

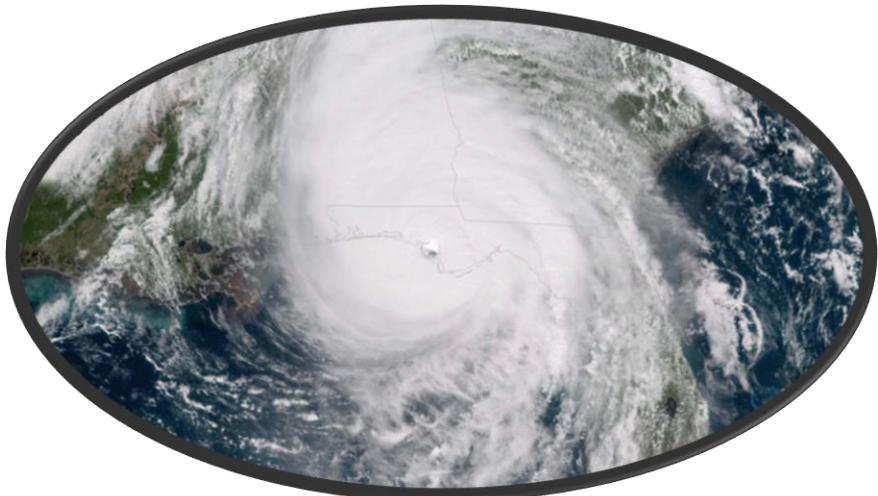
Empowering Real-Time Flood Monitoring with In-Situ's Rapid-Deployable System

Brock Houston, Florida Regional Sales Manager

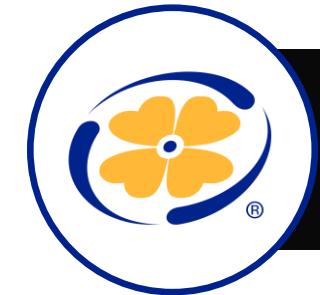


water
simplified.

Challenges of Flood Preparedness



In-Situ's Mission

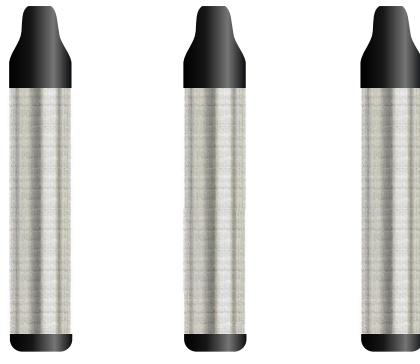


We develop innovative technologies used to monitor and protect the world's water resources



Level Portfolio

Rugged TROLL®



100 200 Baro

Level TROLL®



400 500 700 700h Baro

Aqua TROLL®



100 200

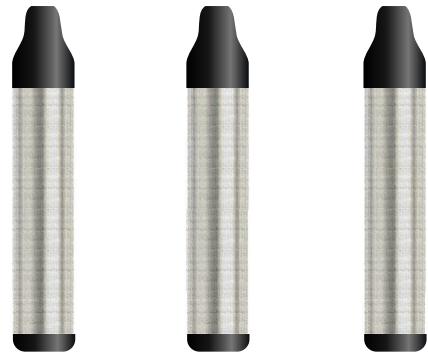
INTR



ING!!

Level Portfolio

Rugged TROLL®



100

200

Baro

Level TROLL®



400

500

700

700h

Baro

100

200

Non-Contact

NEW!!



Aqua TROLL®



100

200

Introducing: Level TROLL NC!!

Non-contact radar device for measuring water level

High-quality radar integrated into In-Situ's ecosystem

Quick and Easy Deployments

Available in three ranges:

15 m [49 ft]

30 m [98 ft]

50 m [164 ft]



