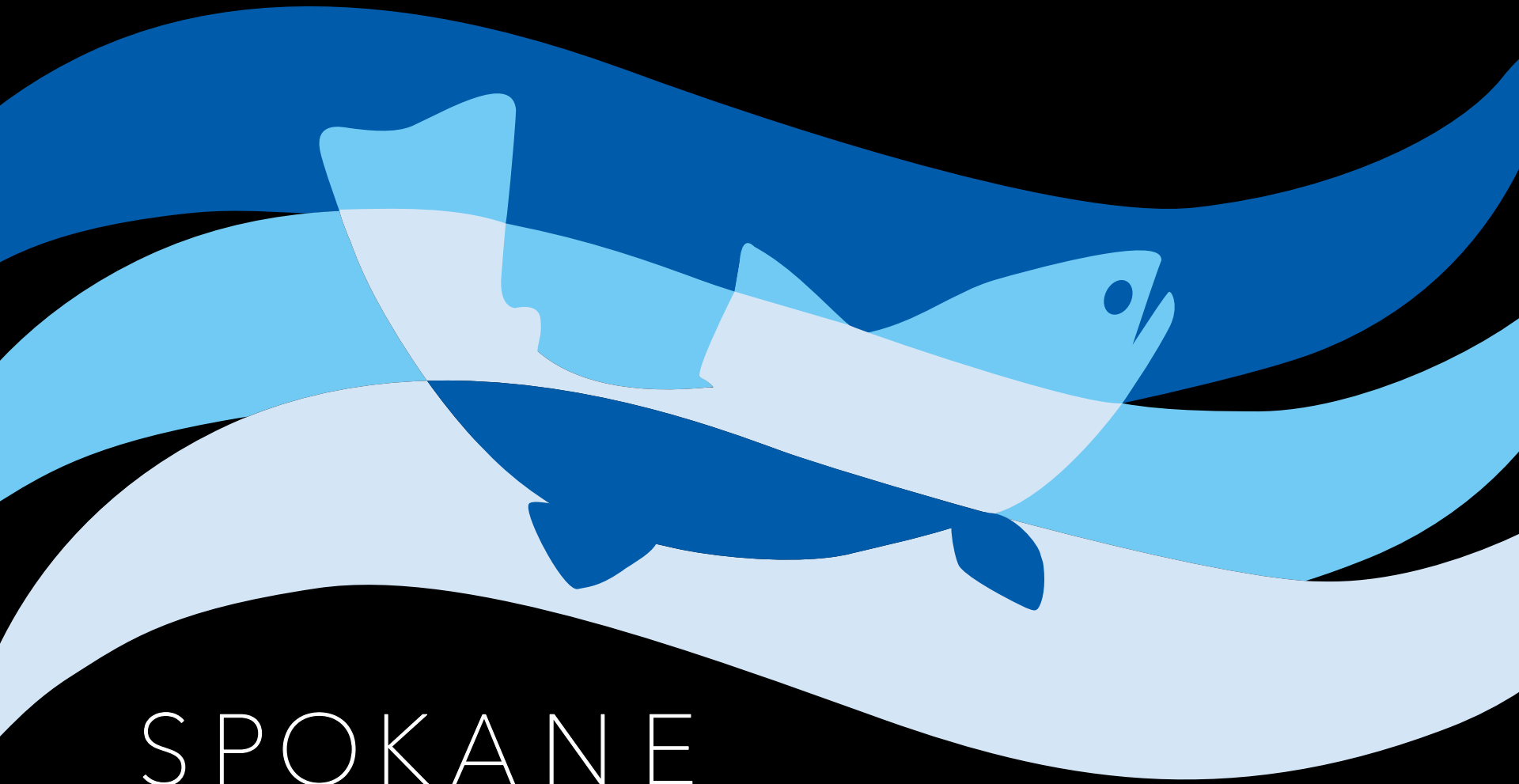

SPOKANE RIVERKEEPER®

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Community Science Turbidity/Sediment Monitoring Study

