

Chemical Analysis Report

TLH-ROC-2019-04-08-01

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

Event Description: **Run 1**
Request ID: **RQ-2018-12-31-28**
Customer: **TLH-ROC**
Project ID: **SMP**

Send Reports to:
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Tallahassee, FL 32399
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Date Certified: 23-APR-2019 11:50



Case Narrative

Unless otherwise noted, all samples included in this report were received in accordance with protocols referenced in Chapter 62-160, Florida Administrative Code (F.A.C.). Results published in this report pertain only to the samples as submitted to, and received by the laboratory. All times in this report are adjusted to the applicable Eastern Time Zone (EST or EDT).

Results for the following analytical groups are included in this report: Nutrients and Pesticides.

Scientific notation may be used in reporting very large or small values. Values reported using scientific notation will take the form of the following example: 1.3E+03, which is equivalent to 1.3×10^3 or 1300.

Unless otherwise noted, analytical values for soil and sediment samples are reported on a dry weight basis, and analytical values for waste and tissue samples are reported on a wet weight basis.

Results for TNI accredited tests met requirements established by The NELAC Institute. A double asterisk (**) is used to indicate an analyte/matrix/method for which the laboratory is not TNI accredited by the Florida Department of Health Environmental Laboratory Certification Program or where accreditation for that field of testing is not applicable.

Any significant anomalies or deviations from established protocols are documented in Non-Conformance Reports, which, where appropriate, are included within this analytical report. Additional comments related to specific analytical tests may be included as remarks following the analytical results for each sample. Such comments and remarks are for informational purposes only and are not intended to convey judgement about the usability of the reported data.

A quality control report on the performance of the test method for the submitted samples is included. Uncertainty associated with the analytical results contained in this report can be estimated from the reported quality assurance results and from published quality control acceptance limits for each analytical test. Matrix quality control results (matrix spike recoveries and matrix sample precision) pertain only to the matrix sample tested and do not necessarily reflect test method performance for other samples.

Typical matrix quality control (QC) measurements may include matrix spike recovery, matrix spike duplicate recovery, matrix spike precision and matrix sample precision. Not all matrix QC results may be available or reportable; where they are not an explanation is provided. Typical reasons for unavailable QC results include, but are not limited to, a) insufficient matrix sample to perform some or all QC measurements; b) analyte concentration in the sample replicated was too low for a meaningful measurement of precision and c) analyte concentration in the matrix sample spiked was too high (relative to the amount of analyte spiked) for a meaningful measurement of recovery. Where matrix QC results are unavailable, other method performance metrics (e.g., LCS recovery, LCS precision, surrogate recovery) may be used to assess performance of the method. Comments explaining any missing QC measurements are not intended to convey any adverse conclusions about the quality of the reported data.

Precision is reported as relative percent difference unless otherwise noted.

Quality Control codes as defined below may be used in this report to indicate results that are associated with one or more quality control elements which did not fall within established test method criteria. Such results may be qualified as estimates using a J qualifier as required by 62-160 F.A.C. Explanations are included in the report for any results that were reported as estimates for other reasons.

QC Codes used in this report may include:

- LCS – Recovery for the batch Laboratory Control Sample (LCS) was outside existing control limits;
- MS – Recovery for the batch matrix spike (MS) was outside existing control limits;
- CCV – Recovery for a continuing calibration verification (CCV) standard was outside existing control limits;
- SUR – Recovery of a surrogate (SUR) for associated analytes was outside existing control limits;
- RPD – The precision, measured as relative percent difference (RPD), of batch replicate measurements was outside existing control limits;
- RSD – The precision, measured as relative standard deviation (RSD), of batch replicate measurements was outside existing control limits;
- SMP – Sample - used precision derived from replicate analyses of a sample;

The following data qualifiers are used, where applicable, in this report as specified in 62-160 F.A.C.

