

Chemical Analysis Report

SO-DIST-2021-10-01-02

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

Event Description: **2021 SMP: DeSoto Cricks**
Request ID: **RQ-2021-09-27-44**
Customer: **SO-DIST**
Project ID: **SMP**

Send Reports to:
FL Dept. of Environmental Protection
FLDEP South District Office
2295 Victoria Ave. Suite 364
Fort Myers, FL 33901-3381
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Certified by: Colin Wright, Program Administrator

Date Certified: 26-OCT-2021 08:43

A handwritten signature in black ink, appearing to read "Colin Wright", is displayed on a light-colored rectangular 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 groups are included in this report: Metals and 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 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: Myrtle Slough @ Bermont

Collection Date/Time: 09/30/2021 08:25

Field ID: G3SD0181

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2279926	EPA 200.7 Rev. 4.4	Barium	4.8		ug/L	P404700	
		Calcium	10.1		mg/L	P404700	
		Iron	280		ug/L	P404700	
		Magnesium	1.01		mg/L	P404700	
		Manganese	5.0		ug/L	P404700	
		Potassium	0.30	U	mg/L	P404700	
		Sodium	5.9		mg/L	P404700	
	EPA 200.8 Rev. 5.4	Zinc	5.0	U	ug/L	P404700	
		Aluminum	72		ug/L	P404700	
		Antimony	0.063	I	ug/L	P404700	
		Arsenic	0.41		ug/L	P404700	
		Beryllium	0.010	U	ug/L	P404700	
		Boron**	14.4		ug/L	P404700	
		Cadmium	0.020	U	ug/L	P404700	
		Chromium	0.40	U	ug/L	P404700	
		Copper	0.41	I	ug/L	P404700	
		Lead	0.28	I	ug/L	P404700	
		Nickel	0.50	U	ug/L	P404700	
		Selenium	0.20	U	ug/L	P404700	
		Silver	0.010	U	ug/L	P404700	
		Thallium	0.10	U	ug/L	P404700	
	SM 2340B	Hardness	29.3		mg/L	P404700	

Sample Location: Myrtle Slough @ Washington

Collection Date/Time: 09/30/2021 09:00

Field ID: G3SD0180

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2279927	EPA 200.7 Rev. 4.4	Barium	5.6		ug/L	P404700	
		Calcium	15.1		mg/L	P404700	
		Iron	410		ug/L	P404700	
		Magnesium	1.85		mg/L	P404700	
		Manganese	7.8		ug/L	P404700	
		Potassium	0.52	I	mg/L	P404700	
		Sodium	10.7		mg/L	P404700	
	EPA 200.8 Rev. 5.4	Zinc	5.0	U	ug/L	P404700	
		Aluminum	74		ug/L	P404700	
		Antimony	0.063	I	ug/L	P404700	
		Arsenic	0.53		ug/L	P404700	
		Beryllium	0.010	U	ug/L	P404700	
		Boron**	16.2		ug/L	P404700	
		Cadmium	0.020	U	ug/L	P404700	
		Chromium	0.40	U	ug/L	P404700	
		Copper	0.40	U	ug/L	P404700	
		Lead	0.20	U	ug/L	P404700	
		Nickel	0.50	U	ug/L	P404700	
		Selenium	0.20	U	ug/L	P404700	
		Silver	0.010	U	ug/L	P404700	
		Thallium	0.10	U	ug/L	P404700	
	SM 2340B	Hardness	45.3		mg/L	P404700	

Sample Location: Hawthorne Creek @ Reynolds St.