Jule Schultz, Spokane Riverkeeper
Jule@spokaneriverkeeper.org, 509-464-7632

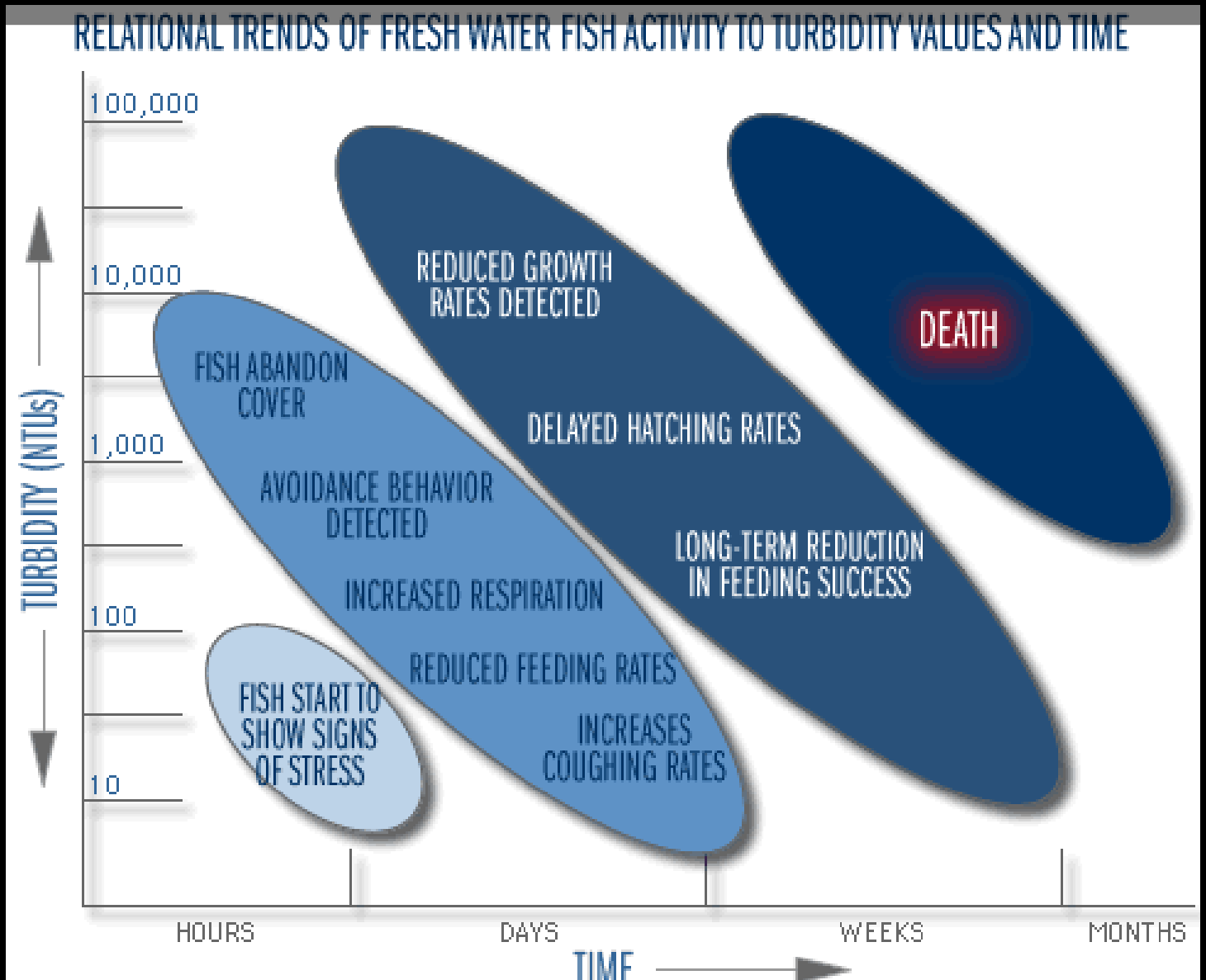
A cooperative study with:

TROUT UNLIMITED SPOKANE FALLS

SPOKANE RIVERKEEPER®

Pollution from Hangman Creek

Turbidity is bad for aquatic life



Native Fish Recovery


Pathway to Clean Water
From Observation to Policy?
Community Recoginition of Water Quality Issue
Community Science
Agency Science?
Policy/TMDL or $$ to Watershed
Action in Watershed

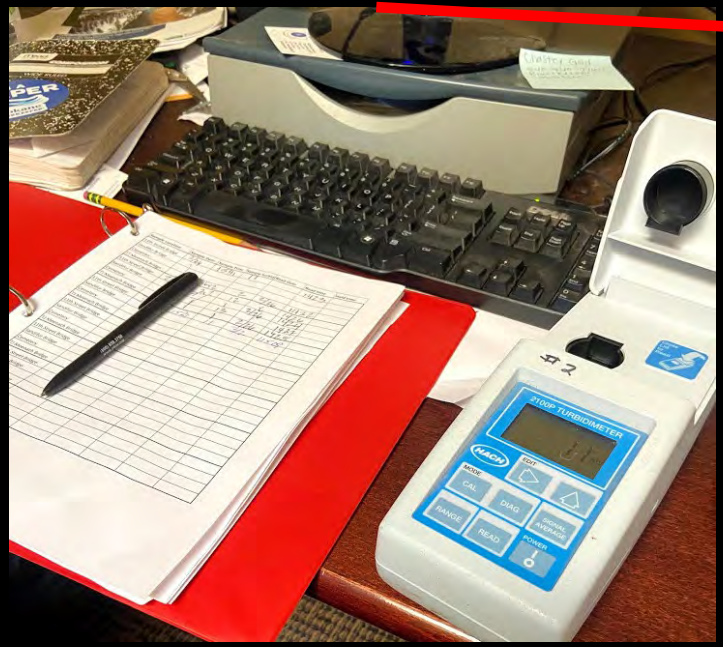
Lucky for us, this pollution:

- Is easy to monitor
- Has a state standard (regulated)

TURBIDITY

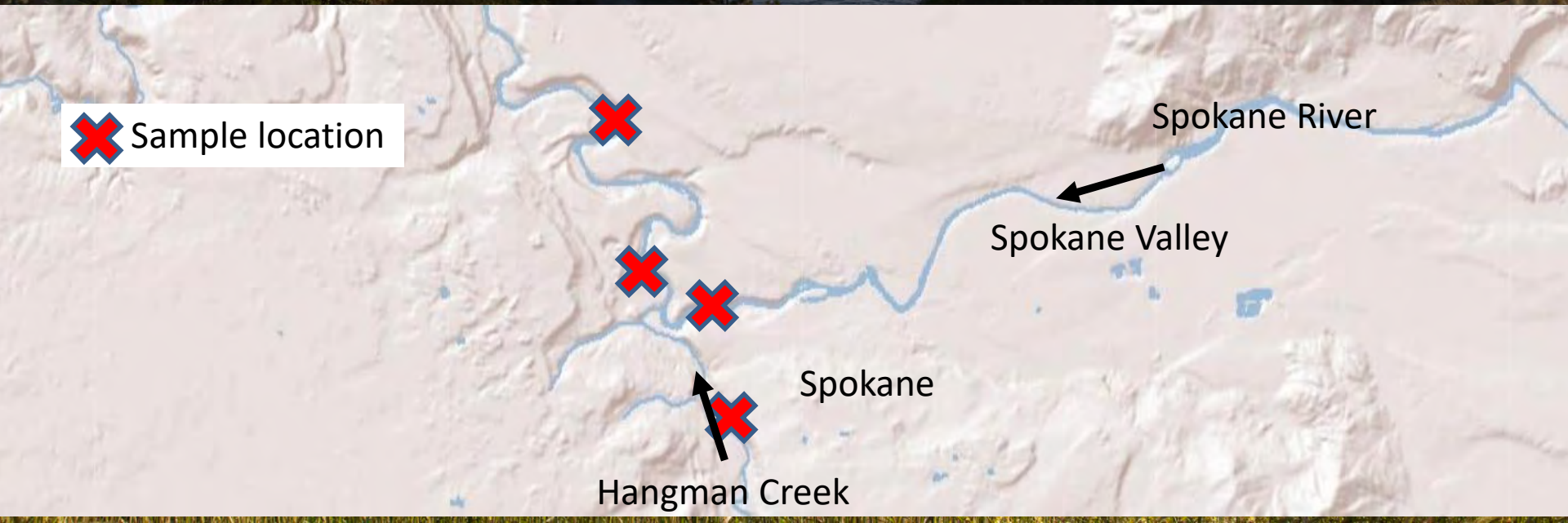
Turbidity is a measure of how light is refracted off particles in the water. (WAC 173-201A-200 (1) Aquatic life uses (e) Aquatic life turbidity criteria): water quality standard for Salmonid

Spawning, Rearing, and Migration and specifically Non-anadromous Interior Redband Trout
not to exceed **5 NTU** over background when the background is 50 NTU or less

