

Chemical Analysis Report

SE-DIST-2017-03-14-02

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

Event Description: **SMP-G1 Okeechobee Run (1/5)**

Request ID: **RQ-2017-02-20-10**

Customer: **SE-DIST**

Project ID: **SMP**

Send Reports to:

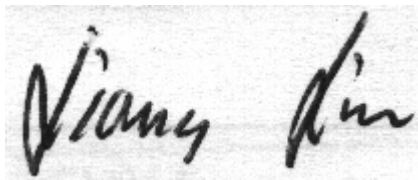
FL Dept. of Environmental Protection
FL Dept. of Environmental Protection
2199 South Rock Road
Fort Pierce, FL 34945
Attn: Matthew Sewell

For additional information please contact

Colin Wright, Ph.D.
Liang-Tsair Lin, Ph.D.
Thekkekalathil Chandrasekhar, PhD, QA Officer
Phone (850) 245-8085

Certified by: Liang Lin, Environmental Administrator

Date Certified: 11-APR-2017 16:48

A handwritten signature in black ink, appearing to read "Liang Lin", on a light-colored background.

Case Narrative

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

Results for the following analytical groups are included in this report: Metals, 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: Otter Creek @ 441

Collection Date/Time: 03/13/2017 12:10

Field ID: G1SE0007

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1879859	EPA 180.1 Rev. 2.0	Turbidity	2.0		NTU	P321564	
	EPA 300.0 Rev. 2.1	Chloride	32		mg Cl/L	P322121	
		Sulfate	13		mg SO4/L	P321815	
	SM 2120 B	Color (true)	82	A	PCU	P321544	
	SM 2320 B-97	Total Alkalinity	57		mg CaCO3/L	P322070	
	SM 2540 C-97	TDS	171		mg/L	P322311	
	SM 2540 D-97	TSS	3	I	mg/L	P322174	
	SM 4500 F-C-97	Fluoride	0.097	I	mg F/L	P322075	
1879860	EPA 350.1 Rev. 2.0	Ammonia-N	0.42		mg N/L	P321642	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.2		mg N/L	P321711	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.048		mg N/L	P321833	
	EPA 365.1 Rev. 2.0	Total-P	0.34		mg P/L	P321605	
	SM 5310 B-00	Organic Carbon	17		mg C/L	P321638	
1879861	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.26		mg P/L	P321537	
1879896	EPA 8321B	Sucralose**	0.018	I	ug/L	P321383	
	USGS O-2060-01	2,4-D	0.0040	U	ug/L	P321386	
		Diuron	0.0040	U	ug/L	P321386	
		Fenuron	0.0080	U	ug/L	P321386	
		Imidacloprid	0.0040	U	ug/L	P321386	
		Bentazon	0.0040	U	ug/L	P321386	
		Linuron	0.0040	UJ	ug/L	P321386	CCV
		Acetaminophen**	0.0040	U	ug/L	P321386	
		MCP	0.0040	U	ug/L	P321386	MS
		Carbamazepine**	4.0E-04	U	ug/L	P321386	
		Triclopyr**	0.010	U	ug/L	P321386	
		Primidone**	0.0080	U	ug/L	P321386	
		Fluridone**	4.0E-04	U	ug/L	P321386	MS, RPD

Ref. Method and Comment:

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

USGS O-2060-01: MS accuracy for 2,4-D, bentazon and triclopyr could not be assessed due to high concentration of parameter in the spiked sample.

USGS O-2060-01: Refer to the narrative for an explanation of QC Codes.

