U.S. Geological Survey: MD-DE-DC

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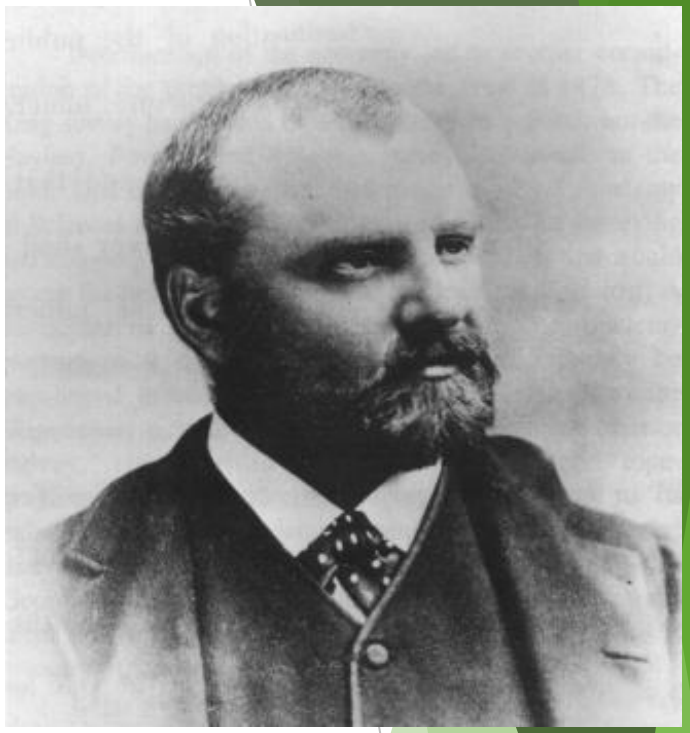
U.S. Geological Survey



- Created in 1879
- Department of Interior
- Charged with
  - classification of the public lands
  - examination of the geological structure, mineral resources, and products of the national domain
- Science Agency with NO regulatory authority
- Clarence King (Pictured) was the first Director.

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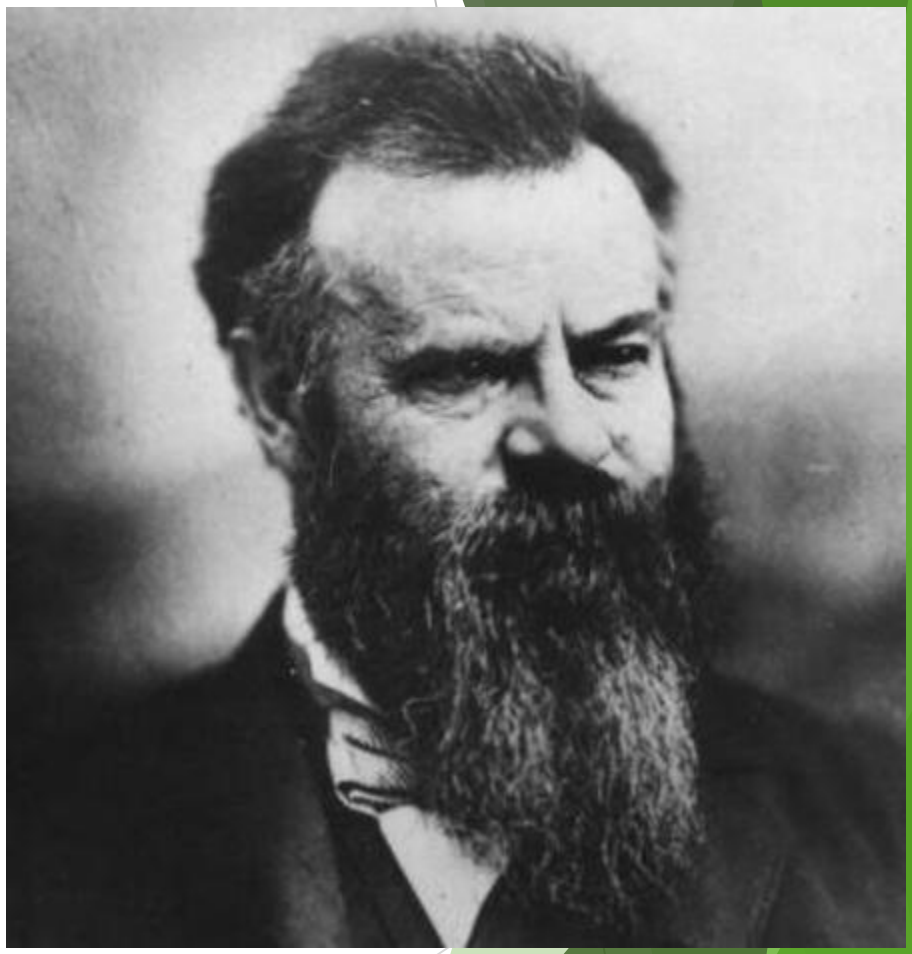
John Wesley Powell

