

## NEON STANDARD OPERATIONG PROCEDURE: AQUA & LEVEL TROLL DATA MANAGEMENT PROCEDURE

PREPARED BY	ORGANIZATION	DATE
Genevieve Faria	ENG	08/28/2019
Bryce Nance	AQU	08/28/2019
Nora Catolico	AQU	09/10/2019
Madeline Cavileer	ENG	09/10/2019

APPROVALS	ORGANIZATION	APPROVAL DATE
Kate Thibault	SCI	03/16/2022

RELEASED BY	ORGANIZATION	RELEASE DATE
Tanisha Waters	СМ	03/16/2022

See configuration management system for approval history.

The National Ecological Observatory Network is a project solely funded by the National Science Foundation and managed under cooperative agreement by Battelle. Any opinions, findings, and conclusions or recommendations expressed in this material are those of the author(s) and do not necessarily reflect the views of the National Science Foundation.



### **Change Record**

REVISION	DATE	ECO #	DESCRIPTION OF CHANGE
А	09/11/2019	ECO-06240	Initial release.
В	03/16/2022	ECO-06785	<ul> <li>Update to reflect change in terminology from relocatable to gradient sites.</li> </ul>



#### **TABLE OF CONTENTS**

1	DES	CRIPTION1
	1.1	Purpose 1
	1.2	Scope 1
2	REL	ATED DOCUMENTS AND ACRONYMS 2
	2.1	Applicable Documents 2
	2.2	Reference Documents
	2.3	External References
	2.4	Acronyms 2
3	OV	ERVIEW
	3.1	Components
	3.2	Subsystem Location and Access 4
4	FIEL	D DATA MANAGAMENT PROCEDURE
	4.1	Equipment 5
	4.2	Connect to a TROLL: Communication Settings
	4.3	Battery Management
	4.4	Enable Logging Procedure
	4.5	Disable Logging Procedure
	4.5 4.6	
		Disable Logging Procedure
	4.6	Disable Logging Procedure    17      Data Download Procedure    19
	4.6 4.7	Disable Logging Procedure    17      Data Download Procedure    19      Delete Log File Procedure    23
5	4.6 4.7 4.8 4.9	Disable Logging Procedure17Data Download Procedure19Delete Log File Procedure23Data Upload Procedure25
5	4.6 4.7 4.8 4.9	Disable Logging Procedure17Data Download Procedure19Delete Log File Procedure23Data Upload Procedure25Add Site Name Procedure26
5	4.6 4.7 4.8 4.9 QU	Disable Logging Procedure17Data Download Procedure19Delete Log File Procedure23Data Upload Procedure25Add Site Name Procedure26CK REFERENCE28

#### LIST OF TABLES AND FIGURES

Fable 1. Equipment Table
--------------------------



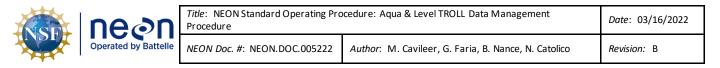
<i>Title</i> : NEON Standard Operating Procedure: Aqua & Level TROLL Data Management Procedure		Date: 03/16/2022
NEON Doc. #: NEON.DOC.005222	Author: M. Cavileer, G. Faria, B. Nance, N. Catolico	Revision: B

Table 2. TROLL & External Battery Pack Voltage Specifications	9
Table 3. Aqua TROLL Log Parameters and Units1	2
Table 4. Level TROLL Log Parameters and Units1	2

Figure 1. Aqua and Level TROLL Connecting to a Laptop
Figure 2. TROLL EPROM ID
Figure 3. Win-Situ5 Icon7
Figure 4. COM Port Pop-up Window
Figure 5. Connect to Device Pop-up Window7
Figure 6. Select "Comm Settings"
Figure 7. Configure Default Communication Settings
Figure 8. Navigate to the Settings Tab and Select Diagnostics to Check Internal and External Voltage 9
Figure 9. Aqua TROLL (left) and Level TROLL (Right) Diagnostics Window to Verify External & Internal
Voltage Levels
Figure 10. Select the "Logging" Tab11
Figure 11. Create a New Log by Clicking on the Document Icon in the Lower Left-hand Corner11
Figure 12. Select Site and Name the Log File12
Figure 13. Set the Parameters and Units to log for the Aqua (Left) or Level TROLL (Right)12
Figure 14. Choose a Long-Term Logging Method - Linear Average for Aqua TROLL & Linear for Level
TROLL
Figure 15. Set the Number of Measurements for each respective TROLL14
Figure 16. Ignore the Pop-Up Window & Click "OK"14
Figure 17. Schedule Start Condition to Start at an Even 5 Minute Interval to Align Timestamps15
Figure 18. Logging Configuration Summary Examples15
Figure 19. Select Log File - Aqua TROLL (Top) and Level TROLL (Bottom)16
Figure 20. Common Conductivity LO Data Error16
Figure 21. Select the "Logging" Tab17
Figure 22. Select the Log File on the Screen and then select the "Stop" Button to Cease Logging17
Figure 23. Right Click on the Log File Notepad Icon to also Stop Logging18
Figure 24. Verify Logging Stopped18
Figure 25. Select the Log file and then the Downward Pointed Arrow to Download the Log File Data19
Figure 26. Select "Download all data" and Click on the Checkmark to Initiate Download20
Figure 27. Click "OK" Again to Proceed20
Figure 28. Click "Yes" to View the Data21
Figure 29. The Log File will be listed under your Site as a .wsl File21
Figure 30. Data Saves to your C Drive under a "WinSitu Data" Folder22
Figure 31. Right Click on the Data File & Select "Export to CSV" from the Dropdown Menu22
Figure 32. The Data Saves under an "Exported Data" Folder on your C Drive
Figure 33. Right Click on the Notepad Icon of the Stopped Log File and Select "Delete"24
Figure 34. Click "OK" to Proceed when Prompted via the Pop-up Window24

ne@n	<i>Title</i> : NEON Standard Operating Procedure: Aqua & Level TROLL Data Management Procedure		Date: 03/16/2022	
	Operated by Battelle	NEON Doc. #: NEON.DOC.005222	Author: M. Cavileer, G. Faria, B. Nance, N. Catolico	Revision: B

Figure 35. N:\Science\Sensor Swap	.25
Figure 36. How to Add a New Site Name to the Logging Wizard Site List Dropdown from WinSitu	
Software Homepage	.26
Figure 37. Input Site ID in Name Field and then Select the Checkmark to Save the Site to the Site List	.27



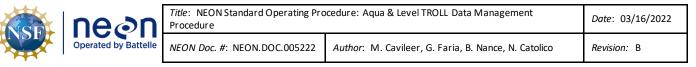
#### **1 DESCRIPTION**

#### 1.1 Purpose

The purpose of this document is to provide Field Science and HQ Repair Lab standard instructional guidance on how to enable and disable logging, in addition to downloading, storing and transferring data for both In-situ, Inc. Aqua and Level TROLLS.

#### 1.2 Scope

The operating procedures herein apply to managing data for In-situ, Inc. Aqua TROLL 200 and Level TROLL 500 sensors at stream, lake and river Aquatic Instrument Sites (AIS). Data management procedures include data collection (logging), transmission and storage (downloading the data from log files and transferring them to the network drive) using Win-Situ 5 software.



#### 2 RELATED DOCUMENTS AND ACRONYMS

#### 2.1 Applicable Documents

The following applicable documents (AD) contain mandatory requirements and/or supplementary information that are directly applicable to the topic and/or procedures herein. Visit the NEON Document Warehouse for electronic copies of these documents.

AD [01]	NEON.DOC.004362	NEON Preventive Maintenance Procedure: AIS Groundwater Level
		Sensor
AD [02]	NEON.DOC.004361	NEON Preventive Maintenance Procedure: AIS Surface Water
		Level Sensor

#### 2.2 Reference Documents

The reference documents (RD) listed below may provide complimentary information to support this procedure. Visit the NEON Document Warehouse for electronic copies of these documents.

