

Chemical Analysis Report

CEN-DIST-2016-03-25-01

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

Event Description: **Haynes Creek+HA**
Request ID: **RQ-2016-02-08-35**
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: Colin Wright, Environmental Administrator

Date Certified: 13-APR-2016 15:57

A handwritten signature in black ink, appearing to read "Colin Wright", is shown on a light-colored background.

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: Haynes Creek @ 300m Downstream of CR 44 Collection Date/Time: 03/24/2016 11:53

Field ID: G1CE0023

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1783563	EPA 180.1 Rev. 2.0	Turbidity	2.0		NTU	P301069	
	EPA 300.0 Rev. 2.1	Chloride	30		mg Cl/L	P301316	
		Sulfate	12		mg SO4/L	P301317	
	SM 2120 B	Color (true)	18	A	PCU	P301078	
	SM 2320 B-97	Total Alkalinity	122		mg CaCO3/L	P301476	
	SM 2540 C-97	TDS	214		mg/L	P301399	
	SM 2540 D-97	TSS	5	I	mg/L	P301471	
	SM 4500 F-C-97	Fluoride	0.19		mg F/L	P301481	
1783564	EPA 350.1 Rev. 2.0	Ammonia-N	0.089		mg N/L	P301369	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.3		mg N/L	P301587	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.060		mg N/L	P301494	
	EPA 365.1 Rev. 2.0	Total-P	0.031		mg P/L	P301397	
	SM 5310 B-00	Organic Carbon	15		mg C/L	P301424	
1783565	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P301071	

Ref. Method and Comment:

SM 2540 D-97: The precision data is unavailable due to the low analyte concentration in the QC sample.

EPA 350.1 Rev. 2.0: 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: P301069

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 300.0 Rev. 2.1

Batch ID: P301316

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1

Batch ID: P301317

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0

Batch ID: P301369

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

Reference Method: EPA 351.2 Rev. 2.0

Batch ID: P301587

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: P301494

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P301397

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P301071

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

Reference Method: SM 2120 B
Batch ID: P301078

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
Batch ID: P301476

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

Reference Method: SM 2540 C-97
Batch ID: P301399

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P301471

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P301481

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P301424

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: P301316

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Chloride	99.6		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P301317

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Sulfate	97.6		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P301369

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P301587

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P301494

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: P301397

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: P301071

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

Reference Method: SM 2320 B-97
Batch ID: P301476

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	103		P	95 - 105

Reference Method: SM 4500 F-C-97
Batch ID: P301481

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	96.6		P	94 - 108

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: SM 5310 B-00
Batch ID: P301424

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: P301316

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1783141	Chloride	99.4		P	90 - 110
1783252	Chloride	96.9		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P301317

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1783141	Sulfate	96.8		P	90 - 110
1783252	Sulfate	94.3		P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P301587

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1783553	Kjeldahl Nitrogen	102	93.4	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P301494

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1783545	NO2NO3-N	102	102	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P301397

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1783546	Total-P	103	105	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P301071

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1783503	O-Phosphate-P	98.8	98.5	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Batch ID: P301481

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1783590	Fluoride	98.8	101	P/P	94 - 107

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SM 5310 B-00
Batch ID: P301424

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1783564	Organic Carbon	92.2	93.7	P/P	85 - 115

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P301069

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1783557	Turbidity	4.46	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P301316

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1783141	Chloride	0.00676	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P301317

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1783141	Sulfate	2.86	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P301369

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1783374	Ammonia-N	1.36	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P301587

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1783553	Kjeldahl Nitrogen	6.14	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P301494

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1783545	NO2NO3-N	0.489	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P301397

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1783546	Total-P	1.90	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P301071

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1783503	O-Phosphate-P	0.229	Spike	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P301078

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1783563	Color (true)	1.82	Sample	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P301476

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1783590	Total Alkalinity	0.297	Sample	P	0 - 4.8

Reference Method: SM 2540 C-97
Batch ID: P301399

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1783552	TDS	3.74	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
Batch ID: P301481

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1783590	Fluoride	1.46	Spike	P	0 - 3.7

