

Chemical Analysis Report

SE-DIST-2017-06-29-01

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

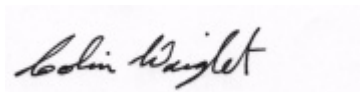
Event Description: **SMP- Last G5 Run**
Request ID: **RQ-2017-06-26-16**
Customer: **SE-DIST**
Project ID: **SMP**

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

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Certified by: Colin Wright, Program Administrator

Date Certified: 27-JUL-2017 10:49

A handwritten signature in black ink, appearing to read "Colin Wright", is displayed on a light-colored rectangular 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: Micco Ditch @ Micco Rd.

Collection Date/Time: 06/28/2017 11:00

Field ID: G5SE0048

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1910004	EPA 180.1 Rev. 2.0	Turbidity	20		NTU	P327749	
	EPA 300.0 Rev. 2.1	Chloride	100		mg Cl/L	P328145	
		Sulfate	24		mg SO4/L	P328150	
	SM 2120 B	Color (true)	130		PCU	P327735	
	SM 2320 B-97	Total Alkalinity	164		mg CaCO3/L	P328061	
	SM 2540 C-97	TDS	416		mg/L	P328161	
	SM 2540 D-97	TSS	9	I	mg/L	P328174	
	SM 4500 F-C-97	Fluoride	0.21		mg F/L	P328068	
1910006	EPA 350.1 Rev. 2.0	Ammonia-N	0.057		mg N/L	P327893	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.3		mg N/L	P328110	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.007	I	mg N/L	P327855	
	EPA 365.1 Rev. 2.0	Total-P	0.33		mg P/L	P327861	
	SM 5310 B-00	Organic Carbon	21		mg C/L	P327944	
1910008	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.16		mg P/L	P327742	
1910016	EPA 8321B	Sucralose**	0.97		ug/L	P327691	
	USGS O-2060-01	2,4-D	0.090		ug/L	P327711	
		Diuron	0.0015	I	ug/L	P327711	
		Fenuron	0.0080	U	ug/L	P327711	
		Imidacloprid	0.021		ug/L	P327711	
		Bentazon	0.0057		ug/L	P327711	
		Linuron	0.0040	U	ug/L	P327711	RPD
		Acetaminophen**	0.0080	U	ug/L	P327711	
		MCP	0.0023	I	ug/L	P327711	
		Carbamazepine**	0.0028		ug/L	P327711	
		Triclopyr**	0.0040	U	ug/L	P327711	
		Primidone**	0.0046	I	ug/L	P327711	
		Fluridone**	0.0026		ug/L	P327711	
	EPA 200.7 Rev. 4.4	Calcium	72.5		mg/L	P327754	
		Iron	2.62E+03		ug/L	P327754	
		Magnesium	11.0		mg/L	P327754	
		Potassium	3.0		mg/L	P327754	
		Sodium	49.2		mg/L	P327754	
		Zinc	5.0	U	ug/L	P327754	
		Arsenic	2.31		ug/L	P327754	
		Cadmium	0.020	U	ug/L	P327754	
		Chromium	0.55	I	ug/L	P327754	
		Copper	1.61		ug/L	P327754	
	EPA 200.8 Rev. 5.4	Lead	0.078	I	ug/L	P327754	
		Nickel	0.31	I	ug/L	P327754	
		Silver	0.010	U	ug/L	P327754	

