

Chemical Analysis Report

SE-DIST-2017-09-28-01

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

Event Description: **SMP-G1 Extra samples**
Request ID: **RQ-2017-09-25-55**
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, Ph.D, QA Officer
Phone (850) 245-8085

Certified by: Liang Lin, Environmental Administrator

Date Certified: 16-OCT-2017 14:23

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

NON-CONFORMANCE REPORT INCLUDED

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: Popash Slough @ SR-70

Collection Date/Time: 09/26/2017 13:00

Field ID: G1SE0017

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1932362	EPA 180.1 Rev. 2.0	Turbidity	5.8		NTU	P332417	
	EPA 300.0 Rev. 2.1	Chloride	75		mg Cl/L	P332575	
		Sulfate	12		mg SO4/L	P332577	
	SM 2120 B	Color (true)	500		PCU	P332390	
	SM 2320 B-97	Total Alkalinity	39		mg CaCO3/L	P332667	
	SM 2540 C-97	TDS	270		mg/L	P332764	
	SM 2540 D-97	TSS	4	I	mg/L	P332545	
	SM 4500 F-C-97	Fluoride	0.060	I	mg F/L	P332670	
1932363	EPA 350.1 Rev. 2.0	Ammonia-N	0.075		mg N/L	P332761	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	2.0		mg N/L	P332534	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P332695	
	EPA 365.1 Rev. 2.0	Total-P	0.81		mg P/L	P332620	
	SM 5310 B-00	Organic Carbon	30		mg C/L	P332616	
1932364	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.62		mg P/L	P332409	

Ref. Method and Comment:

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

Sample Location: Taylor Creek @ SR-70

Collection Date/Time: 09/26/2017 13:55

Field ID: G1SE0011

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1932365	EPA 180.1 Rev. 2.0	Turbidity	7.4		NTU	P332417	
	EPA 300.0 Rev. 2.1	Chloride	43		mg Cl/L	P332575	
		Sulfate	37		mg SO4/L	P332577	
	SM 2120 B	Color (true)	260		PCU	P332390	
	SM 2320 B-97	Total Alkalinity	135		mg CaCO3/L	P332667	
	SM 2540 C-97	TDS	328	A	mg/L	P332764	
	SM 2540 D-97	TSS	3	IA	mg/L	P332545	
	SM 4500 F-C-97	Fluoride	0.089	I	mg F/L	P332670	
1932366	EPA 350.1 Rev. 2.0	Ammonia-N	0.95		mg N/L	P332825	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	2.5		mg N/L	P332534	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.13		mg N/L	P332695	
	EPA 365.1 Rev. 2.0	Total-P	0.35		mg P/L	P332530	
	SM 5310 B-00	Organic Carbon	29		mg C/L	P332616	
1932367	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.23		mg P/L	P332409	
1932387	EPA 8321B	Sucralose**	0.13		ug/L	P332449	
	USGS O-2060-01	2,4-D	0.044		ug/L	P332448	
		Diuron	9.4E-04	I	ug/L	P332448	
		Fenuron	0.0080	U	ug/L	P332448	
		Imidacloprid	0.0057		ug/L	P332448	MS
		Bentazon	1.2		ug/L	P332448	MS
		Linuron	0.0040	U	ug/L	P332448	
		Acetaminophen**	0.0080	U	ug/L	P332448	
		MCP	0.0020	U	ug/L	P332448	
		MCP	0.0020	U	ug/L	P332448	

Field ID: G1SE0011

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1932387	USGS O-2060-01	Carbamazepine**	8.8E-04	I	ug/L	P332448	
		Triclopyr**	0.0040	U	ug/L	P332448	
		Primidone**	0.0040	U	ug/L	P332448	
		Fluridone**	4.0E-04	U	ug/L	P332448	
1932392	EPA 200.7 Rev. 4.4	Calcium	63.7		mg/L	P332421	
		Iron	1.55E+03		ug/L	P332421	
		Magnesium	6.04		mg/L	P332421	
		Potassium	4.2		mg/L	P332421	
		Sodium	30.5		mg/L	P332421	
	EPA 200.8 Rev. 5.4	Zinc	5.0	U	ug/L	P332421	
		Arsenic	2.00		ug/L	P332421	
		Cadmium	0.020	U	ug/L	P332421	
		Chromium	0.71	I	ug/L	P332421	
		Copper	0.36	I	ug/L	P332421	
		Lead	0.13	I	ug/L	P332421	
		Nickel	0.74	I	ug/L	P332421	
		Silver	0.010	U	ug/L	P332421	