RD [01]	NEON.DOC.000008	NEON Acronym List
RD [02]	NEON.DOC.000243	NEON Glossary of Terms
RD [03]	NEON.DOC.001175	NEON Sensor Command, Control, and Configuration - Level TROLL
RD [04]	NEON.DOC.001173	NEON Sensor Command, Control, and Configuration - Aqua TROLL
RD [05]	NEON.DOC.004471	WATER LEVEL/CONDUCTIVITY/TEMPERATURE, GROUNDWATER
		WELL FORMAL VERIFICATION PROCEDURES
RD [06]	NEON.DOC.004419	Stream or Lake Water Level Formal Verification Procedure
RD [07]	NEON.DOC.003880	NEON Preventive Maintenance Procedure: AIS Stream
		Infrastructure
RD [08]	NEON.DOC.004886	NEON Preventive Maintenance Procedure: Aquatic Portal & AIS
		Device Posts

#### 2.3 External References

The external references (ER) listed below contains supplementary information relevant to this procedure. These documents are external to the NEON program and Battelle.

ER [01]	In-Situ, Inc. Win-Situ 5 Software.
	https://in-situ.com/support/documents/win-situ-5-software/
ER [02]	In-Situ, Inc. YouTube Channel, Win-Situ5 Software Training Instructions.
	https://www.youtube.com/watch?v=umfmSOWohf4
ER [03]	In-Situ, Inc. TROLL Com Communication Device Instruction Sheet – Combined. 0056142 rev
	001 01/09 <u>https://in-situ.com/wp-</u>
	content/uploads/2016/01/TROLL_Com_Communication_Devices_Instruction_Sheet.pdf

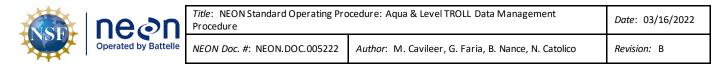
#### 2.4 Acronyms

.csv comma-separated values
-----------------------------



Title:       NEON Standard Operating Procedure: Aqua & Level TROLL Data Management       Date: C         Procedure       Date: C		Date: 03/16/2022	
le	NEON Doc. #: NEON.DOC.005222	Author: M. Cavileer, G. Faria, B. Nance, N. Catolico	Revision: B

.wsl	windows subsystem for Linux	
A/R	As Required	
AIS	Aquatic Instrument Site	
AQU SCI	Aquatic Science	
С	Celsius	
CARI	Caribou Creek, Caribou-Poker Creeks Research Watershed	
CFG Location	Configured Location (in Maximo)	
GMT	Greenwich Mean Time	
GWC	Groundwater Chemistry	
GWW	Groundwater Well	
kPa	Kilopascal	
OKSR	Oksrukuyik Creek	
P/N	Part Number	
psig	Pounds per square in gauge	
S1	Upstream	
S2	Downstream	
μS/cm	microSiemens	
UTC	Coordinated Universal Time	



#### **3 OVERVIEW**

#### 3.1 Components

This document includes components from the following sensors and parts:

- O317730000 Sensor, In-Situ Aqua TROLL 200 15 psig Vented Conductivity/Temperature/Water Level Sensor
- 0317680000 Sensor, In-Situ Level TROLL 500 15 psig (gauged) Surface Water Level Sensor
- 0374140000 Sensor Accessory, Troll Battery Pack

#### 3.2 Subsystem Location and Access

Surface water level TROLL sensors and groundwater aqua TROLL sensors reside at both core and gradient AIS sites. Access to AIS sites require Aquatic PPE and may require a boat.

Level TROLL sensors reside on an anchor at AIS upstream (S1) and downstream (S2) sites, which are near Aquatic Met Station subsystems. Subsystem components reside with the sensor on the infrastructure and/or onshore nearby.

Aqua TROLL sensors reside in groundwater wells (GWWs) and at inlet/outlet lake locations near a lake buoy. Number and location of GWWs vary per site. For lake sites, subsystem components reside with the sensor on the infrastructure and/or onshore nearby. However, for Domain 19 Caribou Creek, Caribou-Poker Creeks Research Watershed (CARI) and Domain 18 Oksrukuyik Creek (OKSR), an Aqua TROLL resides in place of a Level TROLL at both S1 and S2 locations.



#### 4 FIELD DATA MANAGAMENT PROCEDURE

#### 4.1 Equipment

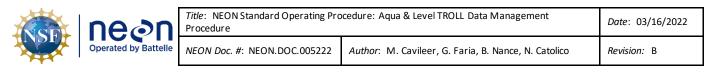
Part Number (P/N)	NEON P/N	Description	Quantity
0051450	0374140000	Sensor Accessory, TROLL Battery Pack	A/R
	HB08410020 0320030020	Subsystem, Groundwater Well, Cable, 20 foot Cable 20 feet length with twist lock connectors on both ends, vented made from TPU. Works with In- Situ Aqua TROLL and Level TROLL sensors.	A/R
0056140		RS232 TROLL COM Cable Connect (See ER [03]) Connects to a 9-pin RS232 serial port. Male connector mates with the Twist-Lock connector on the instrument cable	A/R
GENERIC		USB to RS232 Serial Cable	A/R

#### Table 1. Equipment Table

**PRO TIP:** Recommend downloading WinSitu 5 software on a loaner laptop to use in the field to prevent damaging the laptop you use daily for the program or to have the ability to download data or set up logging on Trolls simultaneously. **Install USB TROLL Com drivers when installing Win-Situ**.

#### 4.2 Connect to a TROLL: Communication Settings

The Aqua TROLL and Level TROLL connect to the external battery pack and laptop the same way (Figure 1). *Reference <u>KB0011788</u> for additional information on connecting a TROLL to external power and basic troubleshooting tips. AD [01] also provides additional information on how to connect the TROLL to your laptop.* 



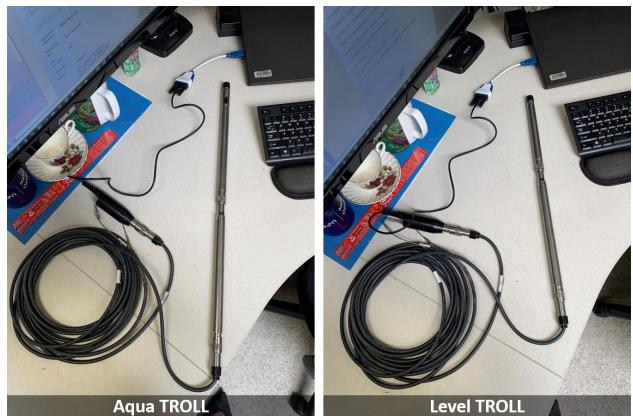
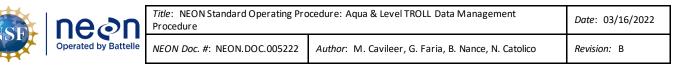


Figure 1. Aqua and Level TROLL Connecting to a Laptop

Important: Verify the TROLL EPROM ID via the settings tab in the software (Figure 2). Ensure it matches what is in Maximo. If you ever use "Reset all devices", it may wipe the EPROM ID from the TROLL and require reconfiguration.

🚾 Win-Situ® 5			
<u>F</u> ile <u>E</u> dit <u>V</u> iew <u>T</u> ools <u>P</u> referen	ices <u>H</u> elp		
	🤣 🧐		
Aqua <b>TROLL</b> ® 200	S/N 312573		
D10	•	Verify EPROM ID	
Device Information	Device	Status	
Name: \$12573		Gensor High Power Managemen	nt:
Manufacture Date: 4/23/2012	Set Name 💿 S	Sensor Low Status:	
	Figure 2. TROLL		



- Synchronize NEON program Laptop time to <u>UTC</u> (Coordinated Universal Time) or <u>GMT</u> (Greenwich Mean Time).
- 2. Launch the Win-Situ5 software application (Figure 3).
- A pop-up window may appear asking you to select a COM port for communication if this is your first time opening the software. Select "No" (Figure 4).



