

Chemical Analysis Report

CEN-DIST-2019-08-14-02

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

Event Description: **Lake Jessup_Haynes Creek BMAP**
Request ID: **RQ-2019-08-12-41**
Customer: **CEN-DIST**
Project ID: **LKJES-BMAP**

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
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: Kerry Tate, Ph.D., Environmental Administrator

Date Certified: 30-AUG-2019 10:56

A handwritten signature in black ink that reads "Kerry Tate". The signature is written in a cursive, flowing style with a horizontal line above the first name.

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 groups are included in this report: Nutrients and Pesticides.

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: Haynes Creek @ just DS of Burell Lock

Collection Date/Time: 08/13/2019 10:37

Field ID: G1CE0063

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2111580	EPA 8321B	Sucralose**	0.096		ug/L	P369616	

Sample Location: Haynes Creek @ 300m DS of CR 44

Collection Date/Time: 08/13/2019 10:56

Field ID: G1CE0023

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2111581	EPA 8321B	Sucralose**	0.097		ug/L	P369616	

Sample Location: Sweetwater Creek @ Florida Ave

Collection Date/Time: 08/13/2019 12:52

Field ID: G2CE0123

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2111582	EPA 350.1 Rev. 2.0	Ammonia-N	0.12		mg N/L	P369467	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.3		mg N/L	P369279	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.10		mg N/L	P369322	
	EPA 365.1 Rev. 2.0	Total-P	0.33		mg P/L	P369181	
2111584	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.25		mg P/L	P369093	
2111586	SM 2540 D-97	TSS	8	I	mg/L	P369481	

Ref. Method and Comment:

SM 2540 D-97: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.

Sample Location: Salt Creek @ Packard Ave

Collection Date/Time: 08/13/2019 13:09

Field ID: G2CE0088

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2111583	EPA 350.1 Rev. 2.0	Ammonia-N	0.087		mg N/L	P369467	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	2.3		mg N/L	P369279	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.046		mg N/L	P369415	
	EPA 365.1 Rev. 2.0	Total-P	0.37		mg P/L	P369181	
2111585	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.26		mg P/L	P369096	
2111587	SM 2540 D-97	TSS	7	I	mg/L	P369481	

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 350.1 Rev. 2.0
Batch ID: P369467

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P369279

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P369322

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P369415

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P369181

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P369093

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P369096

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

Reference Method: EPA 8321B
Batch ID: P369616

Component	Result	Code	Units
Sucralose	0.010	U	ug/L

Reference Method: SM 2540 D-97
Batch ID: P369481

Component	Result	Code	Units
TSS	2	U	mg/L

Quality Assurance Report

Laboratory Control Sample Accuracy

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P369467

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P369279

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P369322

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P369415

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P369181

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total-P	109		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P369093

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
O-Phosphate-P	97.5		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P369096

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

Reference Method: EPA 8321B
Batch ID: P369616

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Sucralose	75.2		P	40 - 150

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P369467

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2111627	Ammonia-N	101	99.7	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P369279

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2111544	Kjeldahl Nitrogen	93.7	95.1	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P369322

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2111549	NO2NO3-N	99.2	99.2	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P369415

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2111621	NO2NO3-N	99.0	99.0	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P369181

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2111627	Total-P	107	104	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P369093

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2111538	O-Phosphate-P	94.7	96.4	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P369096

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2111628	O-Phosphate-P	98.3	98.3	P/P	90 - 110

Reference Method: EPA 8321B
Batch ID: P369616

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2113575	Sucralose	77.3	72.4	P/P	40 - 150

Quality Assurance Report Precision

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P369467

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2111627	Ammonia-N	0.676	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P369279

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2111544	Kjeldahl Nitrogen	1.09	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P369322

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2111549	NO2NO3-N	0.0	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P369415

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2111621	NO2NO3-N	0.0	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P369181

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2111627	Total-P	2.03	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P369093

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2111538	O-Phosphate-P	1.68	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P369096

