

Chemical Analysis Report

TLH-ROC-2019-07-02-01

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

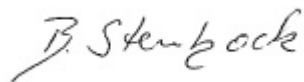
Event Description: **Run 3**
Request ID: **RQ-2019-06-17-41**
Customer: **TLH-ROC**
Project ID: **SMP**

Send Reports to:
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Certified by: Dr. rer. nat. Bettina Steinbock, Environmental Administrator

Date Certified: 26-JUL-2019 15:19



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, 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: Gulf of Mexico (Econfina River)

Collection Date/Time: 07/02/2019 11:10

Field ID: G1TLHR0043

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2100303	EPA 180.1 Rev. 2.0	Turbidity	2.9		NTU	P366659	
	EPA 300.0	Bromide	41		mg Br/L	P366795	
	SM 2320 B-97	Total Alkalinity	125		mg CaCO3/L	P366855	
	SM 2540 D-97	TSS	6	IA	mg/L	P367170	
	SM 4500 F-C-97	Fluoride	0.78		mg F/L	P366857	
2100304	EPA 350.1 Rev. 2.0	Ammonia-N	0.006		mg N/L	P366780	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.70		mg N/L	P366888	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P366881	
	EPA 365.1 Rev. 2.0	Total-P	0.026		mg P/L	P366791	
	SM 5310 B-00	Organic Carbon	9.4		mg C/L	P366800	
2100305	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.005	I	mg P/L	P366645	

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: AUCILLA RIVER @ MOUTH

Collection Date/Time: 07/02/2019 12:10

Field ID: G1TLHR0091

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2100300	EPA 180.1 Rev. 2.0	Turbidity	1.7		NTU	P366659	
	EPA 300.0	Bromide	20		mg Br/L	P366795	
	SM 2320 B-97	Total Alkalinity	134		mg CaCO3/L	P366855	
	SM 2540 D-97	TSS	4	I	mg/L	P367170	
	SM 4500 F-C-97	Fluoride	0.45		mg F/L	P367075	
2100301	EPA 350.1 Rev. 2.0	Ammonia-N	0.032		mg N/L	P366780	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.45		mg N/L	P366888	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.010		mg N/L	P366881	
	EPA 365.1 Rev. 2.0	Total-P	0.033		mg P/L	P366791	
	SM 5310 B-00	Organic Carbon	1.0	U	mg C/L	P366800	
2100302	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.019		mg P/L	P366645	
2100311	EPA 8321B	Acesulfame K**	0.10	U	ug/L	P366649	
		2,4-D	0.0020	U	ug/L	P366536	MS
		AMPA**	0.10	UJ	ug/L	P366649	MS, SUR
		Sucralose**	0.024	I	ug/L	P366649	
		Endothall**	0.25	U	ug/L	P366649	
		Acetaminophen**	0.0080	U	ug/L	P366536	
		Glufosinate**	0.10	UJ	ug/L	P366649	SUR
		Glyphosate**	0.10	UJ	ug/L	P366649	SUR
		Bentazon	8.0E-04	U	ug/L	P366536	
		Carbamazepine**	8.0E-04	U	ug/L	P366536	
		Diuron	0.0020	U	ug/L	P366536	RPD
		Fenuron	0.016	U	ug/L	P366536	
		Fluridone**	8.0E-04	U	ug/L	P366536	
		Imazapyr**	0.011	I	ug/L	P366536	
		Hydrocodone**	0.0020	U	ug/L	P366536	
		Ibuprofen**	0.020	U	ug/L	P366536	
		Imidacloprid	0.0020	U	ug/L	P366536	MS
		Linuron	0.0040	U	ug/L	P366536	
		MCP	0.0020	U	ug/L	P366536	MS
		Naproxen**	0.0080	U	ug/L	P366536	
		Primidone**	0.0040	U	ug/L	P366536	
		Pyraclostrobin**	0.0020	U	ug/L	P366536	
		Triclopyr**	0.0040	U	ug/L	P366536	
2100312	EPA 200.7 Rev. 4.4	Iron	150	I	ug/L	P366964	
		Manganese	19		ug/L	P366964	
		Zinc	15	U	ug/L	P366964	
	EPA 200.8 Rev. 5.4	Aluminum	78	I	ug/L	P366964	
		Antimony	0.20	U	ug/L	P366964	
		Arsenic	1.39		ug/L	P366964	
		Cadmium	0.080	U	ug/L	P366964	
		Chromium	4.0	U	ug/L	P366964	
		Copper	1.6	U	ug/L	P366964	

