

Chemical Analysis Report

WAS-SECT-2019-07-10-01

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

Event Description: **Tallahassee Lakes**

Request ID: **RQ-2019-07-08-19**

Customer: **WAS-SECT**

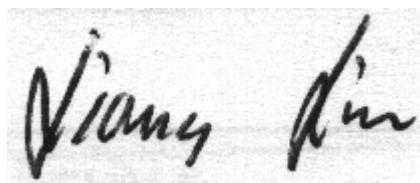
Project ID: **SMP**

Send Reports to:
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Attn: Curtis Musson

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Certified by: Liang Lin, Environmental Administrator

Date Certified: 29-JUL-2019 16:00

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

Case Narrative

Unless otherwise noted, all samples included in this report were received in accordance with protocols referenced in Chapter 62-160, Florida Administrative Code (F.A.C.). Results published in this report pertain only to the samples as submitted to, and received by the laboratory. All times in this report are adjusted to the applicable Eastern Time Zone (EST or EDT).

Results for the following analytical 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: Lake Tom John Middle

Collection Date/Time: 07/10/2019 08:47

Field ID: G1WA0043

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2101519	EPA 180.1 Rev. 2.0	Turbidity	1.4		NTU	P366981	
	EPA 300.0 Rev. 2.1	Chloride	8.7		mg Cl/L	P367222	
		Sulfate	0.20	U	mg SO4/L	P367224	
	SM 2120 B	Color (true)	12		PCU	P367029	
	SM 2320 B-97	Total Alkalinity	22		mg CaCO3/L	P367447	
	SM 2540 C-97	TDS	36		mg/L	P367495	
	SM 2540 D-97	TSS	3	I	mg/L	P367509	
	SM 4500 F-C-97	Fluoride	0.047	I	mg F/L	P367451	
2101524	EPA 350.1 Rev. 2.0	Ammonia-N	0.006		mg N/L	P367714	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.57		mg N/L	P367153	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P367137	
	EPA 365.1 Rev. 2.0	Total-P	0.024		mg P/L	P367157	
	SM 5310 B-00	Organic Carbon	5.2		mg C/L	P367344	
2101529	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P366989	

Ref. Method and Comment:

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

Sample Location: Upper Dianne Lake Middle

Collection Date/Time: 07/10/2019 10:05

Field ID: G1WA0041

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2101520	EPA 180.1 Rev. 2.0	Turbidity	1.7		NTU	P366981	
	EPA 300.0 Rev. 2.1	Chloride	7.4		mg Cl/L	P367222	
		Sulfate	0.54	I	mg SO4/L	P367224	
	SM 2120 B	Color (true)	7.4	A	PCU	P367029	
	SM 2320 B-97	Total Alkalinity	33		mg CaCO3/L	P367447	
	SM 2540 C-97	TDS	51		mg/L	P367495	
	SM 2540 D-97	TSS	2	U	mg/L	P367509	
	SM 4500 F-C-97	Fluoride	0.061	I	mg F/L	P367451	
2101525	EPA 350.1 Rev. 2.0	Ammonia-N	0.006		mg N/L	P367714	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.37		mg N/L	P367289	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P367138	
	EPA 365.1 Rev. 2.0	Total-P	0.022		mg P/L	P367157	
	SM 5310 B-00	Organic Carbon	3.7		mg C/L	P367344	
2101530	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P366988	

Ref. Method and Comment:

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

Sample Location: Lower Dianne Lake Middle

Collection Date/Time: 07/10/2019 10:55

Field ID: G1WA0040

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2101521	EPA 180.1 Rev. 2.0	Turbidity	3.8		NTU	P366981	
	EPA 300.0 Rev. 2.1	Chloride	8.0		mg Cl/L	P367222	
		Sulfate	0.86		mg SO4/L	P367224	
	SM 2120 B	Color (true)	7.8		PCU	P367029	
	SM 2320 B-97	Total Alkalinity	30		mg CaCO3/L	P367447	
	SM 2540 C-97	TDS	46		mg/L	P367495	
	SM 2540 D-97	TSS	3	I	mg/L	P367509	
	SM 4500 F-C-97	Fluoride	0.060	I	mg F/L	P367451	
2101526	EPA 350.1 Rev. 2.0	Ammonia-N	0.006		mg N/L	P367714	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.52		mg N/L	P367289	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P367138	
	EPA 365.1 Rev. 2.0	Total-P	0.022		mg P/L	P367157	
	SM 5310 B-00	Organic Carbon	4.4		mg C/L	P367345	
2101531	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P366988	

Ref. Method and Comment:

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

Sample Location: Pine Hill Lake Middle

Collection Date/Time: 07/10/2019 11:37

Field ID: G1WA0054

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2101522	EPA 180.1 Rev. 2.0	Turbidity	2.0		NTU	P366981	
	EPA 300.0 Rev. 2.1	Chloride	6.0		mg Cl/L	P367222	
		Sulfate	0.37	I	mg SO4/L	P367224	
	SM 2120 B	Color (true)	9.5		PCU	P367029	
	SM 2320 B-97	Total Alkalinity	14		mg CaCO3/L	P367447	
	SM 2540 C-97	TDS	34		mg/L	P367495	
	SM 2540 D-97	TSS	2	I	mg/L	P367509	
	SM 4500 F-C-97	Fluoride	0.044	I	mg F/L	P367451	
2101527	EPA 350.1 Rev. 2.0	Ammonia-N	0.005		mg N/L	P367714	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.48		mg N/L	P367289	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P367138	
	EPA 365.1 Rev. 2.0	Total-P	0.018		mg P/L	P367157	
	SM 5310 B-00	Organic Carbon	5.3		mg C/L	P367345	
2101532	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P366988	

Ref. Method and Comment:

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

**Sample Location: LAKE ARROWHEAD AT BOAT DOCK AT
 TURTLE CRK LN NEAR OUTLET**

Collection Date/Time: 07/10/2019 12:03

Field ID: G1WA0004

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2101523	EPA 180.1 Rev. 2.0	Turbidity	8.9		NTU	P366982	
	EPA 300.0 Rev. 2.1	Chloride	3.9		mg Cl/L	P367222	
		Sulfate	0.46	I	mg SO4/L	P367224	
	SM 2120 B	Color (true)	15		PCU	P367029	
	SM 2320 B-97	Total Alkalinity	31		mg CaCO3/L	P367447	
	SM 2540 C-97	TDS	45		mg/L	P367495	
	SM 2540 D-97	TSS	6	I	mg/L	P367509	
	SM 4500 F-C-97	Fluoride	0.051	I	mg F/L	P367451	
2101528	EPA 350.1 Rev. 2.0	Ammonia-N	0.005		mg N/L	P367714	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.75		mg N/L	P367289	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P367138	
	EPA 365.1 Rev. 2.0	Total-P	0.036		mg P/L	P367157	
	SM 5310 B-00	Organic Carbon	5.6		mg C/L	P367345	
2101533	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P366988	

Ref. Method and Comment:

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

**Sample Location: LAKE ARROWHEAD AT BOAT DOCK AT
 TURTLE CRK LN NEAR OUTLET**

Collection Date/Time: 07/10/2019 12:10

Field ID: G1WA0004_DUP

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2101537	EPA 180.1 Rev. 2.0	Turbidity	8.8		NTU	P366982	
	EPA 300.0 Rev. 2.1	Chloride	4.0		mg Cl/L	P367222	
		Sulfate	0.44	I	mg SO4/L	P367224	
	SM 2120 B	Color (true)	15		PCU	P367029	
	SM 2320 B-97	Total Alkalinity	31		mg CaCO3/L	P367447	
	SM 2540 C-97	TDS	49		mg/L	P367495	
	SM 2540 D-97	TSS	6	I	mg/L	P367509	
	SM 4500 F-C-97	Fluoride	0.049	I	mg F/L	P367451	
2101538	EPA 350.1 Rev. 2.0	Ammonia-N	0.005		mg N/L	P367714	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.76		mg N/L	P367289	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P367138	
	EPA 365.1 Rev. 2.0	Total-P	0.040		mg P/L	P367157	
	SM 5310 B-00	Organic Carbon	5.7		mg C/L	P367345	
2101539	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P366988	