- (1834-1902) served as the 2nd Director of the U.S. Geological Survey from 1881-1894.
- In 1861, Powell enlisted in the Union Army and was commissioned as captain. He lost his right arm at the elbow in the Battle of Shiloh but returned to active duty and was promoted to the rank of major.
- Spring of 1869, led an expedition down the Colorado River into a great, unknown, uncharted territory. Ninety-nine days later, after one of the most daring journeys in American history, Powell emerged from the Grand Canyon to become a contemporary American hero.
- Powell could be viewed as an early climate scientist his extensive experience and observations in the West led to his belief that lands west of the 100th meridian were not generally suitable for agricultural development.
- **In 1878 proposed that state boundaries to be drawn from the Western territories should be based on watershed areas.**



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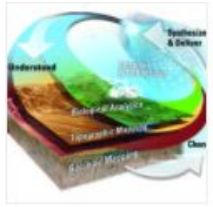
5 Mission Areas within USGS and how you may recognize them

- Natural Hazards: Earthquakes
- Core Science Systems: Topo Maps
- Energy and Minerals: Oil and gas Maps
- Ecosystems: Fish Health, bird banding
- Water Resources: Gages



Core Science Systems

CSS leads USGS's mission as the civilian mapping agency for the Nation. We conduct detailed surveys and develop high quality, highly accurate topographic, geologic, hydrographic, and biogeographic maps and data. Our maps allow precise planning for critical mineral assessments; energy development; infrastructure projects; urban planning; flood prediction; emergency response; and hazard mitigation.

Ecosystems

The USGS Ecosystems Mission Area provides science to help America achieve sustainable management and conservation of biological resources in wild and urban spaces, and places in between. Ecosystems scientists examine consequences of climate and environmental change; effects of management actions on communities, lands, and species; and risks and solutions to harmful invasive species, wildlife diseases, and contaminants in the environment.

Energy and Minerals

The Energy and Minerals Mission Area conducts research and assessments that focus on the location, quantity, and quality of mineral and energy resources, including the economic and environmental effects of resource extraction and use.

Natural Hazards

Every year in the United States, natural hazards threaten lives and livelihoods and result in billions of dollars in damage. We work with many partners to monitor, assess, and conduct targeted research on a wide range of natural hazards so that policymakers and the public have the understanding they need to enhance preparedness, response, and resilience.

Water Resources

Water information is fundamental to national and local economic well-being, protection of life and property, and effective management of the Nation's water resources. The USGS works with partners to monitor, assess, conduct targeted research, and deliver information on a wide range of water resources and conditions including streamflow, groundwater, water quality, and water use and availability.

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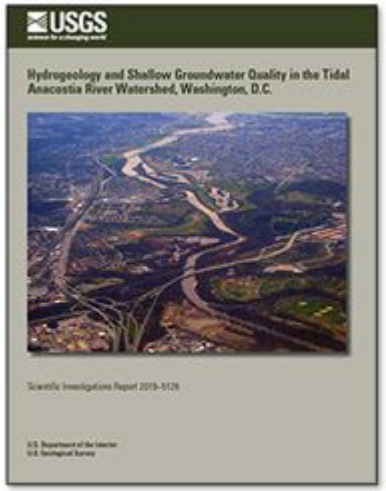
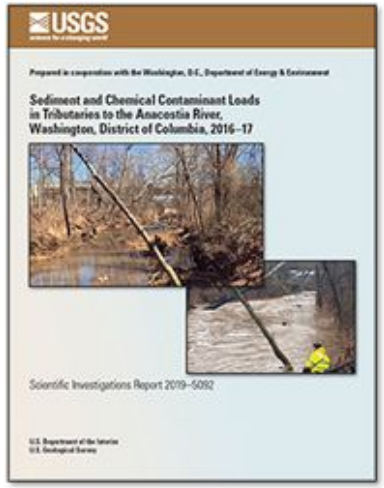
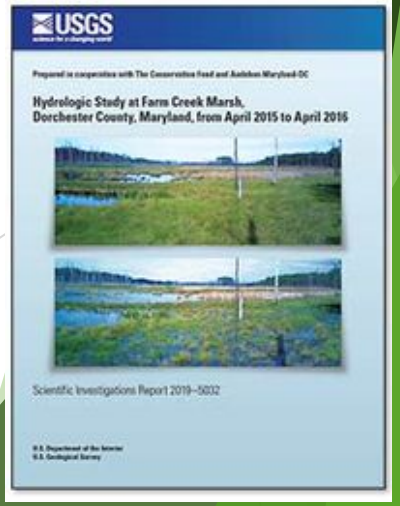
MD-DE-DC Water Science Center

- Over 90 scientists and support staff, including around 35 hydrologic technicians
- Collect, analyze and interpret hydrologic stream flow, groundwater and water-quality data
- 150+ Stream Gages







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USGS Funding

- The Water Mission Area of the USGS has a unique funding model.
- The majority of Gages are paid for by “Cooperators”
  - Typically Federal, State and Local agencies
  - Universities and Associations also fund data collection
- Flood Warning; infrastructure sizing; contaminant load estimates (Ches. Bay); minimum flows; and water balance needs are typical reasons for establishment
- Gages are either stand alone requests or part of a larger project

Form 9-1366
(May 2018)