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2111628	O-Phosphate-P	0.0	Spike	P	0 - 20

Reference Method: EPA 8321B
Batch ID: P369616

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2113575	Sucralose	6.44	Spike	P	0 - 30

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 Surrogates

Lab Sample ID: 2111580
Field Sample ID: G1CE0063

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	Sucralose-d6	70.3	P	30 - 160

Lab Sample ID: 2111581
Field Sample ID: G1CE0023

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	Sucralose-d6	58.1	P	30 - 160

Quality Assurance Report Calibration Verification

Reference Method: EPA 365.1 Rev. 2.0 dissolved

Run ID: A93535

Included Lab Sample IDs: 2111584, 2111585

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	101	99.9	P/P	90 - 110
O-Phosphate-P	99.4	100	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A93591

Included Lab Sample IDs: 2111582, 2111583

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	103	107	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A93635

Included Lab Sample IDs: 2111582

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

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A93647

Included Lab Sample IDs: 2111582, 2111583

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	92.0	97.0	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A93684

Included Lab Sample IDs: 2111583

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

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A93709

Included Lab Sample IDs: 2111582, 2111583

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

Reference Method: EPA 8321B

Run ID: A93861

Included Lab Sample IDs: 2111580, 2111581

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Sucralose	79.5	73.1	P/P	60 - 160

* 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	Precision SMP	MS
EPA 350.1 Rev. 2.0	Ammonia-N	101	101	99.7			0.676
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	99.5	93.7	95.1			1.09
EPA 353.2 Rev. 2.0	NO ₂ NO ₃ -N	100	99.2	99.2			0.0
	NO ₂ NO ₃ -N	101	99.0	99.0			0.0
EPA 365.1 Rev. 2.0	Total-P	109	107	104			2.03
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	97.5	94.7	96.4			1.68
	O-Phosphate-P	99.0	98.3	98.3			0.0
EPA 8321B	Sucralose	75.2	77.3	72.4			6.44

Reference Method Descriptions

Method / DoH Cert #	Description	<u>Associated Samples</u>
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	2111582, 2111583
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	2111582, 2111583
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	2111582, 2111583
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	2111582, 2111583
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2111584, 2111585
EPA 8321B / E31780	Water soluble organic compounds by HPLC/MS/MS	2111580, 2111581
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2111586, 2111587

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
EPA 350.1 Rev. 2.0	08/14/2019			08/21/2019 13:29	Ping Hua	2111582
	08/14/2019			08/21/2019 13:30	Ping Hua	2111583
EPA 351.2 Rev. 2.0	08/14/2019	08/19/2019 13:30	Sima Feizi	08/20/2019 14:06	Joseph Suarez	2111582
	08/14/2019	08/19/2019 13:30	Sima Feizi	08/20/2019 14:07	Joseph Suarez	2111583
EPA 353.2 Rev. 2.0	08/14/2019			08/20/2019 10:03	Beverly Y. Sanders	2111582
	08/14/2019			08/21/2019 10:00	Beverly Y. Sanders	2111583
EPA 365.1 Rev. 2.0	08/14/2019	08/16/2019 13:30	Vijayalakshmi Reddy	08/19/2019 10:20	Lipi Saha	2111582
	08/14/2019	08/16/2019 13:30	Vijayalakshmi Reddy	08/19/2019 10:21	Lipi Saha	2111583
EPA 365.1 Rev. 2.0 dissolved	08/14/2019			08/14/2019 17:55	Jhamieka S. Greenwood	2111584
	08/14/2019			08/14/2019 18:17	Jhamieka S. Greenwood	2111585
EPA 8321B	08/14/2019	08/26/2019 09:30	Rebecca Ware	08/28/2019 15:08	Rebecca Ware	2111580
	08/14/2019	08/26/2019 09:30	Rebecca Ware	08/28/2019 15:19	Rebecca Ware	2111581
SM 2540 D-97	08/14/2019			08/19/2019 15:20	Yijie Li	2111586, 2111587