Ref. Method and Comment:

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

**Sample Location: LAKE ARROWHEAD AT BOAT DOCK AT
 TURTLE CRK LN NEAR OUTLET**

Collection Date/Time: 07/10/2019 12:25

Field ID: FB_07102019

Matrix: W-FIELD-BK

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2101534	EPA 180.1 Rev. 2.0	Turbidity	0.10	U	NTU	P366982	
	EPA 300.0 Rev. 2.1	Chloride	0.20	U	mg Cl/L	P367222	
		Sulfate	0.20	U	mg SO4/L	P367224	
	SM 2120 B	Color (true)	2.5	U	PCU	P367029	
	SM 2320 B-97	Total Alkalinity	0.65	U	mg CaCO3/L	P367447	
	SM 2540 C-97	TDS	15	U	mg/L	P367493	
	SM 2540 D-97	TSS	2	U	mg/L	P367508	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P367451	
2101535	EPA 350.1 Rev. 2.0	Ammonia-N	0.002	U	mg N/L	P367714	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.080	U	mg N/L	P367370	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P367138	
	EPA 365.1 Rev. 2.0	Total-P	0.002	U	mg P/L	P367157	
	SM 5310 B-00	Organic Carbon	0.50	U	mg C/L	P367345	
2101536	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.016		mg P/L	P366988	

Ref. Method and Comment:

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

EPA 365.1 Rev. 2.0: Total-P: The result was confirmed on 07/24/2019.

EPA 365.1 Rev. 2.0 dissolved: O-Phosphate-P: The result was confirmed on 07/10/2019.

Quality Assurance Report Method Blank Results

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P366981

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P366982

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P367222

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P367224

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P367714

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P367153

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P367289

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P367370

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P367137

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

Quality Assurance Report Method Blank Results

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P367138

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P367157

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P366988

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P366989

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

Reference Method: SM 2120 B
Batch ID: P367029

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
Batch ID: P367447

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

Reference Method: SM 2540 C-97
Batch ID: P367493

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 C-97
Batch ID: P367495

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P367508

Component	Result	Code	Units
TSS	2	U	mg/L

Quality Assurance Report

Method Blank Results

Reference Method: SM 2540 D-97
Batch ID: P367509

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P367451

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P367344

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

Reference Method: SM 5310 B-00
Batch ID: P367345

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: P367222

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P367224

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P367714

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P367153

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P367289

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P367370

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Kjeldahl Nitrogen	95.1		P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P367137

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P367138

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P367157

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

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P366988

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: P366989

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

Reference Method: SM 2120 B
Batch ID: P367029

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Color (true)	101		P	85 - 115

Reference Method: SM 2320 B-97
Batch ID: P367447

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

Reference Method: SM 4500 F-C-97
Batch ID: P367451

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	97.5		P	92 - 103

Reference Method: SM 5310 B-00
Batch ID: P367344

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	99.2		P	85 - 115

Reference Method: SM 5310 B-00
Batch ID: P367345

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

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P367222

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2101302	Chloride	103		P	90 - 110
2101519	Chloride	102	102	P/P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P367224

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2101302	Sulfate	103		P	90 - 110
2101519	Sulfate	103	103	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P367714

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2101526	Ammonia-N	97.6	101	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P367153

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2101331	Kjeldahl Nitrogen	107	106	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P367289