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: South Relief Canal @ US1

Collection Date/Time: 06/28/2017 13:40

Field ID: G5SE0044

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1910005	EPA 180.1 Rev. 2.0	Turbidity	3.1		NTU	P327749	
	EPA 300.0 Rev. 2.1	Chloride	380		mg Cl/L	P328145	
		Sulfate	97		mg SO4/L	P328150	
	SM 2120 B	Color (true)	61	A	PCU	P327734	
	SM 2320 B-97	Total Alkalinity	205		mg CaCO3/L	P328061	
	SM 2540 C-97	TDS	978	A	mg/L	P328161	
	SM 2540 D-97	TSS	6	IA	mg/L	P328174	
	SM 4500 F-C-97	Fluoride	0.52		mg F/L	P328068	
1910007	EPA 350.1 Rev. 2.0	Ammonia-N	0.057		mg N/L	P327893	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.84		mg N/L	P328110	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.092		mg N/L	P327855	
	EPA 365.1 Rev. 2.0	Total-P	0.14		mg P/L	P327861	
	SM 5310 B-00	Organic Carbon	13		mg C/L	P327944	
1910009	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.084		mg P/L	P327742	
1910017	EPA 8321B	Sucralose**	1.1		ug/L	P327691	
	USGS O-2060-01	2,4-D	0.025		ug/L	P327711	
		Diuron	0.0020	I	ug/L	P327711	
		Fenuron	0.0080	U	ug/L	P327711	
		Imidacloprid	0.030		ug/L	P327711	
		Bentazon	0.014		ug/L	P327711	
		Linuron	0.0040	U	ug/L	P327711	RPD
		Acetaminophen**	0.0080	U	ug/L	P327711	
		MCP	0.0020	U	ug/L	P327711	
		Carbamazepine**	0.0028		ug/L	P327711	
		Triclopyr**	0.0040	U	ug/L	P327711	
		Primidone**	0.0040	U	ug/L	P327711	
		Fluridone**	0.0049		ug/L	P327711	
	EPA 200.7 Rev. 4.4	Calcium	108		mg/L	P327754	
		Iron	360		ug/L	P327754	
1910019		Magnesium	35.9		mg/L	P327754	
		Potassium	8.1		mg/L	P327754	
		Sodium	180		mg/L	P327754	
		Zinc	5.0	U	ug/L	P327754	
	EPA 200.8 Rev. 5.4	Arsenic	1.22		ug/L	P327754	
		Cadmium	0.020	U	ug/L	P327754	
		Chromium	0.47	I	ug/L	P327754	
		Copper	1.68		ug/L	P327754	
		Lead	0.15	I	ug/L	P327754	
		Nickel	0.43	I	ug/L	P327754	
		Silver	0.010	U	ug/L	P327754	

Ref. Method and Comment:

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

Quality Assurance Report

Method Blank Results

Quality Assurance Report Method Blank Results

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P327749

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P327754

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: P327754

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: P328145

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P328150

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P327893

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P328110

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: P327855

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P327861

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P327742

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

Reference Method: EPA 8321B
Batch ID: P327691

Component	Result	Code	Units
Sucralose	0.010	U	ug/L

Reference Method: SM 2120 B
Batch ID: P327734

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2120 B
Batch ID: P327735

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
Batch ID: P328061

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

Reference Method: SM 2540 C-97
Batch ID: P328161

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P328174

Component	Result	Code	Units
TSS	2	U	mg/L

Quality Assurance Report Method Blank Results

Reference Method: SM 4500 F-C-97
Batch ID: P328068

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P327944

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

Reference Method: USGS O-2060-01
Batch ID: P327711

Component	Result	Code	Units
2,4-D	8.0E-04	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: P327754

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Calcium	100		P	85 - 115
Iron	102		P	85 - 115
Magnesium	103		P	85 - 115
Potassium	99.0		P	85 - 115
Sodium	102		P	85 - 115
Zinc	95.5		P	85 - 115

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P327754

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Arsenic	99.0		P	85 - 115
Cadmium	98.5		P	85 - 115
Chromium	95.9		P	85 - 115
Copper	95.8		P	85 - 115
Lead	95.1		P	85 - 115
Nickel	98.6		P	85 - 115
Silver	96.2		P	85 - 115

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P328145

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Chloride	99.3		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P328150

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Sulfate	96.9		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P327893

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P328110

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P327855

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P327861

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: P327742

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

Reference Method: EPA 8321B
Batch ID: P327691

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Sucralose	112		P	40 - 150

Reference Method: SM 2320 B-97
Batch ID: P328061

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	101		P	95 - 108

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: SM 4500 F-C-97
 Batch ID: P328068

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	94.6		P	92 - 103

Reference Method: SM 5310 B-00
 Batch ID: P327944

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	98.9		P	85 - 115

Reference Method: USGS O-2060-01
 Batch ID: P327711

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2,4-D	101		P	40 - 150
Acetaminophen	101		P	30 - 150
Bentazon	82.7		P	40 - 150
Carbamazepine	107		P	40 - 150
Diuron	103		P	40 - 150
Fenuron	110		P	40 - 150
Fluridone	92.4		P	40 - 150
Imidacloprid	110		P	40 - 160
Linuron	102		P	40 - 150
MCPP	84.6		P	40 - 150
Primidone	92.6		P	40 - 150
Triclopyr	82.2		P	40 - 150

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 200.7 Rev. 4.4
 Batch ID: P327754