Environmental Applications

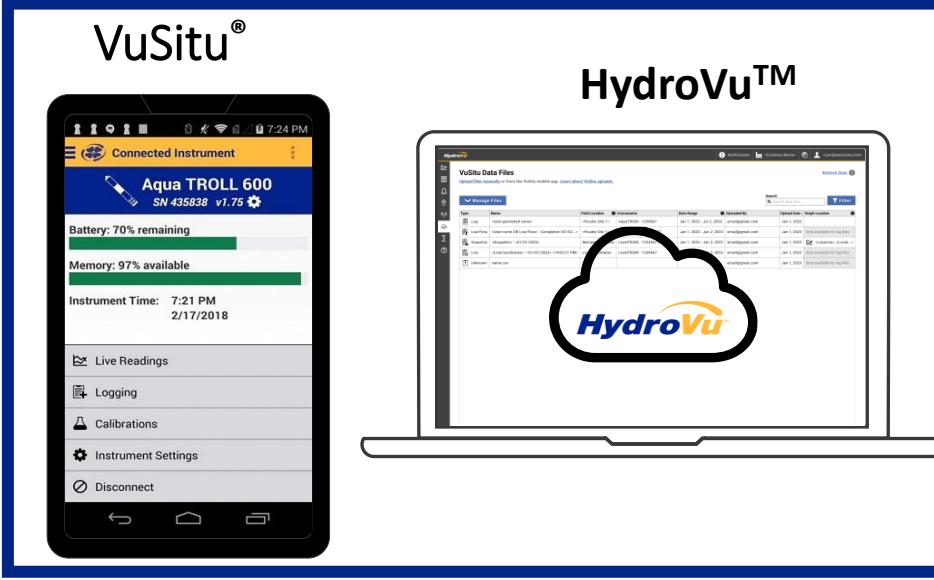
- Flood Management – real-time water level and warnings
- Stream Gaging – stage height in creeks, streams, canals, rivers, and waterways
- Stormwater – water level and flow through culverts and combined sewer overflows (CSOs)
- Surface Water Monitoring – reservoir and lake stage
- Tide Gauging – water surface elevation
- Flow Estimate – simple and stable cross sections



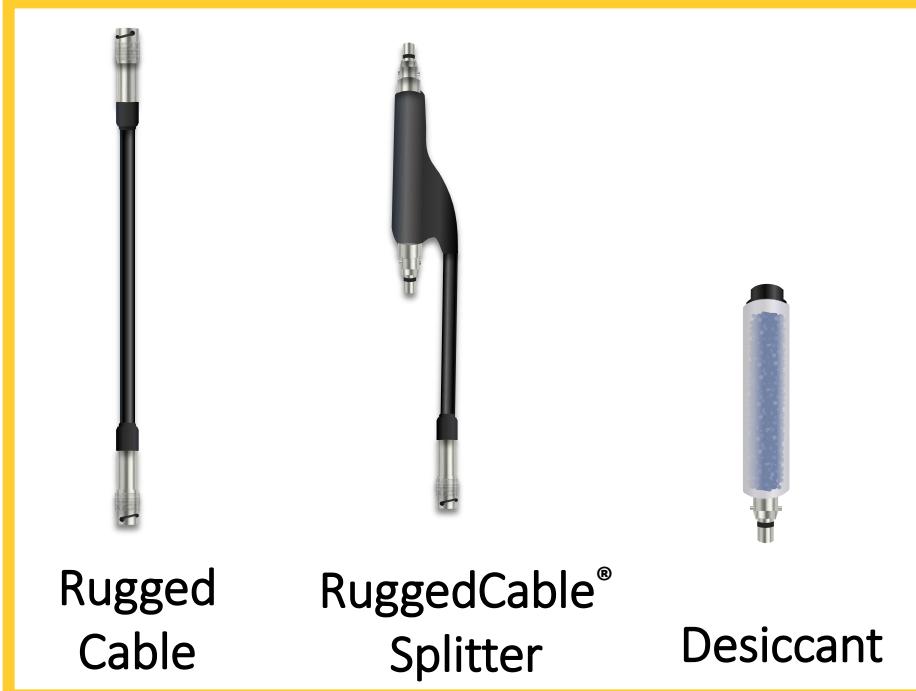


Aqua TROLL

Level TROLL



HydroVu™



Rugged
Cable

RuggedCable®
Splitter

Desiccant

TROLL® Com Plus

VuLink

Simple Interface - VuSitu



VuSitu Mobile App

Connected Instrument  

Level TROLL NC
SN 123456 v1.61 

DISTANCE
26.2 m 

TIET ANGLE
0.7° 

SIGNAL TO NOISE RATIO
87 dB 

 Live Readings

 Radar Configuration

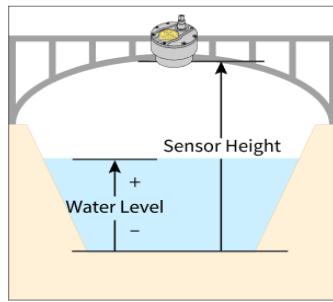
 Instrument Settings

 Disconnect

Water Level  

Level TROLL NC - SN <SN>

View and configure reference settings for Water Level. Use the reference type that's easiest to measure at your deployment site.



Sensor Height

Water Level

Choose Units

Parameter Units 

Choose Reference Type

Measured Water Level
Enter the current water depth.
 m 

Fixed Sensor Height
Enter the distance from the sensor face to the lowest point in the body of water.
 m 

Radar Configuration  

Level TROLL NC - SN <SN>

The echo curve shows all radar signals from a single reading. Adjust radar settings to change how the instrument interprets radar signals.