Figure 3. Win-Situ5 Icon

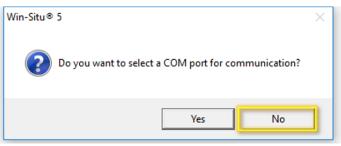


Figure 4. COM Port Pop-up Window

4. The pop-up window most users will experience is one asking if you would like to "**Connect to device now?**" pop-up window. Select "**No**" (**Figure 5**).

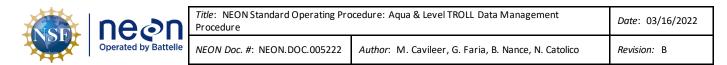


Figure 5. Connect to Device Pop-up Window

- 5. If a "Failed to connect at settings: Comm ## Addr: # (ASCII, 9600, 8, N, 1). Do you want to try other common settings?" pop-up window appears, select "No".
- 6. In Win-Situ5 main program window, select the "**Preferences**" tab in the upper left-hand corner of the screen and select "**Comm Settings...**" from the dropdown options.



Figure 6. Select "Comm Settings..."



7. In the "Default Communication Settings" window, set the following serial communication settings in **Figure 7.** 

Default Communication Settin	gs	×	Serial Comm Settings
C Bluetooth Communications	C IP Communications		Serial Commissenings
Configure Bluetooth Devices	IP Address:	Search For Devices	
Serial Communications	127 . 0 . 0 . 1 Port Number:	Devices	Port Number:
Port Number:	3001		COM#
COM3  Baud:	C Modem Communications	Reset All Devices	0.01111
9600 -	Modem:		(The # is assigned by
Data Bits:			your Laptop from
8 _	Phone Number:		where the troll
None			
Stop Bits:		Mode:	adapter connects.)
1 💌		Modbus-ASCII	Baud: 9600
Device Address:	Transmission Delay (secs):		Data Bits: 8
	0		
Retries:	Max Packet Size(bytes):	TROLL Link Password:	Parity Bits: None
3	1024		Stop Bits: 1
O These settings represent the compute			
* settings are still serial based. To change device setup tab and click the Modbus	ge a device's serial/Modbus settings, first Setup button.	connect and then go to the	Mode: Modbus-
			ASCII
			113 511
		$\times$	Device Address: 1

Figure 7. Configure Default Communication Settings

**PRO TIP:** The **Port Number** (**COM#**) varies across computers. It may also vary from the connector selected for use. To determine which port you are using or verify the port the computer is using is correct, check the **Device Manager** settings.

**IMPORTANT:** CVAL configures the TROLLS **Device Address** to "**1**" as a default setting. If FOPS is initially connecting to an Aqua or Level TROLL from HQ to configure its settings, the **Device Address** must be "**1**". However, post-installation and verification of the sensor, the **Device Address** may correspond to the GWW, Stream or Inlet/outlet number (e.g., for example, the **Device Address** for an Aqua TROLL at GWW 4 is "**4**" instead of "**1**" or S**2** is "**2**"). Reconfigure the Aqua TROLL back to "**1**" prior to shipping the instrument back to CVAL for Sensor Refresh. If you cannot connect to the Aqua TROLL, try another number. DO NOT HIT "**RESET TO DEFAULT**" unless you know the sensor EPROM ID. This is the nuclear option and wipes the sensor configuration in accordance with RD [03] from the sensor. If you use "**RESET TO DEFAULT**", reconfigure the sensor per RD [04]. Submit an informational ServiceNow ticket to CVAL with screenshots of the sensor configuration post-reconfiguration.

neçn	<i>Title</i> : NEON Standard Operating Pro Procedure	Date: 03/16/2022	
Operated by Battelle	NEON Doc. #: NEON.DOC.005222	Author: M. Cavileer, G. Faria, B. Nance, N. Catolico	Revision: B

#### 4.3 Battery Management

Monitor the internal and external battery usage of the Aqua and Level TROLL via the External and Internal Voltage level. The sensor may not be reliable when the battery reaches below 40%. **Table 2** provides the internal and external voltage level of each TROLL and the external battery pack in millivolts.

Table 2. TROLL & External Battery Pack Voltage Specification	ons
--	-----

Device	Millivolts
Aqua TROLL Internal Voltage	3600 (3.6VDC)
Level TROLL Internal Voltage	3600 (3.6VDC)
TROLL External Battery Pack	14000 (14VDC)

1. Check the internal and external voltage by navigating to the **Settings** tab in WinSitu and selecting the **Diagnostics** button (**Figure 8**). This is the same for both the Aqua and Level TROLL.

61 TROLL® 500 SN 2	020	
	•	
Device Information         Name:       44376         Manufacture Date:       7/21/2017         Set Name         Firmware Version:       3.06         Hardware Version:       5         Boot Version:       1.20         Manual Time Set       12:00:21 PM - Set Closed	Sensor Calibration Sensor Malfunction Hardware Reset Device Malfunction Low Battery	Power Management: Enabled Status: Onine External Power: On Disable Power Management Clear Status
Device Firmware Update Available Firmware Versions Level TROLL 500 v3.03		Factory Reset Diagnostics

Figure 8. Navigate to the Settings Tab and Select Diagnostics to Check Internal and External Voltage

 In the Diagnostics pop-up window, monitor and verify the External Voltage and Internal Voltage under the Device Settings section for each TROLL (Figure 9). In Figure 9, the Aqua TROLL Diagnostics is on the left and the Level TROLL Diagnostics is on the right.

nean	<i>Title</i> : NEON Standard Operating Pro Procedure	ocedure: Aqua & Level TROLL Data Management	Date: 03/16/2022
Operated by Battelle	NEON Doc. #: NEON.DOC.005222	Author: M. Cavileer, G. Faria, B. Nance, N. Catolico	Revision: B