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1909385	Calcium	97.9		P	80 - 120
1909385	Iron	98.8		P	80 - 120
1909385	Magnesium	96.3		P	80 - 120
1909385	Potassium	96.1		P	80 - 120
1909385	Sodium	102		P	80 - 120
1909385	Zinc	93.0		P	80 - 120
1909850	Calcium	97.9		P	80 - 120
1909850	Iron	103	102	P/P	80 - 120
1909850	Magnesium	104	101	P/P	80 - 120
1909850	Potassium	98.1	97.5	P/P	80 - 120
1909850	Sodium	103	99.8	P/P	80 - 120
1909850	Zinc	95.0	92.1	P/P	80 - 120

Reference Method: EPA 200.8 Rev. 5.4
 Batch ID: P327754

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1909385	Arsenic	101		P	80 - 120
1909385	Cadmium	100		P	80 - 120

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P327754

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1909385	Chromium	97.3		P	80 - 120
1909385	Copper	92.7		P	80 - 120
1909385	Lead	96.5		P	80 - 120
1909385	Nickel	96.2		P	80 - 120
1909385	Silver	96.1		P	80 - 120
1909850	Arsenic	99.7	98.5	P/P	80 - 120
1909850	Cadmium	100	101	P/P	80 - 120
1909850	Chromium	98.0	97.3	P/P	80 - 120
1909850	Copper	93.3	92.7	P/P	80 - 120
1909850	Lead	96.7	96.2	P/P	80 - 120
1909850	Nickel	97.2	96.0	P/P	80 - 120
1909850	Silver	96.4	96.9	P/P	80 - 120

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P328145

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1910181	Chloride	95.9		P	90 - 110
1910183	Chloride	96.1		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P328150

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1910181	Sulfate	98.1		P	90 - 110
1910183	Sulfate	97.1		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P327893

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1909993	Ammonia-N	100	99.3	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P328110

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1909997	Kjeldahl Nitrogen	99.9	98.9	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P327855

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1909996	NO2NO3-N	104	103	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P327861

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1909997	Total-P	101	102	P/P	90 - 110

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 365.1 Rev. 2.0 dissolved
 Batch ID: P327742

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1910000	O-Phosphate-P	98.5	99.4	P/P	90 - 110

Reference Method: EPA 8321B
 Batch ID: P327691

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1909869	Sucralose	128	130	P/P	40 - 150

Reference Method: SM 4500 F-C-97
 Batch ID: P328068

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1910183	Fluoride	97.4	98.6	P/P	91 - 105

Reference Method: SM 5310 B-00
 Batch ID: P327944

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1909993	Organic Carbon	89.0	92.8	P/P	85 - 115

Reference Method: USGS O-2060-01
 Batch ID: P327711

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1909869	2,4-D	105	83.3	P/P	40 - 150
1909869	Acetaminophen	89.8	81.2	P/P	30 - 150
1909869	Bentazon	64.3	59.9	P/P	40 - 150
1909869	Carbamazepine	120	108	P/P	40 - 150
1909869	Diuron	99.3	82.8	P/P	40 - 150
1909869	Fenuron	106	89.2	P/P	40 - 150
1909869	Fluridone	88.7	76.8	P/P	40 - 150
1909869	Imidacloprid	134	109	P/P	40 - 160
1909869	Linuron	106	76.4	P/P	40 - 150
1909869	MCP	93.9	80.6	P/P	40 - 150
1909869	Primidone	119	103	P/P	40 - 150
1909869	Triclopyr	87.8	73.9	P/P	40 - 150

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
 Batch ID: P327749

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1909991	Turbidity	2.60	Sample	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P327754

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1909850	Calcium	2.13	Spike	P	0 - 20
1909850	Iron	1.76	Spike	P	0 - 20
1909850	Magnesium	1.65	Spike	P	0 - 20
1909850	Potassium	0.503	Spike	P	0 - 20
1909850	Sodium	1.85	Spike	P	0 - 20
1909850	Zinc	3.05	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P327754

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1909850	Arsenic	1.23	Spike	P	0 - 20
1909850	Cadmium	0.826	Spike	P	0 - 20
1909850	Chromium	0.751	Spike	P	0 - 20
1909850	Copper	0.670	Spike	P	0 - 20
1909850	Lead	0.497	Spike	P	0 - 20
1909850	Nickel	1.19	Spike	P	0 - 20
1909850	Silver	0.461	Spike	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P328145

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1910181	Chloride	0.561	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P328150

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1910181	Sulfate	2.75	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P327893

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1909993	Ammonia-N	0.939	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P328110

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1909997	Kjeldahl Nitrogen	0.859	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P327855