Ref. Method and Comment:

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

Non-Conformance Report

NCR ID: 6654

Event(s)	Job(s)	Sample(s)	Test(s)
SE-DIST-2017-09-28-01	TLH-2017-09-28-32		
SE-DIST-2017-09-28-01	TLH-2017-09-28-43		
SE-DIST-2017-09-28-01	TLH-2017-09-28-45		

NCR Type: SHIPPING/RECEIVING

NCR Category: Samples arrived late

Observation: Samples arrived one or more days late,by FEDEX.
FedEx code:7878 6313 0805

Resolution: Biology and Chemistry supervisors were notified by email. Data will be qualified as appropriate.

Authorized by/Date: Joshua Ayres 10/6/2017

The Non-Conformance Report details exceptions or problems encountered with the events/jobs/samples/test.
Please address questions to:

Chemistry Colin Wright (850) 245-8085
Biology Cheryl Swanson (850) 245-8177

Quality Assurance Report Method Blank Results

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P332417

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: P332421

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: P332421

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: P332575

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P332577

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P332761

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P332825

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P332534

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

Quality Assurance Report Method Blank Results

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P332695

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P332530

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P332620

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P332409

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

Reference Method: EPA 8321B
Batch ID: P332449

Component	Result	Code	Units
Sucralose	0.010	U	ug/L

Reference Method: SM 2120 B
Batch ID: P332390

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
Batch ID: P332667

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

Reference Method: SM 2540 C-97
Batch ID: P332764

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P332545

Component	Result	Code	Units
TSS	2	U	mg/L

Quality Assurance Report Method Blank Results

Reference Method: SM 4500 F-C-97
Batch ID: P332670

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P332616

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

Reference Method: USGS O-2060-01
Batch ID: P332448

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	8.0E-04	U	ug/L
Fenuron	0.0080	U	ug/L
Fluridone	4.0E-04	U	ug/L
Imidacloprid	8.0E-04	U	ug/L
Linuron	0.0040	U	ug/L
MCPP	0.0020	U	ug/L
Primidone	0.0040	U	ug/L
Triclopyr	0.0040	U	ug/L

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P332421

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Calcium	107		P	85 - 115
Iron	105		P	85 - 115
Magnesium	107		P	85 - 115
Potassium	100		P	85 - 115
Sodium	105		P	85 - 115
Zinc	99.6		P	85 - 115

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P332421

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Arsenic	101		P	85 - 115
Cadmium	98.6		P	85 - 115
Chromium	94.7		P	85 - 115
Copper	96.5		P	85 - 115
Lead	95.9		P	85 - 115
Nickel	99.4		P	85 - 115
Silver	95.8		P	85 - 115

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P332575

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Chloride	98.7		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P332577

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P332761

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P332825

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P332534

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P332695

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
NO ₂ NO ₃ -N	106		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P332530

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P332620

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total-P	96.2		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P332409

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

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 8321B
Batch ID: P332449

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Sucralose	86.6		P	40 - 150

Reference Method: SM 2320 B-97
Batch ID: P332667

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	103		P	95 - 108

Reference Method: SM 4500 F-C-97
Batch ID: P332670

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	96.8		P	92 - 103

Reference Method: SM 5310 B-00
Batch ID: P332616

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	97.0		P	85 - 115

Reference Method: USGS O-2060-01
Batch ID: P332448

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2,4-D	69.5		P	40 - 150
Acetaminophen	126		P	30 - 150
Bentazon	41.3		P	40 - 150
Carbamazepine	124		P	40 - 150
Diuron	111		P	40 - 150
Fenuron	115		P	40 - 150
Fluridone	101		P	40 - 150
Imidacloprid	107		P	40 - 160
Linuron	115		P	40 - 150
MCPP	72.8		P	40 - 150
Primidone	107		P	40 - 150
Triclopyr	75.6		P	40 - 150

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P332421

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1932064	Calcium	106		P	80 - 120
1932064	Iron	104		P	80 - 120
1932064	Magnesium	107		P	80 - 120
1932064	Potassium	99.7		P	80 - 120
1932064	Sodium	104		P	80 - 120
1932064	Zinc	95.2		P	80 - 120
1932279	Calcium	108	105	P/P	80 - 120

