

Chemical Analysis Report

SO-DIST-2018-05-02-02

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

Event Description: **SFM: Oak, Hendry, Winkler, Manuel**
Request ID: **RQ-2018-04-30-76**
Customer: **SO-DIST**
Project ID: **SMP**

Send Reports to:
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FLDEP South District Office
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Certified by: Dr. rer. nat. Bettina Steinbock, Environmental Administrator

Date Certified: 22-MAY-2018 17:24



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: Manuel Branch @Broadway

Collection Date/Time: 05/01/2018 09:15

Field ID: G3SD0078

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1989115	EPA 8321B	2,4-D	0.0020	U	ug/L	P344412	
		Bentazon	0.019		ug/L	P344412	
		MCP	0.011		ug/L	P344412	
		Triclopyr**	0.0040	U	ug/L	P344412	
		Imidacloprid	0.0020	U	ug/L	P344412	MS
		Diuron	0.0052	I	ug/L	P344412	
		Pyraclostrobin**	0.0020	U	ug/L	P344412	
		Primidone**	0.0040	U	ug/L	P344412	
		Linuron	0.0040	U	ug/L	P344412	
		Acetaminophen**	0.0080	U	ug/L	P344412	
		Fenuron	0.016	U	ug/L	P344412	
		Imazapyr**	0.030		ug/L	P344412	
		Carbamazepine**	0.0050		ug/L	P344412	
		Fluridone**	8.0E-04	U	ug/L	P344412	
		Hydrocodone**	8.0E-04	U	ug/L	P344412	
		Sucralose**	0.40	I	ug/L	P344477	
		Glyphosate**	0.97		ug/L	P344477	
		AMPA**	0.36	I	ug/L	P344477	
		Endothal**	0.10	UJ	ug/L	P344477	SUR
		Glufosinate**	0.10	U	ug/L	P344477	MS

Ref. Method and Comment:

EPA 8321B: Refer to the narrative for an explanation of QC Codes. MS accuracy for sucralose could not be assessed due to high concentration of parameter in the spiked sample.

Sample Location: Winkler Canal@Princeton

Collection Date/Time: 05/01/2018 09:40

Field ID: G3SD0055

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1989100	EPA 180.1 Rev. 2.0	Turbidity	0.65		NTU	P344507	
	EPA 300.0 Rev. 2.1	Chloride	120		mg Cl/L	P344849	
		Sulfate	46		mg SO4/L	P344852	
	SM 2120 B	Color (true)	26		PCU	P344491	
	SM 2320 B-97	Total Alkalinity	141		mg CaCO3/L	P345071	
	SM 2540 C-97	TDS	406	A	mg/L	P345189	
	SM 2540 D-97	TSS	2	IA	mg/L	P345182	
	SM 4500 F-C-97	Fluoride	0.30		mg F/L	P345075	
1989101	EPA 350.1 Rev. 2.0	Ammonia-N	0.014		mg N/L	P344870	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.46		mg N/L	P344574	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.005	I	mg N/L	P344587	
	EPA 365.1 Rev. 2.0	Total-P	0.042		mg P/L	P344583	
	SM 5310 B-00	Organic Carbon	6.0		mg C/L	P345024	
1989102	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.022		mg P/L	P344567	
1989116	EPA 8321B	2,4-D	0.022		ug/L	P344412	
		Bentazon	0.043		ug/L	P344412	

Field ID: G3SD0055

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1989116	EPA 8321B	MCP	0.0020	U	ug/L	P344412	
		Triclopyr**	0.0040	U	ug/L	P344412	
		Imidacloprid	0.022		ug/L	P344412	MS
		Diuron	0.011		ug/L	P344412	
		Pyraclorobin**	0.0020	U	ug/L	P344412	
		Primidone**	0.0040	U	ug/L	P344412	
		Linuron	0.0040	U	ug/L	P344412	
		Acetaminophen**	0.0080	U	ug/L	P344412	
		Fenuron	0.016	U	ug/L	P344412	
		Imazapyr**	0.013	I	ug/L	P344412	
		Carbamazepine**	4.7E-04	I	ug/L	P344412	
		Fluridone**	0.024		ug/L	P344412	
		Hydrocodone**	8.0E-04	U	ug/L	P344412	
		Sucralose**	0.31	I	ug/L	P344477	
		Glyphosate**	0.56		ug/L	P344477	
		AMPA**	0.57		ug/L	P344477	
		Endothal**	0.10	U	ug/L	P344477	
		Glufosinate**	0.10	U	ug/L	P344477	MS

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: MS accuracy for sucralose could not be assessed due to high concentration of parameter in the spiked sample.