U.S. Department of the Interior
U.S. Geological Survey
Joint Funding Agreement
FOR
Water Resource Investigations

Customer #: 6000000207
Agreement #: 20NTJFAND0053 Z7
Project #: NT00GT1 03ND
TIN #: 45-6002126

Fixed Cost Agreement YES[X] NO[ ]

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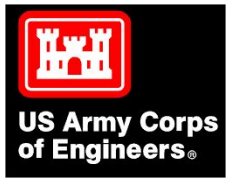
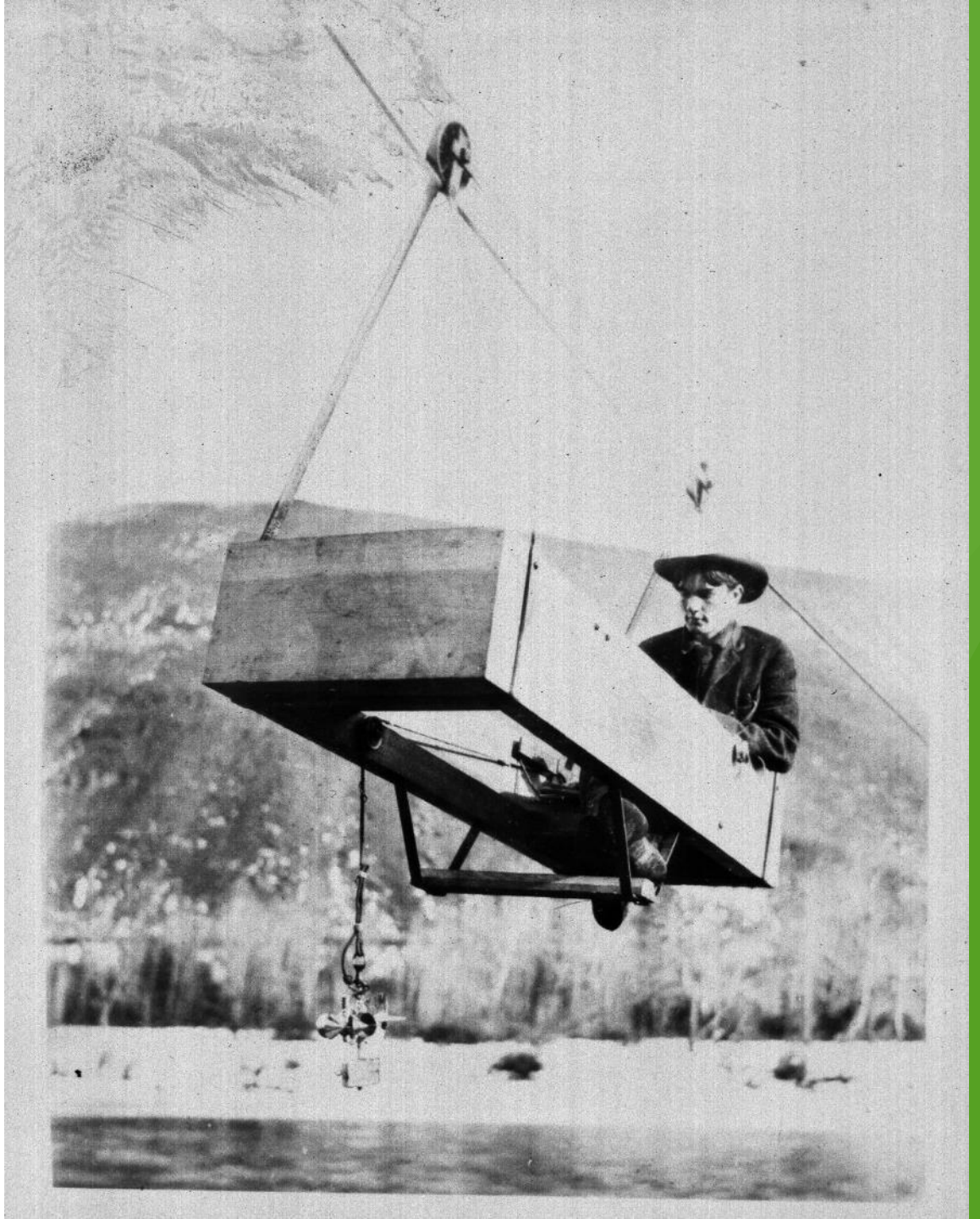
Thank You Cooperators!!!



USGS Stream Gages

- Ten years following the USGS's birth in 1879, and under the advisement of John Wesley Powell, the proposition to inventory the flow of all streams in the arid West and evaluate the potential for crop irrigation.
- In 1889, the foundation for modern water management began on the Rio Grande in Embudo, N.M
- Over the ensuing 136 years the USGS stream gaging program has grown to more than 11,300 gages spread across all 50 states plus territories.



