

Chemical Analysis Report

CEN-DIST-2018-03-13-01

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

Event Description: **Crane Strand / CS Drain / UnDrain 3037**
Request ID: **RQ-2018-03-12-55**
Customer: **CEN-DIST**
Project ID: **SMP**

Send Reports to:
FL Dept. of Environmental Protection
FL Dept. of Environmental Protection
3319 Maguire Blvd., Suite 232
Orlando, FL 32803-3767
Attn: Mike Linger

For additional information please contact
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Certified by: Thekkekalathil Chandrasekhar, Chemist Administrator

Date Certified: 12-APR-2018 12:59



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: Unnamed Drain @ Lake Live Oak Rd (3037)

Collection Date/Time: 03/12/2018 10:57

Field ID: G2CE0168

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1974112	EPA 180.1 Rev. 2.0	Turbidity	2.4		NTU	P341487	
	EPA 300.0 Rev. 2.1	Chloride	120		mg Cl/L	P341584	
		Sulfate	37		mg SO4/L	P341586	
	SM 2120 B	Color (true)	54		PCU	P341475	
	SM 2320 B-97	Total Alkalinity	172		mg CaCO3/L	P341818	
	SM 2540 C-97	TDS	406		mg/L	P341837	
	SM 2540 D-97	TSS	4	I	mg/L	P341789	
	SM 4500 F-C-97	Fluoride	0.55		mg F/L	P341826	RPD
1974114	EPA 350.1 Rev. 2.0	Ammonia-N	0.020		mg N/L	P341888	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.86		mg N/L	P341541	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.31		mg N/L	P341535	
	EPA 365.1 Rev. 2.0	Total-P	0.14		mg P/L	P341516	
	SM 5310 B-00	Organic Carbon	10		mg C/L	P342042	
1974116	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.11	Q	mg P/L	P341572	
1974150	EPA 200.7 Rev. 4.4	Calcium	44.5		mg/L	P341564	
		Iron	100	I	ug/L	P341564	
		Magnesium	8.22		mg/L	P341564	
		Potassium	11.6		mg/L	P341564	
		Sodium	105		mg/L	P341564	
		Zinc	20	I	ug/L	P341564	
	EPA 200.8 Rev. 5.4	Arsenic	0.66		ug/L	P341564	
		Cadmium	0.020	U	ug/L	P341564	
		Chromium	0.49	I	ug/L	P341564	
		Copper	0.73	I	ug/L	P341564	
		Lead	0.15	I	ug/L	P341564	
		Nickel	1.04		ug/L	P341564	
		Silver	0.010	U	ug/L	P342194	

Ref. Method and Comment:

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

SM 4500 F-C-97: Batch matrix spike recoveries are unavailable because of high analyte concentration in the QC sample.

EPA 365.1 Rev. 2.0 dissolved: O-Phosphate-P: The sample was reanalyzed out of holding time due to analytical difficulties. Batch matrix spike recoveries are unavailable because of high analyte concentration in the QC sample.

Sample Location: Unnamed Drain @ Avalon Park Blvd (3037)

Collection Date/Time: 03/12/2018 11:25

Field ID: G2CE0169

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1974113	EPA 180.1 Rev. 2.0	Turbidity	2.5		NTU	P341487	
	EPA 300.0 Rev. 2.1	Chloride	120		mg Cl/L	P341584	
		Sulfate	38		mg SO4/L	P341586	
	SM 2120 B	Color (true)	50		PCU	P341475	
	SM 2320 B-97	Total Alkalinity	177		mg CaCO3/L	P341818	
	SM 2540 C-97	TDS	440		mg/L	P341837	
	SM 2540 D-97	TSS	4	I	mg/L	P341789	
	SM 4500 F-C-97	Fluoride	0.56		mg F/L	P341826	RPD

Field ID: G2CE0169

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1974115	EPA 350.1 Rev. 2.0	Ammonia-N	0.016		mg N/L	P341889	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.87		mg N/L	P341541	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.31		mg N/L	P341535	
	EPA 365.1 Rev. 2.0	Total-P	0.14		mg P/L	P341516	
	SM 5310 B-00	Organic Carbon	10		mg C/L	P342042	
1974117	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.11	Q	mg P/L	P341704	
1974151	EPA 200.7 Rev. 4.4	Calcium	45.4		mg/L	P341564	
		Iron	63	I	ug/L	P341564	
		Magnesium	8.50		mg/L	P341564	
		Potassium	12.0		mg/L	P341564	
		Sodium	110		mg/L	P341564	
		Zinc	23		ug/L	P341564	
	EPA 200.8 Rev. 5.4	Arsenic	0.62		ug/L	P341564	
		Cadmium	0.020	U	ug/L	P341564	
		Chromium	0.44	I	ug/L	P341564	
		Copper	0.47	I	ug/L	P341564	
		Lead	0.13	I	ug/L	P341564	
		Nickel	1.02		ug/L	P341564	
		Silver	0.010	U	ug/L	P342194	

Ref. Method and Comment:

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

SM 4500 F-C-97: Batch matrix spike recoveries are unavailable because of high analyte concentration in the QC sample.