Sample Location: Taylor Creek @ SR-70

Collection Date/Time: 03/13/2017 13:10

Field ID: G1SE0011

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1879862	EPA 180.1 Rev. 2.0	Turbidity	6.1		NTU	P321564	
	EPA 300.0 Rev. 2.1	Chloride	69		mg Cl/L	P322121	
		Sulfate	53		mg SO4/L	P321815	
	SM 2120 B	Color (true)	71		PCU	P321544	
	SM 2320 B-97	Total Alkalinity	185		mg CaCO3/L	P322070	
	SM 2540 C-97	TDS	407		mg/L	P322311	
	SM 2540 D-97	TSS	8	I	mg/L	P322174	
	SM 4500 F-C-97	Fluoride	0.20		mg F/L	P322075	
1879863	EPA 350.1 Rev. 2.0	Ammonia-N	0.016		mg N/L	P321642	

Field ID: G1SE0011

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1879863	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.5		mg N/L	P321711	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.066		mg N/L	P321833	
	EPA 365.1 Rev. 2.0	Total-P	0.36		mg P/L	P321605	
	SM 5310 B-00	Organic Carbon	19		mg C/L	P321638	
1879864	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.12		mg P/L	P321538	
1879890	EPA 200.7 Rev. 4.4	Calcium	78.9		mg/L	P321708	
		Iron	750		ug/L	P321708	
		Magnesium	9.99		mg/L	P321708	
		Potassium	10.7		mg/L	P321708	
		Sodium	48.8		mg/L	P321708	
		Zinc	9.9	I	ug/L	P321708	
	EPA 200.8 Rev. 5.4	Arsenic	1.32		ug/L	P321708	
		Cadmium	0.020	U	ug/L	P321708	
		Chromium	0.78	I	ug/L	P321708	
		Copper	1.51		ug/L	P321708	
		Lead	1.53		ug/L	P321708	
		Nickel	1.03		ug/L	P321708	
		Silver	0.010	U	ug/L	P321708	
1879897	EPA 8321B	Sucralose**	0.19		ug/L	P321383	
	USGS O-2060-01	2,4-D	0.054		ug/L	P321386	
		Diuron	0.0040	U	ug/L	P321386	
		Fenuron	0.0080	U	ug/L	P321386	
		Imidacloprid	0.0040	U	ug/L	P321386	
		Bentazon	0.018		ug/L	P321386	
		Linuron	0.0040	UJ	ug/L	P321386	CCV
		Acetaminophen**	0.0040	U	ug/L	P321386	
		MCP	0.0040	U	ug/L	P321386	MS
		Carbamazepine**	4.0E-04	U	ug/L	P321386	
		Triclopyr**	0.028	I	ug/L	P321386	
		Primidone**	0.0080	U	ug/L	P321386	
		Fluridone**	4.0E-04	U	ug/L	P321386	MS, RPD

Ref. Method and Comment:

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

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

EPA 200.8 Rev. 5.4: Batch matrix spike recoveries for chromium and nickel are unavailable for one of two spiked samples because of high analyte concentration in the QC sample.

USGS O-2060-01: MS accuracy for 2,4-D, bentazon and triclopyr could not be assessed due to high concentration of parameter in the spiked sample.

USGS O-2060-01: 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: P321564

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Quality Assurance Report Method Blank Results

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P321708

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

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P321708

Component	Result	Code	Units
Arsenic	0.050	U	ug/L
Cadmium	0.020	U	ug/L
Chromium	0.40	U	ug/L
Copper	0.20	U	ug/L
Lead	0.050	U	ug/L
Nickel	0.20	U	ug/L
Silver	0.010	U	ug/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P321815

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P322121

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P321642

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P321711

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P321833

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: P321605

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P321537

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P321538

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

Reference Method: EPA 8321B
Batch ID: P321383

Component	Result	Code	Units
Sucralose	0.010	U	ug/L

Reference Method: SM 2120 B
Batch ID: P321544

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
Batch ID: P322070

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

Reference Method: SM 2540 C-97
Batch ID: P322311

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P322174

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P322075

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Quality Assurance Report Method Blank Results