Field ID: G1TLHR0091

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2100312	EPA 200.8 Rev. 5.4	Lead	0.80	U	ug/L	P366964	
		Nickel	2.0	U	ug/L	P366964	
		Selenium	0.80	U	ug/L	P366964	
		Silver	0.040	U	ug/L	P366964	
		Thallium	0.40	U	ug/L	P366964	

Ref. Method and Comment:
SM 2540 D-97: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.
EPA 8321B: Refer to the narrative for an explanation of QC Codes. Surrogate spike recovery exceeding the control limits. Results confirmed in re-extraction.

Quality Assurance Report

Method Blank Results

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P366659

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P366964

Component	Result	Code	Units
Iron	30	U	ug/L
Manganese	1.0	U	ug/L
Zinc	5.0	U	ug/L

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P366964

Component	Result	Code	Units
Aluminum	5.0	U	ug/L
Antimony	0.050	U	ug/L
Arsenic	0.050	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
Batch ID: P366795

Component	Result	Code	Units
Bromide	0.013	U	mg Br/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P366780

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P366888

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P366881

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: P366791

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P366645

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

Reference Method: EPA 8321B
Batch ID: P366536

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	8.0E-04	U	ug/L
Hydrocodone	0.0020	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

Reference Method: EPA 8321B
Batch ID: P366649

Component	Result	Code	Units
Acesulfame K	0.10	U	ug/L
AMPA	0.10	U	ug/L
Endothall	0.25	U	ug/L
Glufosinate	0.10	U	ug/L
Glyphosate	0.10	U	ug/L
Sucralose	0.010	U	ug/L

Reference Method: SM 2320 B-97
Batch ID: P366855

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

Reference Method: SM 2540 D-97
Batch ID: P367170

Component	Result	Code	Units
TSS	3	U	mg/L

Quality Assurance Report

Method Blank Results

Reference Method: SM 4500 F-C-97
Batch ID: P366857

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 4500 F-C-97
Batch ID: P367075

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P366800

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: P366964

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Iron	106		P	85 - 115
Manganese	101		P	85 - 115
Zinc	98.4		P	85 - 115

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P366964

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Aluminum	105		P	80 - 120
Antimony	94.7		P	85 - 115
Arsenic	98.0		P	85 - 115
Cadmium	96.7		P	85 - 115
Chromium	93.9		P	85 - 115
Copper	99.7		P	80 - 120
Lead	104		P	80 - 120
Nickel	101		P	80 - 120
Selenium	99.3		P	85 - 115
Silver	98.0		P	85 - 115
Thallium	99.3		P	85 - 115

Reference Method: EPA 300.0
Batch ID: P366795

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P366780

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	107		P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P366888

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P366881

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
NO ₂ NO ₃ -N	102		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P366791

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

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 365.1 Rev. 2.0 dissolved
 Batch ID: P366645

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
O-Phosphate-P	97.4		P	90 - 110

Reference Method: EPA 8321B
 Batch ID: P366536

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2,4-D	122		P	40 - 150
Acetaminophen	83.5		P	30 - 150
Bentazon	97.6		P	30 - 150
Carbamazepine	92.0		P	40 - 150
Diuron	91.3		P	40 - 150
Fenuron	95.7		P	40 - 150
Fluridone	97.4		P	40 - 150
Hydrocodone	92.1		P	40 - 150
Ibuprofen	89.4		P	30 - 150
Imazapyr	98.1		P	40 - 150
Imidacloprid	89.4		P	40 - 150
Linuron	73.6		P	40 - 150
MCPP	138		P	40 - 150
Naproxen	82.9		P	40 - 150
Primidone	81.8		P	40 - 150
Pyraclostrobin	84.2		P	30 - 150
Triclopyr	103		P	30 - 150