Sample Location: HendryCrk@OldGladiolus

Collection Date/Time: 05/01/2018 10:20

Field ID: G1SD0062

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1989103	EPA 180.1 Rev. 2.0	Turbidity	6.0	A	NTU	P344507	
	SM 2320 B-97	Total Alkalinity	242		mg CaCO3/L	P345178	
	SM 2540 D-97	TSS	9	I	mg/L	P345187	
	SM 4500 F-C-97	Fluoride	0.70		mg F/L	P344920	
1989104	EPA 350.1 Rev. 2.0	Ammonia-N	0.051		mg N/L	P344871	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.1		mg N/L	P344576	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P344800	
	EPA 365.1 Rev. 2.0	Total-P	0.13		mg P/L	P344584	
	SM 5310 B-00	Organic Carbon	13		mg C/L	P345109	
1989105	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.054		mg P/L	P344569	

Quality Assurance Report Method Blank Results

Reference Method: EPA 180.1 Rev. 2.0

Batch ID: P344507

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Quality Assurance Report Method Blank Results

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P344849

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P344852

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P344870

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P344871

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P344574

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P344576

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P344587

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P344800

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P344583

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

Quality Assurance Report Method Blank Results

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P344584

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P344567

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P344569

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

Reference Method: EPA 8321B
Batch ID: P344412

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	4.0E-04	U	ug/L
Diuron	0.0020	U	ug/L
Fenuron	0.016	U	ug/L
Fluridone	8.0E-04	U	ug/L
Hydrocodone	8.0E-04	U	ug/L
Imazapyr	0.0040	U	ug/L
Imidacloprid	0.0020	U	ug/L
Linuron	0.0040	U	ug/L
MCP	0.0020	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: P344477

Component	Result	Code	Units
AMPA	0.10	U	ug/L
Endothall	0.10	U	ug/L
Glufosinate	0.10	U	ug/L
Glyphosate	0.10	U	ug/L
Sucralose	0.10	U	ug/L

Reference Method: SM 2120 B
Batch ID: P344491

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Quality Assurance Report Method Blank Results

Reference Method: SM 2320 B-97
Batch ID: P345071

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

Reference Method: SM 2320 B-97
Batch ID: P345178

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

Reference Method: SM 2540 C-97
Batch ID: P345189

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P345182

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P345187

Component	Result	Code	Units
TSS	3	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P344920

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 4500 F-C-97
Batch ID: P345075

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P345024

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

Reference Method: SM 5310 B-00
Batch ID: P345109

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: P344849

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P344852

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P344870

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P344871

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P344574

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: P344576

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Kjeldahl Nitrogen	99.2		P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P344587

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P344800

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P344583

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

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 365.1 Rev. 2.0

Batch ID: P344584

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved

Batch ID: P344567

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved

Batch ID: P344569

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
O-Phosphate-P	97.3		P	90 - 110

Reference Method: EPA 8321B

Batch ID: P344412

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2,4-D	95.1		P	40 - 150
Acetaminophen	106		P	30 - 150
Bentazon	95.6		P	30 - 150
Carbamazepine	109		P	40 - 150
Diuron	97.6		P	40 - 150
Fenuron	127		P	40 - 150
Fluridone	98.6		P	40 - 150
Hydrocodone	123		P	40 - 150
Imazapyr	118		P	40 - 150
Imidacloprid	111		P	40 - 160
Linuron	103		P	40 - 150
MCP	104		P	40 - 150
Primidone	107		P	40 - 150
Pyraclostrobin	105		P	40 - 150
Triclopyr	110		P	40 - 150

Reference Method: EPA 8321B

Batch ID: P344477

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
AMPA	105		P	40 - 140
Endothall	104		P	40 - 140
Glufosinate	113		P	40 - 140
Glyphosate	117		P	40 - 140
Sucralose	85.7		P	40 - 150

Reference Method: SM 2320 B-97

Batch ID: P345071

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	105		P	98 - 107

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: SM 2320 B-97
Batch ID: P345178