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1909996	NO2NO3-N	0.364	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P327861

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1909997	Total-P	0.677	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P327742

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1910000	O-Phosphate-P	0.910	Spike	P	0 - 20

Reference Method: EPA 8321B
Batch ID: P327691

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1909869	Sucralose	1.51	Spike	P	0 - 30

Reference Method: SM 2120 B
Batch ID: P327734

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1910005	Color (true)	1.69	Sample	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P327735

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1909944	Color (true)	8.18	Sample	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P328061

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1910183	Total Alkalinity	0.359	Sample	P	0 - 4.8

Reference Method: SM 2540 C-97
Batch ID: P328161

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1910005	TDS	2.56	Sample	P	0 - 10

Quality Assurance Report Precision

Reference Method: SM 4500 F-C-97
Batch ID: P328068

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1910183	Fluoride	0.996	Spike	P	0 - 3.0

Reference Method: SM 5310 B-00
Batch ID: P327944

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1909993	Organic Carbon	3.33	Spike	P	0 - 20

Reference Method: USGS O-2060-01
Batch ID: P327711

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1909869	2,4-D	23.3	Spike	P	0 - 30
1909869	Acetaminophen	10.1	Spike	P	0 - 30
1909869	Bentazon	7.08	Spike	P	0 - 30
1909869	Carbamazepine	10.5	Spike	P	0 - 30
1909869	Diuron	18.1	Spike	P	0 - 30
1909869	Fenuron	17.3	Spike	P	0 - 30
1909869	Fluridone	14.3	Spike	P	0 - 30
1909869	Imidacloprid	20.4	Spike	P	0 - 30
1909869	Linuron	32.5	Spike	F	0 - 30
1909869	MCPP	15.3	Spike	P	0 - 30
1909869	Primidone	14.2	Spike	P	0 - 30
1909869	Triclopyr	17.2	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: 1910016
Field Sample ID: G5SE0048

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	Sucralose-d6	147	P	40 - 160
USGS O-2060-01	2,4-D-d3	135	P	40 - 150
USGS O-2060-01	Acetaminophen-d4	110	P	30 - 150
USGS O-2060-01	Carbamazepine-d10	95.0	P	30 - 165
USGS O-2060-01	Diuron-d6	76.6	P	30 - 160
USGS O-2060-01	Primidone-d5	80.9	P	30 - 150

Lab Sample ID: 1910017
Field Sample ID: G5SE0044

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	Sucralose-d6	117	P	40 - 160
USGS O-2060-01	2,4-D-d3	121	P	40 - 150

Quality Assurance Report Surrogates

Lab Sample ID: 1910017
 Field Sample ID: G5SE0044

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
USGS O-2060-01	Acetaminophen-d4	102	P	30 - 150
USGS O-2060-01	Carbamazepine-d10	93.4	P	30 - 165
USGS O-2060-01	Diuron-d6	75.3	P	30 - 160
USGS O-2060-01	Primidone-d5	69.9	P	30 - 150

Quality Assurance Report Calibration Verification

Reference Method: EPA 365.1 Rev. 2.0 dissolved
 Run ID: A77426
 Included Lab Sample IDs: 1910008, 1910009

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	100	99.6	P/P	90 - 110
O-Phosphate-P	99.1	100	P/P	90 - 110

Reference Method: SM 2120 B
 Run ID: A77427
 Included Lab Sample IDs: 1910004, 1910005

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	96.3	95.6	P/P	85 - 115
Color (true)	97.7	99.0	P/P	85 - 115

Reference Method: EPA 180.1 Rev. 2.0
 Run ID: A77435
 Included Lab Sample IDs: 1910004, 1910005

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

Reference Method: EPA 200.7 Rev. 4.4
 Run ID: A77476
 Included Lab Sample IDs: 1910018, 1910019

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Calcium	96.2	97.6	P/P	90 - 110
Iron	97.1	96.9	P/P	90 - 110
Magnesium	97.0	96.7	P/P	90 - 110
Potassium	96.7	95.3	P/P	90 - 110
Sodium	97.6	98.1	P/P	90 - 110
Zinc	95.3	95.0	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
 Run ID: A77492
 Included Lab Sample IDs: 1910006, 1910007

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	99.0	100	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A77506

Included Lab Sample IDs: 1910006, 1910007

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	99.7	99.6	P/P	90 - 110

Reference Method: SM 5310 B-00

Run ID: A77524

Included Lab Sample IDs: 1910006, 1910007

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	94.1	96.4	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A77541