Reference Method: SM 5310 B-00
Batch ID: P321638

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

Reference Method: USGS O-2060-01
Batch ID: P321386

Component	Result	Code	Units
2,4-D	0.0040	U	ug/L
Acetaminophen	0.0040	U	ug/L
Bentazon	0.0040	U	ug/L
Carbamazepine	4.0E-04	U	ug/L
Diuron	0.0040	U	ug/L
Fenuron	0.0080	U	ug/L
Fluridone	4.0E-04	U	ug/L
Imidacloprid	0.0040	U	ug/L
Linuron	0.0040	U	ug/L
MCP	0.0040	U	ug/L
Primidone	0.0080	U	ug/L
Triclopyr	0.010	U	ug/L

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P321708

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Calcium	103		P	85 - 115
Iron	102		P	85 - 115
Magnesium	102		P	85 - 115
Potassium	98.8		P	85 - 115
Sodium	100		P	85 - 115
Zinc	98.8		P	85 - 115

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P321708

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Arsenic	95.9		P	85 - 115
Cadmium	93.3		P	85 - 115
Chromium	95.2		P	85 - 115
Copper	95.6		P	85 - 115
Lead	101		P	85 - 115
Nickel	97.2		P	85 - 115
Silver	103		P	85 - 115

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P321815

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

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P322121

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P321642

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	106		P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P321711

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P321833

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: P321605

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P321537

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
O-Phosphate-P	97.7		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P321538

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

Reference Method: EPA 8321B
Batch ID: P321383

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Sucralose	98.9		P	40 - 140

Reference Method: SM 2320 B-97
Batch ID: P322070

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	104		P	95 - 108

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: SM 4500 F-C-97
 Batch ID: P322075

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	95.4		P	92 - 103

Reference Method: SM 5310 B-00
 Batch ID: P321638

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	94.4		P	85 - 115

Reference Method: USGS O-2060-01
 Batch ID: P321386

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2,4-D	88.4		P	40 - 140
Acetaminophen	97.2		P	40 - 140
Bentazon	72.4		P	40 - 140
Carbamazepine	116		P	40 - 140
Diuron	98.0		P	40 - 140
Fenuron	90.0		P	40 - 140
Fluridone	70.0		P	40 - 140
Imidacloprid	85.6		P	40 - 160
Linuron	66.4		P	40 - 140
MCPP	118		P	40 - 140
Primidone	80.4		P	40 - 140
Triclopyr	86.4		P	40 - 140

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 200.7 Rev. 4.4
 Batch ID: P321708

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1879781	Calcium	101		P	80 - 120
1879781	Iron	103		P	80 - 120
1879781	Magnesium	99.7		P	80 - 120
1879781	Potassium	99.3		P	80 - 120
1879781	Sodium	101		P	80 - 120
1879781	Zinc	100		P	80 - 120
1880382	Calcium	97.3		P	80 - 120
1880382	Iron	97.6	96.9	P/P	80 - 120
1880382	Magnesium	96.8		P	80 - 120
1880382	Potassium	96.7	96.4	P/P	80 - 120
1880382	Sodium	95.3		P	80 - 120
1880382	Zinc	97.3	97.2	P/P	80 - 120

Reference Method: EPA 200.8 Rev. 5.4
 Batch ID: P321708

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1879781	Arsenic	98.5		P	80 - 120
1879781	Cadmium	98.5		P	80 - 120

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P321708

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1879781	Chromium	95.4		P	80 - 120
1879781	Copper	96.7		P	80 - 120
1879781	Lead	103		P	80 - 120
1879781	Nickel	96.3		P	80 - 120
1879781	Silver	103		P	80 - 120
1880382	Arsenic	98.2	99.3	P/P	80 - 120
1880382	Cadmium	96.0	96.4	P/P	80 - 120
1880382	Copper	81.8	82.0	P/P	80 - 120
1880382	Lead	101	102	P/P	80 - 120
1880382	Silver	103	103	P/P	80 - 120

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P321815

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1879380	Sulfate	107		P	90 - 110
1879868	Sulfate	104		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P322121

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1879380	Chloride	95.6		P	90 - 110
1879868	Chloride	94.3		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P321642

