

### NTN in West Virginia

Ten Stations

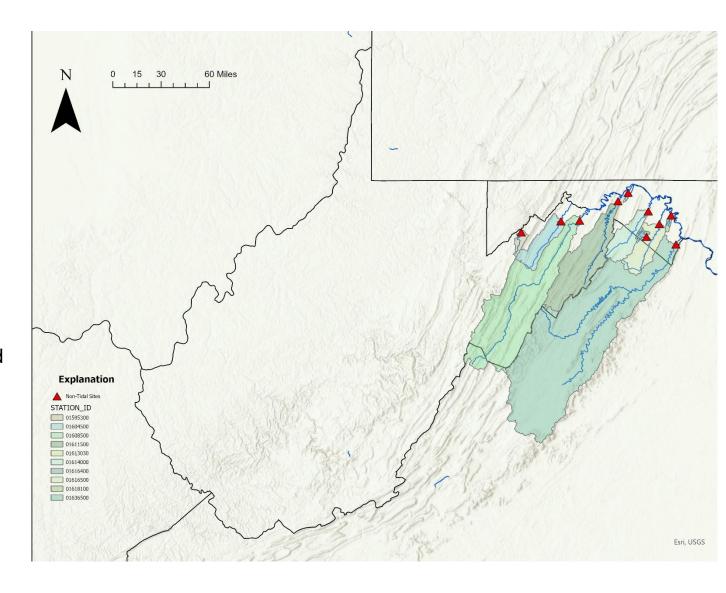
All in Potomac River Basin

Diverse set of sites

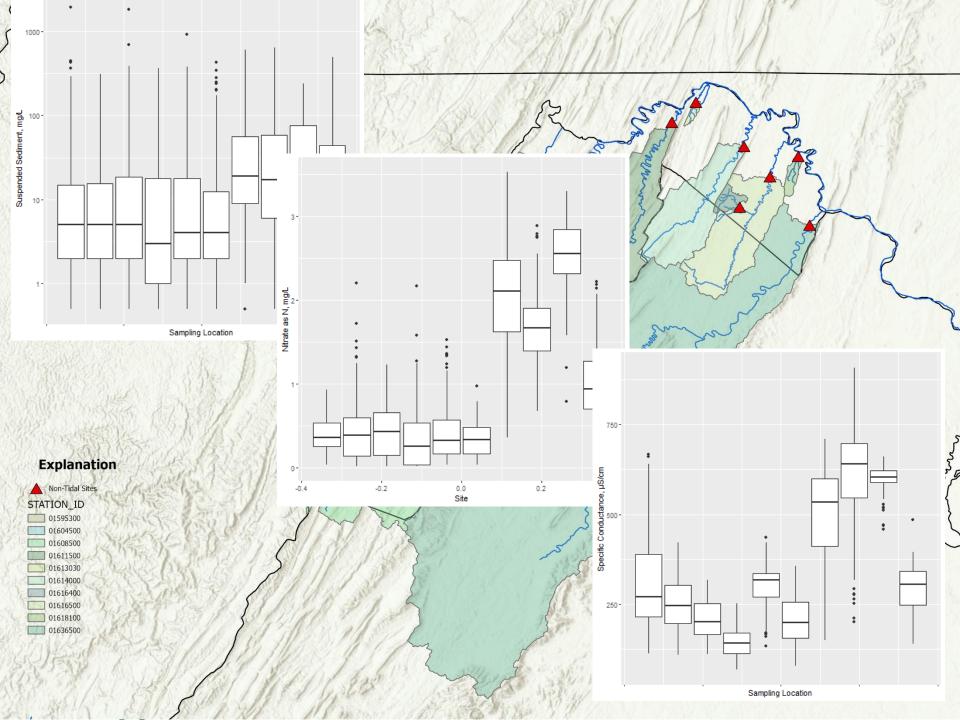
- Basins from <10 Mile<sup>2</sup> to >3,000 Mile<sup>2</sup>
- Physiography
- Mostly Valley and Ridge
- Appalachian Plateaus
- Blue Ridge