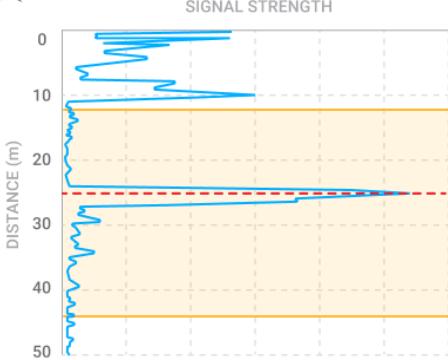
[Echo curve troubleshooting help >](#)

 Radar Echo Curve

 Active Zone

 Distance Reading

26 m 



 Radar Settings

 Save Report



Low Maintenance and Easy to Deploy

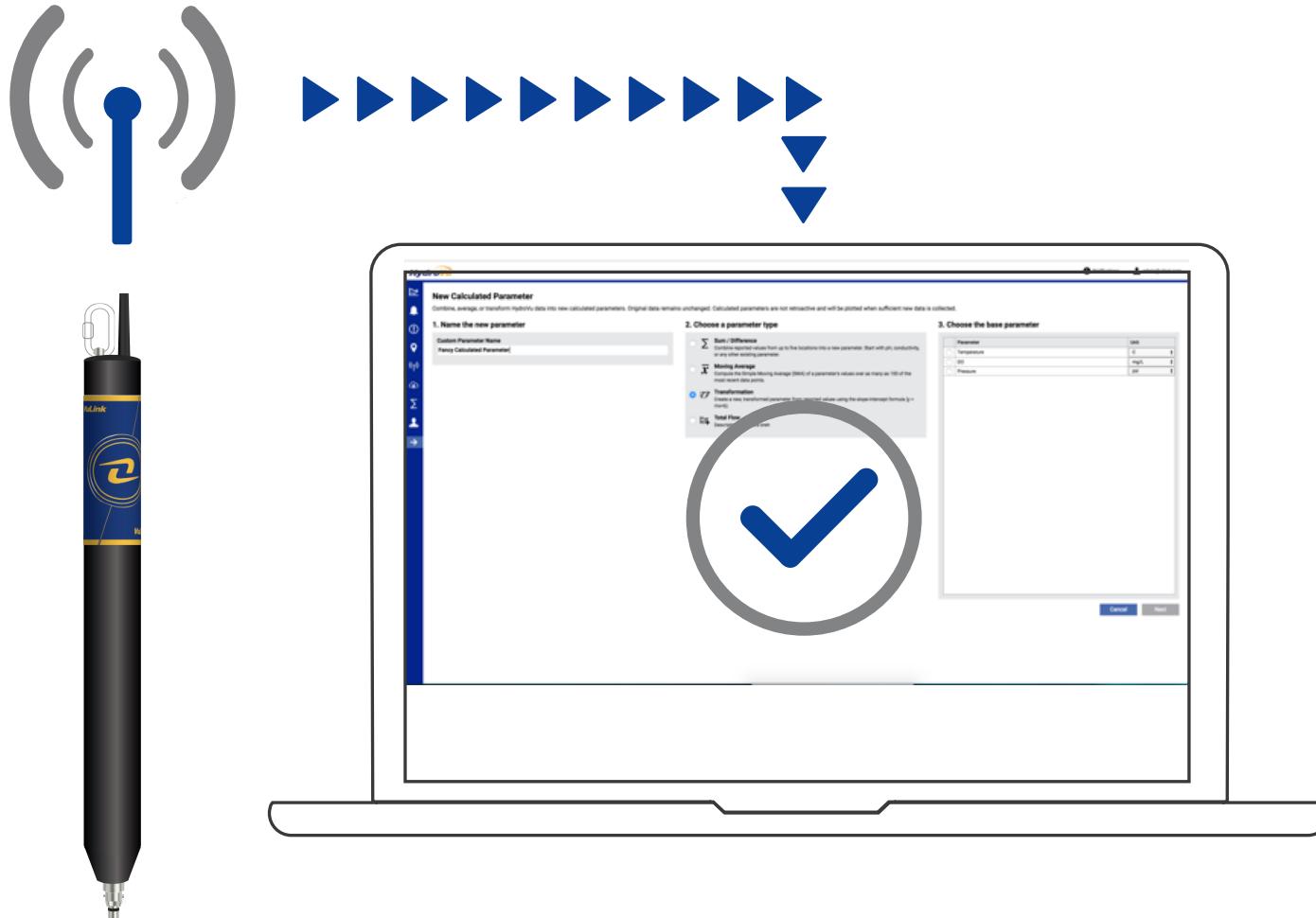


- The Level TROLL NC is easy to setup, requires little to no maintenance, and is quick to deploy
- No recalibration required
- The bubble level on top paired with the In-Situ mounting bracket makes leveling the radar even easier
 - Built-in leveling bolts
 - Multiple mounting holes allow for a variety of deployment needs

