Chemical Analysis Report

CEN-DIST-2016-11-30-02

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

Event Description: **Howey Height**
Request ID: **RQ-2016-11-28-44**
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

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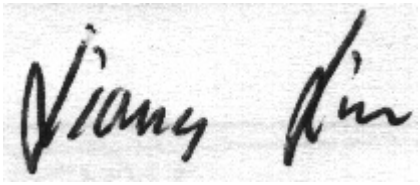
Certified by: Liang Lin, Environmental Administrator

Date Certified: 21-DEC-2016 13:02



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: Double Run @ 800m DS of Double Run Road **Collection Date/Time: 11/29/2016 11:02**

Field ID: G1CE0032 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1853005	EPA 180.1 Rev. 2.0	Turbidity	0.60		NTU	P316183	
	EPA 300.0 Rev. 2.1	Chloride	12	A	mg Cl/L	P316553	
		Sulfate	7.6	A	mg SO4/L	P316557	
	SM 2120 B	Color (true)	58	A	PCU	P315981	
	SM 2320 B-97	Total Alkalinity	78		mg CaCO3/L	P316061	
	SM 2540 C-97	TDS	125		mg/L	P316606	
	SM 2540 D-97	TSS	2	I	mg/L	P316582	
	SM 4500 F-C-97	Fluoride	0.081	I	mg F/L	P316063	
1853006	EPA 350.1 Rev. 2.0	Ammonia-N	0.018		mg N/L	P316471	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.51		mg N/L	P316367	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.34		mg N/L	P316089	
	EPA 365.1 Rev. 2.0	Total-P	0.023		mg P/L	P316253	
	SM 5310 B-00	Organic Carbon	7.5		mg C/L	P315951	
1853007	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P315944	

Ref. Method and Comment:
SM 2540 D-97: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.
SM 4500 F-C-97: 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: P316183

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P316553

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P316557

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P316471

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P316367

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: P316089

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P316253

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P315944

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

Reference Method: SM 2120 B
Batch ID: P315981

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
Batch ID: P316061

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

Reference Method: SM 2540 C-97
Batch ID: P316606

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P316582

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P316063

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P315951

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: P316553

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P316557

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Sulfate	94.6		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P316471

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: P316367

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P316089

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
NO2NO3-N	104		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P316253

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P315944

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

Reference Method: SM 2320 B-97
Batch ID: P316061

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	98.1		P	95 - 108

Reference Method: SM 4500 F-C-97
Batch ID: P316063

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	99.3		P	92 - 103

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: SM 5310 B-00
Batch ID: P315951

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	97.0		P	85 - 115

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P316553

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1853005	Chloride	96.3		P	90 - 110
1853609	Chloride	96.8		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P316557

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1853005	Sulfate	92.5		P	90 - 110
1853609	Sulfate	92.4		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P316471

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1852987	Ammonia-N	97.8	96.9	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P316367

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1852747	Kjeldahl Nitrogen	102	101	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P316089

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1853006	NO2NO3-N	102		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P316253

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1853016	Total-P	103	97.6	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P315944

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1853007	O-Phosphate-P	102	103	P/P	90 - 110

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: SM 5310 B-00
Batch ID: P315951

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1852523	Organic Carbon	95.7	94.8	P/P	85 - 115

Quality Assurance Report
Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P316183

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1852912	Turbidity	5.16	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P316553

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1853005	Chloride	0.0469	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P316557

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1853005	Sulfate	0.961	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P316471

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1852987	Ammonia-N	0.759	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P316367

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1852747	Kjeldahl Nitrogen	0.554	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P316089

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1853006	NO2NO3-N	0.907	Spike	P	0 - 20

Quality Assurance Report
Precision

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P316253

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1853016	Total-P	4.95	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P315944

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1853007	O-Phosphate-P	0.681	Spike	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P315981

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1853005	Color (true)	0.0673	Sample	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P316061

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1853013	Total Alkalinity	0.0347	Sample	P	0 - 4.8

Reference Method: SM 2540 C-97
Batch ID: P316606

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1853085	TDS	7.16	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
Batch ID: P316063

