

Chemical Analysis Report

SW-DIST-2020-02-12-01

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

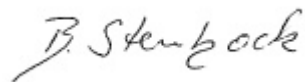
Event Description: **Chaz, Bluebird, Highland**
Request ID: **RQ-2020-02-10-24**
Customer: **SW-DIST**
Project ID: **SMP**

Send Reports to:
FL Dept. of Environmental Protection
FL Dept. of Environmental Protection
13051 N. Telecom Parkway
Temple Terrace, FL 33637-0926
Attn: Judy Ashton

For additional information please contact
Colin Wright, Ph.D.
Liang-Tsair Lin, Ph.D.
Kerry Tate, Ph.D.
Dr. rer. nat. Bettina Steinbock
Thekkekalathil Chandrasekhar, Ph.D, QA Officer
Phone (850) 245-8085

Certified by: Dr. rer. nat. Bettina Steinbock, Environmental Administrator

Date Certified: 06-MAR-2020 11:30



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 group are included in this report: Nutrients.

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: Chassahowitzka River @ Start of WBID

Collection Date/Time: 02/11/2020 10:20

Field ID: G5SW0064

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2156999	EPA 180.1 Rev. 2.0	Turbidity	1.5		NTU	P378806	
	EPA 300.0 Rev. 2.1	Bromide	5.0		mg Br/L	P379449	
	SM 2320 B-2011	Total Alkalinity	172		mg CaCO3/L	P379405	
	SM 2540 D-2011	TSS	3	I	mg/L	P379194	
	SM 4500 F-C-2011	Fluoride	0.15		mg F/L	P379408	
2157002	EPA 350.1 Rev. 2.0	Ammonia-N	0.014		mg N/L	P379351	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.19	I	mg N/L	P379113	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.24		mg N/L	P379860	
	EPA 365.1 Rev. 2.0	Total-P	0.018		mg P/L	P379847	
	SM 5310 B-2011	Organic Carbon	1.4		mg C/L	P378987	
2157005	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.009	I	mg P/L	P378775	

Ref. Method and Comment:

SM 2540 D-2011: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.

Sample Location: Chassahowitzka River Downstream of Houses Collection Date/Time: 02/11/2020 10:35

Field ID: G5SW0065

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2157000	EPA 180.1 Rev. 2.0	Turbidity	1.2		NTU	P378806	
	EPA 300.0 Rev. 2.1	Bromide	5.9		mg Br/L	P379449	
	SM 2320 B-2011	Total Alkalinity	173		mg CaCO3/L	P379405	
	SM 2540 D-2011	TSS	4	I	mg/L	P379194	
	SM 4500 F-C-2011	Fluoride	0.17		mg F/L	P379408	
2157003	EPA 350.1 Rev. 2.0	Ammonia-N	0.021		mg N/L	P379354	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.21	I	mg N/L	P379112	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.20		mg N/L	P379268	
	EPA 365.1 Rev. 2.0	Total-P	0.019		mg P/L	P379985	
	SM 5310 B-2011	Organic Carbon	1.8		mg C/L	P378987	
2157006	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.009	I	mg P/L	P378777	

Ref. Method and Comment:

SM 2540 D-2011: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.

Sample Location: Chassahowitzka River @ Island Compou

Collection Date/Time: 02/11/2020 11:00

Field ID: G5SW0066

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2157001	EPA 180.1 Rev. 2.0	Turbidity	1.6		NTU	P378807	
	EPA 300.0 Rev. 2.1	Bromide	18		mg Br/L	P379449	
	SM 2320 B-2011	Total Alkalinity	186	A	mg CaCO3/L	P379246	
	SM 2540 D-2011	TSS	3	UA	mg/L	P379198	
	SM 4500 F-C-2011	Fluoride	0.31		mg F/L	P379250	
2157004	EPA 350.1 Rev. 2.0	Ammonia-N	0.005	I	mg N/L	P379355	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.32	I	mg N/L	P379112	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.015		mg N/L	P379268	
	EPA 365.1 Rev. 2.0	Total-P	0.016		mg P/L	P379985	
	SM 5310 B-2011	Organic Carbon	4.8		mg C/L	P379080	
2157007	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.007	I	mg P/L	P378777	

Ref. Method and Comment:

SM 2540 D-2011: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.

