Chemical Analysis Report

CEN-DIST-2018-05-16-02

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

Event Description: **Jack's Lk + LVI**
Request ID: **RQ-2018-05-14-37**
Customer: **CEN-DIST**
Project ID: **SMP**

Send Reports to:
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3319 Maguire Blvd., Suite 232
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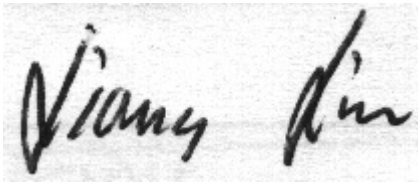
Date Certified: 05-JUN-2018 14:32



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 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: JACK'S LAKE @ NW OF CENTER **Collection Date/Time: 05/15/2018 11:21**

Field ID: G1CE0077 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1993087	EPA 180.1 Rev. 2.0	Turbidity	1.0		NTU	P345457	
	EPA 300.0 Rev. 2.1	Chloride	12		mg Cl/L	P345581	
		Sulfate	3.9		mg SO4/L	P345584	
	SM 2120 B	Color (true)	31		PCU	P345425	
	SM 2320 B-97	Total Alkalinity	14		mg CaCO3/L	P345633	
	SM 2540 C-97	TDS	66		mg/L	P346041	
	SM 2540 D-97	TSS	2	I	mg/L	P345882	
	SM 4500 F-C-97	Fluoride	0.079	I	mg F/L	P345634	
1993088	EPA 350.1 Rev. 2.0	Ammonia-N	0.018		mg N/L	P345576	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.76		mg N/L	P345614	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P345511	
	EPA 365.1 Rev. 2.0	Total-P	0.008		mg P/L	P345542	
	SM 5310 B-00	Organic Carbon	12		mg C/L	P345785	
1993089	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P345461	

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

Quality Assurance Report
Method Blank Results

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P345457

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P345581

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P345584

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P345576

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P345614

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

Quality Assurance Report
Method Blank Results

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P345511

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P345542

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P345461

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

Reference Method: SM 2120 B
Batch ID: P345425

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
Batch ID: P345633

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

Reference Method: SM 2540 C-97
Batch ID: P346041

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P345882

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P345634

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P345785

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: P345581

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P345584

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Sulfate	98.1		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P345576

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P345614

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Kjeldahl Nitrogen	94.0		P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P345511

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: P345542

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total-P	96.6		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P345461

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

Reference Method: SM 2320 B-97
Batch ID: P345633

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	102		P	98 - 107

Reference Method: SM 4500 F-C-97
Batch ID: P345634

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	95.3		P	91 - 105

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: SM 5310 B-00
Batch ID: P345785

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	98.8		P	85 - 115

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P345581

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1992999	Chloride	99.2		P	90 - 110
1993148	Chloride	96.4		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P345584

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1992999	Sulfate	100		P	90 - 110
1993148	Sulfate	96.1		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P345576

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1993003	Ammonia-N	99.8	103	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P345614

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1992993	Kjeldahl Nitrogen	92.1	103	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P345511

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1993006	NO2NO3-N	101		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P345542

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1993006	Total-P	98.3	100	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P345461

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1992972	O-Phosphate-P	95.7	96.1	P/P	90 - 110

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: SM 4500 F-C-97
Batch ID: P345634

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1993148	Fluoride	94.4	95.6	P/P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P345785

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1993061	Organic Carbon	101	98.3	P/P	85 - 115

Quality Assurance Report
Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P345457

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1992989	Turbidity	10.2	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P345581

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1992999	Chloride	0.222	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P345584

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1992999	Sulfate	4.83	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P345576

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1993003	Ammonia-N	2.91	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P345614

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1992993	Kjeldahl Nitrogen	6.02	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P345511

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits

Quality Assurance Report
Precision

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P345511

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1993006	NO2NO3-N	0.584	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P345542

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1993006	Total-P	1.78	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P345461

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1992972	O-Phosphate-P	0.261	Spike	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P345425

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1992999	Color (true)	5.17	Sample	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P345633

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1993148	Total Alkalinity	1.43	Sample	P	0 - 1.6

Reference Method: SM 2540 C-97
Batch ID: P346041

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1993146	TDS	5.88	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
Batch ID: P345634

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1993148	Fluoride	0.993	Spike	P	0 - 3.5