Reference Method: EPA 8321B
 Batch ID: P366649

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Acesulfame K	127		P	40 - 150
AMPA	85.2		P	40 - 150
Endothall	105		P	40 - 150
Glufosinate	103		P	40 - 150
Glyphosate	94.8		P	40 - 140
Sucralose	104		P	40 - 150

Reference Method: SM 2320 B-97
 Batch ID: P366855

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	103		P	98 - 106

Reference Method: SM 4500 F-C-97
 Batch ID: P366857

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	98.6		P	92 - 103

Reference Method: SM 4500 F-C-97
 Batch ID: P367075

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	99.0		P	92 - 103

Quality Assurance Report

Laboratory Control Sample Accuracy

Reference Method: SM 5310 B-00
Batch ID: P366800

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: P366964

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2100312	Iron	101	102	P/P	70 - 130
2100312	Manganese	98.6	98.5	P/P	70 - 130
2100312	Zinc	102	102	P/P	70 - 130

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P366964

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2100312	Aluminum	125	122	P/P	70 - 130
2100312	Antimony	96.4	97.4	P/P	70 - 130
2100312	Arsenic	103	105	P/P	70 - 130
2100312	Cadmium	88.8	91.5	P/P	70 - 130
2100312	Chromium	90.8	88.4	P/P	70 - 130
2100312	Copper	100	99.2	P/P	70 - 130
2100312	Lead	113	110	P/P	70 - 130
2100312	Nickel	106	103	P/P	70 - 130
2100312	Selenium	90.3	90.0	P/P	70 - 130
2100312	Silver	92.1	92.1	P/P	70 - 130
2100312	Thallium	103	105	P/P	70 - 130

Reference Method: EPA 300.0
Batch ID: P366795

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2099104	Bromide	95.7	96.3	P/P	90 - 110
2099566	Bromide	96.0		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P366780

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2100301	Ammonia-N	108	107	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P366888

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2099564	Kjeldahl Nitrogen	92.3	97.6	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P366881

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2100259	NO2NO3-N	101	101	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P366791

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2100261	Total-P	94.8	96.3	P/P	90 - 110

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 365.1 Rev. 2.0 dissolved
 Batch ID: P366645

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2100302	O-Phosphate-P	93.8	94.9	P/P	90 - 110

Reference Method: EPA 8321B
 Batch ID: P366536

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2099202	2,4-D	141	151	P/F	40 - 150
2099202	Acetaminophen	104	107	P/P	30 - 150
2099202	Bentazon	92.4	93.3	P/P	30 - 150
2099202	Carbamazepine	109	109	P/P	40 - 150
2099202	Diuron	102	73.7	P/P	40 - 150
2099202	Fenuron	80.0	90.3	P/P	40 - 150
2099202	Fluridone	105	111	P/P	40 - 150
2099202	Hydrocodone	91.6	75.9	P/P	40 - 150
2099202	Ibuprofen	108	92.2	P/P	30 - 150
2099202	Imazapyr	147	119	P/P	40 - 150
2099202	Imidacloprid	156	163	F/F	40 - 150
2099202	Linuron	82.8	82.7	P/P	40 - 150
2099202	MCPP	168	174	F/F	40 - 150
2099202	Naproxen	105	104	P/P	40 - 150
2099202	Primidone	110	93.4	P/P	40 - 150
2099202	Pyraclostrobin	96.6	103	P/P	30 - 150
2099202	Triclopyr	130	131	P/P	30 - 150

Reference Method: EPA 8321B
 Batch ID: P366649

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2100044	Acesulfame K	107	99.7	P/P	40 - 150
2100044	AMPA	38.4	44.0	F/P	40 - 150
2100044	Endothall	97.6	98.1	P/P	40 - 150
2100044	Glufosinate	69.5	70.1	P/P	40 - 150
2100044	Glyphosate	61.6	64.6	P/P	40 - 140
2100044	Sucralose	111	116	P/P	40 - 150

Reference Method: SM 4500 F-C-97
 Batch ID: P366857

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2099974	Fluoride	98.6	99.2	P/P	89 - 106

