

Chemical Analysis Report

SE-DIST-2023-07-27-01

Florida DEP Laboratory
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DOH Accreditation E31780

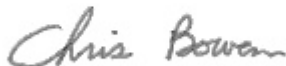
Event Description: **Algal Bloom Response - SE ROC**
Request ID: **RQ-2023-07-10-63**
Customer: **SE-DIST**
Project ID: **BLOOM-RESP**

Send Reports to:
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2199 South Rock Road
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Certified by: Chris Bowen, Environmental Administrator

Date Certified: 07-AUG-2023 12:07



Case Narrative

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

Results for the following analytical groups are included in this report: Nutrients and Pesticides.

Scientific notation may be used in reporting very large or small values. Values reported using scientific notation will take the form of the following example: 1.3E+03, which is equivalent to 1.3×10^3 or 1300.

Unless otherwise noted, analytical values for soil and sediment samples are reported on a dry weight basis, and analytical values for waste and tissue samples are reported on a wet weight basis.

Results for TNI accredited tests met requirements established by The NELAC Institute. A double asterisk (**) is used to indicate an analyte/matrix/method for which the laboratory is not TNI accredited by the Florida Department of Health Environmental Laboratory Certification Program or where accreditation for that field of testing is not applicable.

Any significant anomalies or deviations from established protocols are documented in Non-Conformance Reports, which, where appropriate, are included within this analytical report. Additional comments related to specific analytical tests may be included as remarks following the analytical results for each sample. Such comments and remarks are for informational purposes only and are not intended to convey judgement about the usability of the reported data.

A quality control report on the performance of the test method for the submitted samples is included. Uncertainty associated with the analytical results contained in this report can be estimated from the reported quality assurance results and from published quality control acceptance limits for each analytical test. Matrix quality control results (matrix spike recoveries and matrix sample precision) pertain only to the matrix sample tested and do not necessarily reflect test method performance for other samples.

Typical matrix quality control (QC) measurements may include matrix spike recovery, matrix spike duplicate recovery, matrix spike precision and matrix sample precision. Not all matrix QC results may be available or reportable; where they are not an explanation is provided. Typical reasons for unavailable QC results include, but are not limited to, a) insufficient matrix sample to perform some or all QC measurements; b) analyte concentration in the sample replicated was too low for a meaningful measurement of precision and c) analyte concentration in the matrix sample spiked was too high (relative to the amount of analyte spiked) for a meaningful measurement of recovery. Where matrix QC results are unavailable, other method performance metrics (e.g., LCS recovery, LCS precision, surrogate recovery) may be used to assess performance of the method. Comments explaining any missing QC measurements are not intended to convey any adverse conclusions about the quality of the reported data.

Precision is reported as relative percent difference unless otherwise noted.

Quality Control codes as defined below may be used in this report to indicate results that are associated with one or more quality control elements which did not fall within established test method criteria. Such results may be qualified as estimates using a J qualifier as required by 62-160 F.A.C. Explanations are included in the report for any results that were reported as estimates for other reasons.

QC Codes used in this report may include:

- LCS – Recovery for the batch Laboratory Control Sample (LCS) was outside existing control limits;
- MS – Recovery for the batch matrix spike (MS) was outside existing control limits;
- CCV – Recovery for a continuing calibration verification (CCV) standard was outside existing control limits;
- SUR – Recovery of a surrogate (SUR) for associated analytes was outside existing control limits;
- RPD – The precision, measured as relative percent difference (RPD), of batch replicate measurements was outside existing control limits;
- RSD – The precision, measured as relative standard deviation (RSD), of batch replicate measurements was outside existing control limits;
- SMP – Sample - used precision derived from replicate analyses of a sample;

The following data qualifiers are used, where applicable, in this report as specified in 62-160 F.A.C.

- A - Value reported is the mean of two or more determinations.
- B - Results based on colony counts outside the acceptable range.
- I - The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit.
- J - Estimated value and/or the analysis did not meet established quality control criteria.
- K - Actual value is known to be less than value given.
- L - Actual value is known to be greater than value given.
- N - Presumptive evidence of presence of material.
- O - Sampled, but analysis lost or not performed.
- Q - Sample held beyond normal holding time.
- T - Value reported is less than the criterion of detection.
- U - Material was analyzed for but not detected. The reported value is the method detection limit for the sample analyzed.
- V - Analyte was detected in both sample and method blank.
- X - Too few individuals to calculate SCI value.
- Y - The laboratory analysis was from an unpreserved or improperly preserved sample. The data may not be accurate.
- Z - Colonies were too numerous to count (TNTC).

