

Chemical Analysis Report

WQAP-2022-12-20-05

Florida DEP Laboratory
2600 Blair Stone Road
Tallahassee, FL 32399-2400
DOH Accreditation E31780

Event Description: **Hurricane Ian Post Storm Monitoring - CEN ROC**
Request ID: **RQ-2022-12-05-24**
Customer: **WQAP**
Project ID: **HURR-IAN**

Send Reports to:
FL Dept. of Environmental Protection
3319 Maguire Blvd, Suite 232
Orlando, FL 32803
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Certified by: Thekkekalathil Chandrasekhar, Environmental Consultant

Date Certified: 05-JAN-2023 10:10



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 by the Florida Department of Health Environmental Laboratory Certification Program 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: ST JOHNS RIVER AT HWY 40 NEAR ASTOR

Collection Date/Time: 12/19/2022 13:25

Field ID: 3515

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2376576	DEP SOP: NU-094-1	Color (true)	230		PCU	P423776	
	EPA 120.1	Specific_Conductance	500		umhos/cm	P423812	
	EPA 180.1 Rev. 2.0	Turbidity	1.3		NTU	P423790	
	EPA 300.0 Rev. 2.1	Chloride	100		mg Cl/L	P423803	
		Sulfate	18		mg SO4/L	P423806	
	SM 2320 B-2011	Total Alkalinity	55		mg CaCO3/L	P423925	
	SM 2540 D-2015	TSS	3	I	mg/L	P424052	
	SM 4500-F- C-2011	Fluoride	0.094	I	mg F/L	P423814	
2376577	EPA 350.1 Rev. 2.0	Ammonia-N	0.052		mg N/L	P424067	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.99		mg N/L	P423874	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.11		mg N/L	P423900	
	EPA 365.1 Rev. 2.0	Total-P	0.15		mg P/L	P424011	
	SM 5310 B-2011	Organic Carbon	21		mg C/L	P423876	
2376581	EPA 8321B	2,4-D	0.030		ug/L	P423628	
		Acesulfame K	0.10	U	ug/L	P423755	
		2,4,5-T	0.0040	U	ug/L	P423628	
		AMPA	0.10	U	ug/L	P423755	
		Acetaminophen	0.0080	U	ug/L	P423628	
		Acetamiprid	0.0020	U	ug/L	P423628	
		Endothall	0.25	U	ug/L	P423755	MS
		Glufosinate	0.10	U	ug/L	P423755	
		Glyphosate	0.10	U	ug/L	P423755	
		Afidopyropen	0.0020	U	ug/L	P423628	
		Bentazon	0.0083		ug/L	P423628	
		Sucralose	0.89		ug/L	P423755	
		Benzovindiflupyr	0.0020	U	ug/L	P423628	
		Carbamazepine	8.0E-04	U	ug/L	P423628	
		Clothianidin	0.0020	U	ug/L	P423628	
		Dinotefuran	0.0020	U	ug/L	P423628	
		Diuron	0.0020	U	ug/L	P423628	
		Fenuron	0.032	U	ug/L	P423628	
		Fluridone	0.0030	I	ug/L	P423628	
		Imazapyr	0.050		ug/L	P423628	
		Hydrocodone	0.0020	U	ug/L	P423628	
		Ibuprofen	0.20	U	ug/L	P423628	
		Imidacloprid	0.0042	I	ug/L	P423628	
		Linuron	0.0040	U	ug/L	P423628	
		Mandestrobin	0.0020	U	ug/L	P423628	
		MCP	0.0040	U	ug/L	P423628	
		Naproxen	0.0080	U	ug/L	P423628	
		Primidone	0.0040	U	ug/L	P423628	
		Pyraclostrobin	0.0020	U	ug/L	P423628	
		Silvex	0.0040	U	ug/L	P423628	
		Thiamethoxam	0.0020	U	ug/L	P423628	

Field ID: 3515

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2376581	EPA 8321B	Tolfenpyrad	0.0020	U	ug/L	P423628	
		Triclopyr	0.0040	U	ug/L	P423628	
2376586	EPA 200.7 Rev. 4.4	Calcium	28.0		mg/L	P423800	
		Magnesium	7.96		mg/L	P423800	
		Potassium	3.8		mg/L	P423800	
		Sodium	53.4		mg/L	P423800	
		Hardness	103		mg/L	P423800	
	SM 2340 B-2011						

Ref. Method and Comment:

SM 2540 D-2015: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.

