

Chemical Analysis Report

SW-DIST-2018-09-12-01

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

Event Description: **Snug, PP#1, Basin V, Mckay Tidal**
Request ID: **RQ-2018-09-10-17**
Customer: **SW-DIST**
Project ID: **SMP**

Send Reports to:

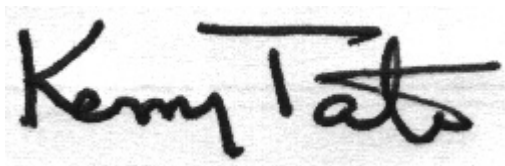
FL Dept. of Environmental Protection
FL Dept. of Environmental Protection
13051 N. Telecom Parkway
Temple Terrace, FL 33637-0926
Attn: judy.ashton@dep.state.fl.us

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: 28-SEP-2018 12:16

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 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: Snug Harbor - TP428

Collection Date/Time: 09/11/2018 10:05

Field ID: G1SW0099

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2024423	EPA 180.1 Rev. 2.0	Turbidity	2.6	A	NTU	P351636	
	SM 2320 B-97	Total Alkalinity	117		mg CaCO3/L	P351904	
	SM 2540 D-97	TSS	4	I	mg/L	P351800	
	SM 4500 F-C-97	Fluoride	0.88		mg F/L	P351907	
2024425	EPA 350.1 Rev. 2.0	Ammonia-N	0.058		mg N/L	P351765	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.75		mg N/L	P351748	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.006	I	mg N/L	P351763	
	EPA 365.1 Rev. 2.0	Total-P	0.20		mg P/L	P351605	
	SM 5310 B-00	Organic Carbon	7.6		mg C/L	P351877	
2024427	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.17		mg P/L	P351522	

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: Pinellas Pt. Basin V TP455

Collection Date/Time: 09/11/2018 10:50

Field ID: G1SW0100

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2024424	EPA 180.1 Rev. 2.0	Turbidity	1.4		NTU	P351636	
	SM 2320 B-97	Total Alkalinity	180		mg CaCO3/L	P351712	
	SM 2540 D-97	TSS	3	I	mg/L	P351982	
	SM 4500 F-C-97	Fluoride	0.17		mg F/L	P351716	
2024426	EPA 350.1 Rev. 2.0	Ammonia-N	0.26		mg N/L	P351767	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.0		mg N/L	P351747	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.084		mg N/L	P351696	
	EPA 365.1 Rev. 2.0	Total-P	0.21		mg P/L	P351669	
	SM 5310 B-00	Organic Carbon	16		mg C/L	P351878	
2024428	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.19		mg P/L	P351520	

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: PP Ditch #1 @ 71st St.

Collection Date/Time: 09/11/2018 11:30

Field ID: G5SW0134

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2024420	EPA 180.1 Rev. 2.0	Turbidity	3.5	A	NTU	P351635	
	SM 2320 B-97	Total Alkalinity	183		mg CaCO3/L	P351712	
	SM 2540 D-97	TSS	4	I	mg/L	P351982	
	SM 4500 F-C-97	Fluoride	0.29		mg F/L	P351716	
2024421	EPA 350.1 Rev. 2.0	Ammonia-N	0.16		mg N/L	P351764	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.2		mg N/L	P351747	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.23		mg N/L	P351696	
	EPA 365.1 Rev. 2.0	Total-P	0.12		mg P/L	P351669	
	SM 5310 B-00	Organic Carbon	14		mg C/L	P351878	
2024422	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.077		mg P/L	P351520	
2024443	EPA 8321B	2,4-D	0.034		ug/L	P351416	
		Bentazon	0.037		ug/L	P351416	
		MCP	0.0091		ug/L	P351416	MS
		Triclopyr**	0.0040	U	ug/L	P351416	MS
		Imidacloprid	0.14		ug/L	P351416	
		Diuron	0.012		ug/L	P351416	
		Pyraclostrobin**	0.0020	U	ug/L	P351416	
		Primidone**	0.0075	I	ug/L	P351416	
		Linuron	0.0040	U	ug/L	P351416	
		Acetaminophen**	0.0080	U	ug/L	P351416	
		Fenuron	0.016	U	ug/L	P351416	
		Imazapyr**	0.080		ug/L	P351416	
		Carbamazepine**	0.0022	I	ug/L	P351416	
		Fluridone**	0.023		ug/L	P351416	
		Hydrocodone**	8.0E-04	U	ug/L	P351416	
		Naproxen**	0.0080	U	ug/L	P351416	
		Ibuprofen**	0.020	U	ug/L	P351416	
		Sucralose**	0.93		ug/L	P351382	
		Acesulfame K**	0.10	U	ug/L	P351382	