EPA 365.1 Rev. 2.0 dissolved: O-Phosphate-P: The sample was reanalyzed out of holding time due to analytical difficulties.

Sample Location: Crane Strand Drain @ 100m US of University Blvd (3014)

Collection Date/Time: 03/12/2018 13:05

Field ID: G2CE0077

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1974106	EPA 180.1 Rev. 2.0	Turbidity	2.1		NTU	P341487	
	EPA 300.0 Rev. 2.1	Chloride	21		mg Cl/L	P341892	
		Sulfate	10		mg SO4/L	P341896	
	SM 2120 B	Color (true)	38		PCU	P341475	
	SM 2320 B-97	Total Alkalinity	89		mg CaCO3/L	P341818	
	SM 2540 C-97	TDS	152		mg/L	P341837	
	SM 2540 D-97	TSS	3	I	mg/L	P341789	
	SM 4500 F-C-97	Fluoride	0.15		mg F/L	P341826	RPD
1974108	EPA 350.1 Rev. 2.0	Ammonia-N	0.052		mg N/L	P341888	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.51		mg N/L	P341541	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.084		mg N/L	P341533	
	EPA 365.1 Rev. 2.0	Total-P	0.12		mg P/L	P341516	
	SM 5310 B-00	Organic Carbon	8.7		mg C/L	P342041	
1974110	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.081	Q	mg P/L	P341572	
1974137	EPA 8321B	2,4-D	0.052		ug/L	P341440	
		Sucralose**	0.36		ug/L	P341353	
		Bentazon	0.017		ug/L	P341440	

Field ID: G2CE0077

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1974137	EPA 8321B	MCP	0.0020	U	ug/L	P341440	MS
		Triclopyr**	0.0040	U	ug/L	P341440	
		Imidacloprid	0.0094		ug/L	P341440	
		Diuron	0.0020	U	ug/L	P341440	
		Pyraclorobin**	0.0020	U	ug/L	P341440	
		Primidone**	0.0040	U	ug/L	P341440	
		Linuron	0.0040	U	ug/L	P341440	
		Acetaminophen**	0.0080	U	ug/L	P341440	
		Fenuron	0.0080	U	ug/L	P341440	
		Imazapyr**	0.063		ug/L	P341440	
		Carbamazepine**	4.7E-04	I	ug/L	P341440	RPD
		Fluridone**	0.012		ug/L	P341440	
1974148	EPA 200.7 Rev. 4.4	Calcium	39.5		mg/L	P341564	
		Iron	310		ug/L	P341564	
		Magnesium	3.34		mg/L	P341564	
		Potassium	1.5		mg/L	P341564	
		Sodium	12.2		mg/L	P341564	
		Zinc	5.0	U	ug/L	P341564	
	EPA 200.8 Rev. 5.4	Arsenic	0.48		ug/L	P341564	
		Cadmium	0.020	U	ug/L	P341564	
		Chromium	0.61	I	ug/L	P341564	
		Copper	0.88		ug/L	P341564	
		Lead	0.26		ug/L	P341564	
		Nickel	0.31	I	ug/L	P341564	
		Silver	0.010	U	ug/L	P342194	

Ref. Method and Comment:

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

SM 4500 F-C-97: Batch matrix spike recoveries are unavailable because of high analyte concentration in the QC sample.

EPA 365.1 Rev. 2.0 dissolved: O-Phosphate-P: The sample was reanalyzed out of holding time due to analytical difficulties. Batch matrix spike recoveries are unavailable because of high analyte concentration in the QC sample.

Sample Location: Crane Strand Drain @ 250m North of University Blvd (3014) **Collection Date/Time: 03/12/2018 13:20**

Field ID: G2CE0157

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1974107	EPA 180.1 Rev. 2.0	Turbidity	2.2		NTU	P341487	
	EPA 300.0 Rev. 2.1	Chloride	21		mg Cl/L	P341892	
		Sulfate	10		mg SO4/L	P341896	
		Color (true)	38		PCU	P341475	
	SM 2320 B-97	Total Alkalinity	90		mg CaCO3/L	P341818	
	SM 2540 C-97	TDS	162		mg/L	P341837	
	SM 2540 D-97	TSS	3	I	mg/L	P341789	
	SM 4500 F-C-97	Fluoride	0.15		mg F/L	P341826	RPD
1974109	EPA 350.1 Rev. 2.0	Ammonia-N	0.055		mg N/L	P341888	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.53		mg N/L	P341541	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.081		mg N/L	P341533	