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1879869	Ammonia-N	101	100	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P321711

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1879740	Kjeldahl Nitrogen	91.8	93.0	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P321833

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1879860	NO2NO3-N	102	100	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P321605

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1879932	Total-P	107	98.0	P/P	90 - 110

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P321537

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1879741	O-Phosphate-P	96.1	98.1	P/P	90 - 110

Reference Method: EPA 8321B
Batch ID: P321383

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1879896	Sucralose	84.1	87.1	P/P	40 - 140

Reference Method: SM 4500 F-C-97
Batch ID: P322075

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1881143	Fluoride	98.7	99.3	P/P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P321638

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1879738	Organic Carbon	92.3	93.8	P/P	85 - 115

Reference Method: USGS O-2060-01
Batch ID: P321386

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1879826	Acetaminophen	49.6	43.2	P/P	40 - 140
1879826	Carbamazepine	50.4	53.2	P/P	40 - 140
1879826	Diuron	53.2	55.2	P/P	40 - 140
1879826	Fenuron	42.0	42.4	P/P	40 - 140
1879826	Fluridone	5.17	10.0	F/F	40 - 140
1879826	Imidacloprid	103	111	P/P	40 - 160
1879826	Linuron	66.0	55.2	P/P	40 - 140
1879826	MCP	144	143	F/F	40 - 140
1879826	Primidone	54.8	48.8	P/P	40 - 140

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P321564

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1879847	Turbidity	5.76	Sample	P	0 - 20

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P321708

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1880382	Calcium	0.288	Spike	P	0 - 20
1880382	Iron	0.737	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P321708

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1880382	Magnesium	1.21	Spike	P	0 - 20
1880382	Potassium	0.179	Spike	P	0 - 20
1880382	Sodium	2.12	Spike	P	0 - 20
1880382	Zinc	0.120	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P321708

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1880382	Arsenic	1.10	Spike	P	0 - 20
1880382	Cadmium	0.365	Spike	P	0 - 20
1880382	Chromium	0.0103	Spike	P	0 - 20
1880382	Copper	0.185	Spike	P	0 - 20
1880382	Lead	1.51	Spike	P	0 - 20
1880382	Nickel	1.71	Spike	P	0 - 20
1880382	Silver	0.435	Spike	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P321815

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1879380	Sulfate	9.23	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P322121

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1879380	Chloride	0.124	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P321642

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1879869	Ammonia-N	0.167	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P321711

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1879740	Kjeldahl Nitrogen	0.679	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P321833

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
--------------------------	-----------	-----------	-------------------	-----------	----------------

Quality Assurance Report Precision

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P321833

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1879860	NO2NO3-N	1.20	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P321605

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1879932	Total-P	8.41	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P321537

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1879741	O-Phosphate-P	2.06	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P321538

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1879864	O-Phosphate-P	0.635	Spike	P	0 - 20

Reference Method: EPA 8321B
Batch ID: P321383

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1879896	Sucralose	3.44	Spike	P	0 - 30

Reference Method: SM 2120 B
Batch ID: P321544

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1879859	Color (true)	0.148	Sample	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P322070

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1881143	Total Alkalinity	0.0281	Sample	P	0 - 4.8

Reference Method: SM 2540 C-97
Batch ID: P322311

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1879751	TDS	3.50	Sample	P	0 - 10

Quality Assurance Report Precision

Reference Method: SM 4500 F-C-97
Batch ID: P322075

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1881143	Fluoride	0.477	Spike	P	0 - 3.0

Reference Method: SM 5310 B-00
Batch ID: P321638

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1879738	Organic Carbon	0.753	Spike	P	0 - 20