Collection Date/Time: 09/30/2021 10:15

Field ID: G3SD0011

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2279914	EPA 180.1 Rev. 2.0	Turbidity	5.2	A	NTU	P404481	
	EPA 300.0 Rev. 2.1	Chloride	68		mg Cl/L	P404662	
		Sulfate	52		mg SO4/L	P404665	
		Color (true)	180		PCU	P404471	
	SM 2320 B-2011	Total Alkalinity	98		mg CaCO3/L	P404825	
	SM 2540 C-2011	TDS	382	A	mg/L	P404940	
	SM 2540 D-2011	TSS	13	A	mg/L	P404898	
2279915	SM 4500 F-C-2011	Fluoride	0.27		mg F/L	P404696	
	EPA 350.1 Rev. 2.0	Ammonia-N	0.072		mg N/L	P404889	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.4		mg N/L	P404590	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.37		mg N/L	P404577	
	EPA 365.1 Rev. 2.0	Total-P	0.50		mg P/L	P404672	
2279916	SM 5310 B-2011	Organic Carbon	20		mg C/L	P404845	
	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.39		mg P/L	P404468	
2279925	EPA 200.7 Rev. 4.4	Barium	23.3		ug/L	P404700	
		Calcium	55.0		mg/L	P404700	
		Iron	1.08E+03		ug/L	P404700	
		Magnesium	11.9		mg/L	P404700	
		Manganese	75.4		ug/L	P404700	
		Potassium	6.4		mg/L	P404700	
		Sodium	30.8		mg/L	P404700	
	EPA 200.8 Rev. 5.4	Zinc	34		ug/L	P404700	
		Aluminum	137		ug/L	P404700	
		Antimony	0.27		ug/L	P404700	
		Arsenic	2.45		ug/L	P404700	
		Beryllium	0.021	I	ug/L	P404700	
		Boron**	47.1		ug/L	P404700	
		Cadmium	0.026	I	ug/L	P404700	
		Chromium	0.78	I	ug/L	P404700	
		Copper	1.34		ug/L	P404700	
		Lead	0.20	U	ug/L	P404700	
		Nickel	1.1	I	ug/L	P404700	
		Selenium	0.22	I	ug/L	P404700	
		Silver	0.010	U	ug/L	P404700	
		Thallium	0.10	U	ug/L	P404700	
		Hardness	186		mg/L	P404700	

Ref. Method and Comment:

EPA 365.1 Rev. 2.0: Total-P: Batch matrix spike recoveries are unavailable because of high analyte concentration in the QC sample.

Sample Location: FB

Collection Date/Time: 09/30/2021 10:30

Field ID: FB_09302021

Matrix: W-FIELD-BK

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2279917	EPA 180.1 Rev. 2.0	Turbidity	0.10	U	NTU	P404481	
	EPA 300.0 Rev. 2.1	Chloride	0.20	U	mg Cl/L	P404662	
		Sulfate	0.20	U	mg SO4/L	P404665	
	SM 2120 B-2011	Color (true)	2.5	U	PCU	P404471	
	SM 2320 B-2011	Total Alkalinity	0.65	U	mg CaCO3/L	P404825	
	SM 2540 C-2011	TDS	15	U	mg/L	P404938	
	SM 2540 D-2011	TSS	2	U	mg/L	P404896	
2279918	SM 4500 F-C-2011	Fluoride	0.035	U	mg F/L	P404696	
	EPA 350.1 Rev. 2.0	Ammonia-N	0.002	U	mg N/L	P404889	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.080	U	mg N/L	P404590	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P404577	
	EPA 365.1 Rev. 2.0	Total-P	0.002	U	mg P/L	P404672	
2279919	SM 5310 B-2011	Organic Carbon	0.52	I	mg C/L	P404845	
	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P404469	
2279928	EPA 200.7 Rev. 4.4	Barium	1.0	U	ug/L	P404700	
		Calcium	0.075	U	mg/L	P404700	
		Iron	30	U	ug/L	P404700	
		Magnesium	0.040	U	mg/L	P404700	
		Manganese	1.0	U	ug/L	P404700	
		Potassium	0.30	U	mg/L	P404700	
		Sodium	0.50	U	mg/L	P404700	
	EPA 200.8 Rev. 5.4	Zinc	5.0	U	ug/L	P404700	
		Aluminum	5.0	U	ug/L	P404700	
		Antimony	0.050	U	ug/L	P404700	
		Arsenic	0.050	U	ug/L	P404700	
		Beryllium	0.010	U	ug/L	P404700	
		Boron**	2.0	I	ug/L	P404700	
		Cadmium	0.020	U	ug/L	P404700	
		Chromium	0.40	U	ug/L	P404700	
		Copper	0.40	U	ug/L	P404700	
		Lead	0.20	U	ug/L	P404700	
		Nickel	0.50	U	ug/L	P404700	
		Selenium	0.20	U	ug/L	P404700	
		Silver	0.010	U	ug/L	P404700	
		Thallium	0.10	U	ug/L	P404700	