Included Lab Sample IDs: 1910006, 1910007

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

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A77551

Included Lab Sample IDs: 1910004, 1910005

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	102	102	P/P	90 - 110
Sulfate	100	94.4	P/P	90 - 110

Reference Method: SM 2320 B-97

Run ID: A77557

Included Lab Sample IDs: 1910004, 1910005

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	103	100	P/P	90 - 110
Total Alkalinity	98.9	103	P/P	90 - 110

Reference Method: SM 4500 F-C-97

Run ID: A77557

Included Lab Sample IDs: 1910004, 1910005

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	97.0	97.6	P/P	90 - 110
Fluoride	97.1	97.0	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A77564

Included Lab Sample IDs: 1910018, 1910019

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Arsenic	100	99.1	P/P	90 - 110
Cadmium	98.7	99.5	P/P	90 - 110
Chromium	98.1	98.5	P/P	90 - 110
Copper	98.9	98.0	P/P	90 - 110
Lead	96.5	97.0	P/P	90 - 110
Nickel	99.1	98.5	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: EPA 200.8 Rev. 5.4
 Run ID: A77564
 Included Lab Sample IDs: 1910018, 1910019

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Silver	94.8	95.3	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
 Run ID: A77578
 Included Lab Sample IDs: 1910006, 1910007

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	90.1	93.5	P/P	90 - 110

Reference Method: USGS O-2060-01
 Run ID: A77714
 Included Lab Sample IDs: 1910016, 1910017

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
2,4-D	91.7	77.3	P/P	50 - 150
Bentazon	85.8	71.6	P/P	50 - 150
MCP	82.7	91.1	P/P	50 - 150
Triclopyr	78.4	72.7	P/P	50 - 150

Reference Method: USGS O-2060-01
 Run ID: A77717
 Included Lab Sample IDs: 1910016, 1910017

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Acetaminophen	81.0	87.6	P/P	60 - 150
Carbamazepine	89.8	88.6	P/P	60 - 150
Diuron	75.6	83.8	P/P	60 - 150
Fenuron	88.3	91.2	P/P	60 - 150
Fluridone	89.8	90.5	P/P	60 - 160
Imidacloprid	93.8	82.2	P/P	60 - 150
Linuron	92.6	79.4	P/P	60 - 150
Primidone	110	86.1	P/P	60 - 150

Reference Method: EPA 8321B
 Run ID: A77777
 Included Lab Sample IDs: 1910016, 1910017

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Sucralose	106	114	P/P	60 - 160
Sucralose	114	135	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	Precision	MS
				LCS	SMP

Quality Assurance Report Summary

Ref. Method	Analyte	LCS % Recovery	MS % Recovery			Precision SMP	MS
			LCS				
EPA 180.1 Rev. 2.0	Turbidity					2.60	
EPA 200.7 Rev. 4.4	Calcium	100		97.9	97.9		2.13
	Iron	102		98.8	103	102	1.76
	Magnesium	103		96.3	104	101	1.65
	Potassium	99.0		96.1	98.1	97.5	0.503
	Sodium	102		102	103	99.8	1.85
	Zinc	95.5		93.0	95.0	92.1	3.05
EPA 200.8 Rev. 5.4	Arsenic	99.0		101	99.7	98.5	1.23
	Cadmium	98.5		100	100	101	0.826
	Chromium	95.9		97.3	98.0	97.3	0.751
	Copper	95.8		92.7	93.3	92.7	0.670
	Lead	95.1		96.5	96.7	96.2	0.497
	Nickel	98.6		96.2	97.2	96.0	1.19
	Silver	96.2		96.1	96.4	96.9	0.461
EPA 300.0 Rev. 2.1	Chloride	99.3		95.9	96.1		0.561
	Sulfate	96.9		98.1	97.1		2.75
EPA 350.1 Rev. 2.0	Ammonia-N	103		100	99.3		0.939
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	99.8		99.9	98.9		0.859
EPA 353.2 Rev. 2.0	NO2NO3-N	104		104	103		0.364
EPA 365.1 Rev. 2.0	Total-P	101		101	102		0.677
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	100		98.5	99.4		0.910
EPA 8321B	Sucralose	112		128	130		1.51
SM 2120 B	Color (true)						1.69
	Color (true)						8.18
SM 2320 B-97	Total Alkalinity	101					0.359
SM 2540 C-97	TDS						2.56
SM 4500 F-C-97	Fluoride	94.6		97.4	98.6		0.996
SM 5310 B-00	Organic Carbon	98.9		89.0	92.8		3.33
USGS O-2060-01	2,4-D	101		105	83.3		23.3
	Acetaminophen	101		89.8	81.2		10.1
	Bentazon	82.7		64.3	59.9		7.08
	Carbamazepine	107		120	108		10.5
	Diuron	103		99.3	82.8		18.1
	Fenuron	110		106	89.2		17.3
	Fluridone	92.4		88.7	76.8		14.3
	Imidacloprid	110		134	109		20.4
	Linuron	102		106	76.4		32.5
	MCPP	84.6		93.9	80.6		15.3
	Primidone	92.6		119	103		14.2
	Triclopyr	82.2		87.8	73.9		17.2