Reference Method: USGS O-2060-01
Batch ID: P321386

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1879826	2,4-D	1.22	Spike	P	0 - 30
1879826	Acetaminophen	13.8	Spike	P	0 - 30
1879826	Bentazon	8.83	Spike	P	0 - 30
1879826	Carbamazepine	5.41	Spike	P	0 - 30
1879826	Diuron	3.69	Spike	P	0 - 30
1879826	Fenuron	0.948	Spike	P	0 - 30
1879826	Fluridone	41.8	Spike	F	0 - 30
1879826	Imidacloprid	7.11	Spike	P	0 - 30
1879826	Linuron	17.8	Spike	P	0 - 30
1879826	MCPP	1.11	Spike	P	0 - 30
1879826	Primidone	11.6	Spike	P	0 - 30
1879826	Triclopyr	7.79	Spike	P	0 - 30

* 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: 1879896
Field Sample ID: G1SE0007

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	Sucralose-d6	82.0	P	40 - 150
USGS O-2060-01	2,4-D-d3	109	P	40 - 150
USGS O-2060-01	Acetaminophen-d4	65.4	P	30 - 150
USGS O-2060-01	Carbamazepine-d10	48.6	P	40 - 160
USGS O-2060-01	Diuron-d6	45.8	P	40 - 150
USGS O-2060-01	Primidone-d5	63.6	P	40 - 150

Lab Sample ID: 1879897
Field Sample ID: G1SE0011

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	Sucralose-d6	104	P	40 - 150
USGS O-2060-01	2,4-D-d3	120	P	40 - 150

Quality Assurance Report Surrogates

Lab Sample ID: 1879897
Field Sample ID: G1SE0011

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
USGS O-2060-01	Acetaminophen-d4	73.0	P	30 - 150
USGS O-2060-01	Carbamazepine-d10	54.6	P	40 - 160
USGS O-2060-01	Diuron-d6	42.6	P	40 - 150
USGS O-2060-01	Primidone-d5	60.0	P	40 - 150

Quality Assurance Report Calibration Verification

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Run ID: A75093
Included Lab Sample IDs: 1879861, 1879864

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	100	100	P/P	90 - 110
O-Phosphate-P	99.9	100	P/P	90 - 110

Reference Method: SM 2120 B
Run ID: A75095
Included Lab Sample IDs: 1879859, 1879862

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	101	102	P/P	85 - 115

Reference Method: EPA 180.1 Rev. 2.0
Run ID: A75104
Included Lab Sample IDs: 1879859, 1879862

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

Reference Method: SM 5310 B-00
Run ID: A75134
Included Lab Sample IDs: 1879860, 1879863

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	94.2	96.2	P/P	90 - 110

Reference Method: EPA 8321B
Run ID: A75135
Included Lab Sample IDs: 1879896, 1879897

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Sucralose	116	65.3	P/P	60 - 150
Sucralose	96.8	99.9	P/P	60 - 150

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A75137
Included Lab Sample IDs: 1879860, 1879863

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

Quality Assurance Report Calibration Verification

Reference Method: USGS O-2060-01

Run ID: A75159

Included Lab Sample IDs: 1879896, 1879897

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Acetaminophen	103	102	P/P	60 - 150
Carbamazepine	141	149	P/P	60 - 150
Diuron	137	123	P/P	60 - 150
Fenuron	127	121	P/P	60 - 150
Fluridone	96.0	91.6	P/P	60 - 150
Imidacloprid	134	120	P/P	60 - 150
Linuron	169*	176*	F/F	60 - 150
Primidone	124	117	P/P	60 - 150

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A75174

Included Lab Sample IDs: 1879860, 1879863

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

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A75189

Included Lab Sample IDs: 1879890

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Arsenic	103	103	P/P	90 - 110
Cadmium	99.9	98.8	P/P	90 - 110
Chromium	102	98.9	P/P	90 - 110
Copper	105	104	P/P	90 - 110
Nickel	103	104	P/P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A75193

Included Lab Sample IDs: 1879859, 1879862

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

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A75199

Included Lab Sample IDs: 1879860, 1879863

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

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A75212

Included Lab Sample IDs: 1879860, 1879863

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	100	98.4	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A75247