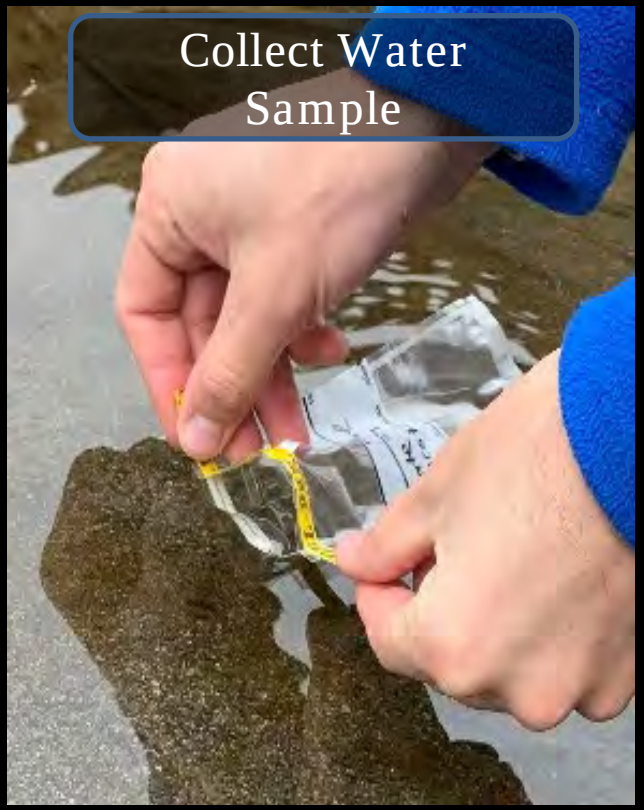


Study Design

Take samples and readings for turbidity at locations designed to show the impact of Hangman Creek sediments on water clarity in the Spokane River.



What Volunteers Do



Volunteer Participation

2023 Samples Through End of March

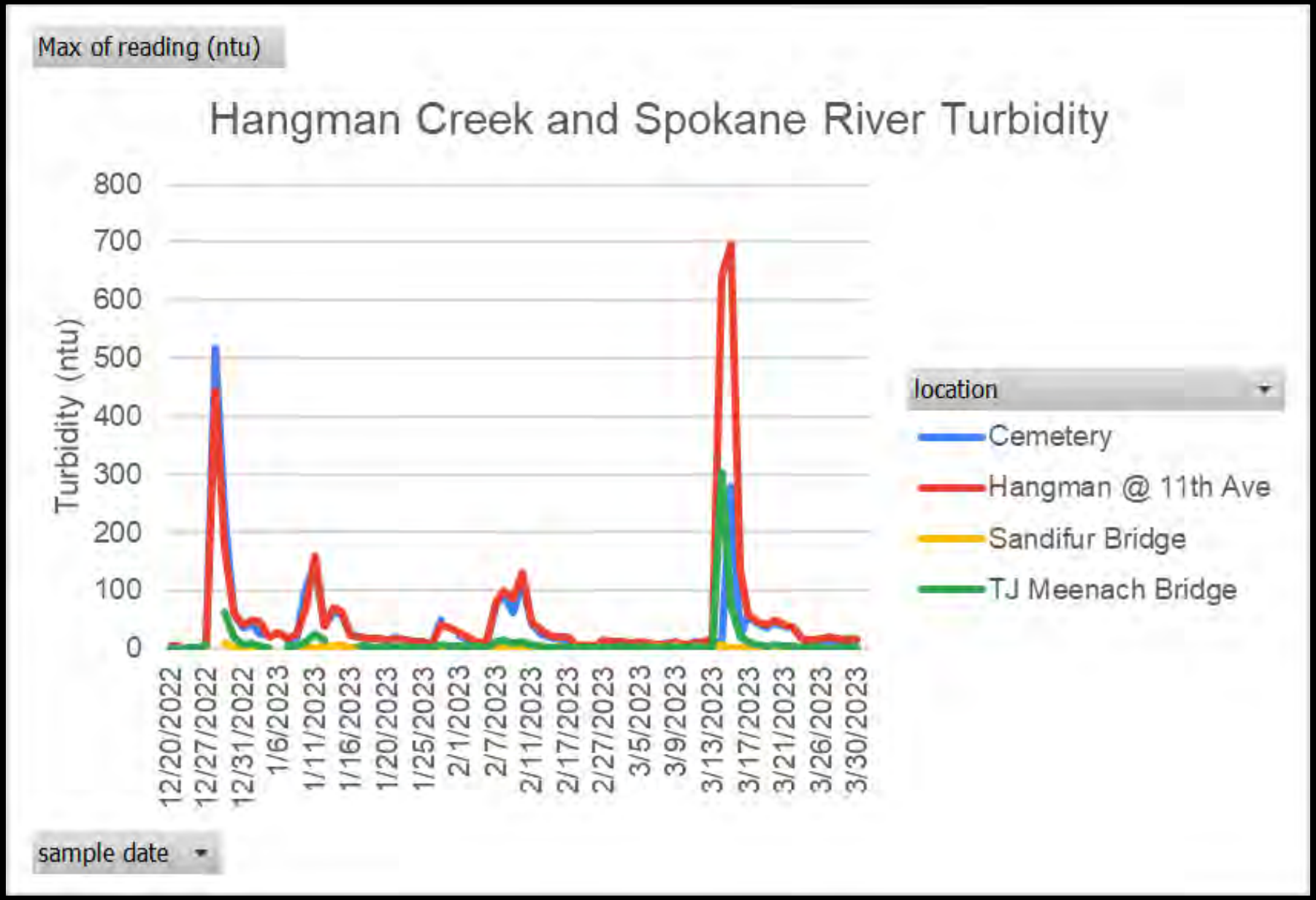
- 26 volunteers
- 79 Sample Runs
- 279 Samples