Reference Method: SM 5310 B-00
Batch ID: P345785

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1993061	Organic Carbon	1.76	Spike	P	0 - 20

Quality Assurance Report
Precision

* 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: SM 2120 B
Run ID: A83942
Included Lab Sample IDs: 1993087

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	100	99.0	P/P	90 - 115

Reference Method: EPA 180.1 Rev. 2.0
Run ID: A83955
Included Lab Sample IDs: 1993087

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Turbidity	98.5	99.0	P/P	95 - 105

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Run ID: A83956
Included Lab Sample IDs: 1993089

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	99.4	100	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A83979
Included Lab Sample IDs: 1993088

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

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A84014
Included Lab Sample IDs: 1993088

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

Reference Method: EPA 300.0 Rev. 2.1
Run ID: A84015
Included Lab Sample IDs: 1993087

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	101	101	P/P	90 - 110
Sulfate	103	102	P/P	90 - 110

Reference Method: SM 2320 B-97
Run ID: A84037
Included Lab Sample IDs: 1993087

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	99.2	102	P/P	90 - 110

Quality Assurance Report
Calibration Verification

Reference Method: SM 4500 F-C-97
Run ID: A84037
Included Lab Sample IDs: 1993087

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

Reference Method: SM 5310 B-00
Run ID: A84099
Included Lab Sample IDs: 1993088

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	99.4	99.0	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A84102
Included Lab Sample IDs: 1993088

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

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A84117
Included Lab Sample IDs: 1993088

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	94.2	96.5	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	SMP	MS
EPA 180.1 Rev. 2.0	Turbidity					10.2	
EPA 300.0 Rev. 2.1	Chloride	97.3	99.2	96.4		0.222	
	Sulfate	98.1	100	96.1		4.83	
EPA 350.1 Rev. 2.0	Ammonia-N	98.7	99.8	103			2.91
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	94.0	92.1	103			6.02
EPA 353.2 Rev. 2.0	NO2NO3-N	102	101				0.584
EPA 365.1 Rev. 2.0	Total-P	96.6	98.3	100			1.78
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	99.4	95.7	96.1			0.261
SM 2120 B	Color (true)					5.17	
SM 2320 B-97	Total Alkalinity	102				1.43	
SM 2540 C-97	TDS					5.88	
SM 4500 F-C-97	Fluoride	95.3	94.4	95.6			0.993
SM 5310 B-00	Organic Carbon	98.8	101	98.3			1.76

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	1993087
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	1993087
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	1993087
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	1993088
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	1993088
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	1993088
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	1993088
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	1993089
SM 2120 B / E31780	True Color measured at 450 nm	1993087
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO3/L	1993087
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	1993087
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	1993087
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	1993087
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	1993088

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	05/16/2018			05/16/2018 16:23	William L. Brown IV	1993087
EPA 300.0 Rev. 2.1	05/16/2018			05/18/2018 09:39	Lipi Saha	1993087
EPA 350.1 Rev. 2.0	05/16/2018			05/18/2018 12:42	Julia Storbeck	1993088
EPA 351.2 Rev. 2.0	05/16/2018	05/21/2018 11:00	Tanya Welborn	05/23/2018 10:29	Joseph Suarez	1993088
EPA 353.2 Rev. 2.0	05/16/2018			05/17/2018 13:03	Lauren Bottorf	1993088
EPA 365.1 Rev. 2.0	05/16/2018	05/17/2018 13:40	Sima Feizi	05/23/2018 09:48	Beverly Y. Sanders	1993088
EPA 365.1 Rev. 2.0 dissolved	05/16/2018			05/16/2018 16:01	Megan Treadwell	1993089
SM 2120 B	05/16/2018			05/16/2018 14:30	Tanya Welborn	1993087
SM 2320 B-97	05/16/2018			05/19/2018 01:29	Dale L. Simmons	1993087
SM 2540 C-97	05/16/2018			05/19/2018 23:10	Yijie Li	1993087
SM 2540 D-97	05/16/2018			05/19/2018 23:10	Yijie Li	1993087
SM 4500 F-C-97	05/16/2018			05/19/2018 01:29	Dale L. Simmons	1993087
SM 5310 B-00	05/16/2018			05/21/2018 18:46	Megan Treadwell	1993088