Reference Method: SM 4500 F-C-97
 Batch ID: P367075

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2100300	Fluoride	96.4	97.1	P/P	89 - 106

Reference Method: SM 5310 B-00
 Batch ID: P366800

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2099325	Organic Carbon	92.5	91.7	P/P	85 - 115

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P366659

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2100256	Turbidity	4.84	Sample	P	0 - 20

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P366964

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2100312	Iron	0.405	Spike	P	0 - 20
2100312	Manganese	0.110	Spike	P	0 - 20
2100312	Zinc	0.186	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P366964

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2100312	Aluminum	2.60	Spike	P	0 - 20
2100312	Antimony	1.03	Spike	P	0 - 20
2100312	Arsenic	1.83	Spike	P	0 - 20
2100312	Cadmium	2.96	Spike	P	0 - 20
2100312	Chromium	2.70	Spike	P	0 - 20
2100312	Copper	1.27	Spike	P	0 - 20
2100312	Lead	2.41	Spike	P	0 - 20
2100312	Nickel	2.40	Spike	P	0 - 20
2100312	Selenium	0.309	Spike	P	0 - 20
2100312	Silver	0.0986	Spike	P	0 - 20
2100312	Thallium	2.49	Spike	P	0 - 20

Reference Method: EPA 300.0
Batch ID: P366795

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2099104	Bromide	0.496	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P366780

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2100301	Ammonia-N	0.736	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P366888

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2099564	Kjeldahl Nitrogen	4.40	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 353.2 Rev. 2.0
 Batch ID: P366881

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2100259	NO2NO3-N	0.0	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
 Batch ID: P366791

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2100261	Total-P	1.49	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
 Batch ID: P366645

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2100302	O-Phosphate-P	0.974	Spike	P	0 - 20

Reference Method: EPA 8321B
 Batch ID: P366536

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2099202	2,4-D	7.20	Spike	P	0 - 30
2099202	Acetaminophen	2.90	Spike	P	0 - 30
2099202	Bentazon	0.997	Spike	P	0 - 30
2099202	Carbamazepine	0.313	Spike	P	0 - 30
2099202	Diuron	32.1	Spike	F	0 - 30
2099202	Fenuron	12.1	Spike	P	0 - 30
2099202	Fluridone	5.52	Spike	P	0 - 30
2099202	Hydrocodone	18.7	Spike	P	0 - 30
2099202	Ibuprofen	16.2	Spike	P	0 - 30
2099202	Imazapyr	21.1	Spike	P	0 - 30
2099202	Imidacloprid	4.59	Spike	P	0 - 30
2099202	Linuron	0.228	Spike	P	0 - 30
2099202	MCP	3.60	Spike	P	0 - 30
2099202	Naproxen	1.22	Spike	P	0 - 30
2099202	Primidone	16.6	Spike	P	0 - 30
2099202	Pyraclostrobin	6.55	Spike	P	0 - 30
2099202	Triclopyr	0.630	Spike	P	0 - 30

Reference Method: EPA 8321B
 Batch ID: P366649

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2100044	Acesulfame K	7.24	Spike	P	0 - 30
2100044	AMPA	9.19	Spike	P	0 - 30
2100044	Endothall	0.554	Spike	P	0 - 30
2100044	Glufosinate	0.928	Spike	P	0 - 30
2100044	Glyphosate	2.45	Spike	P	0 - 30
2100044	Sucralose	4.26	Spike	P	0 - 30

Quality Assurance Report Precision

Reference Method: SM 2320 B-97
 Batch ID: P366855

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2099974	Total Alkalinity	0.388	Sample	P	0 - 2.8

Reference Method: SM 4500 F-C-97
 Batch ID: P366857

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2099974	Fluoride	0.477	Spike	P	0 - 2.5

Reference Method: SM 4500 F-C-97
 Batch ID: P367075

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2100300	Fluoride	0.470	Spike	P	0 - 2.5

Reference Method: SM 5310 B-00
 Batch ID: P366800

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2099325	Organic Carbon	0.816	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 Surrogates