Sample Location: Blue Bird Spring

Collection Date/Time: 02/11/2020 13:00

Field ID: G5SW0028

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2156993	EPA 180.1 Rev. 2.0	Turbidity	0.35		NTU	P378806	
	EPA 300.0 Rev. 2.1	Chloride	56		mg Cl/L	P379510	
		Sulfate	13		mg SO4/L	P379512	
	SM 2120 B-2011	Color (true)	2.7	I	PCU	P378810	
	SM 2320 B-2011	Total Alkalinity	131		mg CaCO3/L	P379405	
	SM 2540 C-2011	TDS	243		mg/L	P379593	
	SM 2540 D-2011	TSS	2	I	mg/L	P379194	
	SM 4500 F-C-2011	Fluoride	0.090	I	mg F/L	P379408	
	EPA 350.1 Rev. 2.0	Ammonia-N	0.013		mg N/L	P379351	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.10	I	mg N/L	P379113	
2156995	EPA 353.2 Rev. 2.0	NO2NO3-N	0.60		mg N/L	P379547	
	EPA 365.1 Rev. 2.0	Total-P	0.025		mg P/L	P379847	
	SM 5310 B-2011	Organic Carbon	0.87	I	mg C/L	P378987	
	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.018		mg P/L	P378775	

Ref. Method and Comment:

SM 2540 D-2011: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.

Sample Location: Highland Lake

Collection Date/Time: 02/11/2020 13:50

Field ID: G5SW0153

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2156994	EPA 180.1 Rev. 2.0	Turbidity	1.0		NTU	P378806	
	EPA 300.0 Rev. 2.1	Chloride	3.9		mg Cl/L	P379510	
		Sulfate	0.20	U	mg SO4/L	P379512	
	SM 2120 B-2011	Color (true)	56		PCU	P378810	
	SM 2320 B-2011	Total Alkalinity	30		mg CaCO3/L	P379405	
	SM 2540 C-2011	TDS	59		mg/L	P379593	
	SM 2540 D-2011	TSS	6	I	mg/L	P379194	
	SM 4500 F-C-2011	Fluoride	0.035	U	mg F/L	P379408	
	EPA 350.1 Rev. 2.0	Ammonia-N	0.006		mg N/L	P379351	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.88		mg N/L	P379113	
2156996	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P379536	
	EPA 365.1 Rev. 2.0	Total-P	0.009		mg P/L	P379847	
	SM 5310 B-2011	Organic Carbon	13		mg C/L	P378987	
	EPA 365.1 Rev. 2.0	O-Phosphate-P	0.004	U	mg P/L	P378775	
	dissolved						

Ref. Method and Comment:

SM 2540 D-2011: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.

Quality Assurance Report Method Blank Results

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P378806

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P378807

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P379449

Component	Result	Code	Units
Bromide	0.013	U	mg Br/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P379510

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P379512

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P379351

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P379354

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P379355

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P379112

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

Quality Assurance Report Method Blank Results

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P379113

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P379268

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P379536

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P379547

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P379860

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P379847

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P379985

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P378775

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P378777

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

Quality Assurance Report

Method Blank Results

Reference Method: SM 2120 B-2011
Batch ID: P378810

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-2011
Batch ID: P379246

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

Reference Method: SM 2320 B-2011
Batch ID: P379405

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

Reference Method: SM 2540 C-2011
Batch ID: P379593

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-2011
Batch ID: P379194

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 2540 D-2011
Batch ID: P379198

Component	Result	Code	Units
TSS	3	U	mg/L

Reference Method: SM 4500 F-C-2011
Batch ID: P379250

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 4500 F-C-2011
Batch ID: P379408

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-2011
Batch ID: P378987

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

Quality Assurance Report

Method Blank Results

Reference Method: SM 5310 B-2011
Batch ID: P379080

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

Quality Assurance Report

Laboratory Control Sample Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P379449

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P379510

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Chloride	99.9		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P379512

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P379351

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	96.0		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P379354

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P379355

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	96.1		P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P379112