- A - Value reported is the mean of two or more determinations.
- B - Results based on colony counts outside the acceptable range.
- I - The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit.
- J - Estimated value and/or the analysis did not meet established quality control criteria.
- K - Actual value is known to be less than value given.
- L - Actual value is known to be greater than value given.
- N - Presumptive evidence of presence of material.
- O - Sampled, but analysis lost or not performed.
- Q - Sample held beyond normal holding time.
- T - Value reported is less than the criterion of detection.
- U - Material was analyzed for but not detected. The reported value is the method detection limit for the sample analyzed.
- V - Analyte was detected in both sample and method blank.
- X - Too few individuals to calculate SCI value.
- Y - The laboratory analysis was from an unpreserved or improperly preserved sample. The data may not be accurate.
- Z - Colonies were too numerous to count (TNTC).

Quality control information from overflow laboratories may not be included in this report. Please refer to the associated report from the overflow laboratory for additional information.

Sample Location: SUGAR CREEK @ SUWANNEE RIV

Collection Date/Time: 04/08/2019 13:20

Field ID: G1TLHR0047

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2076367	EPA 180.1 Rev. 2.0	Turbidity	6.8		NTU	P361818	
	EPA 300.0 Rev. 2.1	Chloride	8.5		mg Cl/L	P362192	
		Sulfate	7.5		mg SO4/L	P362194	
	SM 2120 B	Color (true)	120	A	PCU	P361860	
	SM 2320 B-97	Total Alkalinity	31		mg CaCO3/L	P362173	RPD
	SM 2540 C-97	TDS	107		mg/L	P362413	
	SM 2540 D-97	TSS	8	I	mg/L	P362140	
	SM 4500 F-C-97	Fluoride	0.46		mg F/L	P362179	
	EPA 350.1 Rev. 2.0	Ammonia-N	0.015		mg N/L	P362282	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.53		mg N/L	P362156	
2076368	EPA 353.2 Rev. 2.0	NO2NO3-N	0.022		mg N/L	P362333	
	EPA 365.1 Rev. 2.0	Total-P	0.90		mg P/L	P362082	
	SM 5310 B-00	Organic Carbon	12		mg C/L	P361976	
	EPA 365.1 Rev. 2.0	O-Phosphate-P	0.70		mg P/L	P361837	
	dissolved						
2076373	EPA 8321B	2,4-D	0.0020	U	ug/L	P361794	
		Acesulfame K**	0.10	UJ	ug/L	P361901	MS
		AMPA**	0.17	I	ug/L	P361901	
		Sucralose**	0.012	I	ug/L	P361901	
		Endothall**	0.25	U	ug/L	P361901	
		Acetaminophen**	0.0080	U	ug/L	P361794	
		Glufosinate**	0.10	U	ug/L	P361901	
		Bentazon	8.0E-04	U	ug/L	P361794	
		Glyphosate**	0.10	UJ	ug/L	P361901	MS
		Carbamazepine**	8.0E-04	U	ug/L	P361794	
		Diuron	0.0020	U	ug/L	P361794	
		Fenuron	0.018	I	ug/L	P361794	
		Fluridone**	8.0E-04	U	ug/L	P361794	
		Imazapyr**	0.0040	U	ug/L	P361794	
		Hydrocodone**	0.0020	U	ug/L	P361794	
		Ibuprofen**	0.020	U	ug/L	P361794	
		Imidacloprid	0.0044	I	ug/L	P361794	MS
		Linuron	0.0040	U	ug/L	P361794	
		MCP	0.0020	U	ug/L	P361794	
		Naproxen**	0.0080	U	ug/L	P361794	
		Primidone**	0.0040	U	ug/L	P361794	
		Pyraclostrobin**	0.0020	U	ug/L	P361794	
		Triclopyr**	0.0040	U	ug/L	P361794	

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.