Lab Sample ID: 2100311

Field Sample ID: G1TLHR0091

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	2,4-D-d3	137	P	30 - 160
EPA 8321B	Acetaminophen-d4	100	P	30 - 160
EPA 8321B	Carbamazepine-d10	105	P	30 - 160
EPA 8321B	Diuron-d6	89.2	P	30 - 160
EPA 8321B	Endothall-d6	98.8	P	30 - 160
EPA 8321B	Endothall-d6	98.8	P	30 - 160
EPA 8321B	Glyphosate 13C 15N	3.42	F	30 - 160
EPA 8321B	Glyphosate 13C 15N	3.42	F	30 - 160
EPA 8321B	Ibuprofen-d3	78.7	P	30 - 160
EPA 8321B	Primidone-d5	107	P	30 - 160
EPA 8321B	Sucralose-d6	140	P	30 - 160
EPA 8321B	Sucralose-d6	140	P	30 - 160

Quality Assurance Report

Calibration Verification

Reference Method: EPA 300.0

Run ID: A92511

Included Lab Sample IDs: 2100300, 2100303

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Bromide	106	104	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved

Run ID: A92513

Included Lab Sample IDs: 2100302, 2100305

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	100	100	P/P	90 - 110
O-Phosphate-P	99.2	102	P/P	90 - 110

Reference Method: EPA 180.1 Rev. 2.0

Run ID: A92518

Included Lab Sample IDs: 2100300, 2100303

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Turbidity	102	101	P/P	95 - 105

Reference Method: EPA 8321B

Run ID: A92569

Included Lab Sample IDs: 2100311

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
2,4-D	91.6	109	P/P	50 - 150
Acetaminophen	104	118	P/P	60 - 160
Bentazon	106	105	P/P	50 - 160
Carbamazepine	106	100	P/P	60 - 150
Diuron	110	114	P/P	60 - 150
Fenuron	101	109	P/P	60 - 150
Fluridone	110	112	P/P	60 - 160
Hydrocodone	109	100	P/P	60 - 150
Ibuprofen	85.6	96.9	P/P	50 - 160
Imazapyr	95.2	106	P/P	50 - 150
Imidacloprid	100	100	P/P	60 - 150
Linuron	99.2	94.8	P/P	60 - 150
MCPP	92.5	93.8	P/P	50 - 150
Naproxen	118	117	P/P	50 - 160
Primidone	94.4	96.2	P/P	60 - 150
Pyraclostrobin	110	105	P/P	60 - 150
Triclopyr	108	94.1	P/P	50 - 150

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A92578

Included Lab Sample IDs: 2100301, 2100304

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	108	109	P/P	90 - 110
Ammonia-N	109	110	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: SM 5310 B-00

Run ID: A92585

Included Lab Sample IDs: 2100301, 2100304

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	95.6	95.8	P/P	90 - 110

Reference Method: EPA 8321B

Run ID: A92587

Included Lab Sample IDs: 2100311

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
AMPA	91.7	93.0	P/P	60 - 160
Glufosinate	99.8	104	P/P	60 - 160
Glyphosate	104	106	P/P	60 - 160

Reference Method: EPA 8321B

Run ID: A92594

Included Lab Sample IDs: 2100311

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Acesulfame K	93.8	87.6	P/P	60 - 160
Endothall	99.6	99.5	P/P	60 - 160

Reference Method: SM 2320 B-97

Run ID: A92633

Included Lab Sample IDs: 2100300, 2100303

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	104	101	P/P	90 - 110

Reference Method: SM 4500 F-C-97

Run ID: A92633

Included Lab Sample IDs: 2100303

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	99.5	98.1	P/P	90 - 110

Reference Method: EPA 8321B

Run ID: A92635

Included Lab Sample IDs: 2100311

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Sucralose	104	104	P/P	60 - 160

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A92638

Included Lab Sample IDs: 2100301, 2100304

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	98.5	100	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A92647

Included Lab Sample IDs: 2100301, 2100304

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	99.5	102	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A92675

Included Lab Sample IDs: 2100301, 2100304

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	98.1	99.7	P/P	90 - 110

Reference Method: SM 4500 F-C-97

Run ID: A92708

Included Lab Sample IDs: 2100300

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

Reference Method: EPA 200.7 Rev. 4.4

Run ID: A92720

Included Lab Sample IDs: 2100312

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Iron	102	100	P/P	90 - 110
Manganese	103	102	P/P	90 - 110
Zinc	101	99.8	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A92748