Quality Assurance Report Method Blank Results

Reference Method: DEP SOP: NU-094-1
Batch ID: P423776

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: EPA 120.1
Batch ID: P423812

Component	Result	Code	Units
Specific_Conductance	2.0	U	umhos/cm

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P423790

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P423800

Component	Result	Code	Units
Calcium	0.075	U	mg/L
Magnesium	0.040	U	mg/L
Potassium	0.30	U	mg/L
Sodium	0.50	U	mg/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P423803

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P423806

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P424067

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P423874

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P423900

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

Quality Assurance Report Method Blank Results

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P424011

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

Reference Method: EPA 8321B
Batch ID: P423628

Component	Result	Code	Units
2,4-D	0.0020	U	ug/L
2,4,5-T	0.0040	U	ug/L
Acetaminophen	0.0080	U	ug/L
Acetamiprid	0.0020	U	ug/L
Afidopyropen	0.0020	U	ug/L
Bentazon	8.0E-04	U	ug/L
Benzovindiflupyr	0.0020	U	ug/L
Carbamazepine	8.0E-04	U	ug/L
Clothianidin	0.0020	U	ug/L
Dinotefuran	0.0020	U	ug/L
Diuron	0.0020	U	ug/L
Fenuron	0.032	U	ug/L
Fluridone	8.0E-04	U	ug/L
Hydrocodone	0.0020	U	ug/L
Ibuprofen	0.20	U	ug/L
Imazapyr	0.0040	U	ug/L
Imidacloprid	0.0020	U	ug/L
Linuron	0.0040	U	ug/L
Mandestrobin	0.0020	U	ug/L
MCPP	0.0040	U	ug/L
Naproxen	0.0080	U	ug/L
Primidone	0.0040	U	ug/L
Pyraclostrobin	0.0020	U	ug/L
Silvex	0.0040	U	ug/L
Thiamethoxam	0.0020	U	ug/L
Tolfenpyrad	0.0020	U	ug/L
Triclopyr	0.0040	U	ug/L

Reference Method: EPA 8321B
Batch ID: P423755

Component	Result	Code	Units
Acesulfame K	0.10	U	ug/L
AMPA	0.10	U	ug/L
Endothall	0.25	U	ug/L
Glufosinate	0.10	U	ug/L
Glyphosate	0.10	U	ug/L
Sucralose	0.010	U	ug/L

Reference Method: SM 2320 B-2011
Batch ID: P423925

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

Quality Assurance Report

Method Blank Results

Reference Method: SM 2540 D-2015
Batch ID: P424052

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500-F- C-2011
Batch ID: P423814

Component	Result	Code	Units
Fluoride	0.025	U	mg F/L

Reference Method: SM 5310 B-2011
Batch ID: P423876

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

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: DEP SOP: NU-094-1
Batch ID: P423776

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Color (true)	98.8		P	90 - 110

Reference Method: EPA 120.1
Batch ID: P423812

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

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P423790

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

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P423800

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Calcium	101		P	85 - 115
Magnesium	97.6		P	85 - 115
Potassium	96.3		P	85 - 115
Sodium	98.7		P	85 - 115

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P423803

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P423806

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P424067

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	97.8		P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P423874

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Kjeldahl Nitrogen	99.7		P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P423900