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	102		P	98 - 107

Reference Method: SM 4500 F-C-97
Batch ID: P344920

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	94.4		P	91 - 105

Reference Method: SM 4500 F-C-97
Batch ID: P345075

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	95.1		P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P345024

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

Reference Method: SM 5310 B-00
Batch ID: P345109

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: P344849

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1989010	Chloride	100		P	90 - 110
1989146	Chloride	101		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P344852

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1989010	Sulfate	98.6		P	90 - 110
1989146	Sulfate	102		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P344870

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1989013	Ammonia-N	103	105	P/P	90 - 110

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P344871

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1989063	Ammonia-N	105	101	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P344574

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1989101	Kjeldahl Nitrogen	97.8	97.0	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P344576

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1989197	Kjeldahl Nitrogen	98.0	97.2	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P344587

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1989012	NO2NO3-N	102	102	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P344800

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1989063	NO2NO3-N	104	104	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P344583

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1989013	Total-P	98.9	103	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P344584

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1989063	Total-P	95.8	98.4	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P344567

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1989014	O-Phosphate-P	93.8	96.3	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P344569

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1989064	O-Phosphate-P	92.8	94.5	P/P	90 - 110

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 8321B
Batch ID: P344412

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1989090	2,4-D	70.6	70.8	P/P	40 - 150
1989090	Acetaminophen	116	108	P/P	30 - 150
1989090	Bentazon	43.6	42.0	P/P	30 - 150
1989090	Carbamazepine	106	102	P/P	40 - 150
1989090	Diuron	95.0	81.7	P/P	40 - 150
1989090	Fenuron	109	106	P/P	40 - 150
1989090	Fluridone	87.2	85.7	P/P	40 - 150
1989090	Hydrocodone	140	136	P/P	40 - 150
1989090	Imazapyr	130	112	P/P	40 - 150
1989090	Imidacloprid	216	200	F/F	40 - 160
1989090	Linuron	94.2	88.9	P/P	40 - 150
1989090	MCPP	71.6	69.1	P/P	40 - 150
1989090	Primidone	119	102	P/P	40 - 150
1989090	Pyraclostrobin	94.4	92.7	P/P	40 - 150
1989090	Triclopyr	80.6	75.9	P/P	40 - 150

Reference Method: EPA 8321B
Batch ID: P344477

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1989270	AMPA	49.3	51.6	P/P	40 - 140
1989270	Endothall	106	111	P/P	40 - 140
1989270	Glufosinate	151	139	F/P	40 - 140
1989270	Glyphosate	65.0	61.2	P/P	40 - 140

Reference Method: SM 4500 F-C-97
Batch ID: P344920

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1989796	Fluoride	92.8	93.5	P/P	91 - 105

Reference Method: SM 4500 F-C-97
Batch ID: P345075

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1989011	Fluoride	94.5	95.0	P/P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P345024

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1989013	Organic Carbon	102	103	P/P	85 - 115

Reference Method: SM 5310 B-00
Batch ID: P345109

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1989104	Organic Carbon	94.3	95.3	P/P	85 - 115

Quality Assurance Report Precision

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P344507

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1989103	Turbidity	9.11	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P344849

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1989010	Chloride	0.535	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P344852

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1989010	Sulfate	0.907	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P344870

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1989013	Ammonia-N	1.86	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P344871

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1989063	Ammonia-N	2.99	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P344574

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1989101	Kjeldahl Nitrogen	0.597	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P344576

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1989197	Kjeldahl Nitrogen	0.699	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P344587

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1989012	NO2NO3-N	0.0	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P344800

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1989063	NO2NO3-N	0.480	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P344583

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1989013	Total-P	3.91	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P344584

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1989063	Total-P	2.55	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P344567

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1989014	O-Phosphate-P	2.34	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P344569

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1989064	O-Phosphate-P	1.56	Spike	P	0 - 20

Reference Method: EPA 8321B
Batch ID: P344412

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1989090	2,4-D	0.259	Spike	P	0 - 30
1989090	Acetaminophen	6.90	Spike	P	0 - 30
1989090	Bentazon	3.30	Spike	P	0 - 30
1989090	Carbamazepine	3.47	Spike	P	0 - 30
1989090	Diuron	6.04	Spike	P	0 - 30
1989090	Fenuron	2.24	Spike	P	0 - 30
1989090	Fluridone	1.54	Spike	P	0 - 30
1989090	Hydrocodone	3.08	Spike	P	0 - 30
1989090	Imazapyr	7.57	Spike	P	0 - 30
1989090	Imidacloprid	7.03	Spike	P	0 - 30
1989090	Linuron	5.82	Spike	P	0 - 30
1989090	MCP	3.58	Spike	P	0 - 30
1989090	Primidone	15.0	Spike	P	0 - 30
1989090	Pyraclostrobin	1.79	Spike	P	0 - 30
1989090	Triclopyr	5.92	Spike	P	0 - 30