Field ID: G2CE0157

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1974109	EPA 365.1 Rev. 2.0	Total-P	0.12		mg P/L	P341516	
	SM 5310 B-00	Organic Carbon	8.4		mg C/L	P342041	
1974111	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.079	Q	mg P/L	P341572	
1974138	EPA 8321B	2,4-D	0.075		ug/L	P341440	
		Sucralose**	0.45		ug/L	P341353	
		Bentazon	0.016		ug/L	P341440	
		MCP	0.0020	U	ug/L	P341440	MS
		Triclopyr**	0.0040	U	ug/L	P341440	
		Imidacloprid	0.010		ug/L	P341440	
		Diuron	0.0020	U	ug/L	P341440	
		Pyraclostrobin**	0.0020	U	ug/L	P341440	
		Primidone**	0.0040	U	ug/L	P341440	
		Linuron	0.0040	U	ug/L	P341440	
		Acetaminophen**	0.0080	U	ug/L	P341440	
		Fenuron	0.0080	U	ug/L	P341440	
		Imazapyr**	0.055		ug/L	P341440	
		Carbamazepine**	4.0E-04	U	ug/L	P341440	RPD
		Fluridone**	0.012		ug/L	P341440	
1974149	EPA 200.7 Rev. 4.4	Calcium	38.9		mg/L	P341564	
		Iron	310		ug/L	P341564	
		Magnesium	3.34		mg/L	P341564	
		Potassium	1.5		mg/L	P341564	
		Sodium	12.3		mg/L	P341564	
		Zinc	5.0	U	ug/L	P341564	
	EPA 200.8 Rev. 5.4	Arsenic	0.50		ug/L	P341564	
		Cadmium	0.020	U	ug/L	P341564	
		Chromium	0.63	I	ug/L	P341564	
		Copper	0.87		ug/L	P341564	
		Lead	0.27		ug/L	P341564	
		Nickel	0.31	I	ug/L	P341564	
		Silver	0.010	U	ug/L	P342194	

Ref. Method and Comment:

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

SM 4500 F-C-97: Batch matrix spike recoveries are unavailable because of high analyte concentration in the QC sample.

EPA 365.1 Rev. 2.0 dissolved: O-Phosphate-P: The sample was reanalyzed out of holding time due to analytical difficulties. Batch matrix spike recoveries are unavailable because of high analyte concentration in the QC sample.

Quality Assurance Report

Method Blank Results

Reference Method: EPA 180.1 Rev. 2.0

Batch ID: P341487

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: P341564

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: P341564

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

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P342194

Component	Result	Code	Units
Silver	0.010	U	ug/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P341584

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P341586

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P341892

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P341896

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P341888

Component	Result	Code	Units
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Quality Assurance Report

Method Blank Results

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P341888

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P341889

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P341541

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P341533

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P341535

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P341516

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P341572

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P341704

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

Reference Method: EPA 8321B
Batch ID: P341353

Component	Result	Code	Units
Sucralose	0.010	U	ug/L

Quality Assurance Report

Method Blank Results

Reference Method: EPA 8321B
 Batch ID: P341440

Component	Result	Code	Units
2,4-D	0.0020	U	ug/L
Acetaminophen	0.0080	U	ug/L
Bentazon	8.0E-04	U	ug/L
Carbamazepine	4.0E-04	U	ug/L
Diuron	0.0020	U	ug/L
Fenuron	0.0080	U	ug/L
Fluridone	8.0E-04	U	ug/L
Imazapyr	0.0040	U	ug/L
Imidacloprid	0.0020	U	ug/L
Linuron	0.0040	U	ug/L
MCPP	0.0020	U	ug/L
Primidone	0.0040	U	ug/L
Pyraclostrobin	0.0020	U	ug/L
Triclopyr	0.0040	U	ug/L

Reference Method: SM 2120 B
 Batch ID: P341475

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
 Batch ID: P341818

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

Reference Method: SM 2540 C-97
 Batch ID: P341837

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
 Batch ID: P341789

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-97
 Batch ID: P341826

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
 Batch ID: P342041

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

Quality Assurance Report Method Blank Results

Reference Method: SM 5310 B-00
 Batch ID: P342042

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

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 200.7 Rev. 4.4
 Batch ID: P341564

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Calcium	107		P	85 - 115
Iron	108		P	85 - 115
Magnesium	111		P	85 - 115
Potassium	103		P	85 - 115
Sodium	106		P	85 - 115
Zinc	103		P	85 - 115

Reference Method: EPA 200.8 Rev. 5.4
 Batch ID: P341564

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Arsenic	95.3		P	85 - 115
Cadmium	97.7		P	85 - 115
Chromium	97.9		P	85 - 115
Copper	95.1		P	85 - 115
Lead	104		P	85 - 115
Nickel	95.0		P	85 - 115