Available Battery       2000000       Available Memory       4194304       Good Messages       1887         Used Battery       2122880       Used Memory       0       Bad Messages       131         Max Logs       50       Exceptions       2       Used Battery       146827       Used Memory       0       Bad Messages       655         Max Logs       50       Exceptions       2       Max Logs       50       Exceptions       0         Device Settings       External Voltage       13583       Specific Gravity       0.9999       Pressure Offset       0       0       Device Settings       External Voltage       1351078       Level Reference Value       0       External Voltage       13583       Pressure Offset       0       Device Settings       Level Reference Value       0       External Voltage       1351078       Level Reference Value       0       External Voltage       13583       Level Reference Value       0       External Voltage       1351078       Level Reference Value       0       External Voltage       135       Level Reference Value       0       External Voltage       10       Pressure       0       Pressure       0       Pressure       0       Pressure       0       Pressure       0       Pressure       0 </th <th>qua TROLL Diagn</th> <th>nostics</th> <th></th> <th></th> <th></th> <th>×</th> <th>Level TROLL 500 I</th> <th>Diagnostics</th> <th></th> <th></th> <th></th> <th>×</th>	qua TROLL Diagn	nostics				×	Level TROLL 500 I	Diagnostics				×
Max Logs       50       Exceptions       2         Max Logs       50       Exceptions       0         Reset       Reset       Reset       Reset         Device Settings       External Voltage       13583       Specific Gravity       0.999         Internal Voltage       3583       Pressure Offset       0         Total Measurement Count       317443       Level Reference Head Pressure       0         Battery Measurement Count       317443       Level Reference Head Pressure       0         Cell Offset       0       TDS Factor       0.655	Available Battery	2000000	Available Memory	4194304	Good Messages	1887	Available Batter	2000000	Available Memory	2097152	Good Messages	666690
Reset       Reset         Device Settings       External Voltage 13583       Specific Gravity 0.999         Internal Voltage 3583       Pressure Offset 0         Total Measurement Count 351078       Level Reference Value 0         Battery Measurement Count 317443       Level Reference Head Pressure 0         Cell Offset 0       TDS Factor 0.65	Used Battery	2122880	Used Memory	0	Bad Messages	131	Used Battery	146827	Used Memory	0	Bad Messages	65535
Device Settings	Max Logs	50			Exceptions	2	Max Log	50			Exceptions	0
Device Settings       External Voltage [13583]       Specific Gravity [0.999]         Internal Voltage [3583]       Specific Gravity [0.999]       Internal Voltage [3583]       Pressure Offset [0]         Total Measurement Count [351078]       Level Reference Value [0]       Total Measurement Count [37743]       Level Reference Head Pressure [0]         Battery Measurement Count [317443]       Level Reference Head Pressure [0]       Battery Measurement Count [35]       Level Reference Head [0]         Cell Offset [0]       TDS Factor [0.65]       TDS Factor [0.65]       TDS Factor [0.65]						Reset						Reset
External Voltage       13583       Specific Gravity       0,999       Internal Voltage       13715       Specific Gravity       1         Internal Voltage       3583       Pressure Offset       0       Internal Voltage       3583       Pressure Offset       0         Total Measurement Count       351078       Level Reference Value       0       Total Measurement Count       999880       Level Reference Value       0         Battery Measurement Count       317443       Level Reference Head Pressure       0       Battery Measurement Count       35       Level Reference Head       0         Cell Offset       0       TDS Factor       0.65       0       Pressure       0	- Device Settings -						-Device Settings					
Internal Voltage     3583     Pressure Offset     0       Total Measurement Count     351078     Level Reference Value     0       Battery Measurement Count     317443     Level Reference Head Pressure     0       Cell Offset     0     TDS Factor     0.65	Device Setungs	External Voltage	13583	1				External Voltag	ge 13715	Specif	fic Gravity 1	
Total Measurement Count     351078     Level Reference Value     0       Battery Measurement Count     317443     Level Reference Head Pressure     0       Cell Offset     0     TDS Factor     0.65						999		Internal Volta	ge 3583	Press	ire Offset 0	
Battery Measurement Count 317443 Level Reference Head Pressure 0 Battery Measurement Count 35 Level Reference Head 0 Pressure 0 Cell Offset 0 TDS Factor 0.65			1		<u> </u>						,	
Cell Offset 0 TDS Factor 0.65							Total	Measurement Cou	nt 999880	Level Refere	nce Value   U	
	Battery I	Measurement Count	317443	Level Reference H	lead Pressure 0		Battery	Measurement Cou	int 35	Level Refere		
					-							
Cell Constant 1 Dynamic Specific Gravity Factor Disabled												
		Cell Constant	1	Dynamic Specific (	Gravity Factor Di	sabled	-					OK
Reference Temperature 25 Cache Timeout 1750	Refe	erence Temperature	25	c	Cache Timeout 17	750						
Temperature Coefficient 0.0191 Set	Tem	perature Coefficient	0.0191			Set						

Figure 9. Aqua TROLL (left) and Level TROLL (Right) Diagnostics Window to Verify External & Internal Voltage Levels

# The TROLLs start become unreliable at around 40%; therefore, when the TROLLs internal voltage reaches 50%, which his 1800 millivolts, and an external battery source is unavailable, request a new Aqua or Level TROLL as soon as possible.

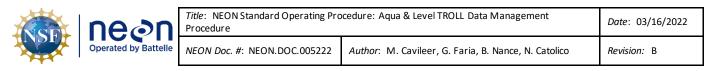
3. Click "**OK**" to close the Diagnostics pop-up window.

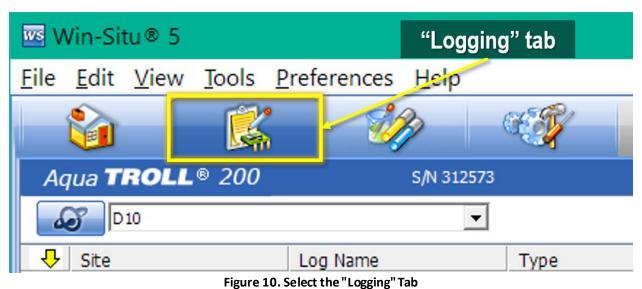
#### 4.4 Enable Logging Procedure

Enable logging on TROLLs to act as a redundancy to collect data to fill in data gaps at sites with alternate power options (e.g., Fuel Cells), poor data availability, in addition to ensuring data collection continues during local area power outages and/or in the event of poor solar productivity for sites that rely on solar energy for power.

Note: Logging may drain the internal battery on the sensor. This constitutes as irreparable damage to the sensor and the site must request a new Aqua TROLL assembly. Monitor the internal and external battery usage using the instructions in Section 4.3. If the internal battery is below 40% and an external power source is unavailable, request a new Aqua or Level TROLL ASAP. Do not stop logging on the TROLL (An external battery pack is likely to revive the internal sensor battery and enable you to pull the log files from the sensor. If unable to revive a dead TROLL with an external battery pack, submit a trouble ticket.)

- 1. Launch the Win-Situ 5 software.
- 2. Select the Logging tab in the upper right-hand corner of the window (Figure 21).





3. Create a new Log by clicking on the **Document** icon in the lower left-hand corner of your screen (**Figure 11**).

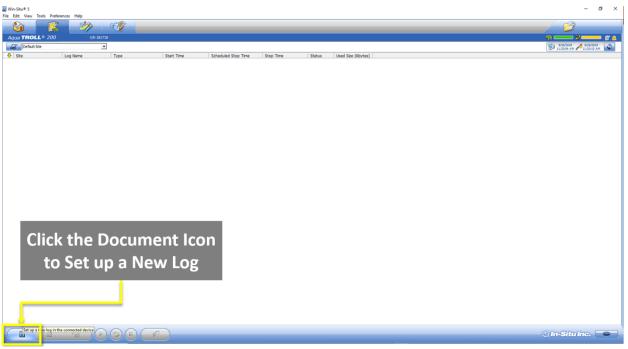


Figure 11. Create a New Log by Clicking on the Document Icon in the Lower Left-hand Corner

4. In the Logging Setup Wizard window, select your Site Name from the dropdown options and name the log file in the Log Name field (Figure 12). See Section 4.9 Add Site Name Procedure on page 26 if your Site Name is not available from the dropdown list.

neon	<i>Title</i> : NEON Standard Operating Pro Procedure	cedure: Aqua & Level TROLL Data Management	Date: 03/16/2022
Operated by Battelle	NEON Doc. #: NEON.DOC.005222	Author: M. Cavileer, G. Faria, B. Nance, N. Catolico	Revision: B

Logging Setup Wizard			×	Logging Setup Wizard				×
	Site Name				Site Name			
Stellings.	HOPS	· •		2 Second	НОРВ	•	6	
Aut Alle	Log Name			Auto allan	Log Name			
	GWW1				S1			
<b>新水料</b> 网络				S SHA				
Alegran	A COLORING COLORING			Alerter	North Contraction			
and the second	and .			and the second				
the second single	ad all the lot				A CONTRACTOR			
and the second				and the second				
And Barris				No. P				
	- Hereit	000						
		$\langle \langle \rangle \rangle$				(<		× )

Figure 12. Select Site and Name the Log File

 Set the parameters and units to log for the Aqua or Level Troll referencing the information in Table 3 and Table 4. Each parameter you select requires a unit selection. After selecting parameters, select a unit from the dropdown for each parameter under Log parameters and order field (Figure 13).

Aqua TROLL Log Parameter	Unit	
Pressure	Kilopascal (kPa)	
Temperature	Celsius (C)	
Actual Conductivity	microSiemens (μS/cm)	

#### Table 4. Level TROLL Log Parameters and Units

Level TROLL Log Parameter	Unit
Pressure	Kilopascal (kPa)
Temperature	Celsius (C)

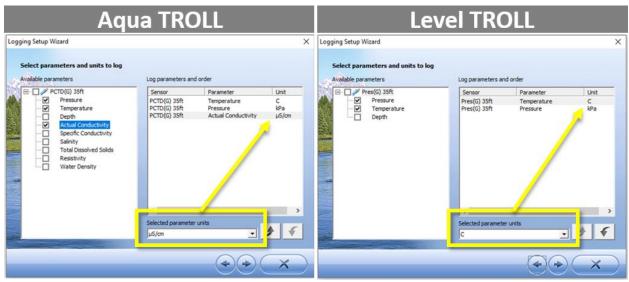


Figure 13. Set the Parameters and Units to log for the Aqua (Left) or Level TROLL (Right)

nean	<i>Title</i> : NEON Standard Operating Pro Procedure	cedure: Aqua & Level TROLL Data Management	Date: 03/16/2022
Operated by Battelle	NEON Doc. #: NEON.DOC.005222	Author: M. Cavileer, G. Faria, B. Nance, N. Catolico	Revision: B

6. Under **Choose a logging method** (Long-Term Monitoring), select **Linear Average** for Aqua TROLLs and **Linear** for Level TROLLS (**Figure 14**).