Quality control information from overflow laboratories may not be included in this report. Please refer to the associated report from the overflow laboratory for additional information.

Sample Location: Lake Marian - Boat Ramp

Collection Date/Time: 07/26/2023 09:45

Field ID: SEHAB0089

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2427087	DEP SOP: NU-094-1	Color (true)	60	A	PCU	P433135	
2427088	EPA 350.1 Rev. 2.0	Ammonia-N	0.012		mg N/L	P433398	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	2.2		mg N/L	P433217	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P433167	
	EPA 365.1 Rev. 2.0	Total-P	0.18		mg P/L	P433150	
2427089	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.006	I	mg P/L	P433118	
2427090	EPA 8321B	Anatoxin-a	0.25	U	ug/L	P433040	
		Cylindrospermopsin	0.10	U	ug/L	P433035	
		Desmethyl microcystin LR	0.25	U	ug/L	P433035	
		Microcystin HiLR	0.25	U	ug/L	P433035	
		Microcystin HtyR	0.25	U	ug/L	P433035	
		Microcystin LA	0.10	U	ug/L	P433035	
		Microcystin LF	0.14	I	ug/L	P433035	
		Microcystin LR	1.5		ug/L	P433035	
		Microcystin LW	0.25	U	ug/L	P433035	
		Microcystin LY	0.46		ug/L	P433035	
		Microcystin RR	0.15	I	ug/L	P433035	
		Microcystin WR	0.50	U	ug/L	P433035	
		Neosaxitoxin	0.50	U	ug/L	P433040	
		Microcystin YR	0.25	U	ug/L	P433035	
		Saxitoxin	0.50	U	ug/L	P433040	
		Nodularin-R	0.10	U	ug/L	P433035	

Quality Assurance Report

Method Blank Results

Reference Method: DEP SOP: NU-094-1
Batch ID: P433135

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P433398

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P433217

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P433167

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P433150

Component	Result	Code	Units
Total-P	0.010	U	mg P/L

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P433118

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

Reference Method: EPA 8321B
Batch ID: P433035

Component	Result	Code	Units
Cylindrospermopsin	0.10	U	ug/L
Desmethyl microcystin LR	0.25	U	ug/L
Microcystin H1LR	0.25	U	ug/L
Microcystin HtyR	0.25	U	ug/L
Microcystin LA	0.10	U	ug/L
Microcystin LF	0.10	U	ug/L
Microcystin LR	0.25	U	ug/L
Microcystin LW	0.25	U	ug/L
Microcystin LY	0.10	U	ug/L
Microcystin RR	0.10	U	ug/L
Microcystin WR	0.50	U	ug/L
Microcystin YR	0.25	U	ug/L
Nodularin-R	0.10	U	ug/L

Quality Assurance Report

Method Blank Results

Reference Method: EPA 8321B
Batch ID: P433040

Component	Result	Code	Units
Anatoxin-a	0.25	U	ug/L
Neosaxitoxin	0.50	U	ug/L
Saxitoxin	0.50	U	ug/L

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: DEP SOP: NU-094-1
Batch ID: P433135

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Color (true)	97.9		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P433398

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P433217

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P433167

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
NO2NO3-N	95.0		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P433150

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P433118

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
O-Phosphate-P	98.3		P	90 - 110

Reference Method: EPA 8321B
Batch ID: P433035

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Cylindrospermopsin	104		P	40 - 160
Desmethyl microcystin LR	103		P	40 - 160
Microcystin HILR	104		P	40 - 160
Microcystin HtyR	93.6		P	40 - 160
Microcystin LA	107		P	40 - 160
Microcystin LF	98.9		P	40 - 160
Microcystin LR	97.6		P	40 - 160
Microcystin LW	100		P	40 - 160
Microcystin LY	99.1		P	40 - 160
Microcystin RR	91.6		P	40 - 160
Microcystin WR	107		P	40 - 160
Microcystin YR	90.4		P	40 - 160
Nodularin-R	91.2		P	40 - 160

Quality Assurance Report

Laboratory Control Sample Accuracy

Reference Method: EPA 8321B
Batch ID: P433040

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Anatoxin-a	106		P	40 - 150
Neosaxitoxin	94.8		P	40 - 150
Saxitoxin	85.6		P	40 - 150

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P433398

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2427088	Ammonia-N	100	99.2	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P433217

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2427054	Kjeldahl Nitrogen	98.3	102	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P433167