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
NO2NO3-N	108		P	90 - 110

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 365.1 Rev. 2.0

Batch ID: P424011

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

Reference Method: EPA 8321B

Batch ID: P423628

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2,4-D	102		P	40 - 150
2,4,5-T	76.0		P	40 - 150
Acetaminophen	95.1		P	30 - 150
Acetamiprid	83.1		P	40 - 150
Afidopyropen	64.9		P	30 - 150
Bentazon	69.1		P	30 - 150
Benzovindiflupyr	85.1		P	40 - 150
Carbamazepine	81.2		P	40 - 150
Clothianidin	93.6		P	40 - 150
Dinotefuran	95.1		P	40 - 150
Diuron	69.3		P	40 - 150
Fenuron	93.5		P	40 - 150
Fluridone	78.0		P	40 - 150
Hydrocodone	86.3		P	40 - 150
Ibuprofen	96.7		P	40 - 150
Imazapyr	83.6		P	40 - 150
Imidacloprid	85.4		P	40 - 150
Linuron	77.2		P	40 - 150
Mandestrobin	91.0		P	40 - 150
MCPP	102		P	40 - 150
Naproxen	87.6		P	40 - 150
Primidone	89.9		P	40 - 150
Pyraclostrobin	78.4		P	40 - 150
Silvex	82.2		P	40 - 150
Thiamethoxam	86.6		P	40 - 150
Tolfenpyrad	40.8		P	30 - 150
Triclopyr	73.2		P	40 - 150

Reference Method: EPA 8321B

Batch ID: P423755

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Acesulfame K	71.4		P	40 - 150
AMPA	90.8		P	40 - 150
Endothall	124		P	40 - 150
Glufosinate	106		P	40 - 150
Glyphosate	108		P	40 - 150
Sucralose	122		P	40 - 150

Reference Method: SM 2320 B-2011

Batch ID: P423925

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	96.3		P	94 - 106

Quality Assurance Report

Laboratory Control Sample Accuracy

Reference Method: SM 2540 D-2015
Batch ID: P424052

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
TSS	98.5		P	85 - 106

Reference Method: SM 4500-F- C-2011
Batch ID: P423814

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	102		P	96 - 104

Reference Method: SM 5310 B-2011
Batch ID: P423876

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	95.6		P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P423800

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2376206	Calcium	105	105	P/P	80 - 120
2376206	Magnesium	102	101	P/P	80 - 120
2376206	Potassium	101	101	P/P	80 - 120
2376206	Sodium	102		P	80 - 120
2376782	Calcium	108		P	80 - 120
2376782	Magnesium	105		P	80 - 120
2376782	Potassium	106		P	80 - 120
2376782	Sodium	107		P	80 - 120

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P423803

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2374252	Chloride	99.9		P	90 - 110
2374368	Chloride	98.9		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P423806

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2374252	Sulfate	98.9		P	90 - 110
2374368	Sulfate	100		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P424067

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2374018	Ammonia-N	97.4	97.8	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P423874

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2376538	Kjeldahl Nitrogen	96.3	99.8	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P423900

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2376486	NO2NO3-N	110	109	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P424011

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2374631	Total-P	102	103	P/P	90 - 110

Reference Method: EPA 8321B
Batch ID: P423628

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2375490	2,4-D	108	102	P/P	40 - 150

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 8321B
Batch ID: P423628

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2375490	2,4,5-T	80.2	74.0	P/P	40 - 150
2375490	Acetaminophen	103	100	P/P	30 - 150
2375490	Acetamiprid	87.9	83.9	P/P	40 - 150
2375490	Afidopyropen	64.1	70.2	P/P	30 - 150
2375490	Bentazon	70.5	75.8	P/P	30 - 150
2375490	Benzovindiflupyr	93.9	88.2	P/P	40 - 150
2375490	Carbamazepine	86.2	83.4	P/P	40 - 150
2375490	Clothianidin	100	103	P/P	40 - 150
2375490	Dinotefuran	103	97.9	P/P	40 - 150
2375490	Diuron	79.8	76.3	P/P	40 - 150
2375490	Fenuron	100	101	P/P	40 - 150
2375490	Fluridone	78.9	81.6	P/P	40 - 150
2375490	Hydrocodone	90.1	92.1	P/P	40 - 150
2375490	Ibuprofen	99.9	92.6	P/P	40 - 150
2375490	Imazapyr	90.6	89.4	P/P	40 - 150
2375490	Imidacloprid	92.5	91.9	P/P	40 - 150
2375490	Linuron	81.9	80.5	P/P	40 - 150
2375490	Mandestrobin	94.3	99.3	P/P	40 - 150
2375490	MCCP	105	96.5	P/P	40 - 150
2375490	Naproxen	89.4	66.8	P/P	40 - 150
2375490	Primidone	95.7	95.6	P/P	40 - 150
2375490	Pyraclostrobin	88.7	85.3	P/P	40 - 150
2375490	Silvex	78.6	88.1	P/P	40 - 150
2375490	Thiamethoxam	95.2	95.2	P/P	40 - 150
2375490	Tolfenpyrad	50.0	42.3	P/P	30 - 150
2375490	Triclopyr	87.9	74.1	P/P	40 - 150