Photos since Feb ‘22

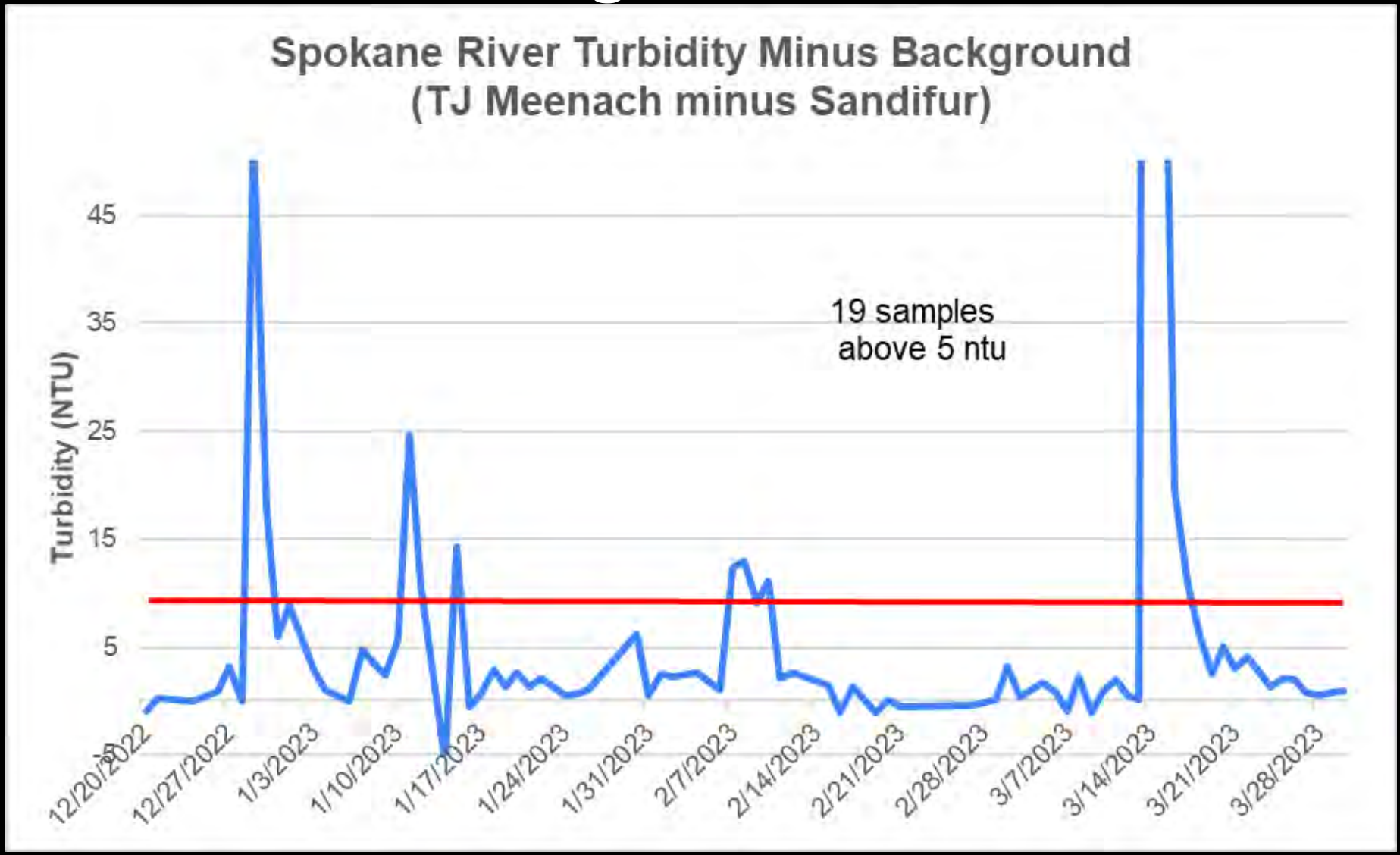
- 150 photos
- 58 Submitters

Chronolog Photos

2023 Data


Max of reading (ntu)
Hangman Creek and Spokane River Turbidity
Turbidity (ntu)
800
700
600
500
400
300
200
100
0
12/20/2022
12/27/2022
12/31/2022
1/6/2023
1/11/2023
1/16/2023
1/20/2023
1/25/2023
2/1/2023
2/7/2023
2/11/2023
2/17/2023
2/27/2023
3/5/2023
3/9/2023
3/13/2023
3/17/2023
3/21/2023
3/26/2023
3/30/2023
location
Cemetery
Hangman @ 11th Ave
Sandifur Bridge
TJ Meenach Bridge
sample date