Included Lab Sample IDs: 1879890

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Lead	98.4	98.3	P/P	90 - 110
Silver	100	101	P/P	90 - 110

Reference Method: USGS O-2060-01

Run ID: A75269

Included Lab Sample IDs: 1879896, 1879897

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
2,4-D	108	119	P/P	50 - 150
Bentazon	99.4	98.2	P/P	50 - 150
MCP	104	117	P/P	50 - 150
Triclopyr	95.6	99.4	P/P	50 - 150

Reference Method: EPA 200.7 Rev. 4.4

Run ID: A75287

Included Lab Sample IDs: 1879890

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Calcium	102	102	P/P	90 - 110
Iron	100	99.8	P/P	90 - 110
Magnesium	100	101	P/P	90 - 110
Potassium	101	101	P/P	90 - 110
Sodium	101	99.5	P/P	90 - 110
Zinc	99.4	98.6	P/P	90 - 110

Reference Method: SM 2320 B-97

Run ID: A75310

Included Lab Sample IDs: 1879859, 1879862

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: A75310

Included Lab Sample IDs: 1879859, 1879862

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	97.5	100	P/P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A75326

Included Lab Sample IDs: 1879859, 1879862

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	102	103	P/P	90 - 110
Chloride	103	98.9	P/P	90 - 110

* Pass/Fail determinations are made for each bracketing calibration verification check.

Control limits for initial calibration checks may be different from those for continuing checks, depending on method requirements.

Where they are different, both control limits are provided.

Quality Assurance Report Summary

Ref. Method	Analyte	LCS % Recovery	MS % Recovery			LCS	Precision SMP	MS
EPA 180.1 Rev. 2.0	Turbidity						5.76	
EPA 200.7 Rev. 4.4	Calcium	103	101	97.3				0.288
	Iron	102	103	97.6	96.9			0.737
	Magnesium	102	99.7	96.8				1.21
	Potassium	98.8	99.3	96.7	96.4			0.179
	Sodium	100	101	95.3				2.12
	Zinc	98.8	100	97.3	97.2			0.120
EPA 200.8 Rev. 5.4	Arsenic	95.9	98.5	98.2	99.3			1.10
	Cadmium	93.3	98.5	96.0	96.4			0.365
	Chromium	95.2	95.4					0.0103
	Copper	95.6	96.7	81.8	82.0			0.185
	Lead	101	103	101	102			1.51
	Nickel	97.2	96.3					1.71
	Silver	103	103	103				0.435
EPA 300.0 Rev. 2.1	Chloride	102	95.6	94.3			0.124	
	Sulfate	106	107	104			9.23	
EPA 350.1 Rev. 2.0	Ammonia-N	106	101	100				0.167
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	104	91.8	93.0				0.679
EPA 353.2 Rev. 2.0	NO2NO3-N	100	102	100				1.20
EPA 365.1 Rev. 2.0	Total-P	102	107	98.0				8.41
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	97.7	96.1	98.1				2.06
	O-Phosphate-P	100						0.635
EPA 8321B	Sucralose	98.9	84.1	87.1				3.44
SM 2120 B	Color (true)						0.148	
SM 2320 B-97	Total Alkalinity	104					0.0281	
SM 2540 C-97	TDS						3.50	
SM 4500 F-C-97	Fluoride	95.4	98.7	99.3				0.477
SM 5310 B-00	Organic Carbon	94.4	92.3	93.8				0.753
USGS O-2060-01	2,4-D	88.4						1.22
	Acetaminophen	97.2	49.6	43.2				13.8
	Bentazon	72.4						8.83
	Carbamazepine	116	50.4	53.2				5.41
	Diuron	98.0	53.2	55.2				3.69
	Fenuron	90.0	42.0	42.4				0.948
	Fluridone	70.0	5.17	10.0				41.8
	Imidacloprid	85.6	103	111				7.11
	Linuron	66.4	66.0	55.2				17.8
	MCPP	118	143	144				1.11
	Primidone	80.4	54.8	48.8				11.6
	Triclopyr	86.4						7.79