Start dates: 2005 to

2012



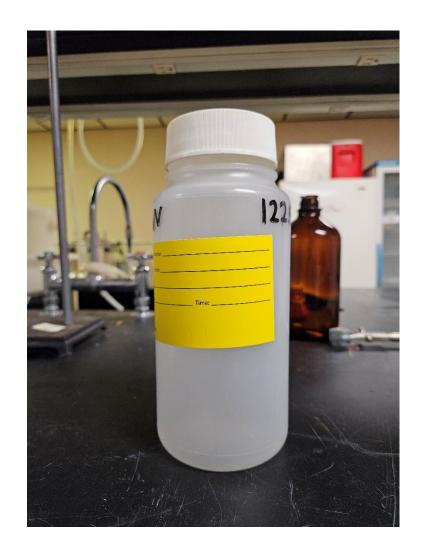


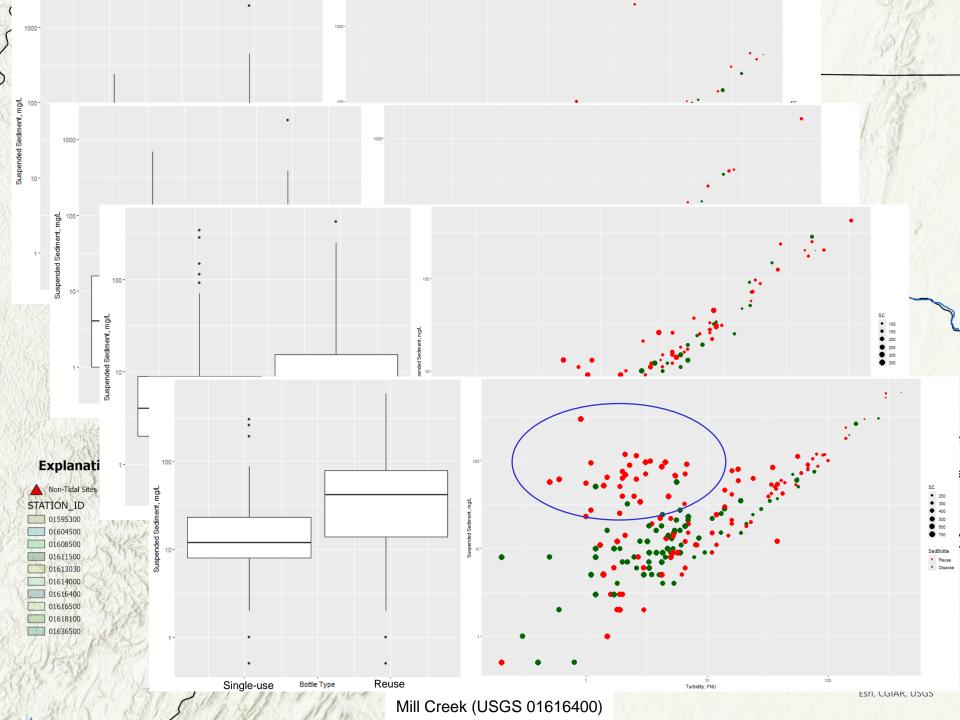