Quality Assurance Report Method Blank Results

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P361818

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P362192

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P362194

Component	Result	Code	Units
Sulfate	0.20	U	mg SO ₄ /L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P362282

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P362156

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P362333

Component	Result	Code	Units
NO ₂ NO ₃ -N	0.004	U	mg N/L

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P362082

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P361837

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

Reference Method: EPA 8321B
Batch ID: P361794

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

Quality Assurance Report Method Blank Results

Reference Method: EPA 8321B
Batch ID: P361794

Component	Result	Code	Units
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: P361901

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 2120 B
Batch ID: P361860

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
Batch ID: P362173

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

Reference Method: SM 2540 C-97
Batch ID: P362413

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P362140

Component	Result	Code	Units
TSS	2	U	mg/L

Quality Assurance Report

Method Blank Results

Reference Method: SM 4500 F-C-97
Batch ID: P362179

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P361976

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

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P362192

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P362194

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P362282

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	99.9		P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P362156

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P362333

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P362082

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P361837

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

Reference Method: EPA 8321B
Batch ID: P361794

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2,4-D	72.6		P	40 - 150
Acetaminophen	82.7		P	30 - 150
Bentazon	86.7		P	30 - 150
Carbamazepine	81.0		P	40 - 150
Diuron	69.9		P	40 - 150
Fenuron	96.3		P	40 - 150
Fluridone	99.0		P	40 - 150
Hydrocodone	79.3		P	40 - 150
Ibuprofen	99.9		P	40 - 150
Imazapyr	84.3		P	40 - 150

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 8321B
Batch ID: P361794

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Imidacloprid	87.5		P	40 - 150
Linuron	74.6		P	40 - 150
MCPP	86.7		P	40 - 150
Naproxen	61.3		P	40 - 150
Primidone	72.0		P	40 - 150
Pyraclostrobin	61.2		P	40 - 150
Triclopyr	51.1		P	40 - 150

Reference Method: EPA 8321B
Batch ID: P361901

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Acesulfame K	117		P	40 - 150
AMPA	96.9		P	40 - 150
Endothall	113		P	40 - 150
Glufosinate	116		P	40 - 150
Glyphosate	83.8		P	40 - 140
Sucralose	108		P	40 - 150

Reference Method: SM 2120 B
Batch ID: P361860

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Color (true)	99.9		P	85 - 115

Reference Method: SM 2320 B-97
Batch ID: P362173

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	101		P	98 - 106

Reference Method: SM 4500 F-C-97
Batch ID: P362179

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	99.5		P	92 - 103

Reference Method: SM 5310 B-00
Batch ID: P361976

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	102		P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P362192

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2076120	Chloride	95.7		P	90 - 110
2076145	Chloride	92.0		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P362194

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2076120	Sulfate	96.9		P	90 - 110
2076145	Sulfate	94.8		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P362282

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2076333	Ammonia-N	99.7	101	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P362156

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2076393	Kjeldahl Nitrogen	106	103	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P362333

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2076777	NO2NO3-N	98.5	99.0	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P362082

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2076333	Total-P	100	101	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P361837

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2076398	O-Phosphate-P	97.5	98.1	P/P	90 - 110

Reference Method: EPA 8321B
Batch ID: P361794

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2076485	2,4-D	66.0	72.2	P/P	40 - 150
2076485	Acetaminophen	77.8	82.4	P/P	30 - 150
2076485	Bentazon	91.4	122	P/P	30 - 150
2076485	Carbamazepine	78.0	87.7	P/P	40 - 150
2076485	Diuron	60.8	68.5	P/P	40 - 150
2076485	Fenuron	104	104	P/P	40 - 150
2076485	Fluridone	134	110	P/P	40 - 150
2076485	Hydrocodone	91.3	92.9	P/P	40 - 150

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 8321B
Batch ID: P361794

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2076485	Ibuprofen	70.6	61.8	P/P	40 - 150
2076485	Imazapyr	74.4	72.7	P/P	40 - 150
2076485	Imidacloprid	136	162	P/F	40 - 150
2076485	Linuron	74.2	58.7	P/P	40 - 150
2076485	MCPP	92.8	105	P/P	40 - 150
2076485	Naproxen	57.9	69.1	P/P	40 - 150
2076485	Primidone	71.7	63.1	P/P	40 - 150
2076485	Pyraclostrobin	76.2	98.0	P/P	40 - 150
2076485	Triclopyr	46.6	55.9	P/P	40 - 150