Ref. Method and Comment:

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

Quality Assurance Report Method Blank Results

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P351635

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P351636

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P351764

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P351765

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P351767

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P351747

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P351748

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P351696

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P351763

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

Quality Assurance Report Method Blank Results

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P351605

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P351669

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P351520

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P351522

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

Reference Method: EPA 8321B
Batch ID: P351382

Component	Result	Code	Units
Acesulfame K	0.10	U	ug/L
Sucralose	0.010	U	ug/L

Reference Method: EPA 8321B
Batch ID: P351416

Component	Result	Code	Units
2,4-D	0.0020	U	ug/L
Acetaminophen	0.0080	U	ug/L
Bentazon	8.0E-04	U	ug/L
Carbamazepine	8.0E-04	U	ug/L
Diuron	0.0020	U	ug/L
Fenuron	0.016	U	ug/L
Fluridone	4.0E-04	U	ug/L
Hydrocodone	8.0E-04	U	ug/L
Ibuprofen	0.020	U	ug/L
Imazapyr	0.0040	U	ug/L
Imidacloprid	0.0020	U	ug/L
Linuron	0.0040	U	ug/L
MCPP	0.0020	U	ug/L
Naproxen	0.0080	U	ug/L
Primidone	0.0040	U	ug/L
Pyraclostrobin	0.0020	U	ug/L
Triclopyr	0.0040	U	ug/L

Quality Assurance Report

Method Blank Results

Reference Method: SM 2320 B-97
Batch ID: P351712

Component	Result	Code	Units
Total Alkalinity	0.65	U	mg CaCO ₃ /L

Reference Method: SM 2320 B-97
Batch ID: P351904

Component	Result	Code	Units
Total Alkalinity	0.65	U	mg CaCO ₃ /L

Reference Method: SM 2540 D-97
Batch ID: P351800

Component	Result	Code	Units
TSS	3	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P351982

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P351716

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 4500 F-C-97
Batch ID: P351907

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P351877

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

Reference Method: SM 5310 B-00
Batch ID: P351878

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

Quality Assurance Report

Laboratory Control Sample Accuracy

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P351764

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P351765

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P351767

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	92.7		P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P351747

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P351748

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: P351696

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: P351763

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: P351605

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P351669

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

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P351520

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P351522

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

Reference Method: EPA 8321B
Batch ID: P351382

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Acesulfame K	78.3		P	40 - 150
Sucralose	100		P	40 - 150

Reference Method: EPA 8321B
Batch ID: P351416

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2,4-D	95.8		P	40 - 150
Acetaminophen	83.5		P	30 - 150
Bentazon	87.4		P	30 - 150
Carbamazepine	89.2		P	40 - 150
Diuron	79.5		P	40 - 150
Fenuron	95.9		P	40 - 150
Fluridone	79.3		P	40 - 150
Hydrocodone	105		P	40 - 150
Ibuprofen	109		P	40 - 150
Imazapyr	77.5		P	40 - 150
Imidacloprid	85.6		P	40 - 160
Linuron	69.1		P	40 - 150
MCPP	96.5		P	40 - 150
Naproxen	102		P	40 - 150
Primidone	69.6		P	40 - 150
Pyraclostrobin	80.5		P	40 - 150
Triclopyr	95.0		P	40 - 150

Reference Method: SM 2320 B-97
Batch ID: P351712

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	103		P	98 - 107

Reference Method: SM 2320 B-97
Batch ID: P351904

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	101		P	98 - 107

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: SM 4500 F-C-97
Batch ID: P351716

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	98.2		P	91 - 105

Reference Method: SM 4500 F-C-97
Batch ID: P351907

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	98.1		P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P351877

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

Reference Method: SM 5310 B-00
Batch ID: P351878

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	96.0		P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P351764