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P379113

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P379268

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
NO2NO3-N	99.5		P	90 - 110

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P379536

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: P379547

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P379860

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: P379847

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P379985

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P378775

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P378777

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
O-Phosphate-P	97.6		P	90 - 110

Reference Method: SM 2120 B-2011
Batch ID: P378810

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Color (true)	97.5		P	85 - 115

Reference Method: SM 2320 B-2011
Batch ID: P379246

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	103		P	98 - 106

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: SM 2320 B-2011
Batch ID: P379405

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	104		P	98 - 106

Reference Method: SM 4500 F-C-2011
Batch ID: P379250

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	96.6		P	92 - 103

Reference Method: SM 4500 F-C-2011
Batch ID: P379408

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	97.9		P	92 - 103

Reference Method: SM 5310 B-2011
Batch ID: P378987

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	98.1		P	85 - 115

Reference Method: SM 5310 B-2011
Batch ID: P379080

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	97.8		P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P379449

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2156692	Bromide	96.0	96.7	P/P	90 - 110
2157502	Bromide	95.5		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P379510

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2156692	Chloride	99.8		P	90 - 110
2157030	Chloride	97.6		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P379512

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2156692	Sulfate	100		P	90 - 110
2157030	Sulfate	97.2		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P379351

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2156995	Ammonia-N	98.6	99.2	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P379354

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2156850	Ammonia-N	98.5	99.8	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P379355

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2157004	Ammonia-N	101	101	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P379112

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2156951	Kjeldahl Nitrogen	96.0	102	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P379113

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2156995	Kjeldahl Nitrogen	98.6	98.4	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P379268

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2156948	NO2NO3-N	100	102	P/P	90 - 110

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P379536

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2156967	NO2NO3-N	98.2	97.2	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P379547

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2157563	NO2NO3-N	99.2	99.7	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P379860

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2159031	NO2NO3-N	102	100	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P379847

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2156996	Total-P	104	106	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P379985

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2157003	Total-P	108	109	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P378775

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2156673	O-Phosphate-P	91.7	92.5	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P378777

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2156880	O-Phosphate-P	95.1	94.7	P/P	90 - 110

Reference Method: SM 4500 F-C-2011
Batch ID: P379250

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2157001	Fluoride	97.3	98.6	P/P	89 - 106

Reference Method: SM 4500 F-C-2011
Batch ID: P379408

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2157223	Fluoride	98.1	99.9	P/P	89 - 106

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SM 5310 B-2011
Batch ID: P378987

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2156962	Organic Carbon	103		P	85 - 115

Reference Method: SM 5310 B-2011
Batch ID: P379080

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2156878	Organic Carbon	96.6	97.2	P/P	85 - 115

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P378806

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2156877	Turbidity	1.91	Sample	P	0 - 20

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P378807

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2156946	Turbidity	3.54	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P379449

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2156692	Bromide	0.725	Spike	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P379510

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2157030	Chloride	0.433	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P379512

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2157030	Sulfate	0.0216	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P379351

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2156995	Ammonia-N	0.512	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P379354

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2156850	Ammonia-N	0.878	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P379355

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2157004	Ammonia-N	0.514	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P379112

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2156951	Kjeldahl Nitrogen	5.05	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P379113

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2156995	Kjeldahl Nitrogen	0.195	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P379268

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2156948	NO2NO3-N	1.48	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P379536

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2156967	NO2NO3-N	0.990	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P379547

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2157563	NO2NO3-N	0.489	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P379860

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2159031	NO2NO3-N	0.990	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P379847

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2156996	Total-P	1.82	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P379985

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2157003	Total-P	0.203	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P378775

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2156673	O-Phosphate-P	0.673	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P378777

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2156880	O-Phosphate-P	0.421	Spike	P	0 - 20

Reference Method: SM 2120 B-2011
Batch ID: P378810

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2157027	Color (true)	0.235	Sample	P	0 - 20

Reference Method: SM 2320 B-2011
Batch ID: P379246

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2157001	Total Alkalinity	0.118	Sample	P	0 - 2.8

Reference Method: SM 2320 B-2011
Batch ID: P379405

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2157223	Total Alkalinity	0.373	Sample	P	0 - 2.8