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P332421

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1932279	Iron	107	106	P/P	80 - 120
1932279	Magnesium	108	107	P/P	80 - 120
1932279	Potassium	104	103	P/P	80 - 120
1932279	Sodium	103	103	P/P	80 - 120
1932279	Zinc	98.8	99.3	P/P	80 - 120

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P332421

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1932064	Arsenic	99.7		P	80 - 120
1932064	Cadmium	100		P	80 - 120
1932064	Chromium	96.8		P	80 - 120
1932064	Copper	96.5		P	80 - 120
1932064	Lead	96.7		P	80 - 120
1932064	Nickel	97.1		P	80 - 120
1932064	Silver	95.6		P	80 - 120
1932279	Arsenic	101	99.9	P/P	80 - 120
1932279	Cadmium	102	101	P/P	80 - 120
1932279	Chromium	101	100	P/P	80 - 120
1932279	Copper	97.2	96.7	P/P	80 - 120
1932279	Lead	98.6	98.1	P/P	80 - 120
1932279	Nickel	98.4	98.3	P/P	80 - 120
1932279	Silver	96.6	96.0	P/P	80 - 120

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P332575

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1932317	Chloride	96.7		P	90 - 110
1932712	Chloride	98.3		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P332577

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1932317	Sulfate	97.5		P	90 - 110
1932712	Sulfate	99.1		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P332761

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1932266	Ammonia-N	101	102	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P332825

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1932988	Ammonia-N	102	101	P/P	90 - 110

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P332534

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1932353	Kjeldahl Nitrogen	95.3	96.8	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P332695

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1932366	NO2NO3-N	104	106	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P332530

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1932353	Total-P	102	102	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P332620

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1932574	Total-P	97.2	97.1	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P332409

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1932195	O-Phosphate-P	98.0	95.2	P/P	90 - 110

Reference Method: EPA 8321B
Batch ID: P332449

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1932400	Sucralose	88.4	77.9	P/P	40 - 150

Reference Method: SM 4500 F-C-97
Batch ID: P332670

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1932888	Fluoride	98.8	98.8	P/P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P332616

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1932192	Organic Carbon	94.6	94.9	P/P	85 - 115

Reference Method: USGS O-2060-01
Batch ID: P332448

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1932495	2,4-D	73.9	74.8	P/P	40 - 150
1932495	Acetaminophen	85.1	95.2	P/P	30 - 150
1932495	Bentazon	29.1	30.2	F/F	40 - 150
1932495	Carbamazepine	96.0	91.3	P/P	40 - 150

Quality Assurance Report Matrix Spike Accuracy

Reference Method: USGS O-2060-01
Batch ID: P332448

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1932495	Diuron	76.4	69.4	P/P	40 - 150
1932495	Fenuron	90.4	83.0	P/P	40 - 150
1932495	Fluridone	49.3	49.3	P/P	40 - 150
1932495	Imidacloprid	213	192	F/F	40 - 160
1932495	Linuron	97.8	95.8	P/P	40 - 150
1932495	MCP	59.6	56.8	P/P	40 - 150
1932495	Primidone	109	101	P/P	40 - 150
1932495	Triclopyr	55.5	59.0	P/P	40 - 150

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P332417

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1932302	Turbidity	0.160	Sample	P	0 - 20

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P332421

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1932279	Calcium	1.50	Spike	P	0 - 20
1932279	Iron	0.878	Spike	P	0 - 20
1932279	Magnesium	0.497	Spike	P	0 - 20
1932279	Potassium	0.517	Spike	P	0 - 20
1932279	Sodium	0.408	Spike	P	0 - 20
1932279	Zinc	0.510	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P332421

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1932279	Arsenic	0.575	Spike	P	0 - 20
1932279	Cadmium	0.339	Spike	P	0 - 20
1932279	Chromium	0.230	Spike	P	0 - 20
1932279	Copper	0.535	Spike	P	0 - 20
1932279	Lead	0.523	Spike	P	0 - 20
1932279	Nickel	0.130	Spike	P	0 - 20
1932279	Silver	0.592	Spike	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P332575

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1932317	Chloride	0.396	Sample	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P332577

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1932317	Sulfate	4.04	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P332761

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1932266	Ammonia-N	0.156	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P332825

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1932988	Ammonia-N	0.703	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P332534

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1932353	Kjeldahl Nitrogen	0.932	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P332695

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1932366	NO2NO3-N	1.17	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P332530

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1932353	Total-P	0.363	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P332620

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1932574	Total-P	0.164	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P332409