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2024372	Ammonia-N	97.8	101	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P351765

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2024296	Ammonia-N	97.1	97.4	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P351767

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2024433	Ammonia-N	91.4	91.6	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P351747

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2024421	Kjeldahl Nitrogen	94.6	97.5	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P351748

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2024283	Kjeldahl Nitrogen	104	104	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P351696

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2024409	NO2NO3-N	99.6	101	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P351763

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2024487	NO2NO3-N	101	102	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P351605

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2024283	Total-P	107	102	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P351669

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2024210	Total-P	102	99.3	P/P	90 - 110

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P351520

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2024386	O-Phosphate-P	95.5	95.0	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P351522

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2024305	O-Phosphate-P	95.6	97.1	P/P	90 - 110

Reference Method: EPA 8321B
Batch ID: P351382

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2023766	Acesulfame K	68.6	81.6	P/P	40 - 150
2023766	Sucralose	117	114	P/P	40 - 150

Reference Method: EPA 8321B
Batch ID: P351416

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2023766	2,4-D	139	144	P/P	40 - 150
2023766	Acetaminophen	76.4	69.6	P/P	30 - 150
2023766	Bentazon	68.5	80.6	P/P	30 - 150
2023766	Carbamazepine	65.8	60.9	P/P	40 - 150
2023766	Diuron	57.8	51.6	P/P	40 - 150
2023766	Fenuron	53.6	52.1	P/P	40 - 150
2023766	Fluridone	83.4	77.5	P/P	40 - 150
2023766	Hydrocodone	77.8	73.3	P/P	40 - 150
2023766	Ibuprofen	102	103	P/P	40 - 150
2023766	Imazapyr	89.4	86.9	P/P	40 - 150
2023766	Imidacloprid	113	112	P/P	40 - 160
2023766	Linuron	59.2	58.8	P/P	40 - 150
2023766	MCP	148	176	P/F	40 - 150
2023766	Naproxen	137	142	P/P	40 - 150
2023766	Primidone	62.7	61.4	P/P	40 - 150
2023766	Pyraclostrobin	81.5	80.8	P/P	40 - 150
2023766	Triclopyr	167	178	F/F	40 - 150

Reference Method: SM 4500 F-C-97
Batch ID: P351716

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2024886	Fluoride	99.5	98.8	P/P	91 - 105

Reference Method: SM 4500 F-C-97
Batch ID: P351907

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2024923	Fluoride	96.1	96.1	P/P	91 - 105

Quality Assurance Report

Matrix Spike Accuracy

Reference Method: SM 5310 B-00
Batch ID: P351877

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2023138	Organic Carbon	99.3	100	P/P	85 - 115

Reference Method: SM 5310 B-00
Batch ID: P351878

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2024208	Organic Carbon	95.2	94.2	P/P	85 - 115

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P351635

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2024420	Turbidity	2.83	Sample	P	0 - 20

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P351636

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2024423	Turbidity	2.33	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P351764

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2024372	Ammonia-N	2.56	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P351765

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2024296	Ammonia-N	0.231	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P351767

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2024433	Ammonia-N	0.169	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P351747

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2024421	Kjeldahl Nitrogen	1.49	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P351748

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2024283	Kjeldahl Nitrogen	0.280	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P351696

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2024409	NO2NO3-N	0.707	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P351763

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2024487	NO2NO3-N	0.480	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P351605

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2024283	Total-P	4.65	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P351669

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2024210	Total-P	1.73	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P351520

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2024386	O-Phosphate-P	0.525	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P351522

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2024305	O-Phosphate-P	1.40	Spike	P	0 - 20

Reference Method: EPA 8321B
Batch ID: P351382

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2023766	Acesulfame K	17.2	Spike	P	0 - 30
2023766	Sucralose	2.41	Spike	P	0 - 30

Reference Method: EPA 8321B
Batch ID: P351416

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2023766	2,4-D	3.06	Spike	P	0 - 30
2023766	Acetaminophen	9.28	Spike	P	0 - 30
2023766	Bentazon	9.75	Spike	P	0 - 30
2023766	Carbamazepine	7.80	Spike	P	0 - 30
2023766	Diuron	11.3	Spike	P	0 - 30
2023766	Fenuron	2.94	Spike	P	0 - 30
2023766	Fluridone	7.11	Spike	P	0 - 30
2023766	Hydrocodone	5.84	Spike	P	0 - 30