Ref. Method and Comment:

SM 2540 D-2011: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.

EPA 365.1 Rev. 2.0: Total-P: Batch matrix spike recoveries are unavailable because of high analyte concentration in the QC sample.

SM 5310 B-2011: The result was confirmed on 10/12/2021.

EPA 200.8 Rev. 5.4: The boron result was confirmed in the undigested sample on 10/08/2021.

Quality Assurance Report

Method Blank Results

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P404481

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P404700

Component	Result	Code	Units
Barium	1.0	U	ug/L
Calcium	0.075	U	mg/L
Iron	30	U	ug/L
Magnesium	0.040	U	mg/L
Manganese	1.0	U	ug/L
Potassium	0.30	U	mg/L
Sodium	0.50	U	mg/L
Zinc	5.0	U	ug/L

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P404700

Component	Result	Code	Units
Aluminum	5.0	U	ug/L
Antimony	0.050	U	ug/L
Arsenic	0.050	U	ug/L
Beryllium	0.010	U	ug/L
Boron	2.0	U	ug/L
Cadmium	0.020	U	ug/L
Chromium	0.40	U	ug/L
Copper	0.40	U	ug/L
Lead	0.20	U	ug/L
Nickel	0.50	U	ug/L
Selenium	0.20	U	ug/L
Silver	0.010	U	ug/L
Thallium	0.10	U	ug/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P404662

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P404665

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P404889

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

Quality Assurance Report Method Blank Results

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P404590

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P404577

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P404672

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P404468

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P404469

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

Reference Method: SM 2120 B-2011
Batch ID: P404471

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-2011
Batch ID: P404825

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

Reference Method: SM 2540 C-2011
Batch ID: P404938

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 C-2011
Batch ID: P404940

Component	Result	Code	Units
TDS	15	U	mg/L

Quality Assurance Report

Method Blank Results

Reference Method: SM 2540 D-2011
Batch ID: P404896

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 2540 D-2011
Batch ID: P404898

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-2011
Batch ID: P404696

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-2011
Batch ID: P404845

Component	Result	Code	Units
Organic Carbon	0.50	U	mg C/L

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P404700

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Barium	103		P	85 - 115
Calcium	103		P	85 - 115
Iron	109		P	85 - 115
Magnesium	109		P	85 - 115
Manganese	102		P	85 - 115
Potassium	102		P	85 - 115
Sodium	103		P	85 - 115
Zinc	102		P	85 - 115

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P404700

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Aluminum	104		P	85 - 115
Antimony	109		P	85 - 115
Arsenic	101		P	85 - 115
Beryllium	103		P	85 - 115
Boron	104		P	85 - 115
Cadmium	104		P	85 - 115
Chromium	99.8		P	85 - 115
Copper	96.1		P	85 - 115
Lead	98.5		P	85 - 115
Nickel	97.1		P	85 - 115
Selenium	102		P	85 - 115
Silver	97.7		P	85 - 115
Thallium	105		P	85 - 115

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P404662

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Chloride	98.9		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P404665

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P404889

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P404590

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Kjeldahl Nitrogen	97.8		P	90 - 110