Reference Method: EPA 8321B
Batch ID: P423755

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2376518	Acesulfame K	46.9	41.6	P/P	40 - 150
2376518	AMPA	87.8	90.6	P/P	40 - 150
2376518	Endothall	157	155	F/F	40 - 150
2376518	Glufosinate	124	124	P/P	40 - 150
2376518	Glyphosate	117	105	P/P	40 - 150
2376518	Sucralose	97.1	101	P/P	40 - 150

Reference Method: SM 4500-F- C-2011
Batch ID: P423814

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2374419	Fluoride	101	99.5	P/P	94 - 104

Reference Method: SM 5310 B-2011
Batch ID: P423876

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2376454	Organic Carbon	96.4	98.3	P/P	85 - 115

Quality Assurance Report Precision

Reference Method: DEP SOP: NU-094-1
Batch ID: P423776

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2376641	Color (true)	0.429	Sample	P	0 - 20

Reference Method: EPA 120.1
Batch ID: P423812

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2374419	Specific_Conductance	1.05	Sample	P	0 - 20

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P423790

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2376297	Turbidity	2.67	Sample	P	0 - 20

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P423800

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2376206	Calcium	0.121	Spike	P	0 - 20
2376206	Magnesium	0.921	Spike	P	0 - 20
2376206	Potassium	0.0872	Spike	P	0 - 20
2376206	Sodium	1.02	Spike	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P423803

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2374252	Chloride	0.0740	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P423806

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2374252	Sulfate	0.00254	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P424067

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2374018	Ammonia-N	0.324	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P423874

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2376538	Kjeldahl Nitrogen	2.15	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P423900

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2376486	NO2NO3-N	0.458	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P424011

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2374631	Total-P	1.30	Spike	P	0 - 20

Reference Method: EPA 8321B
Batch ID: P423628

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2375490	2,4-D	6.37	Spike	P	0 - 30
2375490	2,4,5-T	8.04	Spike	P	0 - 30
2375490	Acetaminophen	3.22	Spike	P	0 - 30
2375490	Acetamiprid	4.61	Spike	P	0 - 30
2375490	Afidopyropen	9.12	Spike	P	0 - 30
2375490	Bentazon	7.20	Spike	P	0 - 30
2375490	Benzovindiflupyr	6.34	Spike	P	0 - 30
2375490	Carbamazepine	3.33	Spike	P	0 - 30
2375490	Clothianidin	2.29	Spike	P	0 - 30
2375490	Dinotefuran	4.92	Spike	P	0 - 30
2375490	Diuron	4.49	Spike	P	0 - 30
2375490	Fenuron	0.949	Spike	P	0 - 30
2375490	Fluridone	3.36	Spike	P	0 - 30
2375490	Hydrocodone	2.16	Spike	P	0 - 30
2375490	Ibuprofen	7.56	Spike	P	0 - 30
2375490	Imazapyr	1.32	Spike	P	0 - 30
2375490	Imidacloprid	0.616	Spike	P	0 - 30
2375490	Linuron	1.69	Spike	P	0 - 30
2375490	Mandestrobin	5.14	Spike	P	0 - 30
2375490	MCPP	8.12	Spike	P	0 - 30
2375490	Naproxen	29.0	Spike	P	0 - 30
2375490	Primidone	0.111	Spike	P	0 - 30
2375490	Pyraclostrobin	3.99	Spike	P	0 - 30
2375490	Silvex	11.4	Spike	P	0 - 30
2375490	Thiamethoxam	0.0381	Spike	P	0 - 30
2375490	Tolfenpyrad	16.5	Spike	P	0 - 30
2375490	Triclopyr	17.0	Spike	P	0 - 30