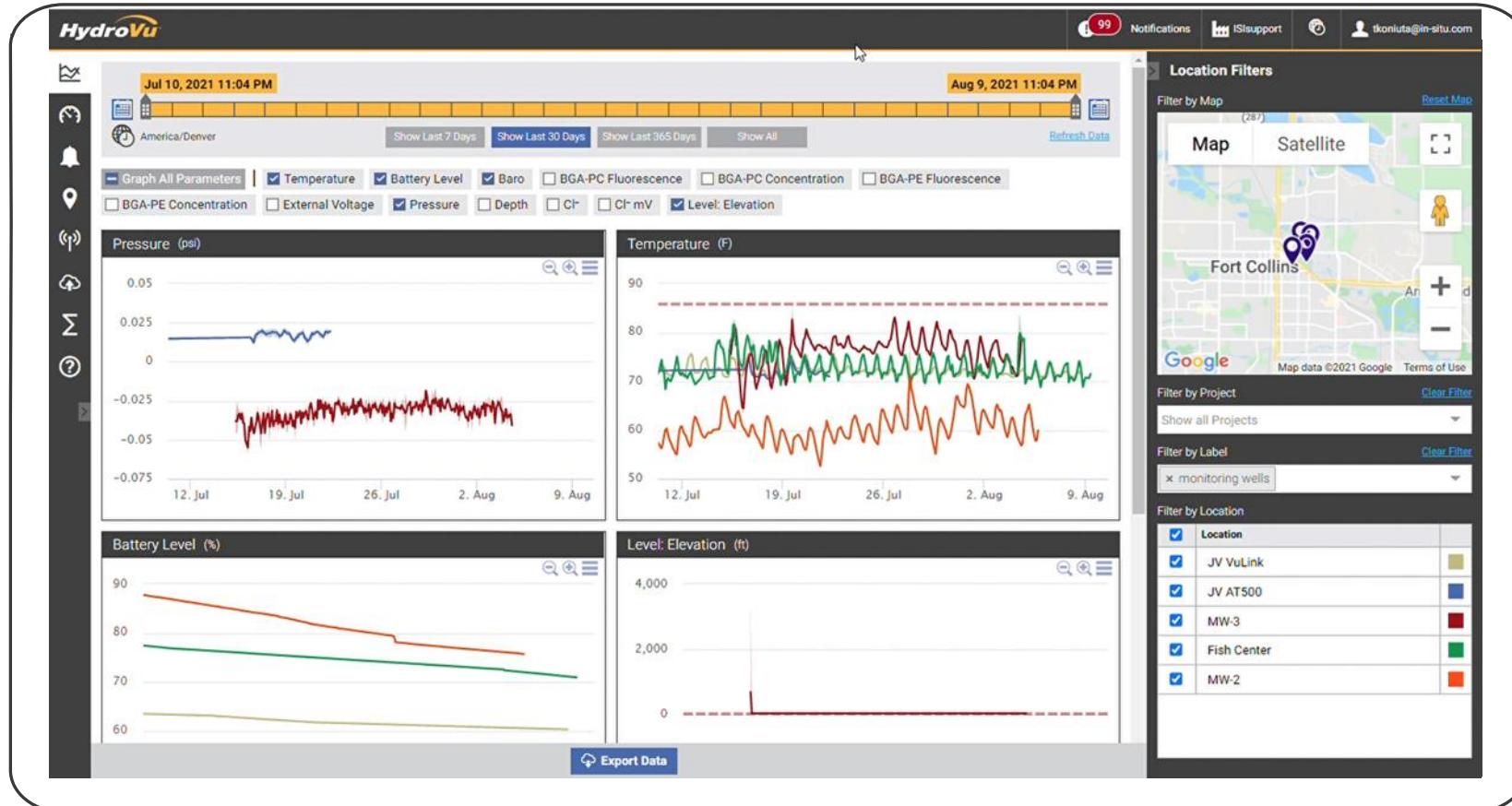
Required Equipment



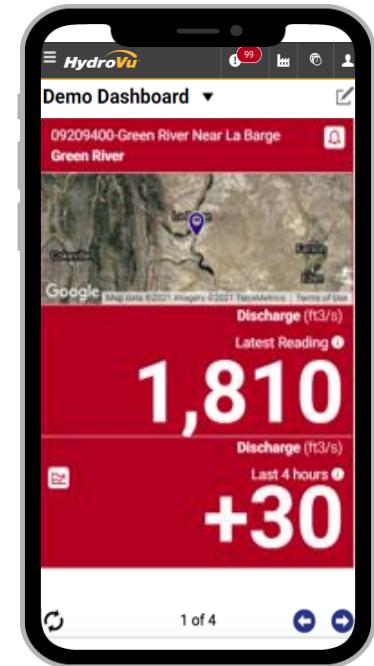
Cellular Connection to the Cloud



HydroVu - Network-Wide Visibility



HydroVu - Dashboards



HydroVu

Multi-Condition Alarms

HydroVu

Add Alarm

1. Choose a Location for the alarm

Filter by Map: Map, Satellite. Filter by Project: Show all Projects, Filter by Label: monitoring wells. Filter by Location: Location: JV VuLink, JV AT500, MW-3, Fish Center, MW-2.