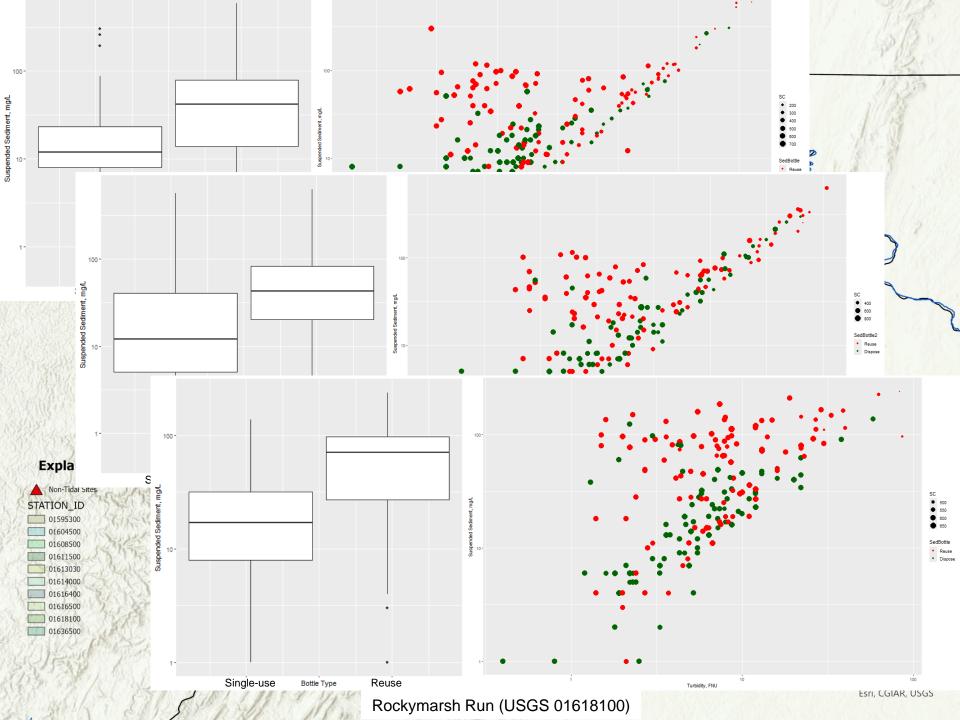
### **Bottle Change**

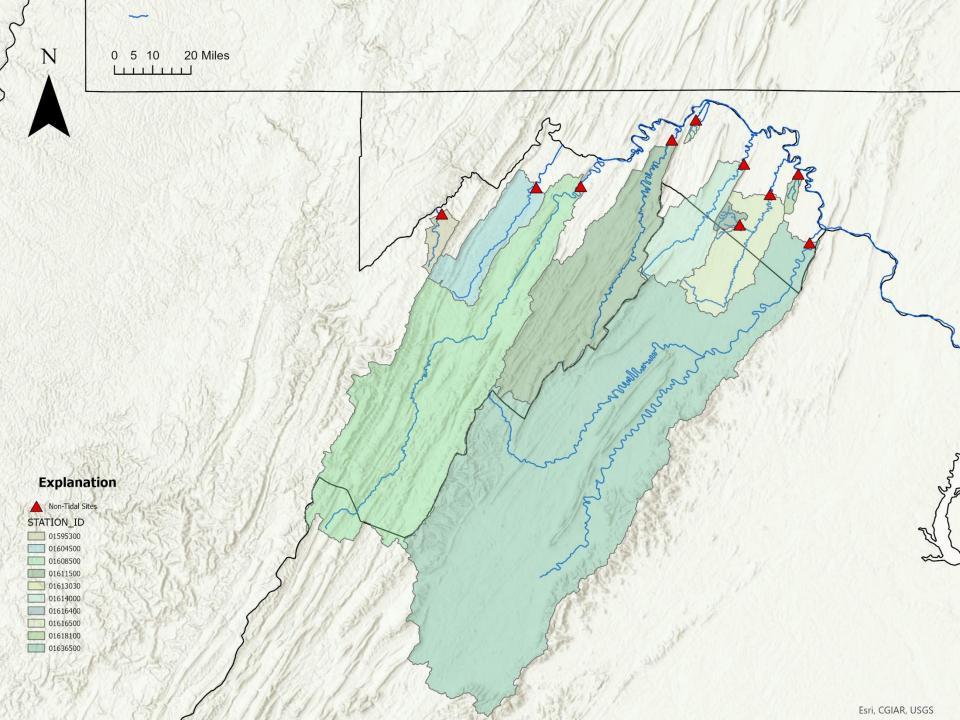
Requested by USGS Kentucky Sediment Lab (KSL)