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	1910004, 1910005
EPA 200.7 Rev. 4.4 / E31780	Total Recoverable Metals analysis using ICP emission spectroscopy for aqueous samples supporting Clean Water Act Projects	1910018, 1910019
EPA 200.8 Rev. 5.4 / E31780	Total Recoverable Metals analysis using ICP-MS for aqueous samples supporting Clean Water Act Projects	1910018, 1910019
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	1910004, 1910005
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	1910004, 1910005

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	1910006, 1910007
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	1910006, 1910007
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	1910006, 1910007
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	1910006, 1910007
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	1910008, 1910009
EPA 8321B / E31780	Water soluble organic compounds by HPLC/MS/MS	1910016, 1910017
SM 2120 B / E31780	True Color measured at 450 nm	1910004, 1910005
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO ₃ /L	1910004, 1910005
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	1910004, 1910005
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices	1910004, 1910005
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	1910004, 1910005
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	1910006, 1910007
USGS O-2060-01 / E31780	Chlorinated (phenoxy acid) herbicides in water matrices by HPLC/MS/MS	1910016, 1910017
USGS O-2060-01 / E31780	Urea herbicides and other chemicals in water matrices by HPLC/MS/MS	1910016, 1910017

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	06/29/2017			06/29/2017 16:54	DeAsia Armster	1910004, 1910005
EPA 200.7 Rev. 4.4	06/29/2017	06/29/2017	Elliott D. Healy	06/30/2017	Betina Topolski	1910018, 1910019
EPA 200.8 Rev. 5.4	06/29/2017	06/29/2017	Elliott D. Healy	07/06/2017	Nadine Brooks	1910018, 1910019
EPA 300.0 Rev. 2.1	06/29/2017			07/07/2017	Ping Hua	1910004, 1910005
EPA 350.1 Rev. 2.0	06/29/2017			07/03/2017	Sofia Elnemr	1910006, 1910007
EPA 351.2 Rev. 2.0	06/29/2017	07/03/2017	Adrian Shelby	07/06/2017	Tanya Welborn	1910006, 1910007
EPA 353.2 Rev. 2.0	06/29/2017			07/03/2017	Beverly Y. Sanders	1910006, 1910007
EPA 365.1 Rev. 2.0	06/29/2017	07/03/2017	Vijayalakshmi Reddy	07/06/2017	Lipi Saha	1910006, 1910007
EPA 365.1 Rev. 2.0 dissolved	06/29/2017			06/29/2017 12:45	Ping Hua	1910008
	06/29/2017			06/29/2017 12:52	Ping Hua	1910009
EPA 8321B	06/29/2017	07/12/2017	Mohammad Ghaffari	07/13/2017	Mohammad Ghaffari	1910016, 1910017
SM 2120 B	06/29/2017			06/29/2017 14:51	Julia Storbeck	1910005
	06/29/2017			06/29/2017 15:22	Julia Storbeck	1910004
SM 2320 B-97	06/29/2017			07/06/2017	Dale L. Simmons	1910004
	06/29/2017			07/07/2017	Dale L. Simmons	1910005
SM 2540 C-97	06/29/2017			07/03/2017	Sima Feizi	1910004, 1910005
SM 2540 D-97	06/29/2017			07/03/2017	Sima Feizi	1910004, 1910005
SM 4500 F-C-97	06/29/2017			07/06/2017	Dale L. Simmons	1910004
	06/29/2017			07/07/2017	Dale L. Simmons	1910005
SM 5310 B-00	06/29/2017			07/04/2017	Sofia Elnemr	1910006, 1910007
USGS O-2060-01	06/29/2017	06/30/2017	Hoor Shaik	07/12/2017	Juyoung Kim	1910016, 1910017