Chemical Analysis Report

CEN-DIST-2016-09-27-02

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

Event Description: **Sand Creek+HA**
Request ID: **RQ-2016-09-05-62**
Customer: **CEN-DIST**
Project ID: **SMP**

Send Reports to:
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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: SAND CREEK @ UNNAMED RD 0.5 MILES WEST OF TOMOKA FARMS RD. **Collection Date/Time: 09/26/2016 11:20**

Field ID: G5CE0076 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1834489	EPA 180.1 Rev. 2.0	Turbidity	12		NTU	P311921	
	EPA 300.0 Rev. 2.1	Chloride	39		mg Cl/L	P312302	
		Sulfate	6.7		mg SO4/L	P312304	
	SM 2120 B	Color (true)	140		PCU	P311929	
	SM 2320 B-97	Total Alkalinity	57		mg CaCO3/L	P312094	
	SM 2540 C-97	TDS	163		mg/L	P312416	
	SM 2540 D-97	TSS	4	I	mg/L	P312362	
	SM 4500 F-C-97	Fluoride	0.11		mg F/L	P312095	
1834490	EPA 350.1 Rev. 2.0	Ammonia-N	0.19		mg N/L	P312116	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.94		mg N/L	P312388	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.018		mg N/L	P312233	
	EPA 365.1 Rev. 2.0	Total-P	0.063		mg P/L	P312526	
	SM 5310 B-00	Organic Carbon	18		mg C/L	P312194	
1834491	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.028		mg P/L	P311916	

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: P311921

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P312302

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P312304

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P312116

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P312388

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: P312233

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P312526

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P311916

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

Reference Method: SM 2120 B
Batch ID: P311929

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
Batch ID: P312094

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

Reference Method: SM 2540 C-97
Batch ID: P312416

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P312362

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P312095

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P312194

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: P312302

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P312304

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P312116

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P312388

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P312233

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P312526

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total-P	96.5		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P311916

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

Reference Method: SM 2320 B-97
Batch ID: P312094

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

Reference Method: SM 4500 F-C-97
Batch ID: P312095

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	98.1		P	92 - 103

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: SM 5310 B-00
Batch ID: P312194

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	98.4		P	85 - 115

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P312302

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1835460	Chloride	101		P	90 - 110
1835461	Chloride	103		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P312304

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1835460	Sulfate	97.1		P	90 - 110
1835461	Sulfate	98.2		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P312116

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1834306	Ammonia-N	104	107	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P312388

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1834466	Kjeldahl Nitrogen	102	101	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P312233

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1834253	NO2NO3-N	102	99.4	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P312526

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1834466	Total-P	101	104	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P311916

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1834491	O-Phosphate-P	97.8	99.4	P/P	90 - 110

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: SM 4500 F-C-97
Batch ID: P312095

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1834799	Fluoride	96.8	98.4	P/P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P312194

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1834287	Organic Carbon	99.4	97.6	P/P	85 - 115

Quality Assurance Report
Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P311921

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1834461	Turbidity	0.0	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P312302

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1835460	Chloride	0.107	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P312304

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1835460	Sulfate	0.711	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P312116

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1834306	Ammonia-N	2.72	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P312388

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1834466	Kjeldahl Nitrogen	0.392	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P312233

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: P312233

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1834253	NO2NO3-N	1.89	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P312526

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1834466	Total-P	2.33	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P311916

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1834491	O-Phosphate-P	1.26	Spike	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P311929

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1834462	Color (true)	7.72	Sample	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P312094

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1834799	Total Alkalinity	0.384	Sample	P	0 - 4.8

Reference Method: SM 2540 C-97
Batch ID: P312416

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1834483	TDS	1.32	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
Batch ID: P312095

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1834799	Fluoride	1.47	Spike	P	0 - 3.0

Reference Method: SM 5310 B-00
Batch ID: P312194

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1834287	Organic Carbon	0.964	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: A71862
Included Lab Sample IDs: 1834491

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	98.7	98.2	P/P	90 - 110

Reference Method: EPA 180.1 Rev. 2.0
Run ID: A71863
Included Lab Sample IDs: 1834489

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

Reference Method: SM 2120 B
Run ID: A71864
Included Lab Sample IDs: 1834489

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	101	100	P/P	85 - 115

Reference Method: EPA 300.0 Rev. 2.1
Run ID: A71882
Included Lab Sample IDs: 1834489

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	103	99.9	P/P	90 - 110
Sulfate	102	98.7	P/P	90 - 110

Reference Method: SM 2320 B-97
Run ID: A71907
Included Lab Sample IDs: 1834489

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	100	104	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Run ID: A71907
Included Lab Sample IDs: 1834489

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

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A71914
Included Lab Sample IDs: 1834490

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

Quality Assurance Report
Calibration Verification

Reference Method: SM 5310 B-00
Run ID: A71942
Included Lab Sample IDs: 1834490

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

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A71950
Included Lab Sample IDs: 1834490

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	99.0	99.0	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A72075
Included Lab Sample IDs: 1834490

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	96.2	98.7	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A72084
Included Lab Sample IDs: 1834490

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	102	103	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					0.0	
EPA 300.0 Rev. 2.1	Chloride	101	101	103		0.107	
	Sulfate	99.0	97.1	98.2		0.711	
EPA 350.1 Rev. 2.0	Ammonia-N	106	104	107			2.72
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	104	102	101			0.392
EPA 353.2 Rev. 2.0	NO2NO3-N	103	102	99.4			1.89
EPA 365.1 Rev. 2.0	Total-P	96.5	101	104			2.33
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	101	97.8	99.4			1.26
SM 2120 B	Color (true)					7.72	
SM 2320 B-97	Total Alkalinity	103				0.384	
SM 2540 C-97	TDS					1.32	
SM 4500 F-C-97	Fluoride	98.1	96.8	98.4			1.47
SM 5310 B-00	Organic Carbon	98.4	99.4	97.6			0.964

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	1834489
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	1834489
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	1834489
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	1834490
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	1834490
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	1834490
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	1834490
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	1834491
SM 2120 B / E31780	True Color measured at 450 nm	1834489
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO3/L	1834489
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	1834489
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices	1834489
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	1834489
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	1834490

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	09/27/2016			09/27/2016 15:28	Sima Feizi	1834489
EPA 300.0 Rev. 2.1	09/27/2016			10/02/2016	Ping Hua	1834489
EPA 350.1 Rev. 2.0	09/27/2016			09/28/2016	Sofia Elnemr	1834490
EPA 351.2 Rev. 2.0	09/27/2016	10/04/2016	Adrian Shelby	10/06/2016	Christopher Armour	1834490
EPA 353.2 Rev. 2.0	09/27/2016			09/30/2016	Beverly Y. Sanders	1834490
EPA 365.1 Rev. 2.0	09/27/2016	10/05/2016	Vijayalakshmi Reddy	10/07/2016	Lipi Saha	1834490
EPA 365.1 Rev. 2.0 dissolved	09/27/2016			09/27/2016 14:36	Julia Storbeck	1834491
SM 2120 B	09/27/2016			09/27/2016 15:51	Julie Michelle Frank	1834489
SM 2320 B-97	09/27/2016			09/29/2016	Dale L. Simmons	1834489
SM 2540 C-97	09/27/2016			09/30/2016	Yijie Li	1834489
SM 2540 D-97	09/27/2016			09/30/2016	Yijie Li	1834489
SM 4500 F-C-97	09/27/2016			09/29/2016	Dale L. Simmons	1834489
SM 5310 B-00	09/27/2016			09/29/2016	Julie Michelle Frank	1834490