Reference Method: EPA 200.8 Rev. 5.4
 Batch ID: P342194

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Silver	101		P	85 - 115

Reference Method: EPA 300.0 Rev. 2.1
 Batch ID: P341584

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

Reference Method: EPA 300.0 Rev. 2.1
 Batch ID: P341586

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

Reference Method: EPA 300.0 Rev. 2.1
 Batch ID: P341892

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

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P341896

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P341888

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P341889

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P341541

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P341533

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P341535

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: P341516

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: P341572

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P341704

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

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 8321B
 Batch ID: P341353

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Sucralose	88.0		P	40 - 150

Reference Method: EPA 8321B
 Batch ID: P341440

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2,4-D	71.7		P	40 - 150
Acetaminophen	110		P	30 - 150
Bentazon	77.3		P	30 - 150
Carbamazepine	97.3		P	40 - 150
Diuron	66.7		P	40 - 150
Fenuron	99.8		P	40 - 150
Fluridone	60.4		P	40 - 150
Imazapyr	67.2		P	40 - 150
Imidacloprid	97.2		P	40 - 160
Linuron	71.7		P	40 - 150
MCPP	63.3		P	40 - 150
Primidone	103		P	40 - 150
Pyraclostrobin	62.7		P	40 - 150
Triclopyr	67.1		P	40 - 150

Reference Method: SM 2320 B-97
 Batch ID: P341818

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	98.7		P	98 - 107

Reference Method: SM 4500 F-C-97
 Batch ID: P341826

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	98.2		P	91 - 105

Reference Method: SM 5310 B-00
 Batch ID: P342041

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	98.2		P	85 - 115

Reference Method: SM 5310 B-00
 Batch ID: P342042

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

Quality Assurance Report Matrix Spike Accuracy

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P341564

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1974148	Calcium	105		P	80 - 120
1974148	Iron	109	108	P/P	80 - 120
1974148	Magnesium	111	107	P/P	80 - 120
1974148	Potassium	104	102	P/P	80 - 120
1974148	Sodium	105		P	80 - 120
1974148	Zinc	105	104	P/P	80 - 120

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P341564

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1974148	Arsenic	100	99.7	P/P	80 - 120
1974148	Cadmium	101	102	P/P	80 - 120
1974148	Chromium	100	99.7	P/P	80 - 120
1974148	Copper	98.4	97.9	P/P	80 - 120
1974148	Lead	108	108	P/P	80 - 120
1974148	Nickel	97.6	97.0	P/P	80 - 120

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P342194

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1973034	Silver	98.0		P	80 - 120
1974069	Silver	98.7	92.4	P/P	80 - 120

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P341584

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1973751	Chloride	92.9		P	90 - 110
1974169	Chloride	97.6		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P341586

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1973751	Sulfate	97.9		P	90 - 110
1974169	Sulfate	95.9		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P341892

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1974026	Chloride	97.2		P	90 - 110
1974106	Chloride	96.2		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P341896

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1974026	Sulfate	99.6		P	90 - 110
1974106	Sulfate	97.7		P	90 - 110

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P341888

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1974044	Ammonia-N	97.1	100	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P341889

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1974115	Ammonia-N	97.4	97.9	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P341541

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1974049	Kjeldahl Nitrogen	99.6	99.3	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P341533

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1974044	NO2NO3-N	94.6	95.6	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P341535

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1974114	NO2NO3-N	100		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P341516

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1974172	Total-P	98.9	102	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P341704

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1974175	O-Phosphate-P	100	102	P/P	90 - 110

Reference Method: EPA 8321B
Batch ID: P341353

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1974062	Sucralose	120	124	P/P	40 - 150

Reference Method: EPA 8321B
Batch ID: P341440

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1974889	2,4-D	52.5	49.4	P/P	40 - 150
1974889	Acetaminophen	136	113	P/P	30 - 150
1974889	Bentazon	31.8	30.5	P/P	30 - 150
1974889	Carbamazepine	95.6	69.0	P/P	40 - 150

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 8321B
 Batch ID: P341440

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1974889	Diuron	65.1	57.5	P/P	40 - 150
1974889	Fenuron	93.6	76.9	P/P	40 - 150
1974889	Fluridone	57.7	57.9	P/P	40 - 150
1974889	Imazapyr	62.5	57.5	P/P	40 - 150
1974889	Imidacloprid	152	118	P/P	40 - 160
1974889	Linuron	85.7	72.0	P/P	40 - 150
1974889	MCP	37.0	35.0	F/F	40 - 150
1974889	Primidone	110	93.0	P/P	40 - 150
1974889	Pyraclostrobin	76.6	67.0	P/P	40 - 150
1974889	Triclopyr	40.4	41.3	P/P	40 - 150

Reference Method: SM 5310 B-00
 Batch ID: P342041

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1973619	Organic Carbon	98.2	98.5	P/P	85 - 115

Reference Method: SM 5310 B-00
 Batch ID: P342042

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1974114	Organic Carbon	97.2	98.9	P/P	85 - 115

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
 Batch ID: P341487

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1974098	Turbidity	0.0	Sample	P	0 - 20

Reference Method: EPA 200.7 Rev. 4.4
 Batch ID: P341564

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1974148	Calcium	1.86	Spike	P	0 - 20
1974148	Iron	0.799	Spike	P	0 - 20
1974148	Magnesium	2.10	Spike	P	0 - 20
1974148	Potassium	1.93	Spike	P	0 - 20
1974148	Sodium	2.12	Spike	P	0 - 20
1974148	Zinc	0.579	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4
 Batch ID: P341564