Reference Method: SM 2540 C-2011
Batch ID: P379593

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2156966	TDS	1.52	Sample	P	0 - 10

Reference Method: SM 4500 F-C-2011
Batch ID: P379250

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2157001	Fluoride	0.946	Spike	P	0 - 2.5

Reference Method: SM 4500 F-C-2011
Batch ID: P379408

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2157223	Fluoride	1.48	Spike	P	0 - 2.5

Quality Assurance Report Precision

Reference Method: SM 5310 B-2011
Batch ID: P378987

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2156962	Organic Carbon	0.955	Spike	P	0 - 20

Reference Method: SM 5310 B-2011
Batch ID: P379080

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2156878	Organic Carbon	0.562	Spike	P	0 - 20

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

Quality Assurance Report Calibration Verification

Reference Method: EPA 365.1 Rev. 2.0 dissolved

Run ID: A97481

Included Lab Sample IDs: 2156997, 2156998, 2157005, 2157006, 2157007

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	96.9	95.5	P/P	90 - 110

Reference Method: EPA 180.1 Rev. 2.0

Run ID: A97488

Included Lab Sample IDs: 2156993, 2156994, 2156999, 2157000, 2157001

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Turbidity	100	99.5	P/P	95 - 105
Turbidity	99.5	98.0	P/P	95 - 105

Reference Method: SM 2120 B-2011

Run ID: A97489

Included Lab Sample IDs: 2156993, 2156994

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	100	101	P/P	90 - 115

Reference Method: SM 5310 B-2011

Run ID: A97559

Included Lab Sample IDs: 2156995, 2156996, 2157002, 2157003

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	101	102	P/P	90 - 110
Organic Carbon	99.8	101	P/P	90 - 110

Reference Method: SM 5310 B-2011

Run ID: A97590

Included Lab Sample IDs: 2157004

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	102	98.8	P/P	90 - 110

Reference Method: SM 2320 B-2011

Run ID: A97673

Included Lab Sample IDs: 2157001

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

Reference Method: SM 4500 F-C-2011

Run ID: A97673

Included Lab Sample IDs: 2157001

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	98.5	99.5	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A97683

Included Lab Sample IDs: 2157003, 2157004

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
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Quality Assurance Report Calibration Verification

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A97683

Included Lab Sample IDs: 2157003, 2157004

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

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A97690

Included Lab Sample IDs: 2156995, 2156996, 2157002, 2157003, 2157004

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	102	103	P/P	90 - 110
Kjeldahl Nitrogen	103	109	P/P	90 - 110
Kjeldahl Nitrogen	109	101	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A97714

Included Lab Sample IDs: 2156995, 2156996, 2157002, 2157003, 2157004

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	101	99.6	P/P	90 - 110
Ammonia-N	101	100	P/P	90 - 110
Ammonia-N	98.9	101	P/P	90 - 110

Reference Method: SM 2320 B-2011

Run ID: A97738

Included Lab Sample IDs: 2156993, 2156994, 2156999, 2157000

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

Reference Method: SM 4500 F-C-2011

Run ID: A97738

Included Lab Sample IDs: 2156993, 2156994, 2156999, 2157000

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

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A97750

Included Lab Sample IDs: 2156999, 2157000, 2157001

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

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A97758

Included Lab Sample IDs: 2156995

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

Quality Assurance Report Calibration Verification

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A97764

Included Lab Sample IDs: 2156996

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

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A97771

Included Lab Sample IDs: 2156993, 2156994

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	98.8	99.4	P/P	90 - 110
Sulfate	98.7	99.2	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A97902

Included Lab Sample IDs: 2157002

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	101	101	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A97933

Included Lab Sample IDs: 2156995, 2156996, 2157002

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	100	99.2	P/P	90 - 110
Total-P	101	100	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A97985