Quality Assurance Report Precision

Reference Method: EPA 8321B
Batch ID: P423755

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2376518	Acesulfame K	11.9	Spike	P	0 - 30
2376518	AMPA	3.18	Spike	P	0 - 30
2376518	Endothall	0.989	Spike	P	0 - 30
2376518	Glufosinate	0.519	Spike	P	0 - 30
2376518	Glyphosate	10.6	Spike	P	0 - 30
2376518	Sucralose	4.08	Spike	P	0 - 30

Reference Method: SM 2320 B-2011
Batch ID: P423925

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2376506	Total Alkalinity	2.25	Sample	P	0 - 3.8

Reference Method: SM 4500-F- C-2011
Batch ID: P423814

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2374419	Fluoride	1.02	Spike	P	0 - 1.6

Reference Method: SM 5310 B-2011
Batch ID: P423876

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2376454	Organic Carbon	1.31	Spike	P	0 - 20

* Sample, spike and/or laboratory control sample precision (LCS) is reported.

Quality Assurance Report Surrogates

Lab Sample ID: 2376581

Field Sample ID: 3515

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	2,4-D-d3	90.4	P	30 - 160
EPA 8321B	Acetaminophen-d4	102	P	30 - 160
EPA 8321B	Carbamazepine-d10	63.4	P	30 - 160
EPA 8321B	Diuron-d6	52.1	P	30 - 160
EPA 8321B	Endothall-d6	144	P	30 - 160
EPA 8321B	Glyphosate 13C 15N	98.0	P	30 - 160
EPA 8321B	Ibuprofen-d3	96.0	P	30 - 160
EPA 8321B	Primidone-d5	81.6	P	30 - 160
EPA 8321B	Sucralose-d6	70.5	P	30 - 160

Quality Assurance Report Calibration Verification

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A116559

Included Lab Sample IDs: 2376576

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

Reference Method: DEP SOP: NU-094-1

Run ID: A116574

Included Lab Sample IDs: 2376576

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	98.2	98.6	P/P	90 - 110

Reference Method: EPA 180.1 Rev. 2.0

Run ID: A116579

Included Lab Sample IDs: 2376576

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

Reference Method: EPA 120.1

Run ID: A116584

Included Lab Sample IDs: 2376576

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Specific_Conductance	100	102	P/P	85 - 115

Reference Method: SM 4500-F- C-2011

Run ID: A116584

Included Lab Sample IDs: 2376576

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	105	109	P/P	90 - 110

Reference Method: SM 5310 B-2011

Run ID: A116614

Included Lab Sample IDs: 2376577

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	99.1	99.6	P/P	90 - 110

Reference Method: EPA 200.7 Rev. 4.4

Run ID: A116621

Included Lab Sample IDs: 2376586

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Calcium	103	100	P/P	90 - 110
Magnesium	101	99.2	P/P	90 - 110
Potassium	99.5	97.3	P/P	90 - 110
Sodium	102	99.4	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: EPA 8321B
Run ID: A116624
Included Lab Sample IDs: 2376581

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Acesulfame K	79.9	77.7	P/P	60 - 160
Sucralose	121	117	P/P	60 - 160

Reference Method: EPA 8321B
Run ID: A116625
Included Lab Sample IDs: 2376581

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
AMPA	107	100	P/P	60 - 160
Endothall	126	125	P/P	60 - 160
Glufosinate	102	97.9	P/P	60 - 160
Glyphosate	99.9	104	P/P	60 - 160

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A116630
Included Lab Sample IDs: 2376577

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	106	106	P/P	90 - 110

Reference Method: SM 2320 B-2011
Run ID: A116645
Included Lab Sample IDs: 2376576

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	96.8	94.3	P/P	90 - 110

Reference Method: EPA 8321B
Run ID: A116684
Included Lab Sample IDs: 2376581

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
2,4-D	105	102	P/P	50 - 150
2,4,5-T	107	110	P/P	50 - 150
Acetaminophen	111	111	P/P	60 - 160
Acetamiprid	101	102	P/P	50 - 150
Afidopyropen	77.9	76.3	P/P	50 - 150
Bentazon	95.2	96.1	P/P	50 - 160
Benzovindiflupyr	112	112	P/P	50 - 150
Carbamazepine	94.6	102	P/P	60 - 150
Clothianidin	107	110	P/P	60 - 150
Dinotefuran	108	102	P/P	50 - 150
Diuron	107	110	P/P	60 - 160
Fenuron	99.3	99.2	P/P	60 - 150
Fluridone	101	106	P/P	60 - 160
Hydrocodone	100	100	P/P	60 - 150
Ibuprofen	103	90.0	P/P	50 - 160
Imazapyr	96.5	102	P/P	50 - 150
Imidacloprid	92.4	93.9	P/P	60 - 150
Linuron	94.4	95.9	P/P	60 - 150
Mandestrobin	106	100	P/P	50 - 150