Quality Assurance Report

Laboratory Control Sample Accuracy

Reference Method: EPA 353.2 Rev. 2.0

Batch ID: P404577

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: P404672

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved

Batch ID: P404468

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved

Batch ID: P404469

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

Reference Method: SM 2120 B-2011

Batch ID: P404471

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Color (true)	96.6		P	85 - 115

Reference Method: SM 2320 B-2011

Batch ID: P404825

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	99.5		P	94 - 106

Reference Method: SM 4500 F-C-2011

Batch ID: P404696

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	100		P	93 - 104

Reference Method: SM 5310 B-2011

Batch ID: P404845

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

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 200.7 Rev. 4.4

Batch ID: P404700

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2279927	Barium	98.5		P	80 - 120
2279927	Calcium	104		P	80 - 120
2279927	Iron	103		P	80 - 120
2279927	Magnesium	102		P	80 - 120
2279927	Manganese	98.0		P	80 - 120
2279927	Potassium	95.7		P	80 - 120
2279927	Sodium	103		P	80 - 120
2279927	Zinc	103		P	80 - 120
2279948	Barium	101	97.5	P/P	80 - 120
2279948	Calcium	103		P	80 - 120
2279948	Iron	109	105	P/P	80 - 120
2279948	Magnesium	108	103	P/P	80 - 120
2279948	Manganese	101	98.1	P/P	80 - 120
2279948	Potassium	99.8	96.4	P/P	80 - 120
2279948	Sodium	100		P	80 - 120
2279948	Zinc	107	105	P/P	80 - 120

Reference Method: EPA 200.8 Rev. 5.4

Batch ID: P404700

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2279927	Aluminum	104		P	80 - 120
2279927	Antimony	111		P	80 - 120
2279927	Arsenic	101		P	80 - 120
2279927	Beryllium	103		P	80 - 120
2279927	Boron	108		P	80 - 120
2279927	Cadmium	108		P	80 - 120
2279927	Chromium	103		P	80 - 120
2279927	Copper	96.3		P	80 - 120
2279927	Lead	100		P	80 - 120
2279927	Nickel	94.3		P	80 - 120
2279927	Selenium	101		P	80 - 120
2279927	Silver	97.2		P	80 - 120
2279927	Thallium	108		P	80 - 120
2279948	Aluminum	99.9	103	P/P	80 - 120
2279948	Antimony	107	110	P/P	80 - 120
2279948	Arsenic	98.9	101	P/P	80 - 120
2279948	Beryllium	102	103	P/P	80 - 120
2279948	Boron	103	105	P/P	80 - 120
2279948	Cadmium	101	103	P/P	80 - 120
2279948	Chromium	99.9	103	P/P	80 - 120
2279948	Copper	94.4	96.6	P/P	80 - 120
2279948	Lead	97.2	99.5	P/P	80 - 120
2279948	Nickel	94.2	96.1	P/P	80 - 120
2279948	Selenium	98.1	101	P/P	80 - 120
2279948	Silver	94.5	98.0	P/P	80 - 120
2279948	Thallium	105	108	P/P	80 - 120

Reference Method: EPA 300.0 Rev. 2.1

Batch ID: P404662

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
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Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P404662

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2279580	Chloride	99.0		P	90 - 110
2279748	Chloride	101		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P404665

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2279580	Sulfate	100		P	90 - 110
2279748	Sulfate	103		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P404889

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2279418	Ammonia-N	96.2	98.0	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P404590

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2279872	Kjeldahl Nitrogen	96.3	95.1	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P404577

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2279872	NO2NO3-N	97.0		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P404468

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2279874	O-Phosphate-P	94.8	95.1	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P404469

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2279963	O-Phosphate-P	98.8	96.5	P/P	90 - 110

Reference Method: SM 4500 F-C-2011
Batch ID: P404696

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2279840	Fluoride	101	101	P/P	92 - 107

Reference Method: SM 5310 B-2011
Batch ID: P404845

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2279942	Organic Carbon	95.8	96.3	P/P	85 - 115