Quality Assurance Report Precision

Reference Method: EPA 8321B
Batch ID: P351416

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2023766	Ibuprofen	1.39	Spike	P	0 - 30
2023766	Imazapyr	1.67	Spike	P	0 - 30
2023766	Imidacloprid	1.43	Spike	P	0 - 30
2023766	Linuron	0.627	Spike	P	0 - 30
2023766	MCP	17.4	Spike	P	0 - 30
2023766	Naproxen	3.24	Spike	P	0 - 30
2023766	Primidone	2.18	Spike	P	0 - 30
2023766	Pyraclostrobin	0.821	Spike	P	0 - 30
2023766	Triclopyr	6.32	Spike	P	0 - 30

Reference Method: SM 2320 B-97
Batch ID: P351712

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2024886	Total Alkalinity	0.425	Sample	P	0 - 1.6

Reference Method: SM 2320 B-97
Batch ID: P351904

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2024923	Total Alkalinity	0.155	Sample	P	0 - 1.6

Reference Method: SM 4500 F-C-97
Batch ID: P351716

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2024886	Fluoride	0.473	Spike	P	0 - 3.5

Reference Method: SM 4500 F-C-97
Batch ID: P351907

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2024923	Fluoride	0.0	Spike	P	0 - 3.5

Reference Method: SM 5310 B-00
Batch ID: P351877

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2023138	Organic Carbon	1.03	Spike	P	0 - 20

Reference Method: SM 5310 B-00
Batch ID: P351878

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2024208	Organic Carbon	0.575	Spike	P	0 - 20

Quality Assurance Report

Precision

* Sample, spike and/or laboratory control sample precision (LCS) is reported.
Replicate spike precision may be reported when sample results are below quantifiable levels.

Quality Assurance Report Surrogates

Lab Sample ID: 2024443
Field Sample ID: G5SW0134

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	2,4-D-d3	123	P	30 - 160
EPA 8321B	Acetaminophen-d4	91.7	P	30 - 160
EPA 8321B	Carbamazepine-d10	65.7	P	30 - 160
EPA 8321B	Diuron-d6	62.6	P	30 - 160
EPA 8321B	Endothall-d6	143	P	40 - 160
EPA 8321B	Ibuprofen-d3	100	P	30 - 160
EPA 8321B	Primidone-d5	77.7	P	30 - 160
EPA 8321B	Sucralose-d6	114	P	40 - 160

Quality Assurance Report Calibration Verification

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Run ID: A86443
Included Lab Sample IDs: 2024422, 2024427, 2024428

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	98.9	99.2	P/P	90 - 110

Reference Method: EPA 180.1 Rev. 2.0
Run ID: A86474
Included Lab Sample IDs: 2024420, 2024423, 2024424

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Turbidity	102	104	P/P	95 - 105
Turbidity	103	102	P/P	95 - 105

Reference Method: EPA 8321B
Run ID: A86482
Included Lab Sample IDs: 2024443

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Acesulfame K	105	94.8	P/P	60 - 160

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A86489
Included Lab Sample IDs: 2024425

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	105	107	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A86506
Included Lab Sample IDs: 2024421, 2024426

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

Reference Method: SM 2320 B-97
Run ID: A86512
Included Lab Sample IDs: 2024420, 2024424

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	102	100	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Run ID: A86512
Included Lab Sample IDs: 2024420, 2024424

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

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A86514
Included Lab Sample IDs: 2024421, 2024426

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

Quality Assurance Report Calibration Verification

Reference Method: EPA 8321B
Run ID: A86520
Included Lab Sample IDs: 2024443

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Sucralose	101	91.5	P/P	60 - 160

Reference Method: EPA 8321B
Run ID: A86528
Included Lab Sample IDs: 2024443

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
2,4-D	91.2	91.9	P/P	50 - 150
Bentazon	92.0	149	P/P	50 - 160
Ibuprofen	125	110	P/P	50 - 160
MCP	83.0	91.4	P/P	50 - 150
Naproxen	73.2	125	P/P	50 - 160
Triclopyr	90.5	81.7	P/P	50 - 160