2. Define the alarm

Location: Location not selected. Alarm Name: Enter name here. Notes: [empty text area]. Alarm Conditions: Select location before adding conditions. Add/Edit Conditions.

3. Set up notifications

Send Notifications: When ALL conditions are met. Notifications: No notifications have been set up. Add/Edit Notifications.

Cancel Save Alarm

Calculated Parameters

HydroVu

New Calculated Parameter

Combine, average, or transform HydroVu data into new Calculated Parameters. Original data remains unchanged. Calculated Parameters are not retroactive and will be plotted when sufficient new data is available.

1. Name the new parameter

Calculated Parameter Name: rating. Make this parameter active:

2. Choose a parameter type

Sum / Difference: Combine reported values from up to five locations into a new parameter. Start with pH, conductivity, or any other existing parameter.

Moving Average: Compute the Simple Moving Average (SMA) of a parameter's values over as many as 100 of the most recent data points.

Transformation: Create a new, transformed parameter from reported values using the slope-intercept formula ($y = mx+b$).

Total Flow: Use flow rates to determine total volume.

Flow from Depth: Create a parameter that converts depth to flow via a lookup table. You must provide at least two known correlations between depth and flow.

3. Choose the source parameter

Parameter	Unit
Specific Conductivity	µS/cm
pH	pH
Turbidity	NTU
Velocity	m/s
Total Positive Flow	m³
Flow Rate	m³/s
Doppler Steam In	Unspecified
PulseIn_24h	Units
PulseIn	Units
Pressure	psi
Level: Depth to Water	m
Actual Conductivity	µS/cm
Salinity	psu
Resistivity	Ω-cm
Density	g/cm³
Total Dissolved Solids	mg/L
pH MV	mV
ORP	mV
% Saturation O₂	% sat