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0

Batch ID: P404481

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2279914	Turbidity	12.4	Sample	P	0 - 20

Reference Method: EPA 200.7 Rev. 4.4

Batch ID: P404700

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2279948	Barium	3.65	Spike	P	0 - 20
2279948	Calcium	2.73	Spike	P	0 - 20
2279948	Iron	3.32	Spike	P	0 - 20
2279948	Magnesium	3.22	Spike	P	0 - 20
2279948	Manganese	3.01	Spike	P	0 - 20
2279948	Potassium	2.35	Spike	P	0 - 20
2279948	Sodium	2.13	Spike	P	0 - 20
2279948	Zinc	2.24	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4

Batch ID: P404700

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2279948	Aluminum	3.01	Spike	P	0 - 20
2279948	Antimony	2.80	Spike	P	0 - 20
2279948	Arsenic	2.01	Spike	P	0 - 20
2279948	Beryllium	0.651	Spike	P	0 - 20
2279948	Boron	1.78	Spike	P	0 - 20
2279948	Cadmium	1.95	Spike	P	0 - 20
2279948	Chromium	3.40	Spike	P	0 - 20
2279948	Copper	2.36	Spike	P	0 - 20
2279948	Lead	2.29	Spike	P	0 - 20
2279948	Nickel	2.02	Spike	P	0 - 20
2279948	Selenium	3.08	Spike	P	0 - 20
2279948	Silver	3.56	Spike	P	0 - 20
2279948	Thallium	2.86	Spike	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1

Batch ID: P404662

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2279580	Chloride	0.836	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1

Batch ID: P404665

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2279580	Sulfate	3.77	Sample	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 350.1 Rev. 2.0

Batch ID: P404889

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2279418	Ammonia-N	1.48	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0

Batch ID: P404590

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2279872	Kjeldahl Nitrogen	0.894	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0

Batch ID: P404577

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2279872	NO2NO3-N	0.411	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0

Batch ID: P404672

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2279915	Total-P	0.838	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved

Batch ID: P404468

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2279874	O-Phosphate-P	0.260	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved

Batch ID: P404469

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2279963	O-Phosphate-P	2.36	Spike	P	0 - 20

Reference Method: SM 2120 B-2011

Batch ID: P404471

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2279833	Color (true)	0.948	Sample	P	0 - 20

Reference Method: SM 2320 B-2011

Batch ID: P404825

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2279840	Total Alkalinity	0.132	Sample	P	0 - 5.2

Quality Assurance Report Precision

Reference Method: SM 2540 C-2011
Batch ID: P404938

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2279363	TDS	4.18	Sample	P	0 - 10

Reference Method: SM 2540 C-2011
Batch ID: P404940

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2279914	TDS	3.66	Sample	P	0 - 10

Reference Method: SM 2540 D-2011
Batch ID: P404898

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2279914	TSS	3.08	Sample	P	0 - 10

Reference Method: SM 4500 F-C-2011
Batch ID: P404696

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2279840	Fluoride	0.0	Spike	P	0 - 2.1

Reference Method: SM 5310 B-2011
Batch ID: P404845

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2279942	Organic Carbon	0.355	Spike	P	0 - 20

* Sample, spike and/or laboratory control sample precision (LCS) is reported.

Quality Assurance Report Calibration Verification

Reference Method: EPA 365.1 Rev. 2.0 dissolved

Run ID: A108107

Included Lab Sample IDs: 2279916, 2279919

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	98.6	99.8	P/P	90 - 110
O-Phosphate-P	99.7	98.6	P/P	90 - 110

Reference Method: SM 2120 B-2011

Run ID: A108108

Included Lab Sample IDs: 2279914, 2279917

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	101	97.4	P/P	90 - 115
Color (true)	99.5	100	P/P	90 - 115

Reference Method: EPA 180.1 Rev. 2.0

Run ID: A108111

Included Lab Sample IDs: 2279914, 2279917

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Turbidity	99.0	100	P/P	95 - 105