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1853013	Fluoride	1.93	Spike	P	0 - 3.0

Reference Method: SM 5310 B-00
Batch ID: P315951

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1852523	Organic Carbon	0.773	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: EPA 365.1 Rev. 2.0 dissolved
Run ID: A73092
Included Lab Sample IDs: 1853007

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

Reference Method: SM 5310 B-00
Run ID: A73095
Included Lab Sample IDs: 1853006

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	96.3	96.8	P/P	90 - 110

Reference Method: SM 2120 B
Run ID: A73102
Included Lab Sample IDs: 1853005

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	98.2	98.2	P/P	85 - 115

Reference Method: SM 2320 B-97
Run ID: A73130
Included Lab Sample IDs: 1853005

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	96.8	98.5	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Run ID: A73130
Included Lab Sample IDs: 1853005

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

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A73139
Included Lab Sample IDs: 1853006

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

Reference Method: EPA 180.1 Rev. 2.0
Run ID: A73167
Included Lab Sample IDs: 1853005

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Turbidity	98.0	99.0	P/P	95 - 105

Reference Method: EPA 300.0 Rev. 2.1
Run ID: A73219
Included Lab Sample IDs: 1853005

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	97.4	100	P/P	90 - 110
Sulfate	93.5	95.4	P/P	90 - 110

Quality Assurance Report
Calibration Verification

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A73226
Included Lab Sample IDs: 1853006

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	98.2	96.2	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A73263
Included Lab Sample IDs: 1853006

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	99.7	99.4	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A73272
Included Lab Sample IDs: 1853006

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	97.2	102	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					5.16	
EPA 300.0 Rev. 2.1	Chloride	99.1	96.3	96.8		0.0469	
	Sulfate	94.6	92.5	92.4		0.961	
EPA 350.1 Rev. 2.0	Ammonia-N	102	97.8	96.9			0.759
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	103	102	101			0.554
EPA 353.2 Rev. 2.0	NO2NO3-N	104	102				0.907
EPA 365.1 Rev. 2.0	Total-P	102	103	97.6			4.95
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	101	102	103			0.681
SM 2120 B	Color (true)					0.0673	
SM 2320 B-97	Total Alkalinity	98.1				0.0347	
SM 2540 C-97	TDS					7.16	
SM 4500 F-C-97	Fluoride	99.3					1.93
SM 5310 B-00	Organic Carbon	97.0	95.7	94.8			0.773

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	1853005
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	1853005
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	1853005
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	1853006

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	1853006
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	1853006
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	1853006
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	1853007
SM 2120 B / E31780	True Color measured at 450 nm	1853005
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO3/L	1853005
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	1853005
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices	1853005
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	1853005
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	1853006

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	11/30/2016			11/30/2016 16:14	Julie Michelle Frank	1853005
EPA 300.0 Rev. 2.1	11/30/2016			12/09/2016	Ping Hua	1853005
EPA 350.1 Rev. 2.0	11/30/2016			12/08/2016	Sofia Elnemr	1853006
EPA 351.2 Rev. 2.0	11/30/2016	12/08/2016	Adrian Shelby	12/09/2016	Joseph Suarez	1853006
EPA 353.2 Rev. 2.0	11/30/2016			12/02/2016	Beverly Y. Sanders	1853006
EPA 365.1 Rev. 2.0	11/30/2016	12/06/2016	Vijayalakshmi Reddy	12/07/2016	Lipi Saha	1853006
EPA 365.1 Rev. 2.0 dissolved	11/30/2016			11/30/2016 15:37	Julia Storbeck	1853007
SM 2120 B	11/30/2016			11/30/2016 16:17	Jared I. Manley	1853005
SM 2320 B-97	11/30/2016			12/02/2016	Dale L. Simmons	1853005
SM 2540 C-97	11/30/2016			12/01/2016	Yijie Li	1853005
SM 2540 D-97	11/30/2016			12/01/2016	Yijie Li	1853005
SM 4500 F-C-97	11/30/2016			12/02/2016	Dale L. Simmons	1853005
SM 5310 B-00	11/30/2016			12/01/2016	Julie Michelle Frank	1853006