Cancel Next

Customer Beta Examples

Stormwater Flow

Tide Gauging

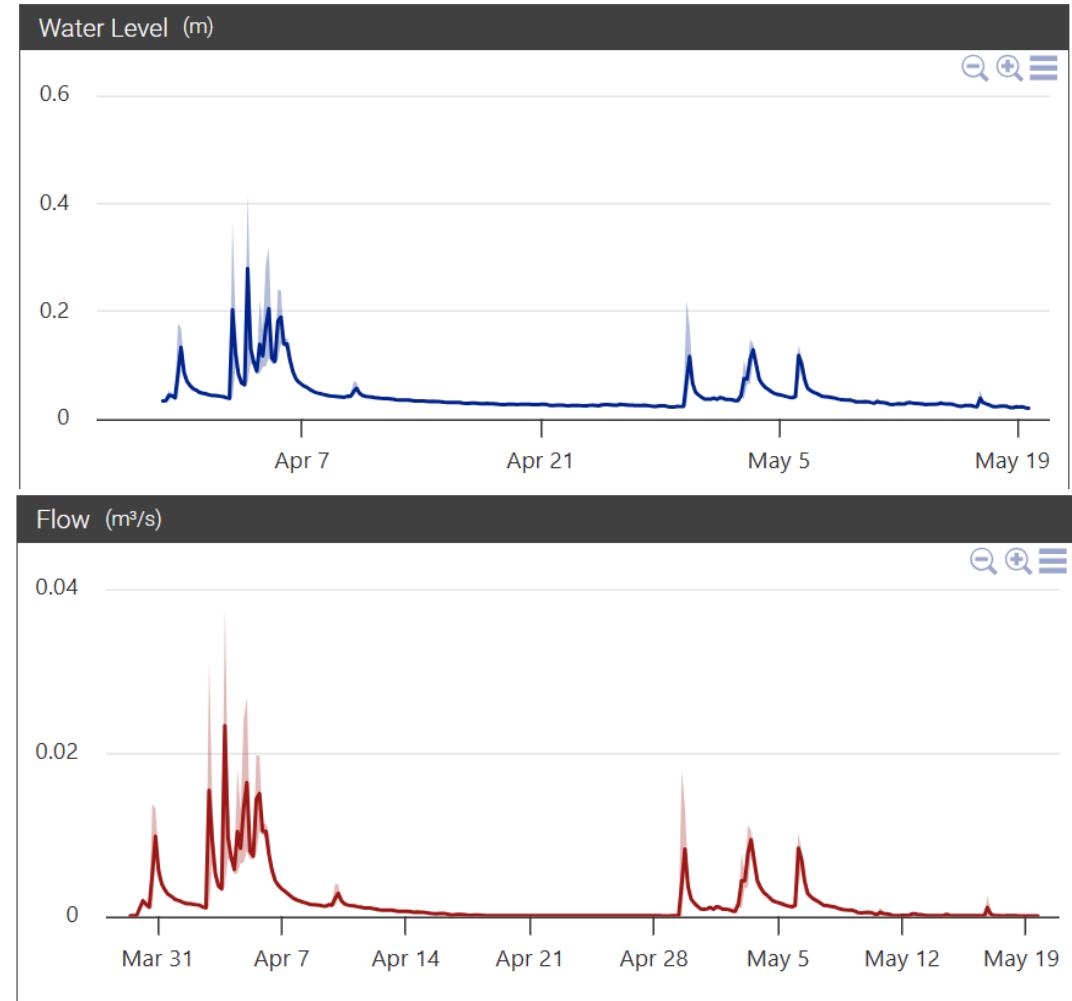
Effluent Monitoring



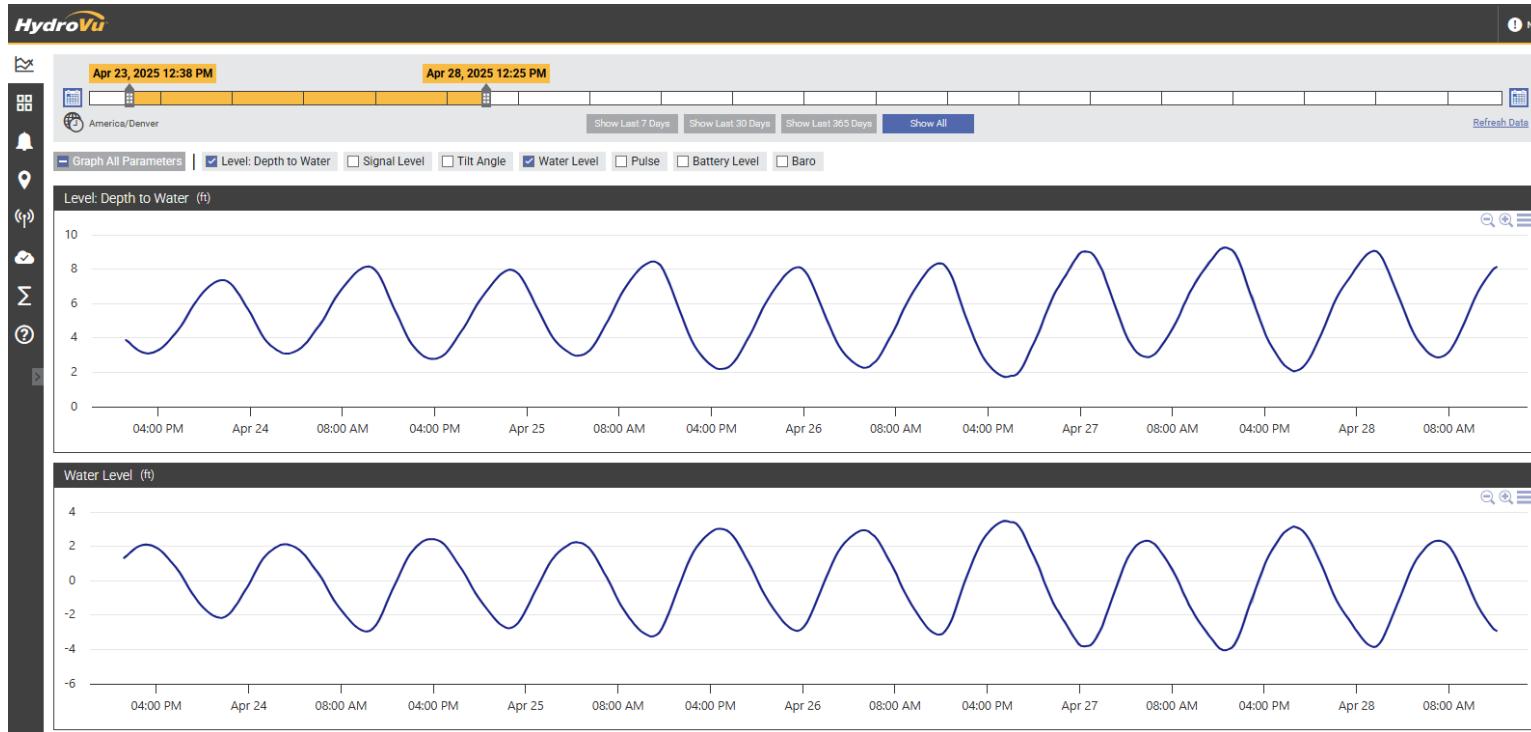
water
simplified.