Reference Method: EPA 8321B
Batch ID: P361901

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2076373	Acesulfame K	178	234	F/F	40 - 150
2076373	AMPA	94.3	95.6	P/P	40 - 150
2076373	Endothall	76.1	77.6	P/P	40 - 150
2076373	Glufosinate	108	109	P/P	40 - 150
2076373	Glyphosate	145	151	F/F	40 - 140
2076373	Sucralose	95.1	97.4	P/P	40 - 150

Reference Method: SM 4500 F-C-97
Batch ID: P362179

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2076930	Fluoride	100	100	P/P	89 - 106

Reference Method: SM 5310 B-00
Batch ID: P361976

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2076492	Organic Carbon	102	95.8	P/P	85 - 115

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P361818

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2076375	Turbidity	1.46	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P362192

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2076120	Chloride	0.227	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P362194

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2076120	Sulfate	0.549	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P362282

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2076333	Ammonia-N	1.51	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P362156

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2076393	Kjeldahl Nitrogen	1.49	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P362333

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2076777	NO2NO3-N	0.259	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P362082

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2076333	Total-P	0.956	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P361837

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2076398	O-Phosphate-P	0.613	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 8321B
Batch ID: P361794

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2076485	2,4-D	8.99	Spike	P	0 - 30
2076485	Acetaminophen	5.73	Spike	P	0 - 30
2076485	Bentazon	8.92	Spike	P	0 - 30
2076485	Carbamazepine	11.0	Spike	P	0 - 30
2076485	Diuron	11.9	Spike	P	0 - 30
2076485	Fenuron	0.624	Spike	P	0 - 30
2076485	Fluridone	9.07	Spike	P	0 - 30
2076485	Hydrocodone	1.75	Spike	P	0 - 30
2076485	Ibuprofen	13.2	Spike	P	0 - 30
2076485	Imazapyr	1.83	Spike	P	0 - 30
2076485	Imidacloprid	16.2	Spike	P	0 - 30
2076485	Linuron	23.3	Spike	P	0 - 30
2076485	MCP	12.3	Spike	P	0 - 30
2076485	Naproxen	17.6	Spike	P	0 - 30
2076485	Primidone	12.8	Spike	P	0 - 30
2076485	Pyraclostrobin	25.1	Spike	P	0 - 30
2076485	Triclopyr	18.1	Spike	P	0 - 30

Reference Method: EPA 8321B
Batch ID: P361901

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2076373	Acesulfame K	27.0	Spike	P	0 - 30
2076373	AMPA	1.15	Spike	P	0 - 30
2076373	Endothall	2.04	Spike	P	0 - 30
2076373	Glufosinate	1.29	Spike	P	0 - 30
2076373	Glyphosate	4.32	Spike	P	0 - 30
2076373	Sucralose	2.34	Spike	P	0 - 30

Reference Method: SM 2120 B
Batch ID: P361860

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2076367	Color (true)	0.406	Sample	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P362173

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2076930	Total Alkalinity	8.08	Sample	F	0 - 2.8

Reference Method: SM 2540 C-97
Batch ID: P362413

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2076183	TDS	2.49	Sample	P	0 - 10

Quality Assurance Report Precision

Reference Method: SM 4500 F-C-97
Batch ID: P362179

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2076930	Fluoride	0.0	Spike	P	0 - 2.5

Reference Method: SM 5310 B-00
Batch ID: P361976

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2076492	Organic Carbon	3.46	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: 2076373

Field Sample ID: G1TLHR0047

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	2,4-D-d3	77.9	P	30 - 160
EPA 8321B	Acetaminophen-d4	92.8	P	30 - 160
EPA 8321B	Carbamazepine-d10	87.7	P	30 - 160
EPA 8321B	Diuron-d6	74.4	P	30 - 160
EPA 8321B	Endothall-d6	69.7	P	30 - 160
EPA 8321B	Endothall-d6	69.7	P	30 - 160
EPA 8321B	Glyphosate 13C 15N	158	P	30 - 160
EPA 8321B	Glyphosate 13C 15N	158	P	30 - 160
EPA 8321B	Ibuprofen-d3	118	P	30 - 160
EPA 8321B	Primidone-d5	74.7	P	30 - 160
EPA 8321B	Sucralose-d6	85.9	P	30 - 160
EPA 8321B	Sucralose-d6	85.9	P	30 - 160