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2101526	Kjeldahl Nitrogen	100	99.9	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P367370

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2101582	Kjeldahl Nitrogen	101	101	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P367137

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2100584	NO2NO3-N	101	102	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P367138

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2101525	NO2NO3-N	104	104	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P367157

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2101525	Total-P	103	101	P/P	90 - 110

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P366988

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2101532	O-Phosphate-P	95.6	96.5	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P366989

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2101529	O-Phosphate-P	94.6	95.8	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Batch ID: P367451

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2101778	Fluoride	95.9	95.9	P/P	89 - 106

Reference Method: SM 5310 B-00
Batch ID: P367344

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2101390	Organic Carbon	101	101	P/P	85 - 115

Reference Method: SM 5310 B-00
Batch ID: P367345

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2101794	Organic Carbon	99.2	98.4	P/P	85 - 115

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P366981

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2101392	Turbidity	0.262	Sample	P	0 - 20

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P366982

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2101580	Turbidity	12.0	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P367222

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2101519	Chloride	0.565	Spike	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P367224

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2101519	Sulfate	0.488	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P367714

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2101526	Ammonia-N	3.06	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P367153

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2101331	Kjeldahl Nitrogen	0.719	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P367289

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2101526	Kjeldahl Nitrogen	0.0582	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P367370

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2101582	Kjeldahl Nitrogen	0.120	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 353.2 Rev. 2.0
 Batch ID: P367137

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2100584	NO2NO3-N	0.985	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
 Batch ID: P367138

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2101525	NO2NO3-N	0.0	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
 Batch ID: P367157

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2101525	Total-P	2.01	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
 Batch ID: P366988

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2101532	O-Phosphate-P	0.937	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
 Batch ID: P366989

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2101529	O-Phosphate-P	1.26	Spike	P	0 - 20

Reference Method: SM 2120 B
 Batch ID: P367029

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2101520	Color (true)	3.56	Sample	P	0 - 20

Reference Method: SM 2320 B-97
 Batch ID: P367447

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2101778	Total Alkalinity	1.24	Sample	P	0 - 2.8

Reference Method: SM 2540 C-97
 Batch ID: P367493

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2101327	TDS	7.56	Sample	P	0 - 10

Quality Assurance Report Precision

Reference Method: SM 2540 C-97
Batch ID: P367495

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2101394	TDS	4.30	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
Batch ID: P367451

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2101778	Fluoride	0.0	Spike	P	0 - 2.5

Reference Method: SM 5310 B-00
Batch ID: P367344

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2101390	Organic Carbon	0.0737	Spike	P	0 - 20

Reference Method: SM 5310 B-00
Batch ID: P367345

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2101794	Organic Carbon	0.654	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 Calibration Verification

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A92640

Included Lab Sample IDs: 2101519, 2101520, 2101521, 2101522, 2101523, 2101534, 2101537

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

Reference Method: EPA 180.1 Rev. 2.0

Run ID: A92685

Included Lab Sample IDs: 2101519, 2101520, 2101521, 2101522, 2101523, 2101534, 2101537

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Turbidity	100	100	P/P	95 - 105
Turbidity	101	100	P/P	95 - 105

Reference Method: EPA 365.1 Rev. 2.0 dissolved

Run ID: A92686

Included Lab Sample IDs: 2101529, 2101530, 2101531, 2101532, 2101533, 2101536, 2101539

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	97.7	97.5	P/P	90 - 110
O-Phosphate-P	97.8	98.8	P/P	90 - 110
O-Phosphate-P	98.5	97.7	P/P	90 - 110
O-Phosphate-P	98.8	97.6	P/P	90 - 110

Reference Method: SM 2120 B

Run ID: A92702

Included Lab Sample IDs: 2101519, 2101520, 2101521, 2101522, 2101523, 2101534, 2101537