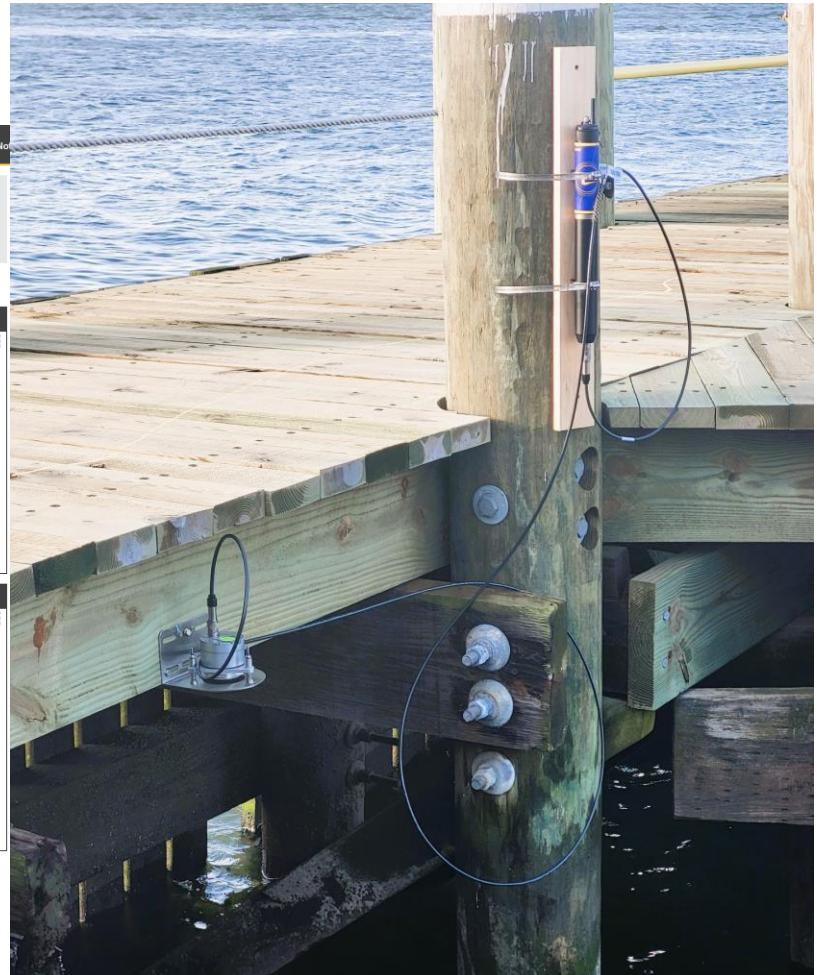
Stormwater Level and Flow



Tide Gauging



1-minute Surface Water Elevation data for Tide Gauging



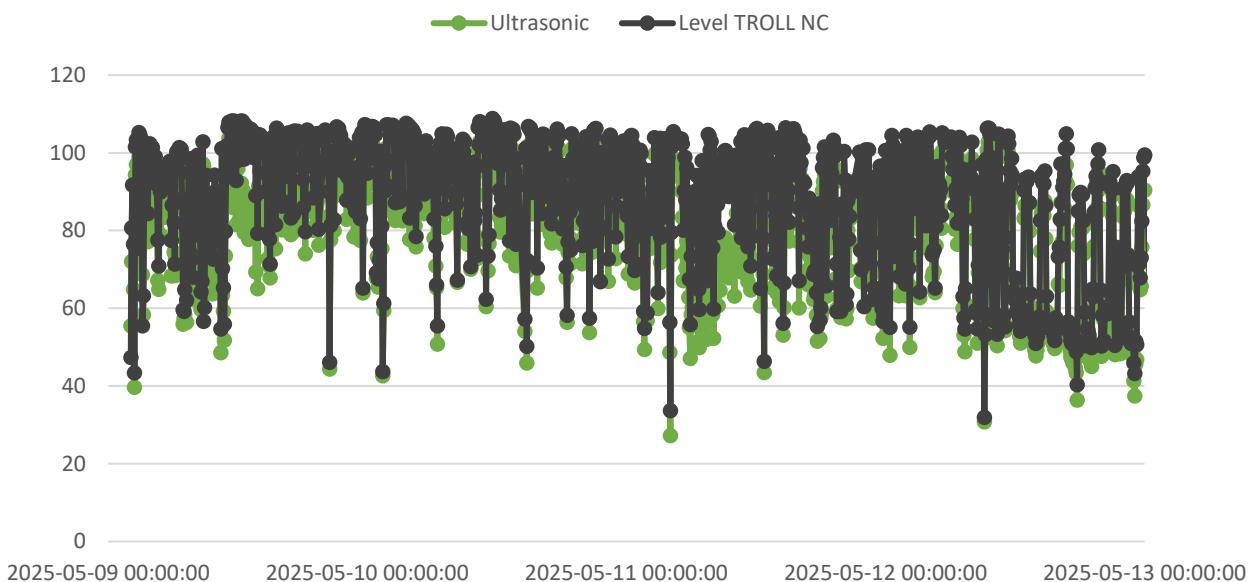
Tide Gauging



1-minute Surface Water Elevation data for Tide Gauging



Effluent Monitoring Comparison



- Level TROLL NC against competitor Ultrasonic
- Beta Customer: “*The Level TROLL is a bit more stable*” and requires much less maintenance
 - Ultrasonic requires weekly troubleshooting and calibration