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1974148	Arsenic	0.670	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P341564

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1974148	Cadmium	0.273	Spike	P	0 - 20
1974148	Chromium	0.270	Spike	P	0 - 20
1974148	Copper	0.484	Spike	P	0 - 20
1974148	Lead	0.00540	Spike	P	0 - 20
1974148	Nickel	0.563	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P342194

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1974069	Silver	6.62	Spike	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P341584

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1973751	Chloride	0.166	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P341586

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1973751	Sulfate	0.138	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P341892

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1974026	Chloride	0.909	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P341896

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1974026	Sulfate	1.05	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P341888

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1974044	Ammonia-N	1.75	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P341889

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1974115	Ammonia-N	0.356	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P341541

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1974049	Kjeldahl Nitrogen	0.243	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P341533

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1974044	NO2NO3-N	0.943	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P341535

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1974114	NO2NO3-N	0.0	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P341516

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1974172	Total-P	3.00	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P341572

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1974086	O-Phosphate-P	2.92	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P341704

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1974175	O-Phosphate-P	1.60	Spike	P	0 - 20

Reference Method: EPA 8321B
Batch ID: P341353

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1974062	Sucralose	3.16	Spike	P	0 - 30

Quality Assurance Report Precision

Reference Method: EPA 8321B
 Batch ID: P341440

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1974889	2,4-D	5.44	Spike	P	0 - 30
1974889	Acetaminophen	18.9	Spike	P	0 - 30
1974889	Bentazon	3.92	Spike	P	0 - 30
1974889	Carbamazepine	32.4	Spike	F	0 - 30
1974889	Diuron	12.4	Spike	P	0 - 30
1974889	Fenuron	19.5	Spike	P	0 - 30
1974889	Fluridone	0.353	Spike	P	0 - 30
1974889	Imazapyr	8.29	Spike	P	0 - 30
1974889	Imidacloprid	25.3	Spike	P	0 - 30
1974889	Linuron	17.4	Spike	P	0 - 30
1974889	MCPD	5.56	Spike	P	0 - 30
1974889	Primidone	17.1	Spike	P	0 - 30
1974889	Pyraclostrobin	13.3	Spike	P	0 - 30
1974889	Triclopyr	2.36	Spike	P	0 - 30

Reference Method: SM 2120 B
 Batch ID: P341475

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1974099	Color (true)	1.72	Sample	P	0 - 20

Reference Method: SM 2320 B-97
 Batch ID: P341818

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1974126	Total Alkalinity	0.166	Sample	P	0 - 1.6

Reference Method: SM 2540 C-97
 Batch ID: P341837

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1974099	TDS	5.26	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
 Batch ID: P341826

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1974126	Fluoride	14.3	Spike	F	0 - 3.5

Reference Method: SM 5310 B-00
 Batch ID: P342041

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1973619	Organic Carbon	0.288	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: SM 5310 B-00
Batch ID: P342042

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1974114	Organic Carbon	1.12	Spike	P	0 - 20

* Sample, spike and/or laboratory control sample precision (LCS) is reported.
Replicate spike precision may be reported when sample results are below quantifiable levels.

Quality Assurance Report Surrogates

Lab Sample ID: 1974137
Field Sample ID: G2CE0077

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	2,4-D-d3	54.0	P	30 - 160
EPA 8321B	Acetaminophen-d4	118	P	30 - 160
EPA 8321B	Carbamazepine-d10	89.8	P	30 - 160
EPA 8321B	Diuron-d6	67.3	P	30 - 160
EPA 8321B	Primidone-d5	107	P	30 - 160
EPA 8321B	Sucralose-d6	93.6	P	40 - 160

Lab Sample ID: 1974138
Field Sample ID: G2CE0157

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	2,4-D-d3	48.4	P	30 - 160
EPA 8321B	Acetaminophen-d4	125	P	30 - 160
EPA 8321B	Carbamazepine-d10	80.9	P	30 - 160
EPA 8321B	Diuron-d6	78.8	P	30 - 160
EPA 8321B	Primidone-d5	113	P	30 - 160
EPA 8321B	Sucralose-d6	94.8	P	40 - 160

Quality Assurance Report Calibration Verification

Reference Method: SM 2120 B
Run ID: A82577
Included Lab Sample IDs: 1974106, 1974107, 1974112, 1974113

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	98.8	97.4	P/P	85 - 115

Reference Method: EPA 180.1 Rev. 2.0
Run ID: A82581
Included Lab Sample IDs: 1974106, 1974107, 1974112, 1974113

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Turbidity	99.0	100	P/P	95 - 105

Quality Assurance Report Calibration Verification

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A82605

Included Lab Sample IDs: 1974108, 1974109, 1974114, 1974115

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	98.5	99.0	P/P	90 - 110
NO2NO3-N	99.0	98.0	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved

Run ID: A82611

Included Lab Sample IDs: 1974110, 1974111, 1974116

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	98.0	98.7	P/P	90 - 110
O-Phosphate-P	99.5	98.0	P/P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A82622

Included Lab Sample IDs: 1974112, 1974113

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	102	101	P/P	90 - 110
Sulfate	98.9	100	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A82646

Included Lab Sample IDs: 1974148, 1974149, 1974150, 1974151

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Arsenic	98.8	98.6	P/P	90 - 110
Cadmium	98.0	98.2	P/P	90 - 110
Chromium	98.3	98.4	P/P	90 - 110
Copper	97.9	97.6	P/P	90 - 110
Lead	105	105	P/P	90 - 110
Nickel	97.8	97.1	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A82647

Included Lab Sample IDs: 1974108, 1974109, 1974114, 1974115

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

Reference Method: EPA 200.7 Rev. 4.4

Run ID: A82648

Included Lab Sample IDs: 1974148, 1974149, 1974150, 1974151

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Calcium	100	103	P/P	90 - 110
Iron	102	104	P/P	90 - 110
Magnesium	103	105	P/P	90 - 110
Potassium	99.8	102	P/P	90 - 110
Sodium	100	103	P/P	90 - 110
Zinc	101	103	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A82658

Included Lab Sample IDs: 1974108, 1974109, 1974114, 1974115

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	103	105	P/P	90 - 110
Total-P	105	101	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved

Run ID: A82664

Included Lab Sample IDs: 1974117

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

Reference Method: EPA 8321B

Run ID: A82710

Included Lab Sample IDs: 1974137, 1974138

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Sucralose	92.1	85.0	P/P	60 - 150

Reference Method: SM 2320 B-97

Run ID: A82726

Included Lab Sample IDs: 1974106, 1974107, 1974112, 1974113

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	98.3	99.2	P/P	90 - 110

Reference Method: SM 4500 F-C-97

Run ID: A82726

Included Lab Sample IDs: 1974106, 1974107, 1974112, 1974113

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	96.7	97.2	P/P	90 - 110

Reference Method: EPA 8321B

Run ID: A82734

Included Lab Sample IDs: 1974137, 1974138

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
2,4-D	93.1	102	P/P	50 - 150
Acetaminophen	110	112	P/P	60 - 150
Bentazon	116	136	P/P	50 - 150
Carbamazepine	109	137	P/P	60 - 150
Diuron	113	115	P/P	60 - 150
Fenuron	107	111	P/P	60 - 150
Fluridone	121	120	P/P	60 - 160
Imazapyr	104	91.5	P/P	50 - 150
Imidacloprid	109	113	P/P	60 - 150
Linuron	123	105	P/P	60 - 150
MCPP	101	102	P/P	50 - 150
Primidone	109	98.1	P/P	60 - 150
Pyraclostrobin	115	118	P/P	60 - 150
Triclopyr	106	96.4	P/P	50 - 150

Quality Assurance Report Calibration Verification

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A82746

Included Lab Sample IDs: 1974108, 1974109, 1974114, 1974115

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

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A82750

Included Lab Sample IDs: 1974106, 1974107

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	95.2	95.4	P/P	90 - 110
Chloride	95.4	96.2	P/P	90 - 110
Sulfate	94.5	97.5	P/P	90 - 110
Sulfate	96.2	94.5	P/P	90 - 110

Reference Method: SM 5310 B-00

Run ID: A82791

Included Lab Sample IDs: 1974108, 1974109, 1974114, 1974115

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	98.0	99.1	P/P	90 - 110
Organic Carbon	99.1	98.6	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A82885

Included Lab Sample IDs: 1974148, 1974149, 1974150, 1974151

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Silver	101	101	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				0.0	
EPA 200.7 Rev. 4.4	Calcium	107	105			1.86
	Iron	108	109	108		0.799
	Magnesium	111	111	107		2.10
	Potassium	103	104	102		1.93
	Sodium	106	105			2.12
	Zinc	103	105	104		0.579
EPA 200.8 Rev. 5.4	Arsenic	95.3	100	99.7		0.670
	Cadmium	97.7	101	102		0.273
	Chromium	97.9	100	99.7		0.270
	Copper	95.1	98.4	97.9		0.484
	Lead	104	108	108		0.0054
	Nickel	95.0	97.6	97.0		0.563