Included Lab Sample IDs: 2157003, 2157004

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	101	102	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			Precision	
						LCS	MS
EPA 180.1 Rev. 2.0	Turbidity					1.91	
	Turbidity					3.54	
EPA 300.0 Rev. 2.1	Bromide	101	96.0	96.7	95.5		0.725
	Chloride	99.9	97.6	99.8		0.433	
	Sulfate	100	97.2	100		0.0216	
	Ammonia-N	96.0	98.6	99.2			0.512
EPA 350.1 Rev. 2.0	Ammonia-N	99.3	98.5	99.8			0.878
	Ammonia-N	96.1	101	101			0.514
	Kjeldahl Nitrogen	103	96.0	102			5.05
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	99.0	98.6	98.4			0.195
	NO2NO3-N	99.5	100	102			1.48
EPA 353.2 Rev. 2.0	NO2NO3-N	100	98.2	97.2			0.990
	NO2NO3-N	99.0	99.2	99.7			0.489
	NO2NO3-N	100	102	100			0.990
	NO2NO3-N	100	102	100			0.990
EPA 365.1 Rev. 2.0	Total-P	103	104	106			1.82
	Total-P	109	108	109			0.203
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	95.2	91.7	92.5			0.673
	O-Phosphate-P	97.6	95.1	94.7			0.421
SM 2120 B-2011	Color (true)	97.5				0.235	
SM 2320 B-2011	Total Alkalinity	103				0.118	
	Total Alkalinity	104				0.373	
SM 2540 C-2011	TDS					1.52	
SM 4500 F-C-2011	Fluoride	96.6	97.3	98.6			0.946
	Fluoride	97.9	98.1	99.9			1.48
SM 5310 B-2011	Organic Carbon	98.1	103				0.955
	Organic Carbon	97.8	96.6	97.2			0.562

Reference Method Descriptions

Method	Description	Associated Samples
EPA 180.1 Rev. 2.0	Turbidity in aqueous matrices	2156993, 2156994, 2156999, 2157000, 2157001
EPA 300.0 Rev. 2.1	Bromide in aqueous matrices	2156999, 2157000, 2157001
EPA 300.0 Rev. 2.1	Chloride in aqueous matrices	2156993, 2156994
EPA 300.0 Rev. 2.1	Sulfate in aqueous matrices	2156993, 2156994
EPA 350.1 Rev. 2.0	Ammonia in aqueous matrices as mg N/L	2156995, 2156996, 2157002, 2157003, 2157004
EPA 351.2 Rev. 2.0	Total Kjeldahl Nitrogen in aqueous matrices	2156995, 2156996, 2157002, 2157003, 2157004
EPA 353.2 Rev. 2.0	Nitrite/Nitrate in aqueous matrices as mg N/L	2156995, 2156996, 2157002, 2157003, 2157004
EPA 365.1 Rev. 2.0	Total Phosphorus in aqueous matrices as mg P/L	2156995, 2156996, 2157002, 2157003, 2157004
EPA 365.1 Rev. 2.0 dissolved	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2156997, 2156998, 2157005, 2157006, 2157007
SM 2120 B-2011	True Color measured at 450 nm (not valid for NPDES monitoring)	2156993, 2156994
SM 2320 B-2011	Alkalinity in aqueous matrices as mg CaCO3/L	2156993, 2156994, 2156999, 2157000, 2157001
SM 2540 C-2011	Total Dissolved Solids in aqueous matrices	2156993, 2156994
SM 2540 D-2011	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2156993, 2156994, 2156999, 2157000, 2157001
SM 4500 F-C-2011	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2156993, 2156994, 2156999, 2157000, 2157001
SM 5310 B-2011	Nonpurgeable Organic Carbon in aqueous matrices	2156995, 2156996, 2157002, 2157003, 2157004