Quality Assurance Report Precision

Reference Method: EPA 8321B
Batch ID: P344477

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1989270	AMPA	4.58	Spike	P	0 - 30
1989270	Endothall	4.70	Spike	P	0 - 30
1989270	Glufosinate	8.80	Spike	P	0 - 30
1989270	Glyphosate	6.03	Spike	P	0 - 30
1989270	Sucralose	19.5	Spike	P	0 - 30

Reference Method: SM 2120 B
Batch ID: P344491

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1989024	Color (true)	1.04	Sample	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P345071

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1989011	Total Alkalinity	0.856	Sample	P	0 - 1.6

Reference Method: SM 2320 B-97
Batch ID: P345178

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1989796	Total Alkalinity	0.243	Sample	P	0 - 1.6

Reference Method: SM 2540 C-97
Batch ID: P345189

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1989100	TDS	1.23	Sample	P	0 - 10

Reference Method: SM 2540 D-97
Batch ID: P345187

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1989062	TSS	7.41	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
Batch ID: P344920

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1989796	Fluoride	0.480	Spike	P	0 - 3.5

Quality Assurance Report Precision

Reference Method: SM 4500 F-C-97
Batch ID: P345075

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1989011	Fluoride	0.472	Spike	P	0 - 3.5

Reference Method: SM 5310 B-00
Batch ID: P345024

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1989013	Organic Carbon	0.440	Spike	P	0 - 20

Reference Method: SM 5310 B-00
Batch ID: P345109

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1989104	Organic Carbon	0.778	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: 1989115
Field Sample ID: G3SD0078

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	2,4-D-d3	69.9	P	30 - 160
EPA 8321B	Acetaminophen-d4	97.9	P	30 - 160
EPA 8321B	Carbamazepine-d10	100	P	30 - 160
EPA 8321B	Diuron-d6	77.0	P	30 - 160
EPA 8321B	Endothall-d6	161	F	50 - 160
EPA 8321B	Glyphosate 13C 15N	61.6	P	40 - 160
EPA 8321B	Primidone-d5	90.9	P	30 - 160
EPA 8321B	Sucralose-d6	84.3	P	40 - 160

Lab Sample ID: 1989116
Field Sample ID: G3SD0055

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	2,4-D-d3	50.1	P	30 - 160
EPA 8321B	Acetaminophen-d4	112	P	30 - 160
EPA 8321B	Carbamazepine-d10	108	P	30 - 160
EPA 8321B	Diuron-d6	76.5	P	30 - 160
EPA 8321B	Endothall-d6	115	P	50 - 160
EPA 8321B	Glyphosate 13C 15N	60.3	P	40 - 160
EPA 8321B	Primidone-d5	123	P	30 - 160
EPA 8321B	Sucralose-d6	85.3	P	40 - 160

Quality Assurance Report Calibration Verification

Quality Assurance Report Calibration Verification

Reference Method: SM 2120 B
Run ID: A83602
Included Lab Sample IDs: 1989100

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	98.9	99.9	P/P	90 - 115

Reference Method: EPA 180.1 Rev. 2.0
Run ID: A83605
Included Lab Sample IDs: 1989100, 1989103

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Run ID: A83633
Included Lab Sample IDs: 1989102, 1989105

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	98.1	95.7	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A83635
Included Lab Sample IDs: 1989101

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

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A83665
Included Lab Sample IDs: 1989104

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	100	103	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A83682
Included Lab Sample IDs: 1989101, 1989104

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	96.0	97.4	P/P	90 - 110
Kjeldahl Nitrogen	97.7	97.6	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A83710
Included Lab Sample IDs: 1989104

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

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A83729
Included Lab Sample IDs: 1989101

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	99.8	100	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A83732

Included Lab Sample IDs: 1989100

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

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A83734

Included Lab Sample IDs: 1989101, 1989104

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	100	104	P/P	90 - 110
Ammonia-N	99.7	100	P/P	90 - 110