Quality Assurance Report Summary

Ref. Method	Analyte	LCS % Recovery	MS % Recovery			Precision	
			LCS	SMP	MS	SMP	MS
EPA 200.8 Rev. 5.4	Silver	101	98.0	98.7	92.4		6.62
EPA 300.0 Rev. 2.1	Chloride	101	92.9	97.6		0.166	
	Chloride	99.0	97.2	96.2		0.909	
	Sulfate	101	97.9	95.9		0.138	
	Sulfate	101	99.6	97.7		1.05	
EPA 350.1 Rev. 2.0	Ammonia-N	99.2	97.1	100			1.75
	Ammonia-N	97.3	97.4	97.9			0.356
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	105	99.6	99.3			0.243
EPA 353.2 Rev. 2.0	NO2NO3-N	100	94.6	95.6			0.943
	NO2NO3-N	100	100				0.0
EPA 365.1 Rev. 2.0	Total-P	101	98.9	102			3.00
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	100					2.92
	O-Phosphate-P	103	100	102			1.60
EPA 8321B	2,4-D	71.7	52.5	49.4			5.44
	Acetaminophen	110	136	113			18.9
	Bentazon	77.3	31.8	30.5			3.92
	Carbamazepine	97.3	95.6	69.0			32.4
	Diuron	66.7	65.1	57.5			12.4
	Fenuron	99.8	93.6	76.9			19.5
	Fluridone	60.4	57.7	57.9			0.353
	Imazapyr	67.2	62.5	57.5			8.29
	Imidacloprid	97.2	152	118			25.3
	Linuron	71.7	85.7	72.0			17.4
	MCP	63.3	37.0	35.0			5.56
	Primidone	103	110	93.0			17.1
	Pyraclostrobin	62.7	76.6	67.0			13.3
	Sucralose	88.0	120	124			3.16
	Triclopyr	67.1	40.4	41.3			2.36
SM 2120 B	Color (true)					1.72	
SM 2320 B-97	Total Alkalinity	98.7				0.166	
SM 2540 C-97	TDS					5.26	
SM 4500 F-C-97	Fluoride	98.2					14.3
SM 5310 B-00	Organic Carbon	98.2	98.2	98.5			0.288
	Organic Carbon	100	97.2	98.9			1.12

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	1974106, 1974107, 1974112, 1974113
EPA 200.7 Rev. 4.4 / E31780	Total Recoverable Metals analysis using ICP emission spectroscopy for aqueous samples supporting Clean Water Act Projects	1974148, 1974149, 1974150, 1974151
EPA 200.8 Rev. 5.4 / E31780	Total Recoverable Metals analysis using ICP-MS for aqueous samples supporting Clean Water Act Projects	1974148, 1974149, 1974150, 1974151
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	1974106, 1974107, 1974112, 1974113
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	1974106, 1974107, 1974112, 1974113
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	1974108, 1974109, 1974114, 1974115
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	1974108, 1974109, 1974114, 1974115
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	1974108, 1974109, 1974114, 1974115

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	1974108, 1974109, 1974114, 1974115
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	1974110, 1974111, 1974116, 1974117
EPA 8321B / E31780	Pesticides, herbicides, and other chemicals in water matrices by HPLC/MS/MS	1974137, 1974138
EPA 8321B / E31780	Water soluble organic compounds by HPLC/MS/MS	1974137, 1974138
SM 2120 B / E31780	True Color measured at 450 nm	1974106, 1974107, 1974112, 1974113
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO ₃ /L	1974106, 1974107, 1974112, 1974113
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	1974106, 1974107, 1974112, 1974113
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices	1974106, 1974107, 1974112, 1974113
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	1974106, 1974107, 1974112, 1974113
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	1974108, 1974109, 1974114, 1974115