Quality Assurance Report Calibration Verification

Reference Method: EPA 8321B
Run ID: A116684
Included Lab Sample IDs: 2376581

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
MCP	96.8	103	P/P	50 - 150
Naproxen	89.1	138	P/P	50 - 160
Primidone	100	96.8	P/P	60 - 150
Pyraclostrobin	122	118	P/P	60 - 150
Silvex	105	107	P/P	50 - 150
Thiamethoxam	106	101	P/P	50 - 150
Tolfenpyrad	95.4	102	P/P	60 - 150
Triclopyr	114	98.4	P/P	50 - 150

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A116700
Included Lab Sample IDs: 2376577

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

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A116711
Included Lab Sample IDs: 2376577

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	98.1	98.5	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A116719
Included Lab Sample IDs: 2376577

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	96.7	99.6	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	MS
							SMP	
DEP SOP: NU-094-1	Color (true)	98.8					0.429	
EPA 120.1	Specific_Conductance	100					1.05	
EPA 180.1 Rev. 2.0	Turbidity	101					2.67	
EPA 200.7 Rev. 4.4	Calcium	101	105	105	108			0.121
	Magnesium	97.6	102	101	105			0.921
	Potassium	96.3	101	101	106			0.0872
	Sodium	98.7	102	107				1.02
EPA 300.0 Rev. 2.1	Chloride	101	99.9	98.9			0.0740	
	Sulfate	101	98.9	100			0.0025	
EPA 350.1 Rev. 2.0	Ammonia-N	97.8	97.4	97.8				0.324
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	99.7	96.3	99.8				2.15
EPA 353.2 Rev. 2.0	NO2NO3-N	108	110	109				0.458
EPA 365.1 Rev. 2.0	Total-P	101	102	103				1.30
EPA 8321B	2,4-D	102	108	102				6.37
	2,4,5-T	76.0	80.2	74.0				8.04
	Acesulfame K	71.4	46.9	41.6				11.9
	Acetaminophen	95.1	103	100				3.22
	Acetamiprid	83.1	87.9	83.9				4.61
	Afidopyropen	64.9	64.1	70.2				9.12
	AMPA	90.8	87.8	90.6				3.18
	Bentazon	69.1	70.5	75.8				7.20
	Benzovindiflupyr	85.1	93.9	88.2				6.34
	Carbamazepine	81.2	86.2	83.4				3.33
	Clothianidin	93.6	100	103				2.29
	Dinotefuran	95.1	103	97.9				4.92
	Diuron	69.3	79.8	76.3				4.49
	Endothall	124	157	155				0.989
	Fenuron	93.5	100	101				0.949
	Fluridone	78.0	78.9	81.6				3.36
	Glufosinate	106	124	124				0.519
	Glyphosate	108	117	105				10.6
	Hydrocodone	86.3	90.1	92.1				2.16
	Ibuprofen	96.7	99.9	92.6				7.56
	Imazapyr	83.6	90.6	89.4				1.32
	Imidacloprid	85.4	92.5	91.9				0.616
	Linuron	77.2	81.9	80.5				1.69
	Mandestrobin	91.0	94.3	99.3				5.14
	MCPP	102	105	96.5				8.12
	Naproxen	87.6	89.4	66.8				29.0
	Primidone	89.9	95.7	95.6				0.111
	Pyraclostrobin	78.4	88.7	85.3				3.99
	Silvex	82.2	78.6	88.1				11.4
	Sucralose	122	97.1	101				4.08
	Thiamethoxam	86.6	95.2	95.2				0.0381
	Tolfenpyrad	40.8	50.0	42.3				16.5
	Triclopyr	73.2	87.9	74.1				17.0
SM 2320 B-2011	Total Alkalinity	96.3					2.25	
SM 2540 D-2015	TSS	98.5						
SM 4500-F- C-2011	Fluoride	102	101	99.5				1.02
SM 5310 B-2011	Organic Carbon	95.6	96.4	98.3				1.31