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Continuous Parameters

Parameter Monitored
❑ Gage height, feet
❑ Discharge, cubic feet per second
❑ Temperature, water, degrees Celsius
❑ Specific conductance, water, unfiltered, microsiemens per centimeter at 25 degrees Celsius
❑ Depth to water level, feet below land surface
❑ pH, water, unfiltered, field, standard units
❑ Turbidity, water, unfiltered, monochrome near infra-red LED light, 780-900 nm, detection angle 90 +-2.5 degrees, formazin nephelometric units (FNU)
❑ Precipitation, total, inches
❑ Dissolved oxygen, water, unfiltered, milligrams per liter
❑ Estuary or ocean water surface elevation above NAVD 1988, feet
❑ Lake or reservoir water surface elevation above NAVD 1988, feet
❑ Discharge, tidally filtered, cubic feet per second
❑ Elevation of reservoir water surface above datum, feet
❑ Reservoir storage, acre feet
❑ Nitrate plus nitrite, water, in situ, milligrams per liter as nit
❑ Wind speed, miles per hour
❑ Wind direction, degrees clockwise from true north
❑ Mean water velocity for discharge computation, feet per second

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USGS Gages in the Inland Bays Watershed

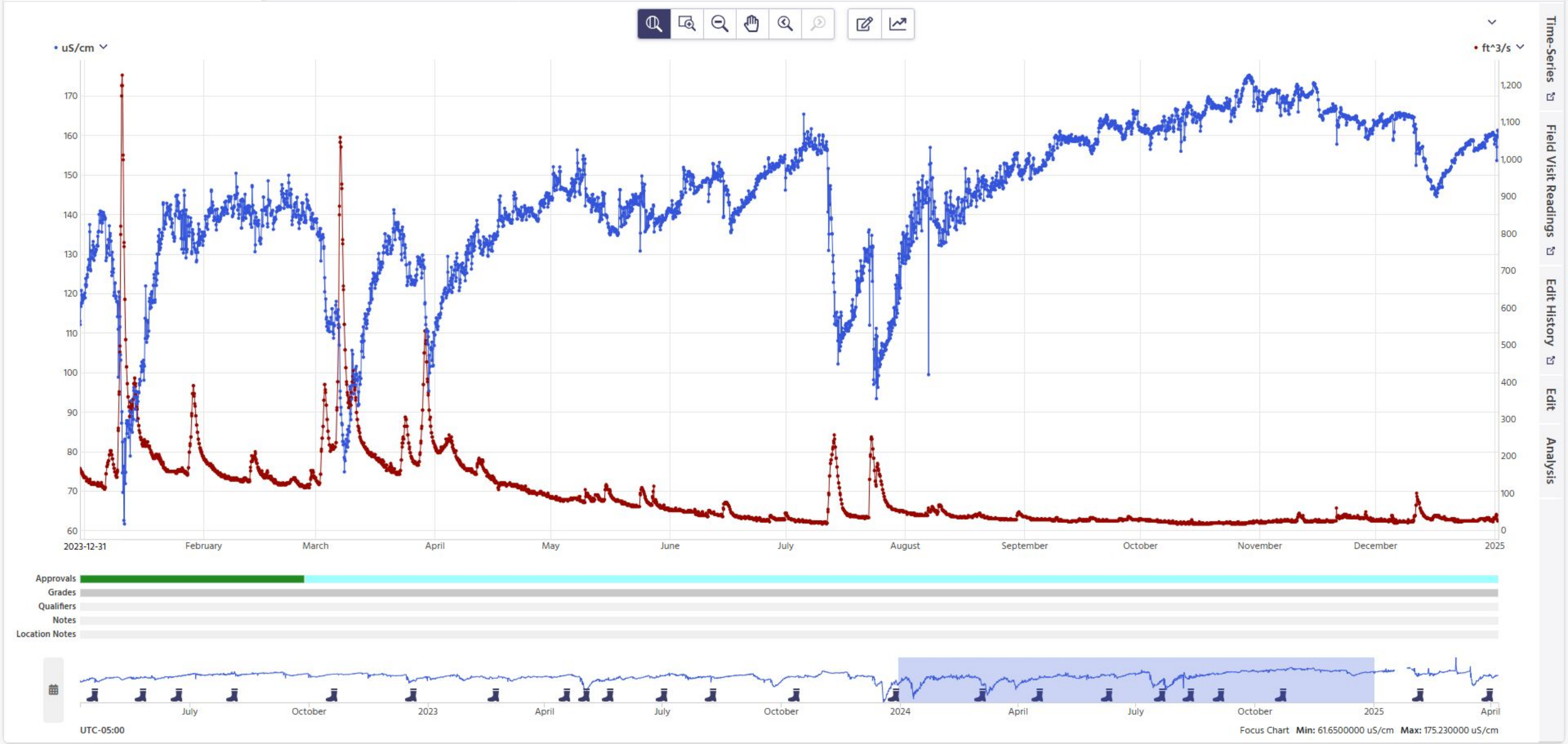
AQUARIUS Time-Series

Typical Year of Specific Conductance and Discharge at Millsboro Pond

Corrected Raw
Specific cond at 25C.Active
@01484525

Corrected
Discharge.Active
@01484525

Add Data Set



Time-Series
Field Visit Readings
Edit History
Edit
Analysis

AQUARIUS Time-Series

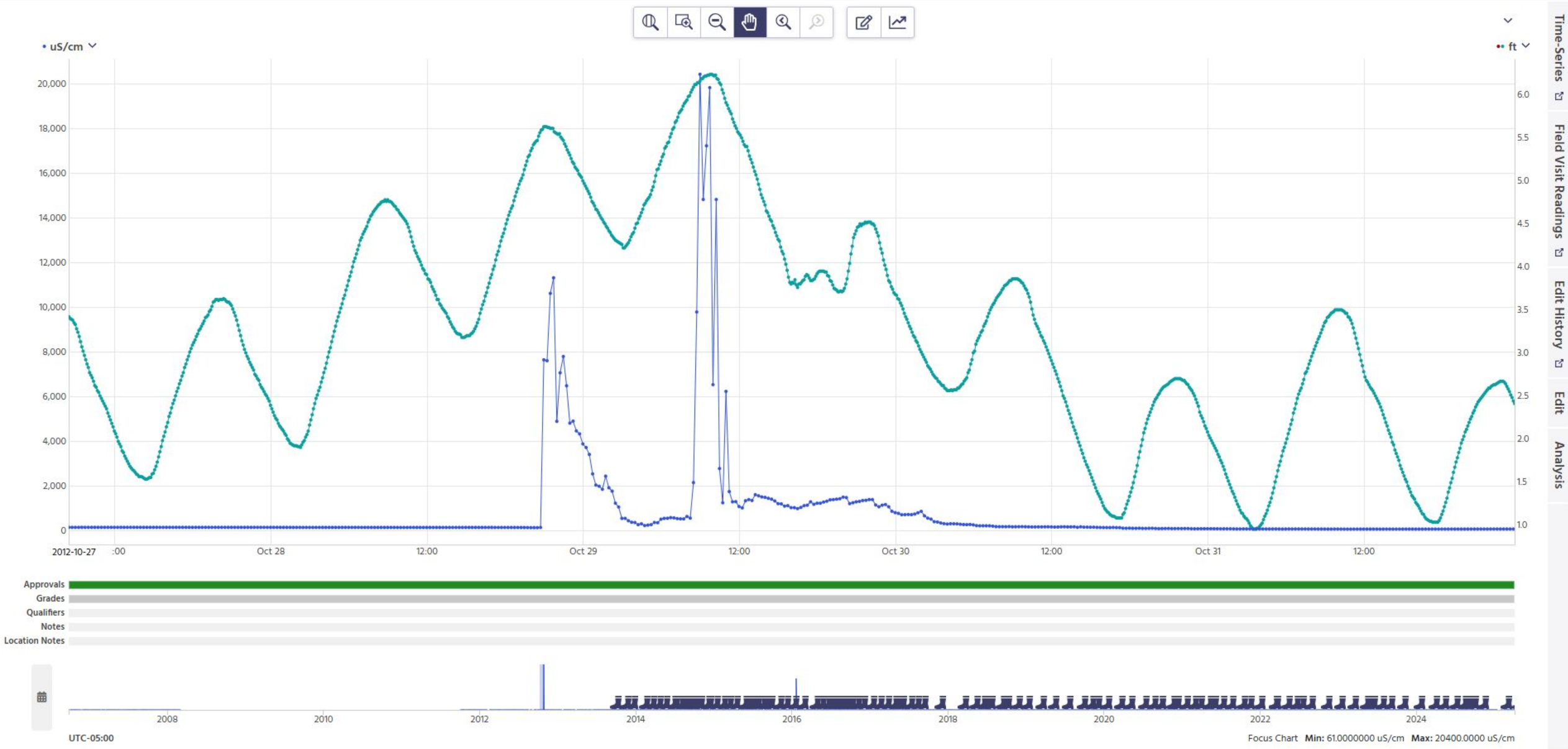
Inland Bays Overtop Millsboro Pond Low Head Dam