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A86530
Included Lab Sample IDs: 2024425

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO ₂ NO ₃ -N	101	101	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A86531
Included Lab Sample IDs: 2024421, 2024425, 2024426

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	96.3	98.5	P/P	90 - 110
Ammonia-N	97.5	96.3	P/P	90 - 110
Ammonia-N	97.9	101	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A86551
Included Lab Sample IDs: 2024421, 2024425, 2024426

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	101	97.5	P/P	90 - 110
Kjeldahl Nitrogen	102	102	P/P	90 - 110
Kjeldahl Nitrogen	97.5	102	P/P	90 - 110

Reference Method: SM 5310 B-00
Run ID: A86572
Included Lab Sample IDs: 2024425

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	98.8	99.9	P/P	90 - 110

Reference Method: SM 5310 B-00
Run ID: A86574
Included Lab Sample IDs: 2024421, 2024426

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
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Quality Assurance Report Calibration Verification

Reference Method: SM 5310 B-00

Run ID: A86574

Included Lab Sample IDs: 2024421, 2024426

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	94.2	95.2	P/P	90 - 110

Reference Method: SM 2320 B-97

Run ID: A86586

Included Lab Sample IDs: 2024423

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	99.3	100	P/P	90 - 110

Reference Method: SM 4500 F-C-97

Run ID: A86586

Included Lab Sample IDs: 2024423

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	98.6	99.0	P/P	90 - 110

Reference Method: EPA 8321B

Run ID: A86696

Included Lab Sample IDs: 2024443

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Acetaminophen	71.1	76.9	P/P	60 - 160
Carbamazepine	110	101	P/P	60 - 160
Diuron	107	105	P/P	60 - 150
Fenuron	99.3	94.6	P/P	60 - 150
Fluridone	104	103	P/P	60 - 160
Hydrocodone	91.4	95.9	P/P	60 - 150
Imazapyr	82.9	77.4	P/P	50 - 150
Imidacloprid	80.7	82.8	P/P	60 - 150
Linuron	96.2	100	P/P	60 - 150
Primidone	86.3	80.2	P/P	60 - 150
Pyraclostrobin	103	105	P/P	60 - 150

* 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					2.83	
	Turbidity					2.33	
EPA 350.1 Rev. 2.0	Ammonia-N	99.0	97.8	101			2.56
	Ammonia-N	94.6	97.1	97.4			0.231
	Ammonia-N	92.7	91.4	91.6			0.169
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	102	94.6	97.5			1.49
	Kjeldahl Nitrogen	103	104	104			0.280
EPA 353.2 Rev. 2.0	NO2NO3-N	100	99.6	101			0.707
	NO2NO3-N	102	101	102			0.480
EPA 365.1 Rev. 2.0	Total-P	99.8	107	102			4.65
	Total-P	102	102	99.3			1.73
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	101	95.5	95.0			0.525
	O-Phosphate-P	100	95.6	97.1			1.40
EPA 8321B	2,4-D	95.8	139	144			3.06
	Acesulfame K	78.3	68.6	81.6			17.2
	Acetaminophen	83.5	76.4	69.6			9.28
	Bentazon	87.4	68.5	80.6			9.75
	Carbamazepine	89.2	65.8	60.9			7.80
	Diuron	79.5	57.8	51.6			11.3
	Fenuron	95.9	53.6	52.1			2.94
	Fluridone	79.3	83.4	77.5			7.11
	Hydrocodone	105	77.8	73.3			5.84
	Ibuprofen	109	102	103			1.39
	Imazapyr	77.5	89.4	86.9			1.67
	Imidacloprid	85.6	113	112			1.43
	Linuron	69.1	59.2	58.8			0.627
	MCPP	96.5	148	176			17.4
	Naproxen	102	137	142			3.24
	Primidone	69.6	62.7	61.4			2.18
	Pyraclostrobin	80.5	81.5	80.8			0.821
	Sucralose	100	117	114			2.41
	Triclopyr	95.0	167	178			6.32
SM 2320 B-97	Total Alkalinity	103				0.425	
	Total Alkalinity	101				0.155	
SM 4500 F-C-97	Fluoride	98.2	99.5	98.8			0.473
	Fluoride	98.1	96.1	96.1			0.0
SM 5310 B-00	Organic Carbon	99.4	99.3	100			1.03
	Organic Carbon	96.0	95.2	94.2			0.575