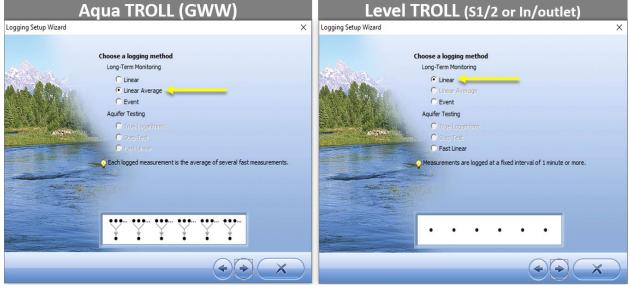


Figure 14. Choose a Long-Term Logging Method - Linear Average for Aqua TROLL & Linear for Level TROLL

- 7. Set up the number of measurements for the Aqua TROLL or Level TROLL (Figure 15).
  - a. <u>GWW Aqua TROLL</u>: Take **3** measurements at an interval of **15** seconds and log an average every **5** minutes.
  - b. <u>Lake/Stream (CARI/OKSR) Aqua TROLL</u>: Take **3** measurements at an interval of **15** seconds and log an average every **1** minute.
  - c. <u>Level TROLL</u>: Take and store a measurement every **1** minute.

neon	<i>Title</i> : NEON Standard Operating Pro Procedure	ocedure: Aqua & Level TROLL Data Management	Date: 03/16/2022
	NEON Doc. #: NEON.DOC.005222	Author: M. Cavileer, G. Faria, B. Nance, N. Catolico	Revision: B

Aqua TROLL (GWW)	Level TROLL (S1/2 or In/outlet)
Logging Setup Witzard X Linear Average Take the following number of measurements: 3 * At an interval of: Minutes 0 * 15 * and log average every: Days Hours 15 * 10 * 1	Logging Setup Wizard X
** X	** X

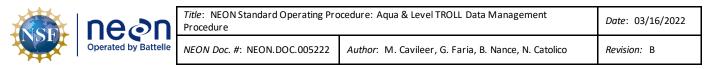
Figure 15. Set the Number of Measurements for each respective TROLL

8. In the pop-up warning about excessive battery use, select "Yes" (Figure 16).

Win-Situ® 5 File Edit View Tools Prefe	rences. Help		- σ ×
<b>1</b>			
Aqua TROLL® 200	S/N 382738		s y y .
Default Site	•		11/35/36 AM 11/36/2019
● Ste	Log Hame Type	Start Time     Scheduled Stop Time     Stop Time     Status     Used Step (Kbytes)	
			🔅 In-Situ Inc. 🛑

Figure 16. Ignore the Pop-Up Window & Click "OK"

 Select Scheduled Start for the Start Condition (Figure 17). The Start Time must start on an even five (5) minute interval to align timestamps. Leave "None" for the Stop Condition. Leave the Wrap Condition blank. Click the "X" to continue.



TROLL • 20		<b>(</b>		
Default Site	*			8/26/2019 A2/2019 11/45/67 AM A11/46/62 AM
			Legging Statup Witzert       X         Statup Control of the	

Figure 17. Schedule Start Condition to Start at an Even 5 Minute Interval to Align Timestamps

 Confirm the logging configuration settings by reviewing the final Summary. Figure 18 provides an example summary for an Aqua TROLL in a GWW and a Level TROLL at a stream site. Click the "V" to continue.

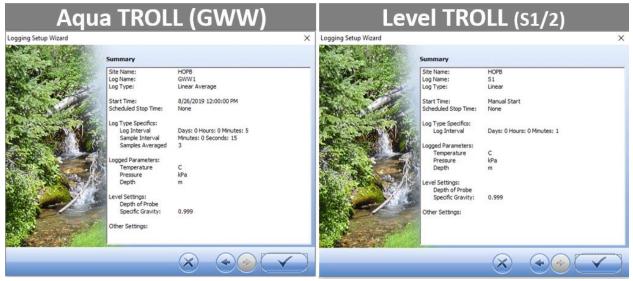


Figure 18. Logging Configuration Summary Examples

11. Once complete, the log file will show up under the logging tab as shown in Figure 19.

neor	<i>Title</i> : NEON Standard Operating Pro Procedure	ocedure: Aqua & Level TROLL Data Management	Date: 03/16/2022
Operated by Batt	e NEON Doc. #: NEON.DOC.005222	Author: M. Cavileer, G. Faria, B. Nance, N. Catolico	Revision: B

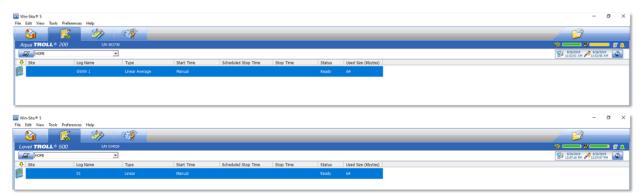


Figure 19. Select Log File - Aqua TROLL (Top) and Level TROLL (Bottom)

After setting the TROLL to log, monitor and verify the data for 24 hours to ensure there are no issues with the sensor data. Conductance L0 data may display abnormal values after configuring or conducting basic maintenance on an Aqua TROLL (see below **Figure 20** for an example of this error).

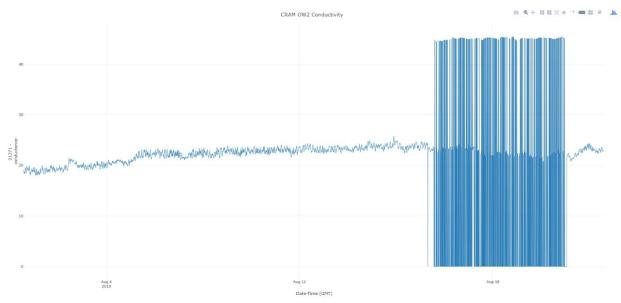
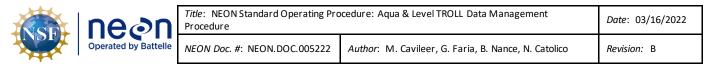


Figure 20. Common Conductivity L0 Data Error

If you notice abnormal values after sensor refresh, groundwater chemistry (GWC) sampling or after updating configuration settings/downloading log data/enabling or disabling logging, report it in ServiceNow via an incident ticket. Establish a data quality iTask for AQU Science listing the dates/times of the abnormal values and troubleshooting steps executed remotely or onsite. A common solution is to power-cycle the sensor via the Grape or by physically disconnecting the cable for a few minutes from the Radio/Comm box onsite.



#### 4.5 Disable Logging Procedure

Disable logging on both the Aqua and Level TROLL sensors prior to shipping them back to HQ for Sensor Refresh or Repair Lab, if applicable. Repair lab tracks and verifies logging was disabled on TROLLs that are received from the field.

- 12. Launch the Win-Situ 5 software.
- 13. Select the Logging tab in the upper right-hand corner of the window to cease logging (Figure 21). This step is to verify the Aqua TROLL is not logging post-refresh or to turn off logging.