Corrected Raw
Specific cond at 25C.Active
@01484525

Corrected
Elevation, ocean/est, NAVD88.Active
@01484540

Corrected
Gage height.Discontinued
@01484540

Add Data Set



Time-Series
Field Visit Readings
Edit History
Edit
Analysis

AQUARIUS Time-Series

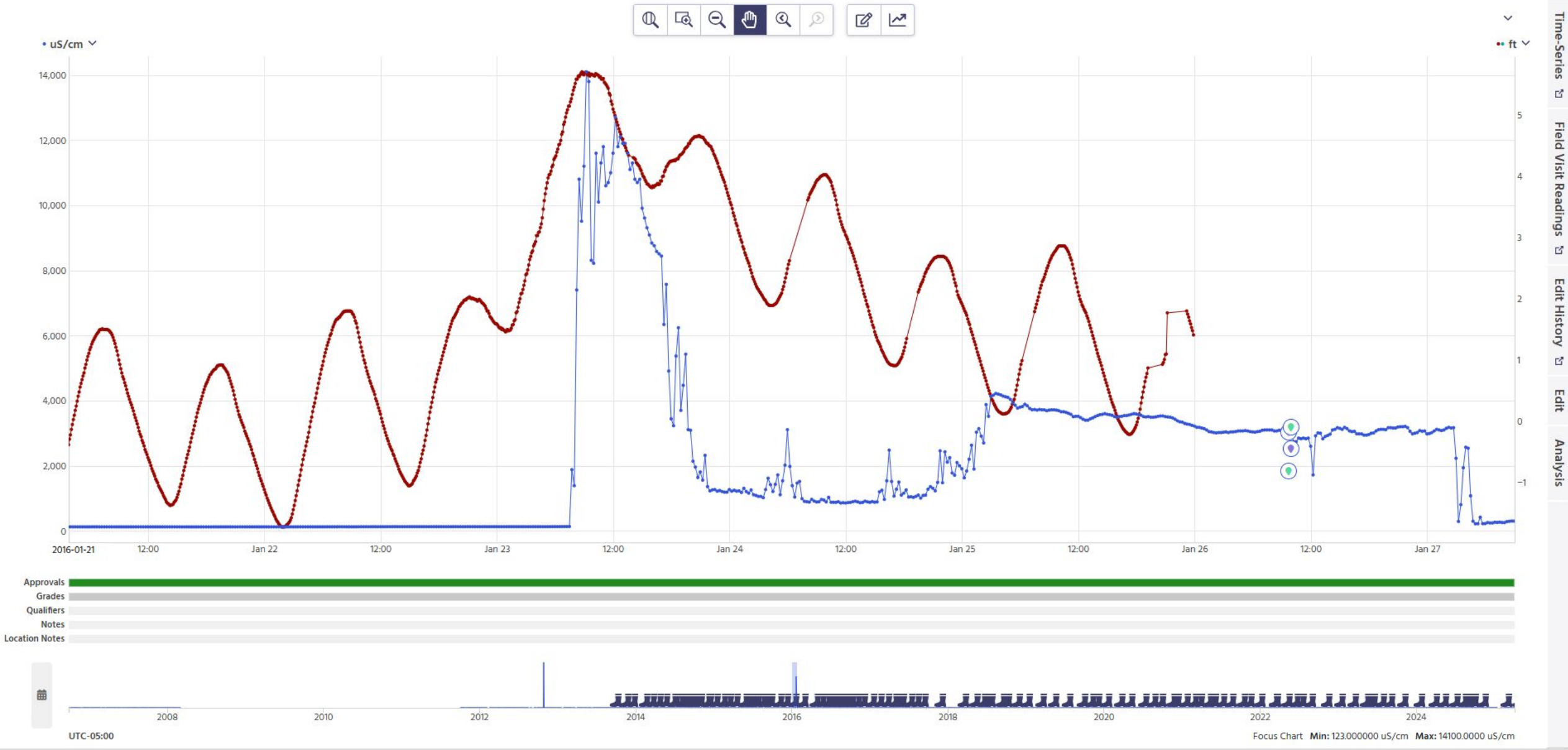
Inland Bays Overtop Millsboro Pond Low Head Dam Again