Turbidity Violations In Spokane River Due to Hangman Creek-2023



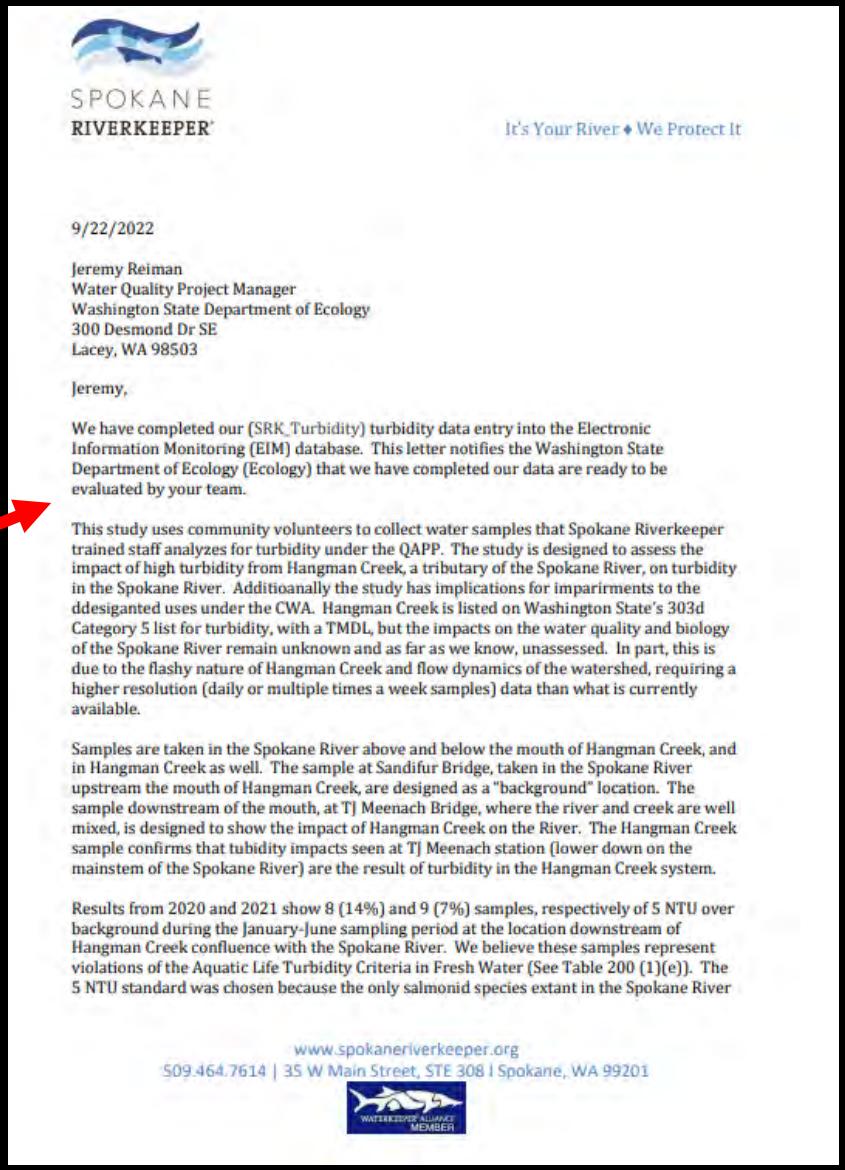
What do we do with the data?

Advocate!

Dear Ecology: Our data shows the river is polluted. Please help us clean it up.

Sincerely,

Spokane Riverkeeper & Community Scientists



SPOKANE RIVERKEEPER

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9/22/2022

Jeremy Reiman
Water Quality Project Manager
Washington State Department of Ecology
300 Desmond Dr SE
Lacey, WA 98503

Jeremy,

We have completed our (SRK_Turbidity) turbidity data entry into the Electronic Information Monitoring (EIM) database. This letter notifies the Washington State Department of Ecology (Ecology) that we have completed our data are ready to be evaluated by your team.