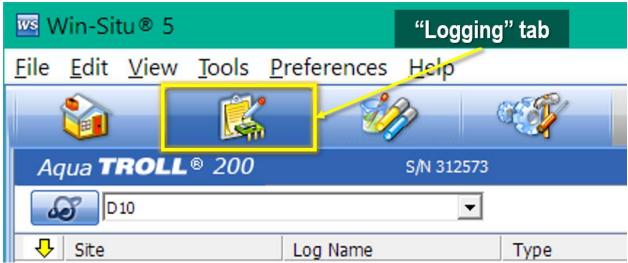


Figure 21. Select the "Logging" Tab

14. Select the log and click the "Stop" button at the bottom of the screen (Figure 22).

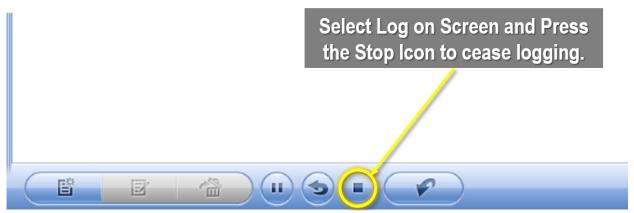
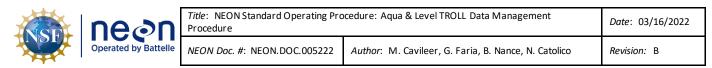


Figure 22. Select the Log File on the Screen and then select the "Stop" Button to Cease Logging

Another way to stop logging is to right click on the notepad icon of the log file and select "**Stop**" from the dropdown menu (**Figure 23**).



Win-Situ® 5								- 🗆 X
File Edit View Tools		~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~						
	🕵 🧼	- C						
Aqua <b>TROLL</b> ® 2	2 <b>00</b> s/N :	382738						
Default Site		¥						8/16/2019 9:31:35 AM 9:31:35 AM
Site	Log Name	Туре	Start Time	Scheduled Stop Time	Stop Time	Status	Used Size (Kbytes)	
Copy	Test	Linear Average	Manual			Running	64	
Paste								
New				1.1				
Edit	Righ	t click on	the Not	epad Icon				
Delete Undelete				-				
Start								
Pause								
Stop								
Kestart	-							
Download								
Properties Add Note								
								🕲 In-Situ Inc. 🛑
	<b>r:</b>			a Las Cila Nati				

Figure 23. Right Click on the Log File Notepad Icon to also Stop Logging

15. Confirm the sensor is no longer logging data. The file status should change to "Stopped" when logging is disabled (**Figure 24**).

Win-Situ® 5							– 🗆 X
<u>File Edit View</u>	Tools Preferences Help						
							7
Aqua TROLL	© 200 S/N 31	12573					) ÿ 💶 🖿 🌲
D10		•				5/8/2017	12/31/1969
🕂 Site	Log Name	Туре	Start Time	Scheduled Stop Time	Stop Time	Status	Used Size (Kbytes)
D10	D10 Arikaree	Linear Average			4/22/2014 13:30:01	Stopped	2368
							-
Ē						ln-Sit	u Inc.

Figure 24. Verify Logging Stopped

ne⊘n	<i>Title</i> : NEON Standard Operating Pro Procedure	cedure: Aqua & Level TROLL Data Management	Date: 03/16/2022
	NEON Doc. #: NEON.DOC.005222	Author: M. Cavileer, G. Faria, B. Nance, N. Catolico	Revision: B

#### 4.6 Data Download Procedure

After you stop logging, download the data log files to a laptop to transfer them to the network drive for AQU SCI on a quarterly cycle, meaning every three (3) months (or 12 weeks) ± 2 weeks. This is subject to change depending on information gleaned from implementation, such as the time it takes to transfer the log files from the sensor or issues resulting from environmental/site variables. If there is no power at the site (i.e. TECR), download during biweekly PMs. Note the exact time you download the file and report it to AQU SCI (AQU SCI is testing time zone).

1. To download data from a TROLL to a NEON program laptop, select the log file and then select the downward pointed arrow from the bottom banner of the screen (**Figure 25**).

Win-Situ® 5								- 🗆 X
File Edit View Tools P	references Help							
	3	C SY						
Aqua <b>TROLL</b> ® 20	00 s/N 3	82738						sin 🖉 💶 🖉 🌲
Default Site		•						8/15/2019 8/15/2019 11:33:35 AM 11:33:35 AM
🕂 Site	Log Name	Туре	Start Time	Scheduled Stop Time	Stop Time	Status	Used Size (Kbytes)	
Default Site		Linear Average	8/15/2019 11:00:40			Stopped	64	
					r -			
	Click to	o Downlo	ad the	Data Eila				
			autilei					
			1					
			1					
								🔍 İn-Situ Inc. 🛑

Figure 25. Select the Log file and then the Downward Pointed Arrow to Download the Log File Data

2. When the Download Options window appears, select "**Download all data**" and click on the checkmark to initiate the download (**Figure 26**).

₩ ne⊘n	Procedure					Date: 03/1
Operated by Battelle	NEON Doc. #: NEON.E	OC.005222	Author: M. Cavi	leer, G. Faria,	B. Nance, N. Catoli	co <i>Revision:</i> E
Win-Situ® 5 File Edit View Tools Preferences Help						
Aqua TROLL® 200 SM	i 382738					\$115:03 AM
Default Ske Test	Linear Average 8/1	Stop Time		× Do Da Cł	elect ownload a ata & Click neckmark ownload	ĸ

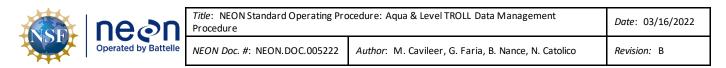
Figure 26. Select "Download all data" and Click on the Checkmark to Initiate Download

().In-Situ Inc. 💳

3. Once the download is complete, another pop-up window appears to confirm its completion. Click "**OK**" (Figure 27).

Site	Log Name	▼ Type	Start Time	Scheduled Stop Time	Stop Time	Status	Used Size (Kbytes)	8/16/2019 9:51:46 AM 9:51:47 AM
Default Site	Test	Linear Average	8/16/2019 9:28:58 AM		8/16/2019 9:50:58 AM		64	
			Download Options		×			
			Download Progress	-	×			
			Win-Situ® 5		×			
				oad Complete - Total Elapsed Ti	me: 00:00:07			
				sud complete - rotal capited ri				
				Canad	ОК			
				Cancel				
				$(\mathbf{x})$				

Figure 27. Click "OK" Again to Proceed



4. Another pop-up window appears to ask if you want to view the data. Click "**Yes**" to view the data file (**Figure 28**).

IVS I	Win-Situ® 5								- 🗆 X
File	Edit View Tools Prefe	rences Help							
	🔪 🛛 🕵	- WA	C.Y						
A	qua <b>TROLL</b> ® 200	S/N 38	32738						
	Default Site		•						8/15/2019 8/15/2019 11:35:46 AM
-0	Site	Log Name	Туре	Start Time	Scheduled Stop Time	Stop Time	Status	Used Size (Kbytes)	
	P Default Site	Test	Linear Average	8/15/2019 11:00:40		8/15/2019 11:32:40	Stopped	64	
				Clic	download has completed succe you want to view the data now? Yes k Yes to he Data F	view			
	B B'								🕲 In-Situ Inc. 🛑

Figure 28. Click "Yes" to View the Data

 This opens up a data view and your downloaded log file will be listed under your site as a .wsl (windows subsystem for Linux) file (Figure 29). This data saves to your C Drive under a WinSitu Data folder (Figure 30).