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	99.5	102	P/P	90 - 115

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A92730

Included Lab Sample IDs: 2101524, 2101525, 2101526, 2101527, 2101528, 2101535, 2101538

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	101	102	P/P	90 - 110
NO2NO3-N	102	102	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A92755

Included Lab Sample IDs: 2101524, 2101525, 2101526, 2101527, 2101528, 2101535, 2101538

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	98.8	99.5	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A92761

Included Lab Sample IDs: 2101524

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	100	97.6	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: SM 5310 B-00

Run ID: A92811

Included Lab Sample IDs: 2101524, 2101525, 2101526, 2101527, 2101528, 2101535, 2101538

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

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A92827

Included Lab Sample IDs: 2101525, 2101526, 2101527, 2101528, 2101538

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	96.8	97.6	P/P	90 - 110
Kjeldahl Nitrogen	97.6	97.2	P/P	90 - 110

Reference Method: SM 2320 B-97

Run ID: A92846

Included Lab Sample IDs: 2101519, 2101520, 2101521, 2101522, 2101523, 2101534, 2101537

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

Reference Method: SM 4500 F-C-97

Run ID: A92846

Included Lab Sample IDs: 2101519, 2101520, 2101521, 2101522, 2101523, 2101534, 2101537

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	99.5	98.6	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A92880

Included Lab Sample IDs: 2101535

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	102	98.0	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A92956

Included Lab Sample IDs: 2101524, 2101525, 2101526, 2101527, 2101528, 2101535, 2101538

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	101	102	P/P	90 - 110
Ammonia-N	102	103	P/P	90 - 110
Ammonia-N	97.9	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					0.262	
	Turbidity					12.0	
EPA 300.0 Rev. 2.1	Chloride	102	102	102	103		0.565
	Sulfate	103	103	103	103		0.488
EPA 350.1 Rev. 2.0	Ammonia-N	99.9	97.6	101			3.06
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	99.7	107	106			0.719
	Kjeldahl Nitrogen	102	100	99.9			0.0582
	Kjeldahl Nitrogen	95.1	101	101			0.120
EPA 353.2 Rev. 2.0	NO2NO3-N	101	101	102			0.985
	NO2NO3-N	102	104	104			0.0
EPA 365.1 Rev. 2.0	Total-P	102	103	101			2.01
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	100	96.5	95.6			0.937
	O-Phosphate-P	98.7	94.6	95.8			1.26
SM 2120 B	Color (true)	101				3.56	
SM 2320 B-97	Total Alkalinity	104				1.24	
SM 2540 C-97	TDS					7.56	
	TDS					4.30	
SM 4500 F-C-97	Fluoride	97.5	95.9	95.9			0.0
SM 5310 B-00	Organic Carbon	99.2	101	101			0.0737
	Organic Carbon	100	99.2	98.4			0.654

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	2101519, 2101520, 2101521, 2101522, 2101523, 2101534, 2101537
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	2101519, 2101520, 2101521, 2101522, 2101523, 2101534, 2101537
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	2101519, 2101520, 2101521, 2101522, 2101523, 2101534, 2101537
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	2101524, 2101525, 2101526, 2101527, 2101528, 2101535, 2101538
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	2101524, 2101525, 2101526, 2101527, 2101528, 2101535, 2101538
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	2101524, 2101525, 2101526, 2101527, 2101528, 2101535, 2101538
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	2101524, 2101525, 2101526, 2101527, 2101528, 2101535, 2101538
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2101529, 2101530, 2101531, 2101532, 2101533, 2101536, 2101539
SM 2120 B / E31780	True Color measured at 450 nm	2101519, 2101520, 2101521, 2101522, 2101523, 2101534, 2101537
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO3/L	2101519, 2101520, 2101521, 2101522, 2101523, 2101534, 2101537
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	2101519, 2101520, 2101521, 2101522, 2101523, 2101534, 2101537
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2101519, 2101520, 2101521, 2101522, 2101523, 2101534, 2101537
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2101519, 2101520, 2101521, 2101522, 2101523, 2101534, 2101537
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	2101524, 2101525, 2101526, 2101527, 2101528, 2101535, 2101538