This study uses community volunteers to collect water samples that Spokane Riverkeeper trained staff analyzes for turbidity under the QAPP. The study is designed to assess the impact of high turbidity from Hangman Creek, a tributary of the Spokane River, on turbidity in the Spokane River. Additioanally the study has implications for imparirments to the ddesiganted uses under the CWA. Hangman Creek is listed on Washington State's 303d Category 5 list for turbidity, with a TMDL, but the impacts on the water quality and biology of the Spokane River remain unknown and as far as we know, unassessed. In part, this is due to the flashy nature of Hangman Creek and flow dynamics of the watershed, requiring a higher resolution (daily or multiple times a week samples) data than what is currently available.

Samples are taken in the Spokane River above and below the mouth of Hangman Creek, and in Hangman Creek as well. The sample at Sandifur Bridge, taken in the Spokane River upstream the mouth of Hangman Creek, are designed as a "background" location. The sample downstream of the mouth, at TJ Meenach Bridge, where the river and creek are well mixed, is designed to show the impact of Hangman Creek on the River. The Hangman Creek sample confirms that tubidity impacts seen at TJ Meenach station (lower down on the mainstem of the Spokane River) are the result of turbidity in the Hangman Creek system.

Results from 2020 and 2021 show 8 (14%) and 9 (7%) samples, respectively of 5 NTU over background during the January-June sampling period at the location downstream of Hangman Creek confluence with the Spokane River. We believe these samples represent violations of the Aquatic Life Turbidity Criteria in Fresh Water (See Table 200 (1)(e)). The 5 NTU standard was chosen because the only salmonid species extant in the Spokane River