Edit View Tools Preferences Help		
ome	Report Date: 8/15/2019 11:40:27 AM	 
7 Connections	Report User Name: gfaria	
7 Site Data	Report Computer Name: NEON-06878	
- 🔐 Default Site	Application: WinSitu.exe	
Test_2019-08-15_11-35-38-470.ws	Application Version: 5.6.29.3	
D03-BARC		
D08-MAYF		
- OF PRIN	Log File Properties:	
SUGG	File Name: Test 2019-08-15 11-35-38-470.wsl	
- 🔊 D06-KING	Create Date: 8/15/2019 11:35:36 AM	
D07-WALK	Device Properties:	
- 🔊 D02-POSE	File Name: Test 2019-08-15_11-35-38-470.wsl Create Date: 8/15/2019 11:35736 AM Device Properties: Device: Aqua TROLL 200 Site: Default Site Device: Name: 12501 Serial Number: 12501	
BARC	Site: Default Site	
	Device Name: 12501	
	Serial Number: 382738	
💓 MAYF	Firmware Version: 2.01	
	Hardware Version: 2	
🔊 LEWI	Device Address: 1	
	Device Comm Cfg: 19200,8,Even,1,(Modbus-RTU)	
- 🔊 D09 PRPO	Used Memory(%): 0	
🞯 OSKR	Used Battery(%): 106	
- 🔊 D13-COMO		
D10	Log Configuration	
	Log Name: Test	
D06 MCDI	Created By: gfaria	
OKSR	Computer Name: NEON-06878	
SYCA	Application: WinSitu.exe	
Exported Data	Application Version: 5.6.29.3	
🤊 Manuals	Create Date: 8/15/2019 10:57:14 AM Mountain Daylight Time	
	Log Setup Time Zone: Mountain Daylight Time	

Figure 29. The Log File will be listed under your Site as a .wsl File

ne⊘n	<i>Title</i> : NEON Standard Operating Pro Procedure	cedure: Aqua & Level TROLL Data Management	Date: 03/16/2022
Operated by Battelle	NEON Doc. #: NEON.DOC.005222	Author: M. Cavileer, G. Faria, B. Nance, N. Catolico	Revision: B

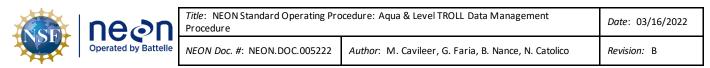
Edit View Tools Preferences Help		
👔 🥵 🤣 🤇		
	🔜 I 🔄 🗕 🖬 Síte Data	- 0
	File Home Share View	~
Home	🖌 📄 📋 🕹 Cut 👘 🖓 New item * 🜍 🖡 Open *	Select all
2 Connections	VOUR NAME HERE	BB Select none
🥱 Site Data	Pin to Quick Copy Paste access Paste shortcut to - to - folder Properties	Invert selection
- 🔊 Default Site 7 Test_2019-08-15_11-35-38-470.wsl		data file saves
- 3 D03-BARC		i uala ille save:
D03-DARC	🔶 🚽 🔨 This PC > OSDisk (C:) > Users > gfaria > Documents > WinSitu Data > Site Data	V Ö Search Sit
PRIN		o your C Drive
SUGG	Name Date modified Type	D YOUR C Drive
D06-KING	Cuick access	
- D HOPB	Desktop	
- D07-WALK	Downloads	7 KB
- TOT DOT POSE		
- 🔊 BARC	Documents #	
D09-PRPO	Pictures *	
- D03-SUGG		
- 3 MAYF	339559_7-25-19	
- Transformation - State - Sta	ENG	
- 🧊 LEWI - 🞯 SIV TEST	ETR Blanks	
- OT DO9 PRPO		
- ST OSKR	ysi	
- 3 D13-COMO		
- 3 D10	57 Dropbox	
D13-WLOU		
D06 MCDI	OneDrive	
- ST OKSR	This PC	
SYCA	inis PC	
C Exported Data	Network	
🥱 Manuals	- Network	
		_
	2 items	BE
	Scheduled Sobh Time, wo Sobh Time	
	Type: Linear Average Log Data Every: Davs: 0 hrs: 00 mins: 01 secs: 00	
	Sample Interval: 1 (secs)	
	< A state of the s	

Figure 30. Data Saves to your C Drive under a "WinSitu Data" Folder

6. In order to upload the data file, you need to turn it in a **.csv** (comma-separated values) file. Right click on the data file and click "**Export to CSV**" from the dropdown menu (**Figure 31**). This saves the data under an **Exported Data** folder on your C drive (**Figure 32**).

		<b>1</b>	
6 Home		Rig	sht Click on the file AM
Connections		&	
	New Site Group New Site		
PRIN 	New Connection		Log File Properties: File Name: Test_2019-08-15_11-35-38-
🔊 D06-KIN , 🎯 HOPB	Properties Export to CSV		Create Date: 8/15/2019 11:35:36 AM
			Device Properties:
BARC	export to text		Device: Aqua TROLL 200 Site: Default Site
D09-PRPO	Delete		Device Name: 12501
D03-SUGG	Connect		Serial Number: 382738
- 🥸 MAYF 📃			Firmware Version: 2.01
- 🔊 GUIL			Hardware Version: 2
			Device Address: 1
SIV TEST			Device Comm Cfg: 19200,8,Even,1,(Modbus-R)

Figure 31. Right Click on the Data File & Select "Export to CSV" from the Dropdown Menu



👔 🔣 🛷 🤫		7
	I      I	>
tome	YOUR NAME HERE Pin to Quick. Copy Paste access Paste shortcut Copy Delete Rename New Folder New Folder New Folder New Folder New Folder New Folder New Folder New Folder New Folder New Folder New Folder F	ල් Search De ර
Corport     SearC     SearC	Documents Pictures P	

Figure 32. The Data Saves under an "Exported Data" Folder on your C Drive

Use the following naming convention for your .csv data files that you upload to the **Sensor Swap** folder:

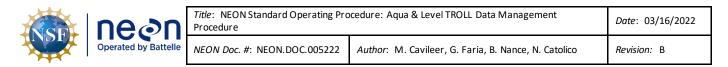
- For Aqua Trolls inside Groundwater Wells: **SITE\_YYYYMMDD\_GWW#** (GWW# stands for Groundwater Well 1-8)
- For Aqua Trolls at Lake Inlets/Outlets: **SITE\_YYYYMMDD\_IN/SITE\_YYYYMMDD\_OT** (*IN stands for Lake Inlet or OT for Lake Outlet*)
- For Level Trolls at Stream sites : **SITE\_YYYYMMDD\_S#** (*S# stands for S1 or S2*)
- For Aqua Trolls at D## TOOK ONLY: **SITE\_YYYYMMDD\_IF/SITE\_YYYYMMDD\_OF** (*IF stands for inflow and OF stands for outflow*)

Add a **\_2** to the end of the file name if it is a duplicate.

After downloading data file(s) from a TROLL(s), delete the log file and restart logging following the procedure in Section 4.7 and Section 4.4.

#### 4.7 Delete Log File Procedure

After downloading a log file onto your laptop, and you have **confirmed** the data was completely downloaded, delete the file on the sensor.



1. Right click on the notepad icon of the stopped file and select "Delete" (Figure 33).

	🕵 🛛 🤣	<b>1</b>					
qua <b>TROLL</b> ® 2	200 s/N	350888					
D03-BARC		•					
Site	Log Name	Туре	Start Time	Scheduled Stop Time	Stop Time	Status	Used Size (Kbytes
D03-BARC	1	Linear	4/22/2019 3:19:3	31 PM	4/22/2019 4:16:31 PM	Stopped	64
Сору	D' Lu	11-1	lotepad Icon &				
				v select			
Paste	INBIIC C						
New							
		from Dropd					
New							
New							
New Edit							
New Edite Delete Undelete							
New Edit Delete Undelete Start							
New Edit Delete Undelete Start Pause							
New Edit Delete Undelete Start Pause Resume							
New Edda Delete Undelete Start Pause Resume Stop							
New Edit Delete Undelete Start Pause Resume Stop Restart							

Figure 33. Right Click on the Notepad Icon of the Stopped Log File and Select "Delete"

2. A pop-up window appears stating the "Selected log will be deleted! Continue?" Click "OK" to continue (Figure 34).

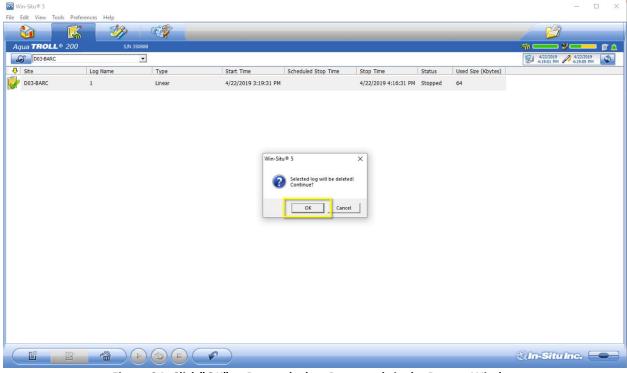
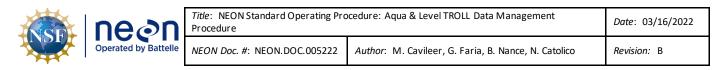


Figure 34. Click "OK" to Proceed when Prompted via the Pop-up Window



3. Complete Steps 1 and 2 again to completely delete the log file. A log file is completely deleted when it is no longer listed and when you hover your cursor over the memory bar in the upper-right corner, it states there is 0% memory used.