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	07/10/2019			07/10/2019 16:04	Adrian Shelby	2101519, 2101520, 2101521, 2101522, 2101523, 2101534, 2101537
EPA 300.0 Rev. 2.1	07/10/2019			07/12/2019 18:23	Jhamieka S. Greenwood	2101519
	07/10/2019			07/12/2019 19:24	Jhamieka S. Greenwood	2101520
	07/10/2019			07/12/2019 19:36	Jhamieka S. Greenwood	2101521
	07/10/2019			07/12/2019 19:48	Jhamieka S. Greenwood	2101522
	07/10/2019			07/12/2019 20:00	Jhamieka S. Greenwood	2101523
	07/10/2019			07/12/2019 20:12	Jhamieka S. Greenwood	2101534
	07/10/2019			07/12/2019 20:49	Jhamieka S. Greenwood	2101537
EPA 350.1 Rev. 2.0	07/10/2019			07/22/2019 17:04	Julia Storbeck	2101525
	07/10/2019			07/22/2019 17:07	Julia Storbeck	2101527
	07/10/2019			07/22/2019 17:10	Julia Storbeck	2101535
	07/10/2019			07/22/2019 17:18	Julia Storbeck	2101528
	07/10/2019			07/22/2019 17:19	Julia Storbeck	2101538
	07/10/2019			07/22/2019 18:55	Julia Storbeck	2101526
	07/10/2019			07/22/2019 19:00	Julia Storbeck	2101524
EPA 351.2 Rev. 2.0	07/10/2019	07/12/2019 11:55	Sima Feizi	07/15/2019 11:27	Virginia P. Brown	2101524
	07/10/2019	07/16/2019 11:30	Adrian Shelby	07/17/2019 10:27	Joseph Suarez	2101525
	07/10/2019	07/16/2019 11:30	Adrian Shelby	07/17/2019 10:29	Joseph Suarez	2101526
	07/10/2019	07/16/2019 11:30	Adrian Shelby	07/17/2019 10:37	Joseph Suarez	2101527
	07/10/2019	07/16/2019 11:30	Adrian Shelby	07/17/2019 10:38	Joseph Suarez	2101528
	07/10/2019	07/16/2019 11:30	Adrian Shelby	07/17/2019 10:40	Joseph Suarez	2101538
	07/10/2019	07/17/2019 12:50	Adrian Shelby	07/18/2019 12:51	Joseph Suarez	2101535
EPA 353.2 Rev. 2.0	07/10/2019			07/12/2019 10:39	Beverly Y. Sanders	2101524
	07/10/2019			07/12/2019 10:46	Beverly Y. Sanders	2101525
	07/10/2019			07/12/2019 10:52	Beverly Y. Sanders	2101526
	07/10/2019			07/12/2019 10:53	Beverly Y. Sanders	2101527
	07/10/2019			07/12/2019 10:54	Beverly Y. Sanders	2101528
	07/10/2019			07/12/2019 10:55	Beverly Y. Sanders	2101538
	07/10/2019			07/12/2019 10:56	Beverly Y. Sanders	2101535
EPA 365.1 Rev. 2.0	07/10/2019	07/12/2019 12:55	Sima Feizi	07/15/2019 11:50	Lipi Saha	2101525
	07/10/2019	07/12/2019 12:55	Sima Feizi	07/15/2019 11:51	Lipi Saha	2101524
	07/10/2019	07/12/2019 12:55	Sima Feizi	07/15/2019 11:52	Lipi Saha	2101526
	07/10/2019	07/12/2019 12:55	Sima Feizi	07/15/2019 11:53	Lipi Saha	2101527
	07/10/2019	07/12/2019 12:55	Sima Feizi	07/15/2019 11:54	Lipi Saha	2101528
	07/10/2019	07/12/2019 12:55	Sima Feizi	07/15/2019 11:55	Lipi Saha	2101535
	07/10/2019	07/12/2019 12:55	Sima Feizi	07/15/2019 11:56	Lipi Saha	2101538
EPA 365.1 Rev. 2.0 dissolved	07/10/2019			07/10/2019 15:59	Jhamieka S. Greenwood	2101532
	07/10/2019			07/10/2019 16:07	Jhamieka S. Greenwood	2101529
	07/10/2019			07/10/2019 16:47	Jhamieka S. Greenwood	2101530