Included Lab Sample IDs: 2100312

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Aluminum	105	108	P/P	90 - 110
Copper	100	103	P/P	90 - 110
Lead	102	102	P/P	90 - 110
Nickel	101	102	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A92823

Included Lab Sample IDs: 2100312

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Antimony	93.7	94.6	P/P	90 - 110
Arsenic	96.5	97.2	P/P	90 - 110
Cadmium	94.8	94.9	P/P	90 - 110
Chromium	96.0	91.7	P/P	90 - 110
Silver	95.3	95.5	P/P	90 - 110
Thallium	92.8	93.4	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A92879

Included Lab Sample IDs: 2100312

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Selenium	101	101	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					4.84	
EPA 200.7 Rev. 4.4	Iron	106	101	102			0.405
	Manganese	101	98.6	98.5			0.110
	Zinc	98.4	102	102			0.186
EPA 200.8 Rev. 5.4	Aluminum	105	125	122			2.60
	Antimony	94.7	96.4	97.4			1.03
	Arsenic	98.0	103	105			1.83
	Cadmium	96.7	88.8	91.5			2.96
	Chromium	93.9	90.8	88.4			2.70
	Copper	99.7	100	99.2			1.27
	Lead	104	113	110			2.41
	Nickel	101	106	103			2.40
	Selenium	99.3	90.3	90.0			0.309
	Silver	98.0	92.1	92.1			0.0986
	Thallium	99.3	103	105			2.49
EPA 300.0	Bromide	97.6	95.7	96.3	96.0		0.496
EPA 350.1 Rev. 2.0	Ammonia-N	107	108	107			0.736
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	100	92.3	97.6			4.40
EPA 353.2 Rev. 2.0	NO2NO3-N	102	101	101			0.0
EPA 365.1 Rev. 2.0	Total-P	101	94.8	96.3			1.49
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	97.4	93.8	94.9			0.974
EPA 8321B	2,4-D	122	151	141			7.20
	Acesulfame K	127	107	99.7			7.24
	Acetaminophen	83.5	104	107			2.90
	AMPA	85.2	38.4	44.0			9.19
	Bentazon	97.6	93.3	92.4			0.997
	Carbamazepine	92.0	109	109			0.313
	Diuron	91.3	73.7	102			32.1
	Endothall	105	97.6	98.1			0.554
	Fenuron	95.7	90.3	80.0			12.1
	Fluridone	97.4	111	105			5.52
	Glufosinate	103	69.5	70.1			0.928
	Glyphosate	94.8	61.6	64.6			2.45
	Hydrocodone	92.1	91.6	75.9			18.7
	Ibuprofen	89.4	108	92.2			16.2
	Imazapyr	98.1	119	147			21.1
	Imidacloprid	89.4	163	156			4.59
	Linuron	73.6	82.7	82.8			0.228
	MCPP	138	168	174			3.60
	Naproxen	82.9	105	104			1.22
	Primidone	81.8	110	93.4			16.6
	Pyraclostrobin	84.2	103	96.6			6.55
	Sucralose	104	111	116			4.26
	Triclopyr	103	130	131			0.630
SM 2320 B-97	Total Alkalinity	103				0.388	
SM 4500 F-C-97	Fluoride	98.6	98.6	99.2			0.477
	Fluoride	99.0	96.4	97.1			0.470
SM 5310 B-00	Organic Carbon	96.2	92.5	91.7			0.816

