Reference Method: SM 5310 B-00
Run ID: A70922
Included Lab Sample IDs: 1816295

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	97.8	98.9	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					2.17	
EPA 300.0 Rev. 2.1	Chloride	99.0	99.9	98.9		0.200	
	Sulfate	96.3	97.4	97.9		1.33	
EPA 350.1 Rev. 2.0	Ammonia-N	103	99.0	101			1.68
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	99.7	95.7	94.2			1.42
EPA 353.2 Rev. 2.0	NO2NO3-N	102	102	102			0.0
EPA 365.1 Rev. 2.0	Total-P	97.9	97.0	96.6			0.345
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	101					0.0979
SM 2120 B	Color (true)					1.79	
SM 2320 B-97	Total Alkalinity	104				0.666	
SM 2540 C-97	TDS					3.95	
SM 4500 F-C-97	Fluoride	98.3	95.3	97.4			1.93
SM 5310 B-00	Organic Carbon	100	96.4	96.2			0.286

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	1816294
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	1816294
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	1816294

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	1816295
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	1816295
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	1816295
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	1816295
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	1816296
SM 2120 B / E31780	True Color measured at 450 nm	1816294
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO3/L	1816294
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	1816294
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices	1816294
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	1816294
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	1816295

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	07/15/2016			07/15/2016 14:09	Blanca Fach	1816294
EPA 300.0 Rev. 2.1	07/15/2016			08/02/2016	Ping Hua	1816294
EPA 350.1 Rev. 2.0	07/15/2016			07/20/2016	Julie Michelle Frank	1816295
EPA 351.2 Rev. 2.0	07/15/2016	07/20/2016	Sofia Elnemr	07/22/2016	Christopher Armour	1816295
EPA 353.2 Rev. 2.0	07/15/2016			07/27/2016	Beverly Y. Sanders	1816295
EPA 365.1 Rev. 2.0	07/15/2016	07/18/2016	Vijayalakshmi Reddy	07/20/2016	Lipi Saha	1816295
EPA 365.1 Rev. 2.0 dissolved	07/15/2016			07/15/2016 16:00	Julia Storbeck	1816296
SM 2120 B	07/15/2016			07/15/2016 13:30	Rochelle Y Jackson	1816294
SM 2320 B-97	07/15/2016			07/27/2016	Dale L. Simmons	1816294
SM 2540 C-97	07/15/2016			07/18/2016	Yijie Li	1816294
SM 2540 D-97	07/15/2016			07/18/2016	Yijie Li	1816294
SM 4500 F-C-97	07/15/2016			07/27/2016	Dale L. Simmons	1816294
SM 5310 B-00	07/15/2016			08/01/2016	Sofia Elnemr	1816295