After deleting the log file, restart logging following the procedure in Section 4.4.

#### 4.8 Data Upload Procedure

After returning to the Domain Support Facility or via VPN, save a copy of the .csv data file to the Network drive in the following folder (**Figure 35**): N:\Science\Sensor Swap

📕 I 🖸	🚽 🗧 🛛 Sensor Swa	p			
File	Home Share	View			
Navigation pane 🗸	Preview pane	Image icons     Ima	Group by ▼ II Add columns ▼ Sort by ▼ II Size all columns to the	<ul> <li>☐ Item check boxes</li> <li>☐ File name extensions</li> <li>☐ Hidden items</li> </ul>	Options
	Panes	Layout	Current view	Show/hide	
$\leftarrow \rightarrow$	< 🛧 📙 > This	PC > NEON Shares (N:) > Science > Sensor Swap			ٽ ~
	Links	^ Name	Date modified Ty	pe Size	
	logs	aquaTROLL	7/15/2019 3:25 PM Fil	e folder	
<b>_</b> (	OneDrive	levelTROLL	7/15/2019 3:25 PM Fil	e folder	
	Pictures	SUNA Log Files	7/15/2019 4:17 PM Fil	e folder	
	REACHit				
	Roaming				

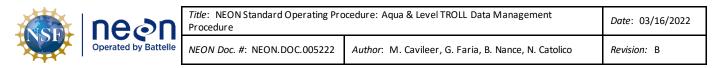
Figure 35. N:\Science\SensorSwap

Use the following naming convention for your .csv data files that you upload to the **Sensor Swap** folder:

- For Aqua Trolls inside Groundwater Wells: **SITE\_YYYYMMDD\_GWW#** (GWW# stands for Groundwater Well 1-8)
- For Aqua Trolls at Lake Inlets/Outlets: **SITE\_YYYYMMDD\_IN/SITE\_YYYYMMDD\_OT** (*IN stands for Lake Inlet or OT for Lake Outlet*)
- For Level Trolls at Stream sites : **SITE\_YYYYMMDD\_S#** (S# stands for S1 or S2)
- For Aqua Trolls at D## TOOK ONLY: **SITE\_YYYYMMDD\_IF/SITE\_YYYYMMDD\_OF** (*IF stands for inflow and OF stands for outflow*)

Add a\_2 to the end of the file name, if exporting multiple files from the same sensor on the same day.

Maintain a local copy of the files for at least two (2) years to have backup files in the event of an emergency (if HQ requires files to be re-uploaded to another or same location).



#### 4.9 Add Site Name Procedure

If you do not find your site name from the dropdown option when initiating the logging wizard, follow the steps below to add your site name to the list.

 From the WinSitu-5 homepage, select the Planet icon in the upper left hand corner of the screen (A in Figure 36). Then from the Site List pop-up window, select the New Document icon (B in Figure 36).

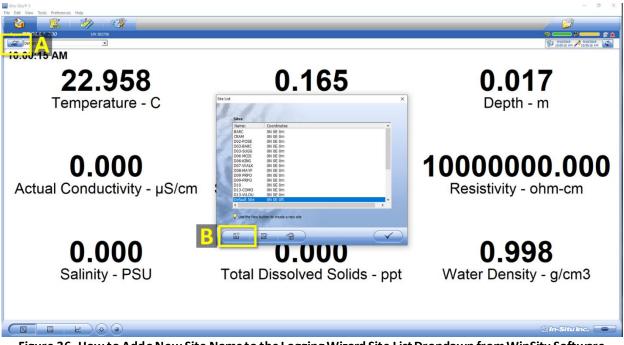
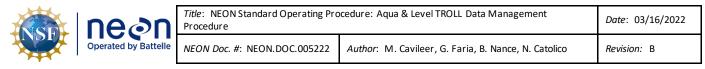


Figure 36. How to Add a New Site Name to the Logging Wizard Site List Dropdown from WinSitu Software Homepage

2. In the **Add Site** pop-up window, enter the site ID for the site that is missing from the dropdown options (**Figure 37**), for example, SYCA is the site ID for Sycamore Creek. Only the **Name** field is required. Click on the checkmark to save the site name to the **Site List**.



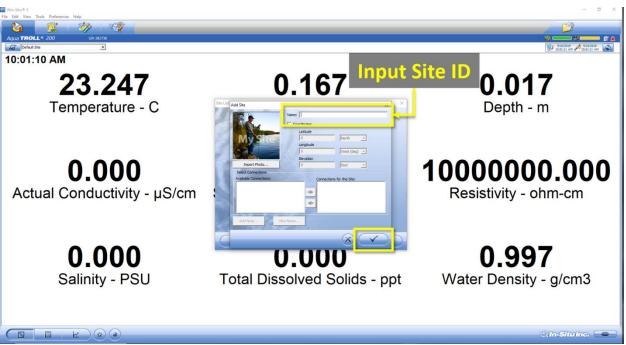


Figure 37. Input Site ID in Name Field and then Select the Checkmark to Save the Site to the Site List



#### 5 QUICK REFERENCE

This section serves as a quick reference for the order of operations Aquatic Science expects these procedures to be performed by Field Science.

#### 5.1 Receiving and Deploying TROLL Sensors for Sensor Refresh (Sensor Swap)

- 1. Connect and set Device Location (Section 4.2)
- 2. Check battery and install external battery packs, as necessary (Section 4.3 and KB0011788)
- 3. Set sensor to log data (Section 4.4)
- 4. Install sensor physically onsite (NEON.DOC.004362, NEON.DOC.004361 and NEON.DOC.005038)
- 5. Install sensor at the site (CFG Location) in Maximo (NEON.DOC.005038)

#### 5.2 Quarterly Log Data Retrieval

- 1. Connect (Section 4.2)
- 2. Check battery (Section 4.3) and request an external battery pack, if necessary
- 3. Download data log files (Section 4.6)
- 4. Confirm data files downloaded onto laptop and delete log file on Sensor (Section 4.7)
- 5. Restart logging on sensor (Section 4.4)
- 6. Complete other preventive or corrective maintenance and reinstall sensor, if necessary (NEON.DOC.004362 and NEON.DOC.004361)
- 7. Upload data files to N drive from DSF (Section 4.8)
- 8. Monitor sensor data to verify sensor state of health (specifically conductivity, where applicable)

# 5.3 Removing and Shipping TROLL Sensors for Sensor Refresh (Sensor Swap) or for Corrective Actions (Repair)

- 1. Remove sensor and any external battery pack(s) from the field
- 2. Connect and set the Device Location back to 1 (Section 4.2)
- 3. Turn off logging mode (Section 4.5)
- 4. Download data (Section 4.6)
- 5. Confirm data files downloaded onto laptop and delete log file on Sensor (Section 4.7)
- 6. Upload data files to N drive from DSF (Section 4.8)
- 7. Uninstall from CFG Location in Maximo (NEON.DOC.005038)
- Complete any other activities necessary for Sensor Refresh or Corrective Actions and ship sensor and external battery pack as a pair, if applicable, back to HQ (NEON.DOC.005038 and KB0011788)