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WATERKEEPER ALLIANCE MEMBER

35 W. MAIN : SUITE 300

SPOKANE, WA 99203

jule@spokaneriverkeeper.org

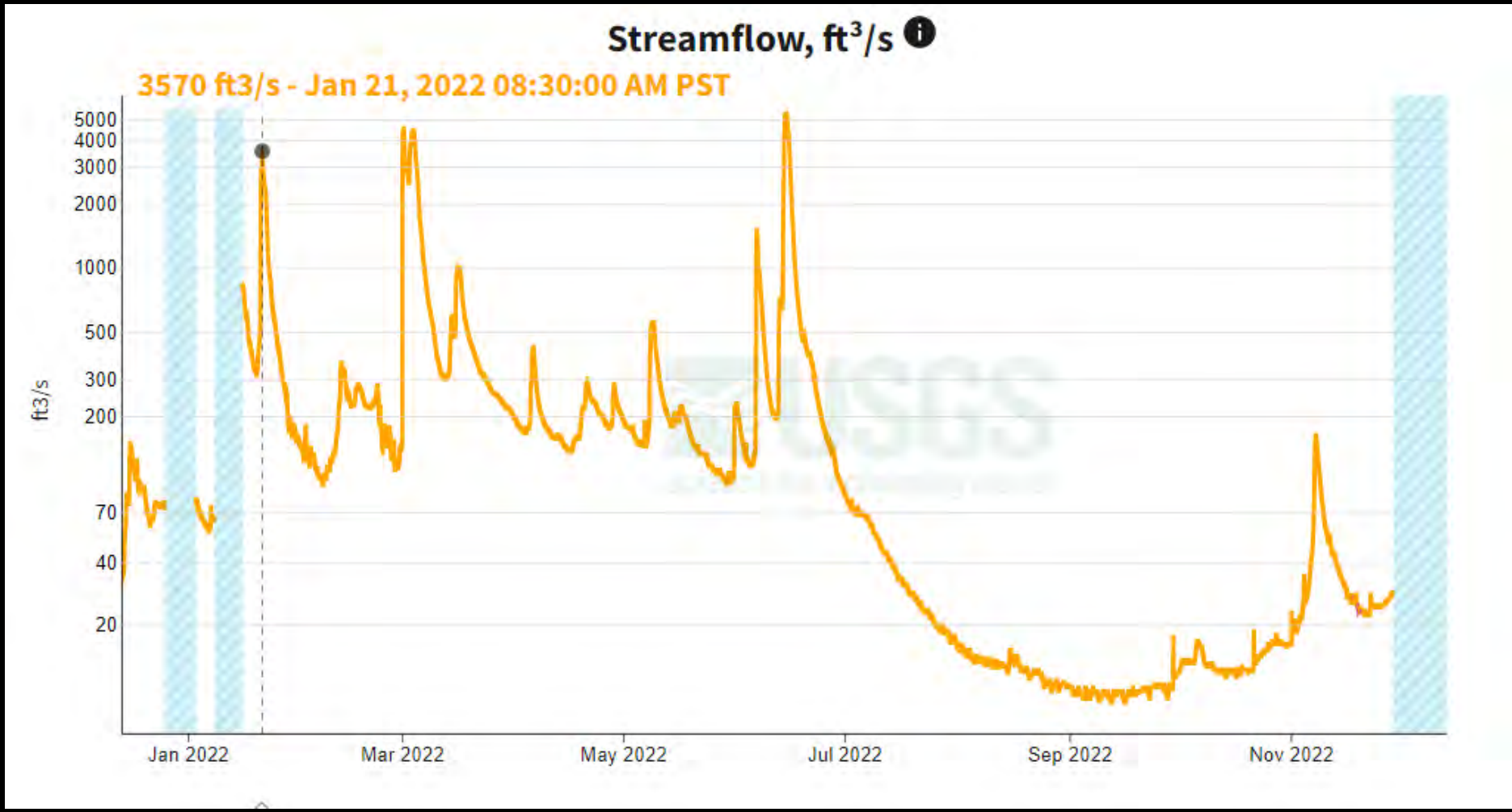
spokaneriverkeeper.org

Hangman Creek is a muddy mess

- Victim of erosion and land use issues
- Recognized by Washington State Dept. of Ecology as polluted with sediment (and much more!)
- Flows into the Spokane River

Land use: Roads

Flashy Hydrology



How do we go from this to this?

Solutions: Flood plain reconnection

Upper Hangman Creek was filled in

Routed into historic flood plain

Riparian Restoration

Direct Seed Reduces Erosion

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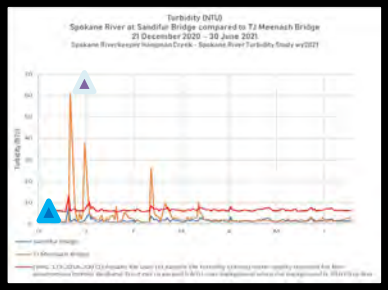
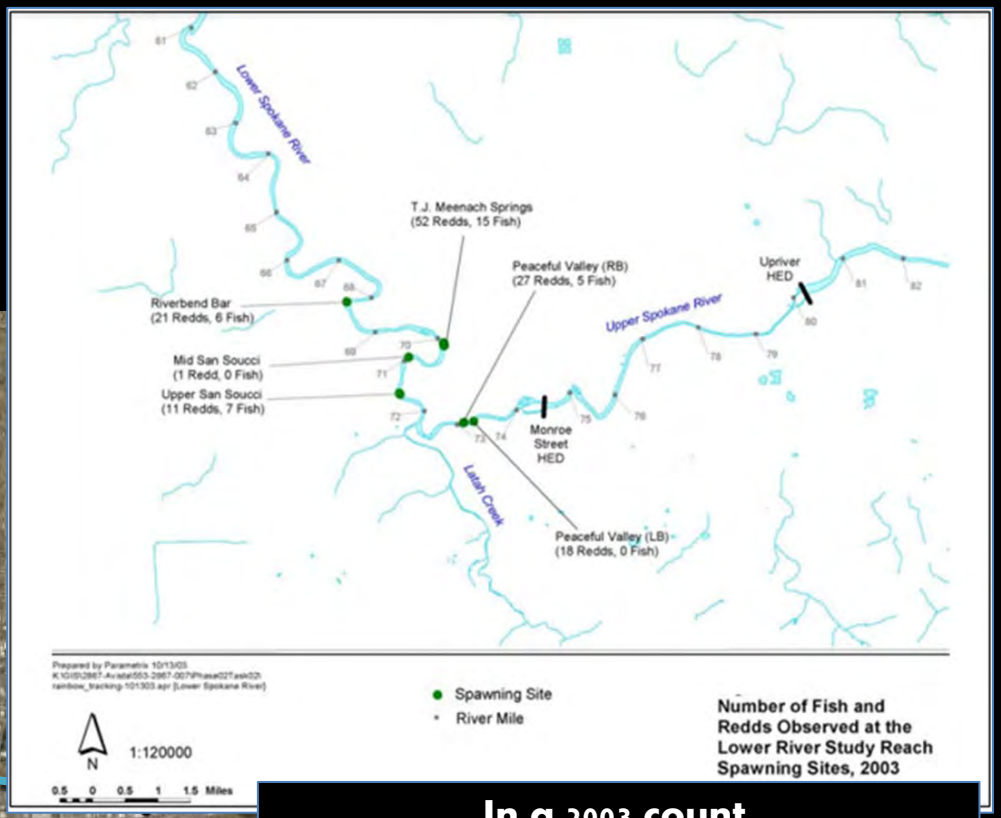


Spokane River

Sediment Influence from Hangman Creek



In a 2003 count,

64 of the 130 rainbow trout redds below Monroe Street Dam were found in the most impacted area

(Parametrix 2003)