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A108146

Included Lab Sample IDs: 2279915, 2279918

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

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A108179

Included Lab Sample IDs: 2279914, 2279917

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

Reference Method: SM 4500 F-C-2011

Run ID: A108185

Included Lab Sample IDs: 2279914, 2279917

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	104	103	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A108200

Included Lab Sample IDs: 2279915, 2279918

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	102	103	P/P	90 - 110
Kjeldahl Nitrogen	104	102	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A108203

Included Lab Sample IDs: 2279915

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	98.8	99.8	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A108230

Included Lab Sample IDs: 2279918

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	99.5	97.0	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A108250

Included Lab Sample IDs: 2279925, 2279926, 2279927, 2279928

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Aluminum	101	102	P/P	90 - 110
Aluminum	102	102	P/P	90 - 110
Antimony	106	109	P/P	90 - 110
Antimony	109	109	P/P	90 - 110
Arsenic	98.2	96.8	P/P	90 - 110
Arsenic	99.8	98.2	P/P	90 - 110
Beryllium	101	99.3	P/P	90 - 110
Beryllium	99.3	97.3	P/P	90 - 110
Boron	106	106	P/P	90 - 110
Boron	97.9	106	P/P	90 - 110
Cadmium	101	103	P/P	90 - 110
Cadmium	103	104	P/P	90 - 110
Chromium	96.2	96.5	P/P	90 - 110
Chromium	96.5	98.5	P/P	90 - 110
Copper	92.2	91.6	P/P	90 - 110
Copper	95.0	92.2	P/P	90 - 110
Lead	94.4	94.9	P/P	90 - 110
Lead	94.9	93.8	P/P	90 - 110
Nickel	92.8	91.8	P/P	90 - 110
Nickel	94.9	92.8	P/P	90 - 110
Selenium	102	104	P/P	90 - 110
Selenium	104	102	P/P	90 - 110
Silver	95.0	96.1	P/P	90 - 110
Silver	96.1	95.2	P/P	90 - 110
Thallium	100	101	P/P	90 - 110
Thallium	101	100	P/P	90 - 110

Reference Method: SM 2320 B-2011

Run ID: A108253

Included Lab Sample IDs: 2279914, 2279917

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	96.8	100	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: EPA 200.7 Rev. 4.4

Run ID: A108254

Included Lab Sample IDs: 2279925, 2279926, 2279927, 2279928

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Barium	99.2	99.9	P/P	95 - 105
Barium	99.9	98.9	P/P	90 - 110
Calcium	102	103	P/P	90 - 110
Calcium	103	102	P/P	95 - 105
Iron	101	101	P/P	90 - 110
Iron	102	101	P/P	95 - 105
Magnesium	100	101	P/P	90 - 110
Magnesium	102	100	P/P	95 - 105
Manganese	100	101	P/P	90 - 110
Manganese	99.6	100	P/P	95 - 105
Potassium	101	99.0	P/P	95 - 105
Potassium	99.0	98.6	P/P	90 - 110
Sodium	102	101	P/P	90 - 110
Sodium	103	102	P/P	95 - 105
Zinc	102	104	P/P	90 - 110
Zinc	99.9	102	P/P	95 - 105

Reference Method: SM 5310 B-2011

Run ID: A108262

Included Lab Sample IDs: 2279915, 2279918

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	95.6	96.2	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A108272