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	02/12/2020			02/12/2020 16:39	Yen Ta	2156993, 2156994, 2156999, 2157000, 2157001
EPA 300.0 Rev. 2.1	02/12/2020			02/22/2020 08:54	Lipi Saha	2156999
	02/12/2020			02/22/2020 09:11	Lipi Saha	2157000
	02/12/2020			02/22/2020 09:28	Lipi Saha	2157001
	02/12/2020			02/24/2020 21:36	Lipi Saha	2156993
	02/12/2020			02/24/2020 21:48	Lipi Saha	2156994
EPA 350.1 Rev. 2.0	02/12/2020			02/19/2020 11:08	Ping Hua	2156995
	02/12/2020			02/19/2020 11:21	Ping Hua	2156996
	02/12/2020			02/19/2020 11:23	Ping Hua	2157002
	02/12/2020			02/19/2020 13:03	Ping Hua	2157003
	02/12/2020			02/19/2020 13:08	Ping Hua	2157004
EPA 351.2 Rev. 2.0	02/12/2020	02/18/2020 11:25	Sima Feizi	02/20/2020 16:28	Jhamieka S. Greenwood	2157003
	02/12/2020	02/18/2020 11:25	Sima Feizi	02/20/2020 16:30	Jhamieka S. Greenwood	2157004
	02/12/2020	02/18/2020 11:25	Sima Feizi	02/20/2020 16:45	Jhamieka S. Greenwood	2156995
	02/12/2020	02/18/2020 11:25	Sima Feizi	02/20/2020 16:55	Jhamieka S. Greenwood	2156996
	02/12/2020	02/18/2020 11:25	Sima Feizi	02/20/2020 16:56	Jhamieka S. Greenwood	2157002
EPA 353.2 Rev. 2.0	02/12/2020			02/20/2020 11:52	Lauren Lees	2157003
	02/12/2020			02/20/2020 11:53	Lauren Lees	2157004
	02/12/2020			02/21/2020 10:28	Beverly Y. Sanders	2156996
	02/12/2020			02/24/2020 11:00	Beverly Y. Sanders	2156995
	02/12/2020			02/28/2020 10:21	Beverly Y. Sanders	2157002
EPA 365.1 Rev. 2.0	02/12/2020	02/28/2020 14:20	Yen Ta	03/02/2020 14:18	Lipi Saha	2156996
	02/12/2020	02/28/2020 14:20	Yen Ta	03/02/2020 14:28	Lipi Saha	2156995
	02/12/2020	02/28/2020 14:20	Yen Ta	03/02/2020 14:29	Lipi Saha	2157002
	02/12/2020	03/03/2020 13:55	Yen Ta	03/04/2020 10:14	Benjamin T. Nordmann	2157003
	02/12/2020	03/03/2020 13:55	Yen Ta	03/04/2020 10:15	Benjamin T. Nordmann	2157004
EPA 365.1 Rev. 2.0 dissolved	02/12/2020			02/12/2020 14:09	Lipi Saha	2156997, 2156998
	02/12/2020			02/12/2020 14:10	Lipi Saha	2157005
	02/12/2020			02/12/2020 14:11	Lipi Saha	2157006
	02/12/2020			02/12/2020 14:12	Lipi Saha	2157007
SM 2120 B-2011	02/12/2020			02/12/2020 14:53	Madeline Funaro	2156993
	02/12/2020			02/12/2020 14:54	Madeline Funaro	2156994
SM 2320 B-2011	02/12/2020			02/18/2020 21:25	Dale L. Simmons	2157001
	02/12/2020			02/21/2020 02:24	Dale L. Simmons	2156993
	02/12/2020			02/21/2020 02:38	Dale L. Simmons	2156994
	02/12/2020			02/21/2020 04:17	Dale L. Simmons	2156999
	02/12/2020			02/21/2020 04:30	Dale L. Simmons	2157000
SM 2540 C-2011	02/12/2020			02/14/2020 13:00	Sima Feizi	2156993, 2156994

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
SM 2540 D-2011	02/12/2020			02/14/2020 13:00	Sima Feizi	2156993, 2156994, 2156999, 2157000, 2157001
SM 4500 F-C-2011	02/12/2020			02/18/2020 19:01	Dale L. Simmons	2157001
	02/12/2020			02/21/2020 02:24	Dale L. Simmons	2156993
	02/12/2020			02/21/2020 02:38	Dale L. Simmons	2156994
	02/12/2020			02/21/2020 04:17	Dale L. Simmons	2156999
SM 5310 B-2011	02/12/2020			02/21/2020 04:30	Dale L. Simmons	2157000
	02/12/2020			02/14/2020 19:01	Lauren Lees	2156995
	02/12/2020			02/14/2020 21:10	Lauren Lees	2156996
	02/12/2020			02/14/2020 21:22	Lauren Lees	2157002
	02/12/2020			02/14/2020 21:36	Lauren Lees	2157003
	02/12/2020			02/18/2020 04:44	Madeline Funaro	2157004