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	1879859, 1879862
EPA 200.7 Rev. 4.4 / E31780	Total Recoverable Metals analysis using ICP emission spectroscopy for aqueous samples supporting Clean Water Act Projects	1879890
EPA 200.8 Rev. 5.4 / E31780	Total Recoverable Metals analysis using ICP-MS for aqueous samples supporting Clean Water Act Projects	1879890
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	1879859, 1879862
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	1879859, 1879862

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	1879860, 1879863
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	1879860, 1879863
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	1879860, 1879863
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	1879860, 1879863
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	1879861, 1879864
EPA 8321B / E31780	Water soluble organic compounds by HPLC/MS/MS	1879896, 1879897
SM 2120 B / E31780	True Color measured at 450 nm	1879859, 1879862
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO ₃ /L	1879859, 1879862
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	1879859, 1879862
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices	1879859, 1879862
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	1879859, 1879862
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	1879860, 1879863
USGS O-2060-01 / E31780	Chlorinated (phenoxy acid) herbicides in water matrices by HPLC/MS/MS	1879896, 1879897
USGS O-2060-01 / E31780	Urea herbicides and other chemicals in water matrices by HPLC/MS/MS	1879896, 1879897

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	03/14/2017			03/14/2017 16:51	Blanca Fach	1879859, 1879862
EPA 200.7 Rev. 4.4	03/14/2017	03/16/2017	Elliott D. Healy	03/22/2017	Martin Acosta	1879890
EPA 200.8 Rev. 5.4	03/14/2017	03/16/2017	Elliott D. Healy	03/18/2017	Betina Topolski	1879890
	03/14/2017	03/16/2017	Elliott D. Healy	03/21/2017	Betina Topolski	1879890
EPA 300.0 Rev. 2.1	03/14/2017			03/18/2017	Elisa J Lutz	1879859, 1879862
	03/14/2017			03/24/2017	Ping Hua	1879859, 1879862
EPA 350.1 Rev. 2.0	03/14/2017			03/15/2017	Sofia Elnemr	1879860, 1879863
EPA 351.2 Rev. 2.0	03/14/2017	03/17/2017	Adrian Shelby	03/20/2017	Joseph Suarez	1879860, 1879863
EPA 353.2 Rev. 2.0	03/14/2017			03/20/2017	Beverly Y. Sanders	1879860, 1879863
EPA 365.1 Rev. 2.0	03/14/2017	03/15/2017	Vijayalakshmi Reddy	03/17/2017	Lipi Saha	1879860, 1879863
EPA 365.1 Rev. 2.0 dissolved	03/14/2017			03/14/2017 15:05	Ping Hua	1879864
	03/14/2017			03/14/2017 15:32	Ping Hua	1879861
EPA 8321B	03/14/2017	03/15/2017	Mohammad Ghaffari	03/15/2017	Mohammad Ghaffari	1879896, 1879897
SM 2120 B	03/14/2017			03/14/2017 18:35	Julie Michelle Frank	1879859
	03/14/2017			03/14/2017 18:36	Julie Michelle Frank	1879862
SM 2320 B-97	03/14/2017			03/22/2017	Dale L. Simmons	1879859, 1879862
SM 2540 C-97	03/14/2017			03/17/2017	Yijie Li	1879859, 1879862
SM 2540 D-97	03/14/2017			03/17/2017	Yijie Li	1879859, 1879862
SM 4500 F-C-97	03/14/2017			03/22/2017	Dale L. Simmons	1879859, 1879862
SM 5310 B-00	03/14/2017			03/15/2017	Julia Storbeck	1879860, 1879863
USGS O-2060-01	03/14/2017	03/15/2017	Hoor Shaik	03/18/2017	Juyoung Kim	1879896, 1879897
	03/14/2017	03/15/2017	Hoor Shaik	03/22/2017	Juyoung Kim	1879896, 1879897