Reference Method: SM 4500 F-C-97

Run ID: A83750

Included Lab Sample IDs: 1989103

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	97.6	99.0	P/P	90 - 110

Reference Method: EPA 8321B

Run ID: A83769

Included Lab Sample IDs: 1989115, 1989116

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Acetaminophen	103	106	P/P	60 - 150
Carbamazepine	108	109	P/P	60 - 150
Diuron	119	110	P/P	60 - 150
Fenuron	115	115	P/P	60 - 150
Fluridone	116	114	P/P	60 - 160
Hydrocodone	123	120	P/P	60 - 150
Imazapyr	113	114	P/P	50 - 150
Imidacloprid	102	113	P/P	60 - 150
Linuron	109	108	P/P	60 - 150
Primidone	97.1	99.1	P/P	60 - 150
Pyraclostrobin	116	117	P/P	60 - 150

Reference Method: SM 5310 B-00

Run ID: A83798

Included Lab Sample IDs: 1989101

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	99.8	99.1	P/P	90 - 110

Reference Method: SM 2320 B-97

Run ID: A83812

Included Lab Sample IDs: 1989100

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	99.1	102	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: SM 4500 F-C-97

Run ID: A83812

Included Lab Sample IDs: 1989100

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	98.6	98.1	P/P	90 - 110

Reference Method: SM 5310 B-00

Run ID: A83819

Included Lab Sample IDs: 1989104

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	100	95.2	P/P	90 - 110

Reference Method: SM 2320 B-97

Run ID: A83837

Included Lab Sample IDs: 1989103

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	99.0	102	P/P	90 - 110

Reference Method: EPA 8321B

Run ID: A83883

Included Lab Sample IDs: 1989115, 1989116

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
2,4-D	123	110	P/P	50 - 150
Bentazon	124	127	P/P	50 - 150
MCP	125	133	P/P	50 - 150
Triclopyr	121	131	P/P	50 - 160

Reference Method: EPA 8321B

Run ID: A83902

Included Lab Sample IDs: 1989115, 1989116

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
AMPA	103	108	P/P	60 - 160
Endothall	109	106	P/P	60 - 160
Glufosinate	93.2	99.6	P/P	60 - 160
Glyphosate	94.1	107	P/P	60 - 160
Sucralose	93.8	92.3	P/P	60 - 160

* 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						9.11	
EPA 300.0 Rev. 2.1	Chloride	101		100	101		0.535	
	Sulfate	102		98.6	102		0.907	
EPA 350.1 Rev. 2.0	Ammonia-N	101		103	105			1.86

Quality Assurance Report Summary

Ref. Method	Analyte	LCS % Recovery	MS % Recovery		Precision	
					LCS	MS
EPA 350.1 Rev. 2.0	Ammonia-N	102	105	101		2.99
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	102	97.8	97.0		0.597
	Kjeldahl Nitrogen	99.2	98.0	97.2		0.699
EPA 353.2 Rev. 2.0	NO2NO3-N	101	102	102		0.0
	NO2NO3-N	101	104	104		0.480
EPA 365.1 Rev. 2.0	Total-P	105	98.9	103		3.91
	Total-P	101	95.8	98.4		2.55
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	96.5	93.8	96.3		2.34
	O-Phosphate-P	97.3	92.8	94.5		1.56
EPA 8321B	2,4-D	95.1	70.6	70.8		0.259
	Acetaminophen	106	116	108		6.90
	AMPA	105	51.6	49.3		4.58
	Bentazon	95.6	43.6	42.0		3.30
	Carbamazepine	109	106	102		3.47
	Diuron	97.6	95.0	81.7		6.04
	Endothall	104	106	111		4.70
	Fenuron	127	109	106		2.24
	Fluridone	98.6	87.2	85.7		1.54
	Glufosinate	113	151	139		8.80
	Glyphosate	117	61.2	65.0		6.03
	Hydrocodone	123	140	136		3.08
	Imazapyr	118	130	112		7.57
	Imidacloprid	111	216	200		7.03
	Linuron	103	94.2	88.9		5.82
	MCPP	104	71.6	69.1		3.58
	Primidone	107	119	102		15.0
	Pyraclostrobin	105	94.4	92.7		1.79
	Sucralose	85.7				19.5
	Triclopyr	110	80.6	75.9		5.92
SM 2120 B	Color (true)				1.04	
SM 2320 B-97	Total Alkalinity	105			0.856	
	Total Alkalinity	102			0.243	
SM 2540 C-97	TDS				1.23	
SM 2540 D-97	TSS				7.41	
SM 4500 F-C-97	Fluoride	94.4	92.8	93.5		0.480
	Fluoride	95.1	94.5	95.0		0.472
SM 5310 B-00	Organic Carbon	100	102	103		0.440
	Organic Carbon	102	94.3	95.3		0.778