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1932195	O-Phosphate-P	2.90	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 8321B
Batch ID: P332449

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1932400	Sucralose	6.88	Spike	P	0 - 30

Reference Method: SM 2120 B
Batch ID: P332390

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1932317	Color (true)	0.819	Sample	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P332667

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1932888	Total Alkalinity	0.00389	Sample	P	0 - 4.8

Reference Method: SM 2540 C-97
Batch ID: P332764

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1932365	TDS	0.610	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
Batch ID: P332670

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1932888	Fluoride	0.0	Spike	P	0 - 3.0

Reference Method: SM 5310 B-00
Batch ID: P332616

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1932192	Organic Carbon	0.243	Spike	P	0 - 20

Reference Method: USGS O-2060-01
Batch ID: P332448

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1932495	2,4-D	0.857	Spike	P	0 - 30
1932495	Acetaminophen	11.2	Spike	P	0 - 30
1932495	Bentazon	3.30	Spike	P	0 - 30
1932495	Carbamazepine	4.90	Spike	P	0 - 30
1932495	Diuron	5.00	Spike	P	0 - 30
1932495	Fenuron	8.51	Spike	P	0 - 30
1932495	Fluridone	0.0367	Spike	P	0 - 30
1932495	Imidacloprid	8.31	Spike	P	0 - 30
1932495	Linuron	1.98	Spike	P	0 - 30

Quality Assurance Report Precision

Reference Method: USGS O-2060-01
Batch ID: P332448

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1932495	MCP	4.71	Spike	P	0 - 30
1932495	Primidone	7.65	Spike	P	0 - 30
1932495	Triclopyr	6.15	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: 1932387
Field Sample ID: G1SE0011

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	Acetaminophen-d4	96.0	P	30 - 160
EPA 8321B	Carbamazepine-d10	66.5	P	30 - 160
EPA 8321B	Diuron-d6	47.4	P	30 - 160
EPA 8321B	Primidone-d5	75.3	P	30 - 160
EPA 8321B	Sucralose-d6	92.8	P	40 - 160
USGS O-2060-01	2,4-D-d3	69.7	P	40 - 160
USGS O-2060-01	Acetaminophen-d4	96.0	P	30 - 160
USGS O-2060-01	Carbamazepine-d10	66.5	P	30 - 160
USGS O-2060-01	Diuron-d6	47.4	P	30 - 160
USGS O-2060-01	Primidone-d5	75.3	P	30 - 160
USGS O-2060-01	Sucralose-d6	92.8	P	40 - 160

Quality Assurance Report Calibration Verification

Reference Method: EPA 300.0 Rev. 2.1
Run ID: A79203
Included Lab Sample IDs: 1932362, 1932365

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	98.9	99.2	P/P	90 - 110
Chloride	99.2	99.2	P/P	90 - 110
Sulfate	101	99.0	P/P	90 - 110
Sulfate	97.3	101	P/P	90 - 110

Reference Method: SM 2120 B
Run ID: A79209
Included Lab Sample IDs: 1932362, 1932365

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	103	102	P/P	85 - 115

Quality Assurance Report Calibration Verification

Reference Method: EPA 365.1 Rev. 2.0 dissolved

Run ID: A79216

Included Lab Sample IDs: 1932364, 1932367

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	100	98.3	P/P	90 - 110
O-Phosphate-P	99.3	101	P/P	90 - 110

Reference Method: EPA 180.1 Rev. 2.0

Run ID: A79220

Included Lab Sample IDs: 1932362, 1932365

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Turbidity	99.5	100	P/P	95 - 105

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A79258

Included Lab Sample IDs: 1932392

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Arsenic	101	102	P/P	90 - 110
Cadmium	100	101	P/P	90 - 110
Chromium	101	101	P/P	90 - 110
Copper	98.7	99.5	P/P	90 - 110
Lead	99.1	98.7	P/P	90 - 110
Nickel	99.0	100	P/P	90 - 110
Silver	95.4	96.1	P/P	90 - 110

Reference Method: EPA 200.7 Rev. 4.4

Run ID: A79259

Included Lab Sample IDs: 1932392

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Calcium	101	98.1	P/P	90 - 110
Iron	98.8	99.5	P/P	90 - 110
Magnesium	99.8	100	P/P	90 - 110
Potassium	97.2	97.0	P/P	90 - 110
Sodium	98.5	96.8	P/P	90 - 110
Zinc	95.6	94.9	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A79301