Quality Assurance Report Calibration Verification

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A90538

Included Lab Sample IDs: 2076367

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	102	103	P/P	90 - 110
Sulfate	101	103	P/P	90 - 110

Reference Method: EPA 180.1 Rev. 2.0

Run ID: A90551

Included Lab Sample IDs: 2076367

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Turbidity	99.5	99.5	P/P	95 - 105

Reference Method: EPA 365.1 Rev. 2.0 dissolved

Run ID: A90555

Included Lab Sample IDs: 2076369

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	99.6	97.0	P/P	90 - 110

Reference Method: SM 2120 B

Run ID: A90564

Included Lab Sample IDs: 2076367

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

Reference Method: SM 5310 B-00

Run ID: A90618

Included Lab Sample IDs: 2076368

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

Reference Method: EPA 8321B

Run ID: A90662

Included Lab Sample IDs: 2076373

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Acesulfame K	110	119	P/P	60 - 160
Endothall	102	126	P/P	60 - 160

Reference Method: EPA 8321B

Run ID: A90675

Included Lab Sample IDs: 2076373

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
AMPA	92.4	102	P/P	60 - 160
Glufosinate	104	116	P/P	60 - 160
Glyphosate	83.6	109	P/P	60 - 160

Quality Assurance Report Calibration Verification

Reference Method: SM 2320 B-97
Run ID: A90703
Included Lab Sample IDs: 2076367

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	97.5	101	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Run ID: A90703
Included Lab Sample IDs: 2076367

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

Reference Method: EPA 8321B
Run ID: A90706
Included Lab Sample IDs: 2076373

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Sucralose	120	102	P/P	60 - 160

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A90722
Included Lab Sample IDs: 2076368

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

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A90751
Included Lab Sample IDs: 2076368

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	99.6	97.4	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A90762
Included Lab Sample IDs: 2076368

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	102	101	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A90779
Included Lab Sample IDs: 2076368

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	99.0	98.5	P/P	90 - 110

Reference Method: EPA 8321B
Run ID: A90848
Included Lab Sample IDs: 2076373

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
2,4-D	83.8	95.6	P/P	50 - 150
Acetaminophen	105	112	P/P	60 - 160

Quality Assurance Report Calibration Verification

Reference Method: EPA 8321B

Run ID: A90848

Included Lab Sample IDs: 2076373

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Bentazon	109	98.7	P/P	50 - 160
Carbamazepine	107	86.3	P/P	60 - 150
Diuron	101	102	P/P	60 - 150
Fenuron	98.1	98.0	P/P	60 - 150
Fluridone	99.5	96.1	P/P	60 - 160
Hydrocodone	91.3	82.0	P/P	60 - 150
Ibuprofen	146	152	P/P	50 - 160
Imazapyr	80.4	103	P/P	50 - 150
Imidacloprid	101	94.0	P/P	60 - 150
Linuron	95.5	102	P/P	60 - 150
MCPP	88.9	94.4	P/P	50 - 150
Naproxen	98.3	88.0	P/P	50 - 160
Primidone	83.7	84.3	P/P	60 - 150
Pyraclostrobin	105	101	P/P	60 - 150
Triclopyr	93.5	100	P/P	50 - 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		Precision	
					LCS	MS
EPA 180.1 Rev. 2.0	Turbidity				1.46	
EPA 300.0 Rev. 2.1	Chloride	100	95.7	92.0	0.227	
	Sulfate	99.8	96.9	94.8	0.549	
EPA 350.1 Rev. 2.0	Ammonia-N	99.9	99.7	101		1.51
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	102	106	103		1.49
EPA 353.2 Rev. 2.0	NO ₂ NO ₃ -N	100	98.5	99.0		0.259
EPA 365.1 Rev. 2.0	Total-P	103	100	101		0.956
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	98.5	97.5	98.1		0.613
EPA 8321B	2,4-D	72.6	66.0	72.2		8.99
	Acesulfame K	117	178	234		27.0
	Acetaminophen	82.7	77.8	82.4		5.73
	AMPA	96.9	94.3	95.6		1.15
	Bentazon	86.7	91.4	122		8.92
	Carbamazepine	81.0	78.0	87.7		11.0
	Diuron	69.9	60.8	68.5		11.9
	Endothall	113	76.1	77.6		2.04
	Fenuron	96.3	104	104		0.624
	Fluridone	99.0	134	110		9.07
	Glufosinate	116	108	109		1.29
	Glyphosate	83.8	145	151		4.32
	Hydrocodone	79.3	91.3	92.9		1.75
	Ibuprofen	99.9	70.6	61.8		13.2
	Imazapyr	84.3	74.4	72.7		1.83
	Imidacloprid	87.5	136	162		16.2
	Linuron	74.6	74.2	58.7		23.3
	MCPP	86.7	92.8	105		12.3
	Naproxen	61.3	57.9	69.1		17.6
	Primidone	72.0	71.7	63.1		12.8
	Pyraclostrobin	61.2	76.2	98.0		25.1
	Sucralose	108	95.1	97.4		2.34
	Triclopyr	51.1	46.6	55.9		18.1
SM 2120 B	Color (true)	99.9			0.406	
SM 2320 B-97	Total Alkalinity	101			8.08	
SM 2540 C-97	TDS				2.49	
SM 4500 F-C-97	Fluoride	99.5	100	100		0.0
SM 5310 B-00	Organic Carbon	102	102	95.8		3.46