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	1989100, 1989103
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	1989100
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	1989100
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	1989101, 1989104
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	1989101, 1989104
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	1989101, 1989104

Reference Method Descriptions

Method / DoH Cert #	Description	<u>Associated Samples</u>
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	1989101, 1989104
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	1989102, 1989105
EPA 8321B / E31780	Pesticides, herbicides, and other chemicals in water matrices by HPLC/MS/MS	1989115, 1989116
SM 2120 B / E31780	True Color measured at 450 nm	1989100
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO ₃ /L	1989100, 1989103
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	1989100
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices	1989100, 1989103
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	1989100, 1989103
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	1989101, 1989104

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	05/02/2018			05/02/2018 17:27	William L. Brown IV	1989100, 1989103
EPA 300.0 Rev. 2.1	05/02/2018			05/08/2018 03:12	Lipi Saha	1989100
EPA 350.1 Rev. 2.0	05/02/2018			05/07/2018 12:45	Ping Hua	1989101
	05/02/2018			05/07/2018 13:10	Ping Hua	1989104
EPA 351.2 Rev. 2.0	05/02/2018	05/03/2018 13:30	Adrian Shelby	05/04/2018 15:05	Joseph Suarez	1989101
	05/02/2018	05/03/2018 13:30	Adrian Shelby	05/04/2018 16:02	Joseph Suarez	1989104
EPA 353.2 Rev. 2.0	05/02/2018			05/03/2018 12:46	Lauren Bottorf	1989101
	05/02/2018			05/07/2018 13:10	Lauren Bottorf	1989104
EPA 365.1 Rev. 2.0	05/02/2018	05/03/2018 13:11	Sima Feizi	05/04/2018 11:08	Beverly Y. Sanders	1989104
	05/02/2018	05/03/2018 13:11	Sima Feizi	05/07/2018 11:44	Beverly Y. Sanders	1989101
EPA 365.1 Rev. 2.0 dissolved	05/02/2018			05/02/2018 15:07	Megan Treadwell	1989102
	05/02/2018			05/02/2018 15:08	Megan Treadwell	1989105
EPA 8321B	05/02/2018	05/03/2018 10:00	Hoor Shaik	05/07/2018 05:20	Juyoung Kim	1989115
	05/02/2018	05/03/2018 10:00	Hoor Shaik	05/07/2018 05:55	Juyoung Kim	1989116
	05/02/2018	05/03/2018 10:00	Hoor Shaik	05/09/2018 12:07	Juyoung Kim	1989115
	05/02/2018	05/03/2018 10:00	Hoor Shaik	05/09/2018 12:41	Juyoung Kim	1989116
	05/02/2018	05/03/2018 17:00	Hoor Shaik	05/04/2018 04:05	Juyoung Kim	1989115
	05/02/2018	05/03/2018 17:00	Hoor Shaik	05/04/2018 04:24	Juyoung Kim	1989116
SM 2120 B	05/02/2018			05/02/2018 15:38	Tanya Welborn	1989100
SM 2320 B-97	05/02/2018			05/10/2018 01:34	Dale L. Simmons	1989100
	05/02/2018			05/12/2018 08:04	Dale L. Simmons	1989103
SM 2540 C-97	05/02/2018			05/05/2018 23:12	Yijie Li	1989100
SM 2540 D-97	05/02/2018			05/05/2018 23:12	Yijie Li	1989100, 1989103
SM 4500 F-C-97	05/02/2018			05/08/2018 18:41	Dale L. Simmons	1989103
	05/02/2018			05/10/2018 01:34	Dale L. Simmons	1989100
SM 5310 B-00	05/02/2018			05/10/2018 00:53	Megan Treadwell	1989101
	05/02/2018			05/11/2018 03:21	Julia Storbeck	1989104