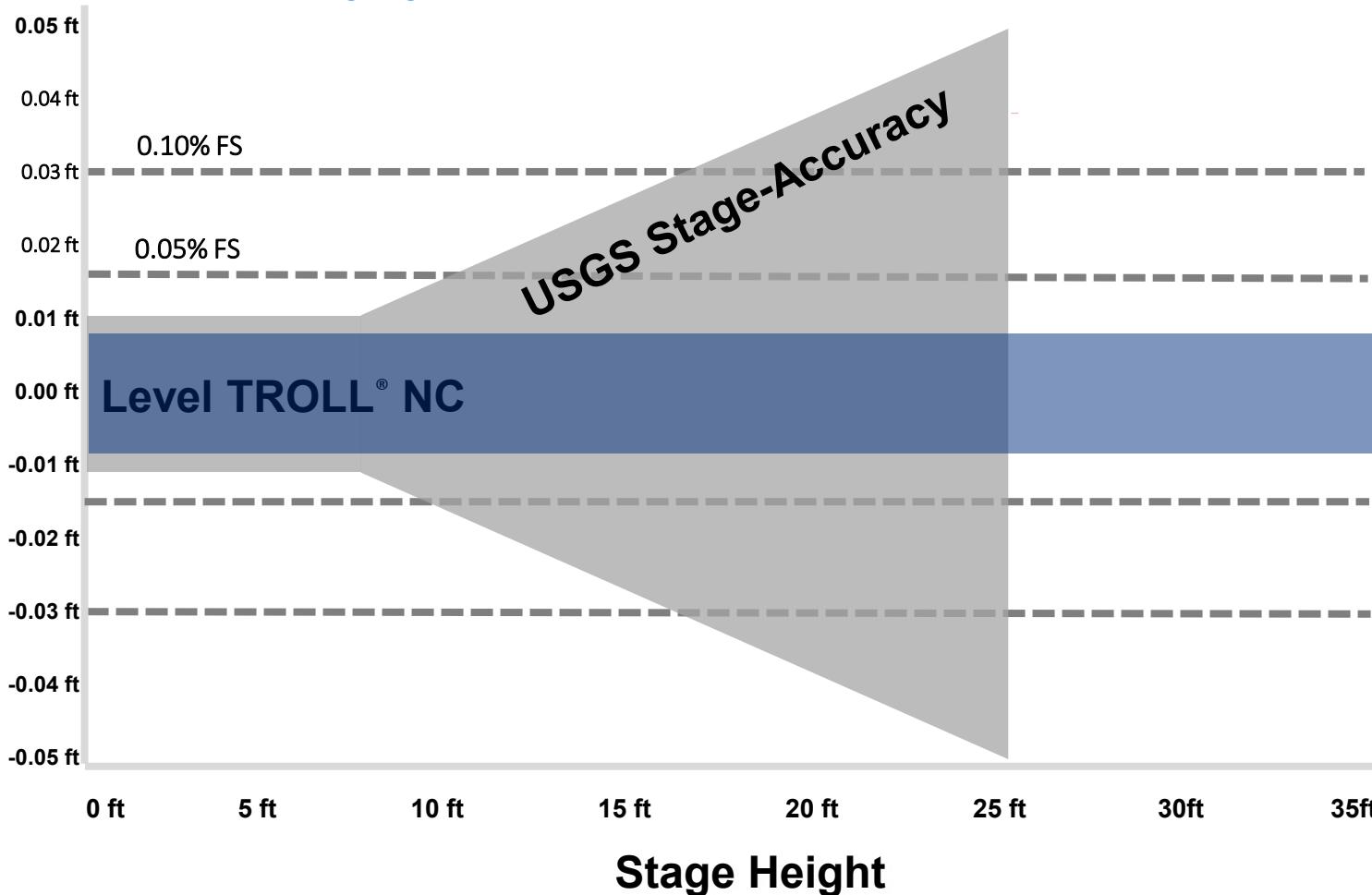
Questions?



water
simplified.

USGS Stage Accuracy

<https://pubs.usgs.gov/tm/tm3-a7/tm3a7.pdf>



- Office of Surface Water Stage-Accuracy Requirements
 - 0.01 ft or 0.10% of the effective stage
- The Level TROLL® NC exceeds the USGS surface water specification
 - Accuracy: ± 0.006 ft (± 2 mm) FS
 - Resolution: 0.001 ft (0.5 mm)