

Providing educational resources for neighbors residing on northern Idaho lakes

> Presented by Citizen Scientist Spokane River – Susan Stiger

# Goals of Monitoring

- Collect data that will be used to protect and improve water bodies
- Identify potential water quality problems by viewing trends over time
- Provide property owners with an opportunity to learn about aquatic ecosystems





## Thank you to our 2024 Bay Watchers

Spokane River – Susan and Bob Stiger Cougar Bay – David Wold Steamboat Point – Bryce Cyr Panhandle Yacht Club – Jim Duff Beauty and Blue Creek Bay – Barb and Bob McFarland Leaning Pine Point – Joe and Lynn Morris Rockford Bay – Julie Fromm Cave Bay – Steve Wilson Cottonwood Bay, Harlow Point, and Carey Bay – Chris Kellogg





# **Collaborative Monitoring on CDA**

- •Collaborative Monitoring: USGS, IDEQ, the Coeur d'Alene Tribe, and Bay Watchers volunteers all contribute to tracking lake health.
- •Long-Term Data: Federal, state, and tribal agencies collect multi-decade data on nutrients, heavy metals, and ecological trends.
- •Bay Watchers Program: Since 2019, volunteers have gathered nearshore water quality data, offering local insight and early warnings.

https://cdapress.com/news/2025/mar/09/our-gemunderstanding-water-quality-monitoring-on-coeur-dalenelake/







Bay Watchers

### **Steamboat Point**

Volunteer: Cyr

Dock Coordinates: 47°38′40″ N, 116°47′20″ W Monitoring Coordinates: 47°38'41" N, 116°47'18" W

Max depth at dock: 7 meters

Lake Education Ambassadors

Site Description: Temperature and Secchi data from Cyr dock on Steamboat Point (near Steven's Point), profile data taken about 12 m off dock.



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-8-9/30/20 Temp °C

-X-10/11/2021 Temp °C ---- 6/29/22 Temp °C

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#### **Overview of Monitoring findings**

from USGS, Idaho Department of Environmental Quality and the Coeur d' Alene Tribe

- Warming Waters: Surface temperatures have risen ~1.1°C over 30 years, affecting oxygen levels, nutrient cycling, and lake mixing.
- **Anoxic Events:** Low-oxygen conditions at the lake bottom may trigger release of heavy metals from sediments, impacting water quality.
- **Informed Lake Management:** Connecting central lake monitoring with citizen science in bays helps support science-based lake management decisions.
- Data Integration Efforts: Agencies/governments are working to align long-term datasets with Bay Watchers' nearshore data through a collaborative platform.





## Monitoring the Spokane River in Idaho





# Expanded Monitoring Brings Focus to Key Issues on the Spokane River

- The River is narrow and shallow, with development along much of its length (residential, community parks, church camps, etc.).
- Increasing recreational pressures over the last decade have resulted in conflicts amongst types of recreation and between recreation and the long-term health of the River.
- Surveys of those living and recreating on the River indicate wake surfing is one of the top concerns.
  - Surf boat wakes are exponentially more powerful than other boat wakes
  - Because of their size and power, surf boat wakes have led to significant erosion, property damage, serious injuries and other safety issues, scouring river sediments, and interference with other types of recreation
  - Controls established on all County waterways were lifted on the Spokane River in 2023, leaving it with much less protection than other waterways
- Invasive species transport and the River's "carrying capacity" are gaining attention



#### Surf Boat Wakes Uniquely Stir up More Sediments than Other Boats



Lake Education Ambassadors



## Concerns Regarding Release of Contaminated Sediments Merit More Study

- Historical mining in the Cd'A River Basin has resulted in elevated concentrations of some metals (e.g., Cd, Pb, Zn) in water and sediment of Cd'A Lake and downstream in the Spokane River in ID and WA\*. Streambed sediment was enriched in some trace elements...with the maximum enrichment in the Upper Spokane River.... Some of the elevated concentrations were high enough to present potential aquatic and human-health problems.\*\*
- Sediment samples collected by INBRE student showed Pb at "contaminated" levels and Zn at "high" levels in silt fraction.
- Water samples collected in the midst of a surf boat wake showed total phosphorus at levels 5-10 times higher than Cd'A Lake and total recoverable lead an order of magnitude higher than the lake (2.8 to 7.9 micrograms/L).
- Further study is warranted

<sup>^</sup>Caldwell, R. R. and C. L. Bowers (2003), Surface-Water/Ground-Water Interaction of the Spokane River and the Spokane Valley/Rathdrum Prairie Aquifer, Idaho and Washington, USGS 03-4239

\*\*As referenced in Caldwell and Bowers (2003): Grosbois and others (2001), The effect of mining and related activities on the sediment-trace element geochemistry of Lake Coeur d'Alene, Idaho, USA, Part III, Downstream effects—the Spokane River Basin: Hydrological Processes, v. 15.



## Bay Watchers Data can Inform Discussions on How to Balance Competing Values on the Spokane River



## **Further Resources**

https://onlinelibrary.wiley.com/doi/full/10.1002/rra.4438

https://olis.oregonlegislature.gov/liz/2019R1/Downloads/CommitteeMeetingDocument/159 409 (Testimony of Dr Gregor Macfarlane to Oregon State Legislature)

J. Marr et al (2002), U of Minn St Anthony Falls Laboratory, SAFL Project Report 600, A Field Study of Maximum Wave Height, Total Wave Energy, and Maximum Wave Power Produced by four Recreational Boats on a Fresh Water Lake.

Lake Windermere Recreational Impact and Sediment Quality Assessment, Larratt Aquatic Consulting and Ecoscape Environmental Consultants, August 2024

Videos:

- <u>youtube.com/watch?v=zmkK\_zVIKGs&t=3s</u> (boat wakes on Spokane River)
- <u>youtube.com/watch?v=XuUvWnIXRPo&t=7s</u> (surf boat wake impacts Big Cedar Lake)