Corrected Raw
Specific cond at 25C.Active
@01484525

Corrected
Elevation, ocean/est, NAVD88.Active
@01484540

Corrected
Gage height.Discontinued
@01484540

Add Data Set



Time-Series
Field Visit Readings
Edit History
Edit
Analysis

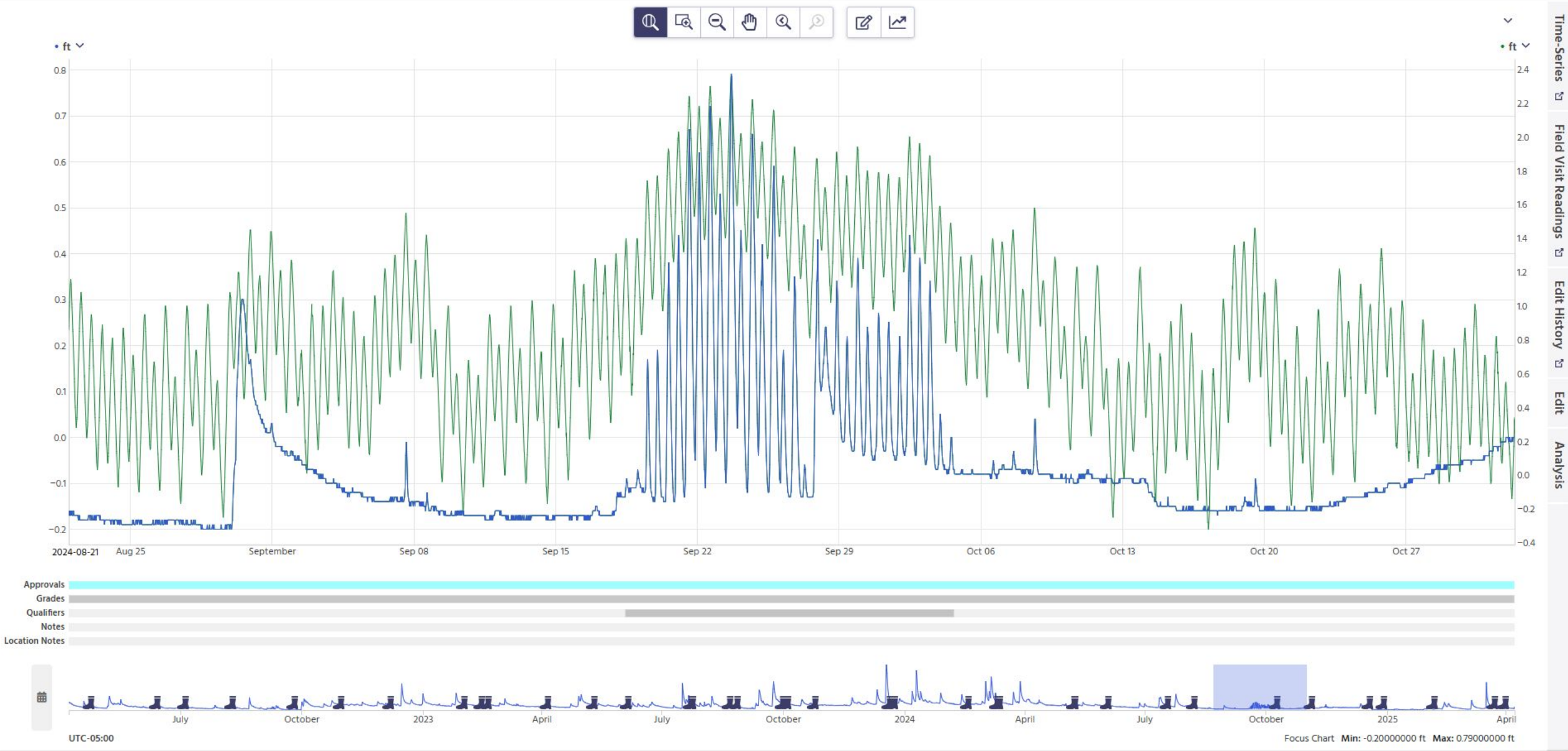
AQUARIUS Time-Series

Inland Bays Tidal Backwater on Streamflow

Corrected Raw
Gage height.Active
@01484695

Corrected
Elevation, ocean/est, NAVD88.Active
@01484696

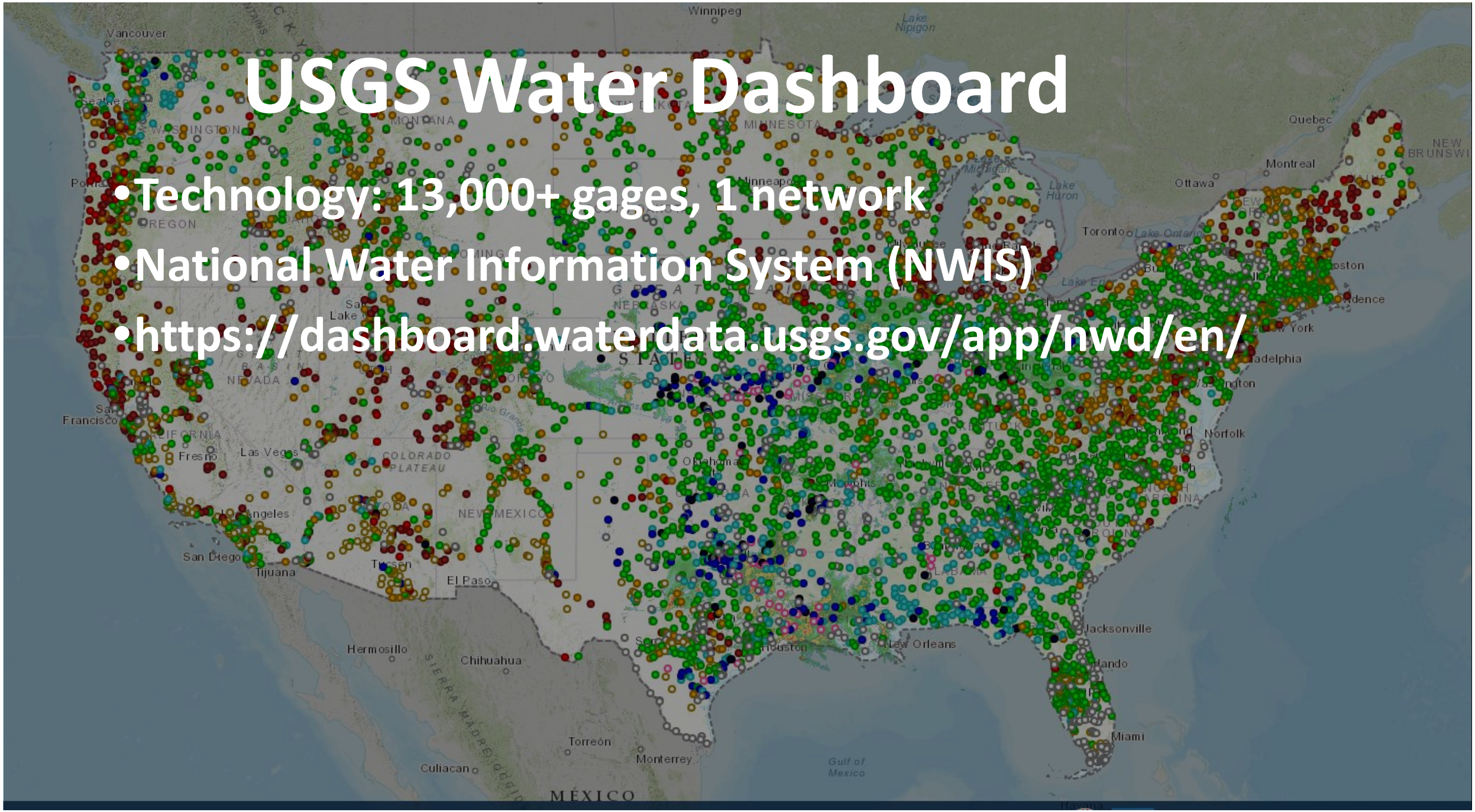
Add Data Set

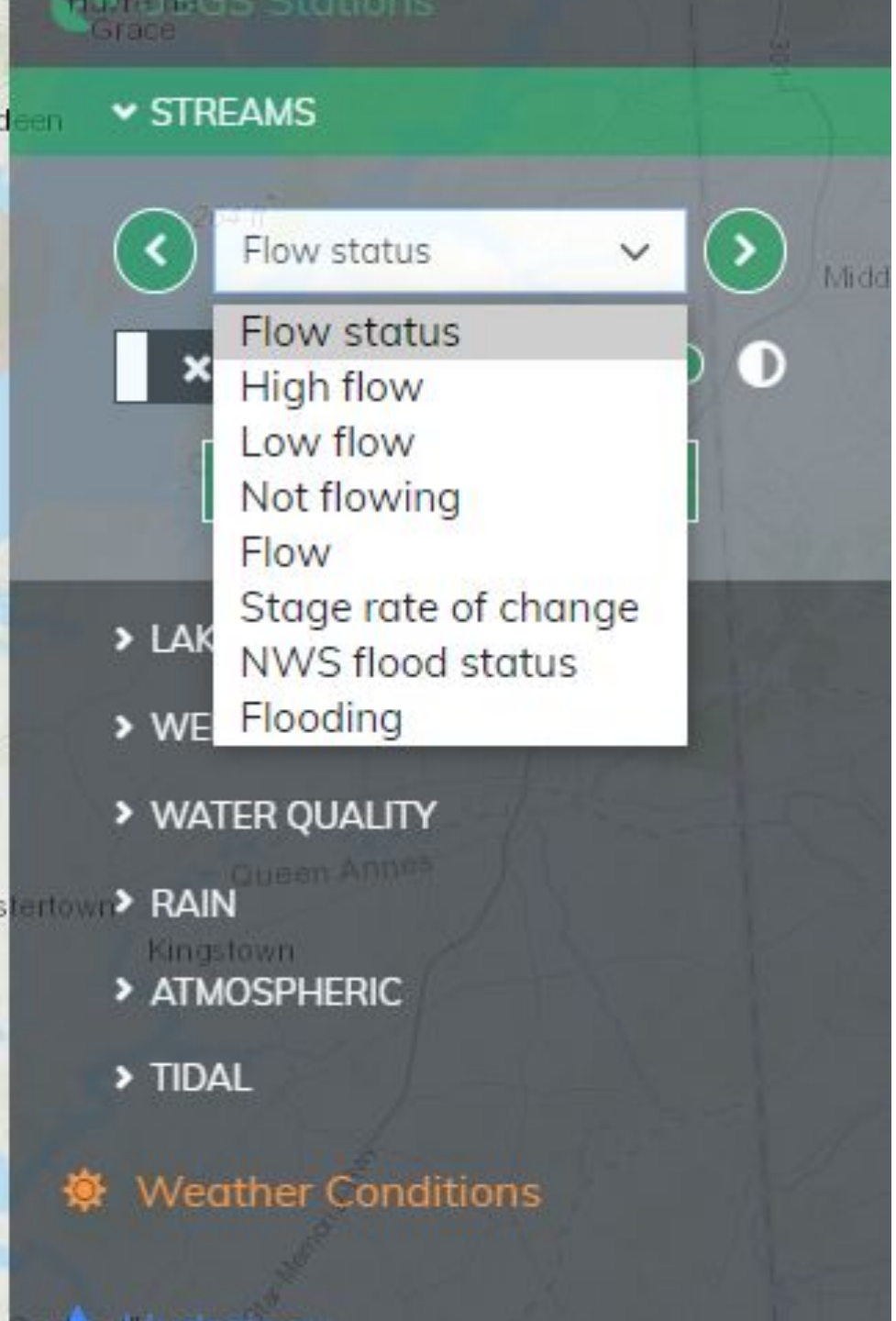


Time-Series
Field Visit Readings
Edit History
Edit
Analysis

USGS Water Dashboard

- Technology: 13,000+ gages, 1 network
- National Water Information System (NWIS)
- https://dashboard.waterdata.usgs.gov/app/nwd/en/





Stream Menu

- Number of different options for you to visualize what is going on in the area
- Stage rate of change may help plan trips
- Radar can be added to see where storms are going
- Past precipitation totals can be added as a layer to see how gages have reacted to a certain amount of precipitation

Questions?

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