Included Lab Sample IDs: 2279915, 2279918

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	97.8	97.9	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			LCS	Precision SMP	MS
EPA 180.1 Rev. 2.0	Turbidity						12.4	
EPA 200.7 Rev. 4.4	Barium	103	98.5	101	97.5			3.65
	Calcium	103	104	103				2.73
	Iron	109	103	109	105			3.32
	Magnesium	109	102	108	103			3.22
	Manganese	102	98.0	101	98.1			3.01
	Potassium	102	95.7	99.8	96.4			2.35
	Sodium	103	103	100				2.13
	Zinc	102	103	107	105			2.24
EPA 200.8 Rev. 5.4	Aluminum	104	99.9	103	104			3.01
	Antimony	109	107	110	111			2.80
	Arsenic	101	98.9	101	101			2.01
	Beryllium	103	102	103	103			0.651
	Boron	104	103	105	108			1.78
	Cadmium	104	101	103	108			1.95
	Chromium	99.8	99.9	103	103			3.40
	Copper	96.1	94.4	96.6	96.3			2.36
	Lead	98.5	97.2	99.5	100			2.29
	Nickel	97.1	94.2	96.1	94.3			2.02
	Selenium	102	98.1	101	101			3.08
	Silver	97.7	94.5	98.0	97.2			3.56
	Thallium	105	105	108	108			2.86
EPA 300.0 Rev. 2.1	Chloride	98.9	99.0	101			0.836	
	Sulfate	101	100	103			3.77	
EPA 350.1 Rev. 2.0	Ammonia-N	97.8	96.2	98.0				1.48
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	97.8	96.3	95.1				0.894
EPA 353.2 Rev. 2.0	NO ₂ NO ₃ -N	102	97.0					0.411
EPA 365.1 Rev. 2.0	Total-P	105						0.838
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	98.2	94.8	95.1				0.260
	O-Phosphate-P	99.0	98.8	96.5				2.36
SM 2120 B-2011	Color (true)	96.6					0.948	
SM 2320 B-2011	Total Alkalinity	99.5					0.132	
SM 2540 C-2011	TDS						4.18	
	TDS						3.66	
SM 2540 D-2011	TSS						3.08	
SM 4500 F-C-2011	Fluoride	100	101	101				0.0
SM 5310 B-2011	Organic Carbon	96.2	95.8	96.3				0.355

Reference Method Descriptions

Method	Description	Associated Samples
EPA 180.1 Rev. 2.0	Turbidity in aqueous matrices	2279914, 2279917
EPA 200.7 Rev. 4.4	Total Recoverable Metals analysis using ICP emission spectroscopy for aqueous samples supporting Clean Water Act Projects	2279925, 2279926, 2279927, 2279928
EPA 200.8 Rev. 5.4	Total Recoverable Metals analysis using ICP-MS for aqueous samples supporting Clean Water Act Projects	2279925, 2279926, 2279927, 2279928
EPA 300.0 Rev. 2.1	Chloride in aqueous matrices	2279914, 2279917
EPA 300.0 Rev. 2.1	Sulfate in aqueous matrices	2279914, 2279917
EPA 350.1 Rev. 2.0	Ammonia in aqueous matrices as mg N/L	2279915, 2279918
EPA 351.2 Rev. 2.0	Total Kjeldahl Nitrogen in aqueous matrices	2279915, 2279918
EPA 353.2 Rev. 2.0	Nitrite/Nitrate in aqueous matrices as mg N/L	2279915, 2279918
EPA 365.1 Rev. 2.0	Total Phosphorus in aqueous matrices as mg P/L	2279915, 2279918

Reference Method Descriptions

Method	Description	<u>Associated Samples</u>
EPA 365.1 Rev. 2.0 dissolved	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2279916, 2279919
SM 2120 B-2011	True Color measured at 450 nm (not valid for NPDES monitoring)	2279914, 2279917
SM 2320 B-2011	Alkalinity in aqueous matrices as mg CaCO ₃ /L	2279914, 2279917
SM 2340B	Hardness by calculation, in aqueous matrices, reported as mg/L CaCO ₃	2279925, 2279926, 2279927
SM 2540 C-2011	Total Dissolved Solids in aqueous matrices	2279914, 2279917
SM 2540 D-2011	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2279914, 2279917
SM 4500 F-C-2011	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2279914, 2279917
SM 5310 B-2011	Nonpurgeable Organic Carbon in aqueous matrices	2279915, 2279918