Reference Method Descriptions

Method	Description	<u>Associated Samples</u>
DEP SOP: NU-094-1	True Color measured at 450 nm (not valid for NPDES monitoring)	2376576
EPA 120.1	Specific Conductivity in aqueous matrices (umhos/cm at 25 deg C).	2376576
EPA 180.1 Rev. 2.0	Turbidity in aqueous matrices	2376576
EPA 200.7 Rev. 4.4	Total Recoverable Metals analysis using ICP emission spectroscopy for aqueous samples supporting Clean Water Act Projects	2376586
EPA 300.0 Rev. 2.1	Chloride in aqueous matrices	2376576
EPA 300.0 Rev. 2.1	Sulfate in aqueous matrices	2376576
EPA 350.1 Rev. 2.0	Ammonia in aqueous matrices as mg N/L	2376577
EPA 351.2 Rev. 2.0	Total Kjeldahl Nitrogen in aqueous matrices	2376577
EPA 353.2 Rev. 2.0	Nitrite/Nitrate in aqueous matrices as mg N/L	2376577
EPA 365.1 Rev. 2.0	Total Phosphorus in aqueous matrices as mg P/L	2376577
EPA 8321B	Pesticides, herbicides, and other chemicals in water matrices by HPLC/MS/MS	2376581
SM 2320 B-2011	Alkalinity in aqueous matrices as mg CaCO3/L	2376576
SM 2340 B-2011	Hardness by calculation, in aqueous matrices, reported as mg/L CaCO3	2376586
SM 2540 D-2015	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2376576
SM 4500-F- C-2011	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2376576
SM 5310 B-2011	Nonpurgeable Organic Carbon in aqueous matrices	2376577

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
DEP SOP: NU-094-1	12/20/2022			12/20/2022 14:32	Alexis Price	2376576
EPA 120.1	12/20/2022			12/20/2022 23:34	Dale L. Simmons	2376576
EPA 180.1 Rev. 2.0	12/20/2022			12/20/2022 14:24	Chandler E Cox	2376576
EPA 200.7 Rev. 4.4	12/20/2022	12/21/2022 10:30	George D Taylor	12/21/2022 21:10	McKinley C Carter	2376586
EPA 300.0 Rev. 2.1	12/20/2022			12/20/2022 17:40	Anna M. Plaviak	2376576
EPA 350.1 Rev. 2.0	12/20/2022			01/03/2023 12:27	Ping Hua	2376577
EPA 351.2 Rev. 2.0	12/20/2022	12/22/2022 12:45	Simonne.V. Calhoun	01/04/2023 11:48	Samantha L Bates	2376577
EPA 353.2 Rev. 2.0	12/20/2022			12/22/2022 11:20	Beverly Y. Sanders	2376577
EPA 365.1 Rev. 2.0	12/20/2022	12/29/2022 14:13	Adam P Silver	01/03/2023 09:11	James L Waggeberby	2376577
EPA 8321B	12/20/2022	12/20/2022 11:30	June Rhew	12/20/2022 23:47	Juyoung Kim	2376581
	12/20/2022	12/21/2022 13:45	Umesh Chiluwal	12/21/2022 16:15	Umesh Chiluwal	2376581
	12/20/2022	12/21/2022 13:45	Umesh Chiluwal	12/22/2022 02:43	Umesh Chiluwal	2376581
SM 2320 B-2011	12/20/2022			12/21/2022 23:12	Dale L. Simmons	2376576
SM 2340 B-2011	12/20/2022			12/21/2022 21:10	McKinley C Carter	2376586
SM 2540 D-2015	12/20/2022			12/21/2022 14:49	Yijie Li	2376576
SM 4500-F- C-2011	12/20/2022			12/20/2022 23:34	Dale L. Simmons	2376576
SM 5310 B-2011	12/20/2022			12/21/2022 14:18	Khloe J Berg	2376577