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2427059	NO2NO3-N	96.0	96.0	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P433150

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2427054	Total-P	107	108	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P433118

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2427020	O-Phosphate-P	97.3	101	P/P	90 - 110

Reference Method: EPA 8321B
Batch ID: P433035

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2426705	Cylindrospermopsin	98.7	99.5	P/P	40 - 160
2426705	Desmethyl microcystin LR	112	113	P/P	40 - 160
2426705	Microcystin HiLR	107	108	P/P	40 - 160
2426705	Microcystin HtyR	93.8	97.2	P/P	40 - 160
2426705	Microcystin LA	103	107	P/P	40 - 160
2426705	Microcystin LF	108	109	P/P	40 - 160
2426705	Microcystin LR	102	108	P/P	40 - 160
2426705	Microcystin LW	101	97.2	P/P	40 - 160
2426705	Microcystin LY	104	100	P/P	40 - 160
2426705	Microcystin RR	90.9	92.6	P/P	40 - 160
2426705	Microcystin WR	106	107	P/P	40 - 160
2426705	Microcystin YR	94.0	89.7	P/P	40 - 160
2426705	Nodularin-R	94.7	92.8	P/P	40 - 160

Reference Method: EPA 8321B
Batch ID: P433040

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2426705	Anatoxin-a	97.9	95.9	P/P	40 - 150
2426705	Neosaxitoxin	59.7	57.9	P/P	40 - 150
2426705	Saxitoxin	64.1	63.0	P/P	40 - 150

Quality Assurance Report Precision

Reference Method: DEP SOP: NU-094-1
Batch ID: P433135

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2427087	Color (true)	2.89	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P433398

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2427088	Ammonia-N	0.972	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P433217

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2427054	Kjeldahl Nitrogen	3.09	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P433167

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2427059	NO2NO3-N	0.0	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P433150

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2427054	Total-P	1.02	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P433118

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2427020	O-Phosphate-P	2.56	Spike	P	0 - 20

Reference Method: EPA 8321B
Batch ID: P433035

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2426705	Cylindrospermopsin	0.847	Spike	P	0 - 30
2426705	Desmethyl microcystin LR	1.11	Spike	P	0 - 30
2426705	Microcystin HtIR	0.806	Spike	P	0 - 30
2426705	Microcystin HtyR	3.58	Spike	P	0 - 30
2426705	Microcystin LA	3.86	Spike	P	0 - 30
2426705	Microcystin LF	0.525	Spike	P	0 - 30
2426705	Microcystin LR	5.35	Spike	P	0 - 30
2426705	Microcystin LW	3.41	Spike	P	0 - 30
2426705	Microcystin LY	4.24	Spike	P	0 - 30

Quality Assurance Report Precision

Reference Method: EPA 8321B
Batch ID: P433035

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2426705	Microcystin RR	1.86	Spike	P	0 - 30
2426705	Microcystin WR	1.12	Spike	P	0 - 30
2426705	Microcystin YR	4.77	Spike	P	0 - 30
2426705	Nodularin-R	2.00	Spike	P	0 - 30

Reference Method: EPA 8321B
Batch ID: P433040

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2426705	Anatoxin-a	2.08	Spike	P	0 - 30
2426705	Neosaxitoxin	3.00	Spike	P	0 - 30
2426705	Saxitoxin	1.61	Spike	P	0 - 30

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

Quality Assurance Report Surrogates

Lab Sample ID: 2427090
Field Sample ID: SEHAB0089

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	Anatoxin-a 13C4	136	P	30 - 160
EPA 8321B	Microcystin LR ethyl-d5	114	P	30 - 160

Quality Assurance Report Calibration Verification

Reference Method: EPA 365.1 Rev. 2.0 dissolved

Run ID: A120685

Included Lab Sample IDs: 2427089

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	97.6	99.8	P/P	90 - 110

Reference Method: DEP SOP: NU-094-1

Run ID: A120689

Included Lab Sample IDs: 2427087

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	98.4	97.0	P/P	90 - 110

Reference Method: EPA 8321B

Run ID: A120691

Included Lab Sample IDs: 2427090

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Anatoxin-a	131	129	P/P	50 - 160
Neosaxitoxin	116	107	P/P	50 - 160
Saxitoxin	92.0	92.2	P/P	50 - 160