Included Lab Sample IDs: 1932366

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

Reference Method: SM 5310 B-00

Run ID: A79302

Included Lab Sample IDs: 1932363, 1932366

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	97.0	95.5	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: SM 2320 B-97

Run ID: A79318

Included Lab Sample IDs: 1932362, 1932365

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	102	98.5	P/P	90 - 110

Reference Method: SM 4500 F-C-97

Run ID: A79318

Included Lab Sample IDs: 1932362, 1932365

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	99.0	101	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A79325

Included Lab Sample IDs: 1932363, 1932366

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	102	104	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A79332

Included Lab Sample IDs: 1932363, 1932366

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	99.9	99.5	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A79344

Included Lab Sample IDs: 1932363

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

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A79346

Included Lab Sample IDs: 1932363

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	105	102	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A79368

Included Lab Sample IDs: 1932366

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

Reference Method: USGS O-2060-01

Run ID: A79377

Included Lab Sample IDs: 1932387

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
2,4-D	102	103	P/P	50 - 150
Acetaminophen	106	103	P/P	60 - 150

Quality Assurance Report Calibration Verification

Reference Method: USGS O-2060-01
Run ID: A79377
Included Lab Sample IDs: 1932387

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Carbamazepine	107	110	P/P	60 - 150
Diuron	105	108	P/P	60 - 150
Fenuron	101	103	P/P	60 - 150
Fluridone	101	103	P/P	60 - 160
Imidacloprid	98.6	97.1	P/P	60 - 150
Linuron	106	105	P/P	60 - 150
MCPP	101	98.5	P/P	50 - 150
Primidone	97.6	101	P/P	60 - 150
Triclopyr	106	106	P/P	50 - 150

Reference Method: USGS O-2060-01
Run ID: A79444
Included Lab Sample IDs: 1932387

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Bentazon	97.9	98.2	P/P	50 - 150

Reference Method: EPA 8321B
Run ID: A79445
Included Lab Sample IDs: 1932387

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Sucralose	98.0	105	P/P	60 - 150

* Pass/Fail determinations are made for each bracketing calibration verification check.
Control limits for initial calibration checks may be different from those for continuing checks, depending on method requirements.
Where they are different, both control limits are provided.

Quality Assurance Report Summary

Ref. Method	Analyte	LCS % Recovery	MS % Recovery			Precision	
			LCS			SMP	MS
EPA 180.1 Rev. 2.0	Turbidity					0.160	
EPA 200.7 Rev. 4.4	Calcium	107	106	108	105		1.50
	Iron	105	104	107	106		0.878
	Magnesium	107	107	108	107		0.497
	Potassium	100	99.7	104	103		0.517
	Sodium	105	104	103	103		0.408
	Zinc	99.6	95.2	98.8	99.3		0.510
EPA 200.8 Rev. 5.4	Arsenic	101	99.7	101	99.9		0.575
	Cadmium	98.6	100	102	101		0.339
	Chromium	94.7	96.8	101	100		0.230
	Copper	96.5	96.5	97.2	96.7		0.535
	Lead	95.9	96.7	98.6	98.1		0.523
	Nickel	99.4	97.1	98.4	98.3		0.130
	Silver	95.8	95.6	96.6	96.0		0.592
EPA 300.0 Rev. 2.1	Chloride	98.7	96.7	98.3		0.396	
	Sulfate	100	97.5	99.1		4.04	
EPA 350.1 Rev. 2.0	Ammonia-N	103	101	102			0.156

Quality Assurance Report Summary

Ref. Method	Analyte	LCS % Recovery	MS % Recovery		Precision	
					LCS	SMP
EPA 350.1 Rev. 2.0	Ammonia-N	104	102	101		
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	101	95.3	96.8		
EPA 353.2 Rev. 2.0	NO ₂ NO ₃ -N	106	104	106		
EPA 365.1 Rev. 2.0	Total-P	101	102	102		
	Total-P	96.2	97.2	97.1		
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	98.1	98.0	95.2		
EPA 8321B	Sucralose	86.6	88.4	77.9		
SM 2120 B	Color (true)					0.819
SM 2320 B-97	Total Alkalinity	103				0.0038
SM 2540 C-97	TDS					0.610
SM 4500 F-C-97	Fluoride	96.8	98.8	98.8		
SM 5310 B-00	Organic Carbon	97.0	94.6	94.9		
USGS O-2060-01	2,4-D	69.5	73.9	74.8		
	Acetaminophen	126	85.1	95.2		
	Bentazon	41.3	29.1	30.2		
	Carbamazepine	124	96.0	91.3		
	Diuron	111	76.4	69.4		
	Fenuron	115	90.4	83.0		
	Fluridone	101	49.3	49.3		
	Imidacloprid	107	213	192		
	Linuron	115	97.8	95.8		
	MCP	72.8	59.6	56.8		
	Primidone	107	109	101		
	Tricopyr	75.6	55.5	59.0		