Reference Method: SM 5310 B-00
Batch ID: P301424

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1783564	Organic Carbon	0.871	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 180.1 Rev. 2.0

Run ID: A68445

Included Lab Sample IDs: 1783563

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved

Run ID: A68446

Included Lab Sample IDs: 1783565

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	99.3	99.2	P/P	90 - 110

Reference Method: SM 2120 B

Run ID: A68449

Included Lab Sample IDs: 1783563

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	97.0	98.0	P/P	90 - 115

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A68546

Included Lab Sample IDs: 1783563

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	101	101	P/P	90 - 110
Sulfate	98.2	99.6	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A68562

Included Lab Sample IDs: 1783564

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

Reference Method: SM 5310 B-00

Run ID: A68589

Included Lab Sample IDs: 1783564

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	94.2	94.5	P/P	90 - 110

Reference Method: SM 2320 B-97

Run ID: A68607

Included Lab Sample IDs: 1783563

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	103	99.8	P/P	90 - 110

Reference Method: SM 4500 F-C-97

Run ID: A68607

Included Lab Sample IDs: 1783563

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

Quality Assurance Report Calibration Verification

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A68614

Included Lab Sample IDs: 1783564

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

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A68686

Included Lab Sample IDs: 1783564

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	98.5	99.2	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A68701

Included Lab Sample IDs: 1783564

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	95.7	95.6	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 SMP	MS
EPA 180.1 Rev. 2.0	Turbidity				4.46	
EPA 300.0 Rev. 2.1	Chloride	99.6	99.4	96.9	0.0067	
	Sulfate	97.6	96.8	94.3	2.86	
EPA 350.1 Rev. 2.0	Ammonia-N	99.5				1.36
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	94.6	102	93.4		6.14
EPA 353.2 Rev. 2.0	NO2NO3-N	102	102	102		0.489
EPA 365.1 Rev. 2.0	Total-P	102	103	105		1.90
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	101	98.8	98.5		0.229
SM 2120 B	Color (true)				1.82	
SM 2320 B-97	Total Alkalinity	103			0.297	
SM 2540 C-97	TDS				3.74	
SM 4500 F-C-97	Fluoride	96.6	98.8	101		1.46
SM 5310 B-00	Organic Carbon	100	92.2	93.7		0.871

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	1783563
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	1783563
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	1783563
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	1783564

Reference Method Descriptions

Method / DoH Cert #	Description	<u>Associated Samples</u>
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	1783564
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	1783564
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	1783564
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	1783565
SM 2120 B / E31780	True Color measured at 450 nm	1783563
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO ₃ /L	1783563
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	1783563
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices	1783563
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	1783563
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	1783564

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	03/25/2016			03/25/2016 14:31	Sima Feizi	1783563
EPA 300.0 Rev. 2.1	03/25/2016			03/31/2016	Ping Hua	1783563
EPA 350.1 Rev. 2.0	03/25/2016			03/31/2016	Diana M. Turner	1783564
EPA 351.2 Rev. 2.0	03/25/2016	04/05/2016	Sofia Elnemr	04/06/2016	Virginia P. Brown	1783564
EPA 353.2 Rev. 2.0	03/25/2016			04/01/2016	Diana M. Turner	1783564
EPA 365.1 Rev. 2.0	03/25/2016	04/01/2016	Christopher Armour	04/06/2016	Rochelle Y Jackson	1783564
EPA 365.1 Rev. 2.0 dissolved	03/25/2016			03/25/2016 15:13	Ping Hua	1783565
SM 2120 B	03/25/2016			03/25/2016 16:26	Rochelle Y Jackson	1783563
SM 2320 B-97	03/25/2016			03/31/2016	Dale L. Simmons	1783563
SM 2540 C-97	03/25/2016			03/29/2016	Yijie Li	1783563
SM 2540 D-97	03/25/2016			03/29/2016	Yijie Li	1783563
SM 4500 F-C-97	03/25/2016			03/31/2016	Dale L. Simmons	1783563
SM 5310 B-00	03/25/2016			03/31/2016	Sofia Elnemr	1783564