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	03/13/2018			03/13/2018 16:35	DeAsia Armster	1974106, 1974107, 1974112, 1974113
EPA 200.7 Rev. 4.4	03/13/2018	03/14/2018 17:50	Elliott D. Healy	03/15/2018 15:03	Betina Topolski	1974148
	03/13/2018	03/14/2018 17:50	Elliott D. Healy	03/15/2018 15:29	Betina Topolski	1974149
	03/13/2018	03/14/2018 17:50	Elliott D. Healy	03/15/2018 15:37	Betina Topolski	1974150
	03/13/2018	03/14/2018 17:50	Elliott D. Healy	03/15/2018 15:44	Betina Topolski	1974151
EPA 200.8 Rev. 5.4	03/13/2018	03/14/2018 17:50	Elliott D. Healy	03/15/2018 20:23	Nadine Brooks	1974148
	03/13/2018	03/14/2018 17:50	Elliott D. Healy	03/15/2018 20:51	Nadine Brooks	1974149
	03/13/2018	03/14/2018 17:50	Elliott D. Healy	03/15/2018 21:00	Nadine Brooks	1974150
	03/13/2018	03/14/2018 17:50	Elliott D. Healy	03/15/2018 21:09	Nadine Brooks	1974151
	03/13/2018	03/26/2018 18:50	Elliott D. Healy	03/28/2018 01:33	Robert K Palmer	1974148
	03/13/2018	03/26/2018 18:50	Elliott D. Healy	03/28/2018 01:39	Robert K Palmer	1974149
	03/13/2018	03/26/2018 18:50	Elliott D. Healy	03/28/2018 01:45	Robert K Palmer	1974150
	03/13/2018	03/26/2018 18:50	Elliott D. Healy	03/28/2018 01:51	Robert K Palmer	1974151
EPA 300.0 Rev. 2.1	03/13/2018			03/15/2018 01:00	Julia Storbeck	1974112
	03/13/2018			03/15/2018 01:12	Julia Storbeck	1974113
	03/13/2018			03/20/2018 03:15	Julia Storbeck	1974106
	03/13/2018			03/20/2018 05:50	Julia Storbeck	1974107
EPA 350.1 Rev. 2.0	03/13/2018			03/20/2018 14:34	Ping Hua	1974108
	03/13/2018			03/20/2018 14:35	Ping Hua	1974109
	03/13/2018			03/20/2018 14:37	Ping Hua	1974114
	03/13/2018			03/20/2018 14:50	Ping Hua	1974115
EPA 351.2 Rev. 2.0	03/13/2018	03/14/2018 15:30	Adrian Shelby	03/15/2018 17:23	Joseph Suarez	1974108
	03/13/2018	03/14/2018 15:30	Adrian Shelby	03/15/2018 17:24	Joseph Suarez	1974109
	03/13/2018	03/14/2018 15:30	Adrian Shelby	03/15/2018 17:26	Joseph Suarez	1974114
	03/13/2018	03/14/2018 15:30	Adrian Shelby	03/15/2018 17:27	Joseph Suarez	1974115
EPA 353.2 Rev. 2.0	03/13/2018			03/14/2018 12:20	Lauren Bottorf	1974114
	03/13/2018			03/14/2018 12:32	Lauren Bottorf	1974115
	03/13/2018			03/14/2018 12:58	Lauren Bottorf	1974108
	03/13/2018			03/14/2018 12:59	Lauren Bottorf	1974109
EPA 365.1 Rev. 2.0	03/13/2018	03/14/2018 13:25	Adrian Shelby	03/16/2018 11:34	Lipi Saha	1974108
	03/13/2018	03/14/2018 13:25	Adrian Shelby	03/16/2018 11:35	Lipi Saha	1974109
	03/13/2018	03/14/2018 13:25	Adrian Shelby	03/16/2018 11:39	Lipi Saha	1974114
	03/13/2018	03/14/2018 13:25	Adrian Shelby	03/16/2018 11:40	Lipi Saha	1974115
EPA 365.1 Rev. 2.0 dissolved	03/13/2018			03/14/2018 13:50	Lipi Saha	1974110
	03/13/2018			03/14/2018 13:55	Lipi Saha	1974111
	03/13/2018			03/14/2018 13:56	Lipi Saha	1974116
	03/13/2018			03/16/2018 12:11	Megan Treadwell	1974117
EPA 8321B	03/13/2018	03/15/2018 10:00	Hoor Shaik	03/16/2018 09:17	Julie Michelle Frank	1974137
	03/13/2018	03/15/2018 10:00	Hoor Shaik	03/16/2018 09:52	Julie Michelle Frank	1974138
	03/13/2018	03/15/2018 10:00	Hoor Shaik	03/17/2018 02:00	Julie Michelle Frank	1974137

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
EPA 8321B	03/13/2018	03/15/2018 10:00	Hoor Shaik	03/17/2018 02:35	Julie Michelle Frank	1974138
	03/13/2018	03/15/2018 12:00	Julie Michelle Frank	03/16/2018 17:29	Juyoung Kim	1974137
	03/13/2018	03/15/2018 12:00	Julie Michelle Frank	03/16/2018 17:45	Juyoung Kim	1974138
SM 2120 B	03/13/2018			03/13/2018 15:00	Tanya Welborn	1974106
	03/13/2018			03/13/2018 15:01	Tanya Welborn	1974107, 1974112
	03/13/2018			03/13/2018 15:02	Tanya Welborn	1974113
SM 2320 B-97	03/13/2018			03/19/2018 21:54	Lauren Bottorf	1974106
	03/13/2018			03/19/2018 22:04	Lauren Bottorf	1974107
	03/13/2018			03/19/2018 22:14	Lauren Bottorf	1974112
	03/13/2018			03/19/2018 22:25	Lauren Bottorf	1974113
SM 2540 C-97	03/13/2018			03/14/2018 16:02	Yijie Li	1974106, 1974107, 1974112, 1974113
SM 2540 D-97	03/13/2018			03/14/2018 16:02	Yijie Li	1974106, 1974107, 1974112, 1974113
SM 4500 F-C-97	03/13/2018			03/19/2018 21:54	Lauren Bottorf	1974106
	03/13/2018			03/19/2018 22:04	Lauren Bottorf	1974107
	03/13/2018			03/19/2018 22:14	Lauren Bottorf	1974112
	03/13/2018			03/19/2018 22:25	Lauren Bottorf	1974113
SM 5310 B-00	03/13/2018			03/22/2018 03:29	Megan Treadwell	1974108
	03/13/2018			03/22/2018 03:44	Megan Treadwell	1974109
	03/13/2018			03/22/2018 04:27	Megan Treadwell	1974114
	03/13/2018			03/22/2018 05:59	Megan Treadwell	1974115