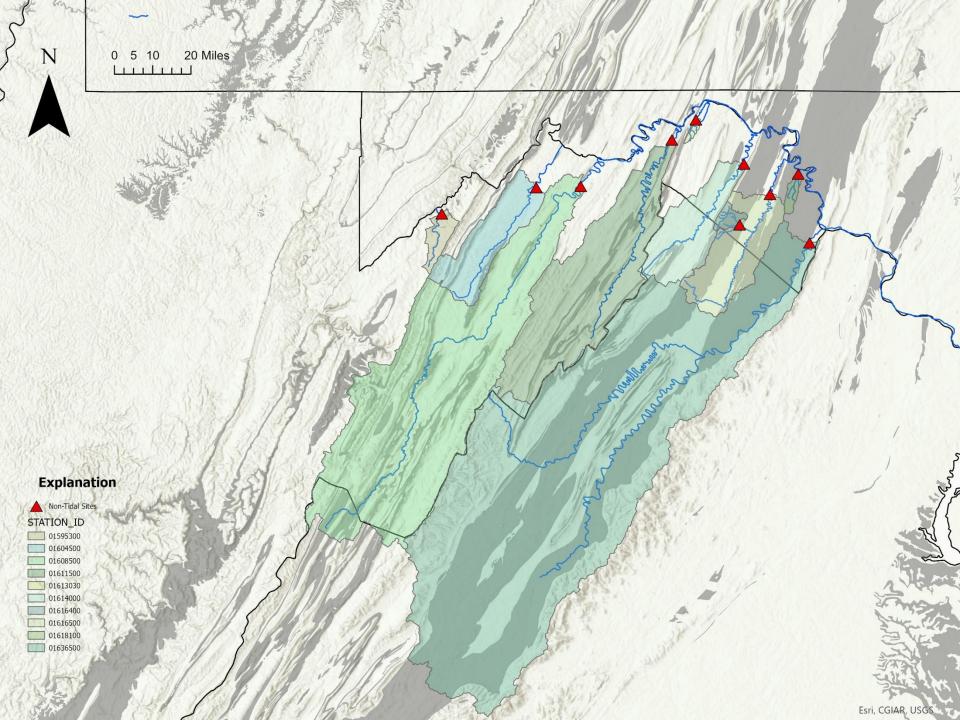
- Late 2016
- Change from
  - 500-mL disposable
  - 1-L HDPE reusable