Reference Method: EPA 8321B

Run ID: A120692

Included Lab Sample IDs: 2427090

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Cylindrospermopsin	101	101	P/P	60 - 160
Desmethyl microcystin LR	94.9	96.0	P/P	50 - 160
Microcystin HILR	97.9	93.5	P/P	60 - 160
Microcystin HtyR	87.0	86.6	P/P	60 - 160
Microcystin LA	103	102	P/P	50 - 160
Microcystin LF	86.3	84.7	P/P	60 - 160
Microcystin LR	91.8	89.9	P/P	60 - 160
Microcystin LW	80.9	79.7	P/P	60 - 160
Microcystin LY	96.5	96.4	P/P	60 - 160
Microcystin RR	88.7	87.9	P/P	60 - 160
Microcystin WR	94.0	94.9	P/P	60 - 160
Microcystin YR	79.3	79.6	P/P	60 - 160
Nodularin-R	89.4	85.9	P/P	60 - 160

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A120701

Included Lab Sample IDs: 2427088

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	96.0	94.0	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A120732

Included Lab Sample IDs: 2427088

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	103	100	P/P	90 - 110

Quality Assurance Report

Calibration Verification

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A120769

Included Lab Sample IDs: 2427088

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

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A120823

Included Lab Sample IDs: 2427088

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	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		LCS	Precision	MS
						SMP	
DEP SOP: NU-094-1	Color (true)	97.9				2.89	
EPA 350.1 Rev. 2.0	Ammonia-N	99.8	100	99.2			0.972
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	101	98.3	102			3.09
EPA 353.2 Rev. 2.0	NO ₂ NO ₃ -N	95.0	96.0	96.0			0.0
EPA 365.1 Rev. 2.0	Total-P	105	107	108			1.02
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	98.3	97.3	101			2.56
EPA 8321B	Anatoxin-a	106	97.9	95.9			2.08
	Cylindrospermopsin	104	98.7	99.5			0.847
	Desmethyl microcystin LR	103	112	113			1.11
	Microcystin HiLR	104	107	108			0.806
	Microcystin HtyR	93.6	93.8	97.2			3.58
	Microcystin LA	107	103	107			3.86
	Microcystin LF	98.9	108	109			0.525
	Microcystin LR	97.6	102	108			5.35
	Microcystin LW	100	101	97.2			3.41
	Microcystin LY	99.1	104	100			4.24
	Microcystin RR	91.6	90.9	92.6			1.86
	Microcystin WR	107	106	107			1.12
	Microcystin YR	90.4	94.0	89.7			4.77
	Neosaxitoxin	94.8	59.7	57.9			3.00
	Nodularin-R	91.2	94.7	92.8			2.00
	Saxitoxin	85.6	64.1	63.0			1.61

Reference Method Descriptions

Method	Description	Associated Samples
DEP SOP: NU-094-1	True Color measured at 450 nm (not valid for NPDES monitoring)	2427087
EPA 350.1 Rev. 2.0	Ammonia in aqueous matrices as mg N/L	2427088
EPA 351.2 Rev. 2.0	Total Kjeldahl Nitrogen in aqueous matrices	2427088
EPA 353.2 Rev. 2.0	Nitrite/Nitrate in aqueous matrices as mg N/L	2427088
EPA 365.1 Rev. 2.0	Total Phosphorus in aqueous matrices as mg P/L	2427088
EPA 365.1 Rev. 2.0 dissolved	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2427089
EPA 8321B	Microcystins in water matrices by HPLC/MS/MS	2427090
EPA 8321B	Saxitoxin in water matrices by HPLC/MS/MS	2427090

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
DEP SOP: NU-094-1	07/27/2023			07/27/2023 15:53	Alexis Price	2427087
EPA 350.1 Rev. 2.0	07/27/2023			08/03/2023 14:14	Ping Hua	2427088
EPA 351.2 Rev. 2.0	07/27/2023	07/31/2023 10:34	Dana G. Hughes	08/01/2023 14:25	Samantha L Bates	2427088
EPA 353.2 Rev. 2.0	07/27/2023			07/28/2023 10:20	Beverly Y. Sanders	2427088
EPA 365.1 Rev. 2.0	07/27/2023	07/28/2023 14:20	Simonne.V. Calhoun	07/31/2023 11:45	Chandler E Cox	2427088
EPA 365.1 Rev. 2.0 dissolved	07/27/2023			07/27/2023 13:31	Chandler E Cox	2427089
EPA 8321B	07/27/2023	07/27/2023 12:00	Hana Lee	07/27/2023 16:20	Tae K Lee	2427090
	07/27/2023	07/27/2023 12:00	Hana Lee	07/27/2023 21:49	Tae K Lee	2427090