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	10/01/2021			10/01/2021 15:49	Khloe J Berg	2279914, 2279917
EPA 200.7 Rev. 4.4	10/01/2021	10/07/2021 10:45	Emily M Philpot	10/08/2021 13:11	Josef B Mick	2279928
	10/01/2021	10/07/2021 10:45	Emily M Philpot	10/08/2021 13:59	Josef B Mick	2279925
	10/01/2021	10/07/2021 10:45	Emily M Philpot	10/08/2021 14:07	Josef B Mick	2279926
	10/01/2021	10/07/2021 10:45	Emily M Philpot	10/08/2021 14:48	Josef B Mick	2279927
EPA 200.8 Rev. 5.4	10/01/2021	10/07/2021 10:45	Emily M Philpot	10/08/2021 13:12	Alexander Thompson	2279928
	10/01/2021	10/07/2021 10:45	Emily M Philpot	10/08/2021 14:00	Alexander Thompson	2279925
	10/01/2021	10/07/2021 10:45	Emily M Philpot	10/08/2021 15:08	Alexander Thompson	2279926
	10/01/2021	10/07/2021 10:45	Emily M Philpot	10/08/2021 16:25	Alexander Thompson	2279927
EPA 300.0 Rev. 2.1	10/01/2021			10/05/2021 17:34	Roberta Tatti	2279914
	10/01/2021			10/05/2021 17:47	Roberta Tatti	2279917
EPA 350.1 Rev. 2.0	10/01/2021			10/08/2021 13:18	Ping Hua	2279915
	10/01/2021			10/08/2021 13:27	Ping Hua	2279918
EPA 351.2 Rev. 2.0	10/01/2021	10/05/2021 12:35	Benjamin T. Nordmann	10/07/2021 09:44	Alexandra J Mattheus	2279915
	10/01/2021	10/05/2021 12:35	Benjamin T. Nordmann	10/07/2021 09:48	Alexandra J Mattheus	2279918
EPA 353.2 Rev. 2.0	10/01/2021			10/05/2021 10:59	Beverly Y. Sanders	2279915
	10/01/2021			10/05/2021 11:01	Beverly Y. Sanders	2279918
EPA 365.1 Rev. 2.0	10/01/2021	10/06/2021 12:50	Simonne.V. Calhoun	10/07/2021 10:51	Lipi Saha	2279915
	10/01/2021	10/06/2021 12:50	Simonne.V. Calhoun	10/07/2021 15:04	Lipi Saha	2279918
EPA 365.1 Rev. 2.0 dissolved	10/01/2021			10/01/2021 14:27	James L Waggeberby	2279916
	10/01/2021			10/01/2021 14:37	James L Waggeberby	2279919
SM 2120 B-2011	10/01/2021			10/01/2021 15:17	Benjamin T. Nordmann	2279917
	10/01/2021			10/01/2021 15:32	Benjamin T. Nordmann	2279914
SM 2320 B-2011	10/01/2021			10/09/2021 02:33	Dale L. Simmons	2279914
	10/01/2021			10/09/2021 02:39	Dale L. Simmons	2279917
SM 2340B	10/01/2021			10/08/2021 13:59	Josef B Mick	2279925
	10/01/2021			10/08/2021 14:07	Josef B Mick	2279926
	10/01/2021			10/08/2021 14:48	Josef B Mick	2279927
SM 2540 C-2011	10/01/2021			10/04/2021 14:45	Yijie Li	2279914, 2279917
SM 2540 D-2011	10/01/2021			10/04/2021 14:45	Yijie Li	2279914, 2279917
SM 4500 F-C-2011	10/01/2021			10/06/2021 21:01	Dale L. Simmons	2279914
	10/01/2021			10/06/2021 21:08	Dale L. Simmons	2279917
SM 5310 B-2011	10/01/2021			10/08/2021 21:14	Khloe J Berg	2279915
	10/01/2021			10/08/2021 21:24	Khloe J Berg	2279918