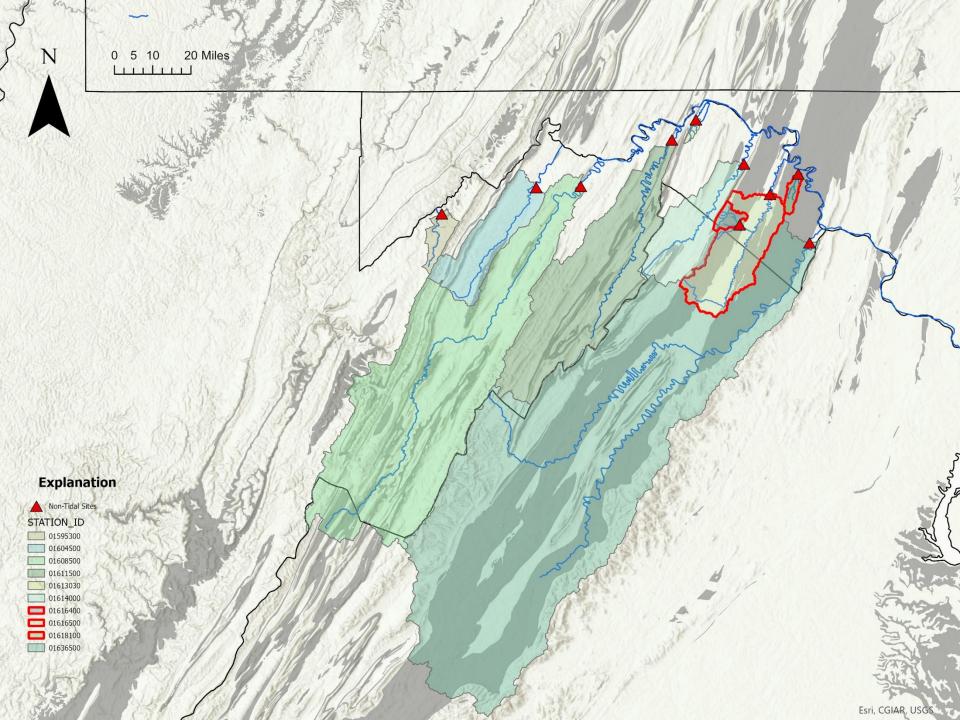


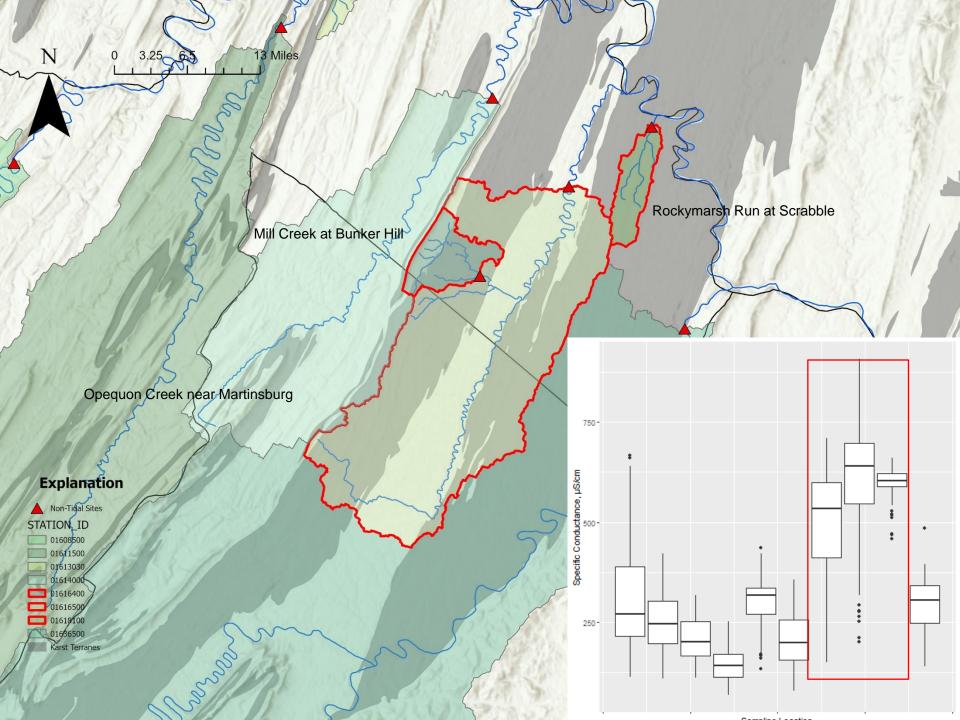












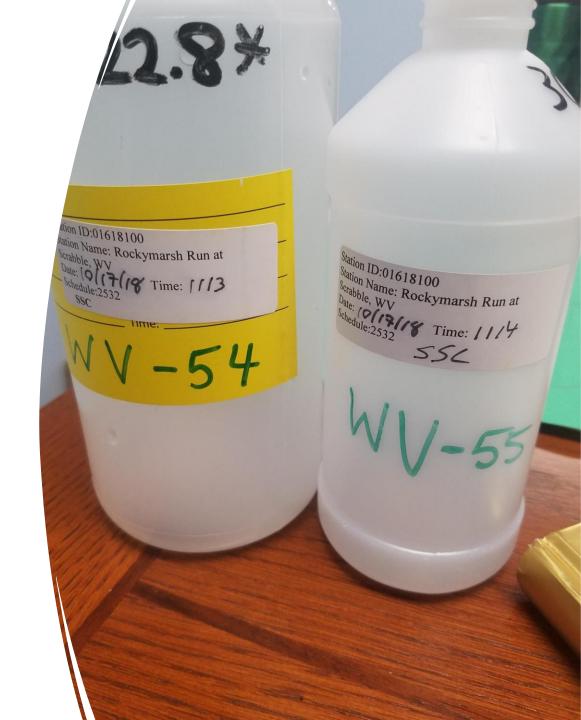
# Initial response

Additional QA samples:

A sediment bottle-type replicate for each sample

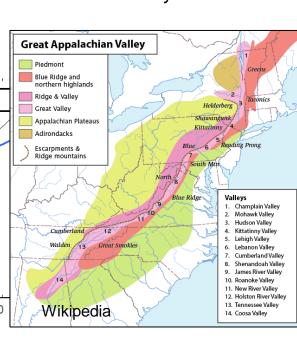
- Environmental samples
- Field blanks
- Replicates

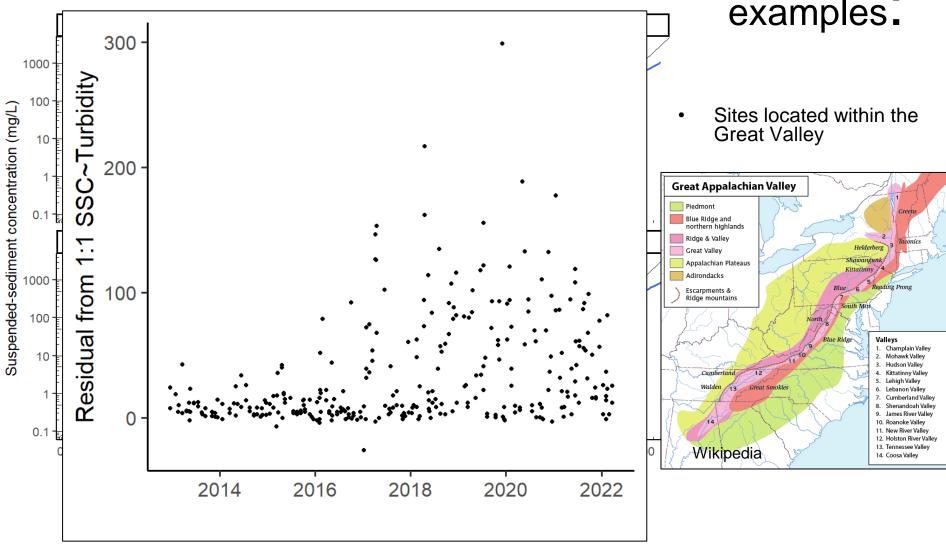
Consultation with Lab



### Roanoke & WV

examples.

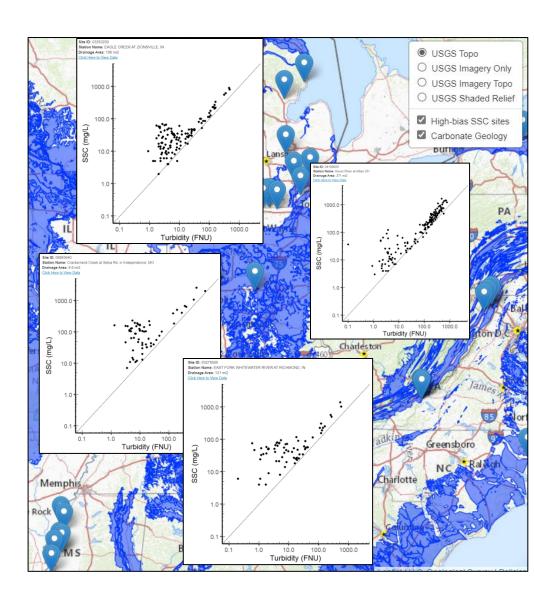






## Midwest examples:

- Other sites underlain by carbonate geology identified with similar 'high-bias' patterns in suspended sediment
- Elevated dissolved solids are possibly contributing to the 'high-bias' samples
- https://rpubs.com/smiller\_us gs/979521