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
EPA 365.1 Rev. 2.0 dissolved	07/10/2019			07/10/2019 16:48	Jhamieka S. Greenwood	2101533
	07/10/2019			07/10/2019 16:49	Jhamieka S. Greenwood	2101539
	07/10/2019			07/10/2019 16:51	Jhamieka S. Greenwood	2101531
	07/10/2019			07/10/2019 16:56	Jhamieka S. Greenwood	2101536
SM 2120 B	07/10/2019			07/10/2019 19:01	Madeline Funaro	2101519
	07/10/2019			07/10/2019 19:03	Madeline Funaro	2101520
	07/10/2019			07/10/2019 19:04	Madeline Funaro	2101521, 2101522
	07/10/2019			07/10/2019 19:05	Madeline Funaro	2101523
	07/10/2019			07/10/2019 19:06	Madeline Funaro	2101534
	07/10/2019			07/10/2019 19:07	Madeline Funaro	2101537
	07/10/2019			07/17/2019 07:21	Dale L. Simmons	2101519
	07/10/2019			07/17/2019 07:33	Dale L. Simmons	2101520
SM 2320 B-97	07/10/2019			07/17/2019 07:45	Dale L. Simmons	2101521
	07/10/2019			07/17/2019 07:56	Dale L. Simmons	2101522
	07/10/2019			07/17/2019 08:07	Dale L. Simmons	2101523
	07/10/2019			07/17/2019 08:21	Dale L. Simmons	2101534
	07/10/2019			07/17/2019 08:33	Dale L. Simmons	2101537
	07/10/2019			07/15/2019 15:02	Yijie Li	2101519, 2101520, 2101521, 2101522, 2101523, 2101534, 2101537
SM 2540 C-97	07/10/2019			07/15/2019 15:02	Yijie Li	2101519, 2101520, 2101521, 2101522, 2101523, 2101534, 2101537
SM 2540 D-97	07/10/2019			07/15/2019 15:02	Yijie Li	2101519, 2101520, 2101521, 2101522, 2101523, 2101534, 2101537
SM 4500 F-C-97	07/10/2019			07/17/2019 07:21	Dale L. Simmons	2101519
	07/10/2019			07/17/2019 07:33	Dale L. Simmons	2101520
	07/10/2019			07/17/2019 07:45	Dale L. Simmons	2101521
	07/10/2019			07/17/2019 07:56	Dale L. Simmons	2101522
	07/10/2019			07/17/2019 08:07	Dale L. Simmons	2101523
	07/10/2019			07/17/2019 08:21	Dale L. Simmons	2101534
	07/10/2019			07/17/2019 08:33	Dale L. Simmons	2101537
	07/10/2019			07/15/2019 23:52	Madeline Funaro	2101524
SM 5310 B-00	07/10/2019			07/16/2019 00:04	Madeline Funaro	2101525
	07/10/2019			07/16/2019 01:54	Madeline Funaro	2101526
	07/10/2019			07/16/2019 02:06	Madeline Funaro	2101527
	07/10/2019			07/16/2019 02:20	Madeline Funaro	2101528
	07/10/2019			07/16/2019 02:32	Madeline Funaro	2101535
	07/10/2019			07/16/2019 02:44	Madeline Funaro	2101538