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	2076367
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	2076367
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	2076367
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	2076368
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	2076368
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	2076368
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	2076368

Reference Method Descriptions

Method / DoH Cert #	Description	<u>Associated Samples</u>
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2076369
EPA 8321B / E31780	Pesticides, herbicides, and other chemicals in water matrices by HPLC/MS/MS	2076373
EPA 8321B / E31780	Water soluble organic compounds by HPLC/MS/MS	2076373
SM 2120 B / E31780	True Color measured at 450 nm	2076367
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO ₃ /L	2076367
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	2076367
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2076367
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2076367
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	2076368

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	04/08/2019			04/09/2019 15:54	Adrian Shelby	2076367
EPA 300.0 Rev. 2.1	04/08/2019			04/13/2019 03:15	Lipi Saha	2076367
EPA 350.1 Rev. 2.0	04/08/2019			04/15/2019 13:26	Ping Hua	2076368
EPA 351.2 Rev. 2.0	04/08/2019	04/15/2019 14:15	Jhamieka S. Greenwood	04/16/2019 13:26	Joseph Suarez	2076368
EPA 353.2 Rev. 2.0	04/08/2019			04/17/2019 11:09	Beverly Y. Sanders	2076368
EPA 365.1 Rev. 2.0	04/08/2019	04/12/2019 15:40	Sima Feizi	04/15/2019 14:34	Rosalyn Ballman	2076368
EPA 365.1 Rev. 2.0 dissolved	04/08/2019			04/09/2019 17:36	Julia Storbeck	2076369
EPA 8321B	04/08/2019	04/10/2019 10:00	Hoor Shaik	04/19/2019 19:22	Juyoung Kim	2076373
	04/08/2019	04/10/2019 15:30	Rebecca Ware	04/11/2019 10:00	Rebecca Ware	2076373
	04/08/2019	04/10/2019 15:30	Rebecca Ware	04/11/2019 17:42	Rebecca Ware	2076373
	04/08/2019	04/10/2019 15:30	Rebecca Ware	04/12/2019 17:39	Rebecca Ware	2076373
SM 2120 B	04/08/2019			04/09/2019 15:38	Mariam Hanna	2076367
SM 2320 B-97	04/08/2019			04/13/2019 10:35	Dale L. Simmons	2076367
SM 2540 C-97	04/08/2019			04/09/2019 15:45	Yijie Li	2076367
SM 2540 D-97	04/08/2019			04/09/2019 15:45	Yijie Li	2076367
SM 4500 F-C-97	04/08/2019			04/13/2019 10:35	Dale L. Simmons	2076367
SM 5310 B-00	04/08/2019			04/10/2019 15:45	Julia Storbeck	2076368