Reference Method Descriptions

Method / DoH Cert #

Description

Associated Samples

Reference Method Descriptions

Method / DoH Cert #	Description	<u>Associated Samples</u>
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	2100300, 2100303
EPA 200.7 Rev. 4.4 / E31780	Total Recoverable Metals analysis using ICP emission spectroscopy for aqueous samples supporting Clean Water Act Projects	2100312
EPA 200.8 Rev. 5.4 / E31780	Total Recoverable Metals analysis using ICP-MS for aqueous samples supporting Clean Water Act Projects	2100312
EPA 300.0 / E31780	Bromide in aqueous matrices	2100300, 2100303
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	2100301, 2100304
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	2100301, 2100304
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	2100301, 2100304
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	2100301, 2100304
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2100302, 2100305
EPA 8321B / E31780	Pesticides, herbicides, and other chemicals in water matrices by HPLC/MS/MS	2100311
EPA 8321B / E31780	Water soluble organic compounds by HPLC/MS/MS	2100311
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO ₃ /L	2100300, 2100303
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2100300, 2100303
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2100300, 2100303
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	2100301, 2100304

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	07/02/2019			07/02/2019 16:56	Adrian Shelby	2100300, 2100303
EPA 200.7 Rev. 4.4	07/02/2019	07/10/2019 16:15	Elliott D. Healy	07/11/2019 14:05	Vijayalakshmi Reddy	2100312
EPA 200.8 Rev. 5.4	07/02/2019	07/10/2019 16:15	Elliott D. Healy	07/12/2019 20:13	Robert K Palmer	2100312
	07/02/2019	07/10/2019 16:15	Elliott D. Healy	07/16/2019 17:19	Robert K Palmer	2100312
	07/02/2019	07/10/2019 16:15	Elliott D. Healy	07/16/2019 18:25	Robert K Palmer	2100312
	07/02/2019	07/10/2019 16:15	Elliott D. Healy	07/18/2019 17:15	Robert K Palmer	2100312
EPA 300.0	07/02/2019			07/05/2019 18:07	Jhamieka S. Greenwood	2100300
	07/02/2019			07/05/2019 18:24	Jhamieka S. Greenwood	2100303
EPA 350.1 Rev. 2.0	07/02/2019			07/06/2019 12:28	Ping Hua	2100301
	07/02/2019			07/06/2019 12:39	Ping Hua	2100304
EPA 351.2 Rev. 2.0	07/02/2019	07/09/2019 12:45	Adrian Shelby	07/10/2019 10:16	Joseph Suarez	2100301
	07/02/2019	07/09/2019 12:45	Adrian Shelby	07/10/2019 10:17	Joseph Suarez	2100304
EPA 353.2 Rev. 2.0	07/02/2019			07/09/2019 12:28	Beverly Y. Sanders	2100301
	07/02/2019			07/09/2019 12:29	Beverly Y. Sanders	2100304
EPA 365.1 Rev. 2.0	07/02/2019	07/08/2019 11:04	Joseph Suarez	07/09/2019 10:38	Lipi Saha	2100301
	07/02/2019	07/08/2019 11:04	Joseph Suarez	07/09/2019 10:39	Lipi Saha	2100304
EPA 365.1 Rev. 2.0 dissolved	07/02/2019			07/02/2019 17:13	Jhamieka S. Greenwood	2100302
	07/02/2019			07/02/2019 17:39	Jhamieka S. Greenwood	2100305
EPA 8321B	07/02/2019	07/03/2019 09:15	Rebecca Ware	07/05/2019 11:17	Mohammad Ghaffari	2100311
	07/02/2019	07/03/2019 09:15	Rebecca Ware	07/05/2019 21:38	Mohammad Ghaffari	2100311
	07/02/2019	07/03/2019 09:15	Rebecca Ware	07/08/2019 23:58	Rebecca Ware	2100311
	07/02/2019	07/03/2019 12:30	Hoor Shaik	07/04/2019 12:37	Juyoung Kim	2100311
SM 2320 B-97	07/02/2019			07/08/2019 21:16	Dale L. Simmons	2100300
	07/02/2019			07/08/2019 21:28	Dale L. Simmons	2100303
SM 2540 D-97	07/02/2019			07/05/2019 13:29	Yijie Li	2100300, 2100303
SM 4500 F-C-97	07/02/2019			07/08/2019 19:43	Dale L. Simmons	2100303
	07/02/2019			07/11/2019 02:02	Dale L. Simmons	2100300
SM 5310 B-00	07/02/2019			07/06/2019 10:01	Madeline Funaro	2100301
	07/02/2019			07/06/2019 10:18	Madeline Funaro	2100304