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	2024420, 2024423, 2024424
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	2024421, 2024425, 2024426
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	2024421, 2024425, 2024426
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	2024421, 2024425, 2024426
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	2024421, 2024425, 2024426
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2024422, 2024427, 2024428

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 8321B / E31780	Pesticides, herbicides, and other chemicals in water matrices by HPLC/MS/MS	2024443
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO ₃ /L	2024420, 2024423, 2024424
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2024420, 2024423, 2024424
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2024420, 2024423, 2024424
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	2024421, 2024425, 2024426

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
EPA 180.1 Rev. 2.0	09/12/2018			09/12/2018 17:42	Megan Treadwell	2024420, 2024423, 2024424
EPA 350.1 Rev. 2.0	09/12/2018			09/17/2018 14:43	Ping Hua	2024425
	09/12/2018			09/17/2018 16:18	Ping Hua	2024421
	09/12/2018			09/17/2018 16:37	Ping Hua	2024426
EPA 351.2 Rev. 2.0	09/12/2018	09/17/2018 15:30	Adrian Shelby	09/18/2018 12:05	Joseph Suarez	2024421
	09/12/2018	09/17/2018 15:30	Adrian Shelby	09/18/2018 12:17	Joseph Suarez	2024426
	09/12/2018	09/17/2018 15:30	Adrian Shelby	09/18/2018 12:44	Joseph Suarez	2024425
EPA 353.2 Rev. 2.0	09/12/2018			09/14/2018 12:53	Lauren Bottorf	2024421
	09/12/2018			09/14/2018 12:54	Lauren Bottorf	2024426
	09/12/2018			09/17/2018 14:05	Lauren Bottorf	2024425
EPA 365.1 Rev. 2.0	09/12/2018	09/13/2018 15:36	Sima Feizi	09/14/2018 13:13	Beverly Y. Sanders	2024425
	09/12/2018	09/14/2018 11:50	Sima Feizi	09/17/2018 09:53	Beverly Y. Sanders	2024421
	09/12/2018	09/14/2018 11:50	Sima Feizi	09/17/2018 09:54	Beverly Y. Sanders	2024426
EPA 365.1 Rev. 2.0 dissolved	09/12/2018			09/12/2018 15:52	Julia Storbeck	2024422
	09/12/2018			09/12/2018 15:53	Julia Storbeck	2024428
	09/12/2018			09/12/2018 15:54	Julia Storbeck	2024427
EPA 8321B	09/12/2018	09/13/2018 13:00	Mohammad Ghaffari	09/13/2018 18:41	Mohammad Ghaffari	2024443
	09/12/2018	09/13/2018 13:00	Mohammad Ghaffari	09/14/2018 20:41	Mohammad Ghaffari	2024443
	09/12/2018	09/13/2018 14:00	Hoor Shaik	09/16/2018 01:38	Juyoung Kim	2024443
	09/12/2018	09/13/2018 14:00	Hoor Shaik	09/23/2018 04:42	Mohammad Ghaffari	2024443
SM 2320 B-97	09/12/2018			09/14/2018 19:33	Dale L. Simmons	2024420
	09/12/2018			09/14/2018 19:44	Dale L. Simmons	2024424
	09/12/2018			09/19/2018 07:00	Dale L. Simmons	2024423
SM 2540 D-97	09/12/2018			09/14/2018 15:32	Yijie Li	2024420, 2024423, 2024424
SM 4500 F-C-97	09/12/2018			09/14/2018 19:33	Dale L. Simmons	2024420
	09/12/2018			09/14/2018 19:44	Dale L. Simmons	2024424
	09/12/2018			09/19/2018 05:50	Dale L. Simmons	2024423
SM 5310 B-00	09/12/2018			09/17/2018 22:15	Megan Treadwell	2024421
	09/12/2018			09/17/2018 22:29	Megan Treadwell	2024426
	09/12/2018			09/18/2018 11:56	Megan Treadwell	2024425