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	1932362, 1932365
EPA 200.7 Rev. 4.4 / E31780	Total Recoverable Metals analysis using ICP emission spectroscopy for aqueous samples supporting Clean Water Act Projects	1932392
EPA 200.8 Rev. 5.4 / E31780	Total Recoverable Metals analysis using ICP-MS for aqueous samples supporting Clean Water Act Projects	1932392
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	1932362, 1932365
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	1932362, 1932365
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	1932363, 1932366
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	1932363, 1932366
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	1932363, 1932366
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	1932363, 1932366
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	1932364, 1932367
EPA 8321B / E31780	Analysis of sucralose in water matrices by HPLC/MS/MS	1932387
SM 2120 B / E31780	True Color measured at 450 nm	1932362, 1932365
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO ₃ /L	1932362, 1932365
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	1932362, 1932365
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices	1932362, 1932365
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	1932362, 1932365
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	1932363, 1932366

Reference Method Descriptions

Method / DoH Cert #	Description	<u>Associated Samples</u>
USGS O-2060-01 / E31780	Chlorinated (phenoxy acid) herbicides in water matrices by HPLC/MS/MS	1932387
USGS O-2060-01 / E31780	Urea herbicides and other chemicals in water matrices by HPLC/MS/MS	1932387

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
EPA 180.1 Rev. 2.0	09/28/2017			09/28/2017 12:31	DeAsia Armster	1932362
	09/28/2017			09/28/2017 12:32	DeAsia Armster	1932365
EPA 200.7 Rev. 4.4	09/28/2017	09/28/2017	Elliott D. Healy	09/29/2017	Betina Topolski	1932392
EPA 200.8 Rev. 5.4	09/28/2017	09/28/2017	Elliott D. Healy	09/29/2017	Nadine Brooks	1932392
EPA 300.0 Rev. 2.1	09/28/2017			09/29/2017	Julia Storbeck	1932362, 1932365
EPA 350.1 Rev. 2.0	09/28/2017			10/04/2017	Sofia Elnemr	1932363
	09/28/2017			10/05/2017	Sofia Elnemr	1932366
EPA 351.2 Rev. 2.0	09/28/2017	10/02/2017	Sofia Elnemr	10/03/2017	Joseph Suarez	1932363, 1932366
EPA 353.2 Rev. 2.0	09/28/2017			10/04/2017	Beverly Y. Sanders	1932363, 1932366
EPA 365.1 Rev. 2.0	09/28/2017	10/02/2017	Sima Feizi	10/03/2017	Lipi Saha	1932366
	09/28/2017	10/03/2017	Sima Feizi	10/04/2017	Lipi Saha	1932363
EPA 365.1 Rev. 2.0 dissolved	09/28/2017			09/28/2017 12:58	Megan Treadwell	1932364
	09/28/2017			09/28/2017 13:21	Megan Treadwell	1932367
EPA 8321B	09/28/2017	10/03/2017	Hoor Shaik	10/05/2017	Juyoung Kim	1932387
SM 2120 B	09/28/2017			09/28/2017 12:50	Tanya Welborn	1932362
	09/28/2017			09/28/2017 12:51	Tanya Welborn	1932365
SM 2320 B-97	09/28/2017			10/04/2017	Dale L. Simmons	1932362, 1932365
SM 2540 C-97	09/28/2017			09/29/2017	DeAsia Armster	1932362, 1932365
SM 2540 D-97	09/28/2017			09/29/2017	DeAsia Armster	1932362, 1932365
SM 4500 F-C-97	09/28/2017			10/04/2017	Dale L. Simmons	1932362, 1932365
SM 5310 B-00	09/28/2017			10/03/2017	Ping Hua	1932363, 1932366
USGS O-2060-01	09/28/2017	10/03/2017	Hoor Shaik	10/07/2017	Julie Michelle Frank	1932387
	09/28/2017	10/03/2017	Hoor Shaik	10/09/2017	Julie Michelle Frank	1932387