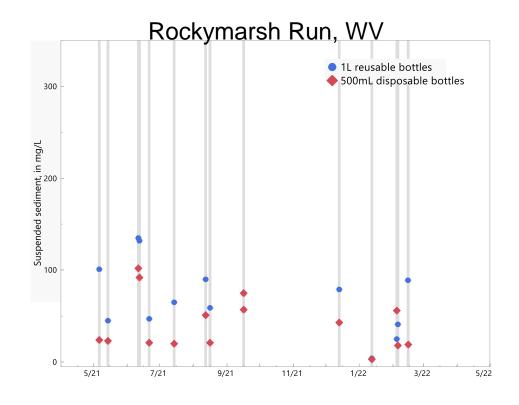


## Replicates



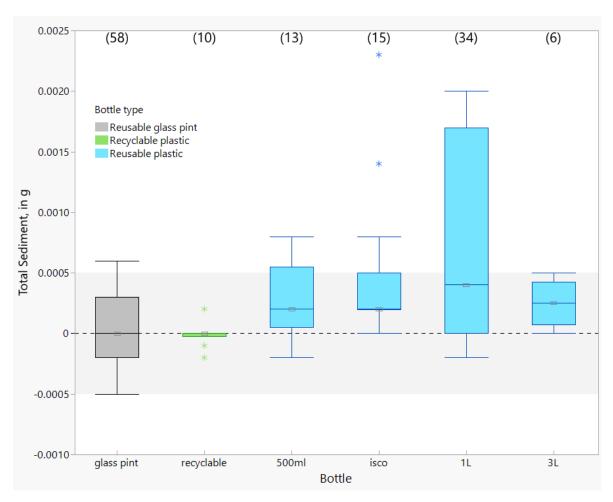
### WV replicates

- Multiple bottle types
- Reusable 1L bottles tended to have higher SSC
  - Cannot use the spatula in small bottles, used extra DI rinses
  - Issue with reusable bottles?





# Blanks – comparison of bottle types







# Possible Contributing Factors

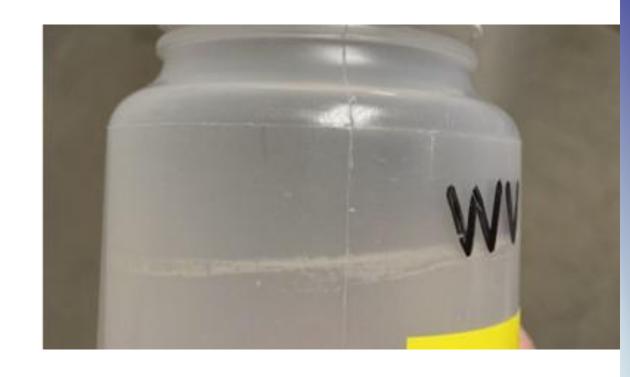
### High Dissolved Solids

 Precipitation of dissolved constituents

#### **Bottles**

- Material
  - Plastics
  - Glass
- Condition
  - Wear
  - Scrapes
- Residue
  - Environmental
  - Cleaning

Holding time



## Take aways

- High bias in SSC has been observed for sites with high dissolved solids (as measured by specific conductance).
- Not isolated to one lab. Findings shared with the USGS Sediment Labs Workgroup.
- KSL incorporated new procedures:
  - SpCond measurements for all samples
  - Additional rinses for samples with SpCond > 500 μS/cm
  - Acid rinsing of all sample bottles during cleaning
- Plastic sample bottles should be routinely replaced, or glass bottles used.



### NTN Considerations

- Karst Terranes are present throughout the Chesapeake Bay Watershed
- Many NTN sampled watersheds contain karst terranes
- Careful examinations of SSC:Turbidity are needed
- Field staff should pay close attention to conditions of reusable sample vessels

