



SPOKANE
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It's Your River ♦ We Protect It

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. Additionally the study has implications for impairments to the designated 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 turbidity 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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is resident interior redband trout (*O. m. gairdneri*). These violations occurred despite 2020 and 2021 being historically dry years in Hangman Creek basin (flows were very low in WYs 2020 and 2021 (152 and 122 cfs compared to the 233 cfs 72 year average)).

**Table 200 (1)(e)
Aquatic Life Turbidity Criteria in Fresh Water**

Nonanadromous Interior Redband Trout	Turbidity shall not exceed: <ul style="list-style-type: none">• 5 NTU over background when the background is 50 NTU or less; or• A 10 percent increase in turbidity when the background turbidity is more than 50 NTU
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At the location located just downstream of the “mixing zone” of the Hangman Creek site (at the cemetery) samples 64% (143 of 223) samples during the 2020 and 2021 season contained turbidity levels over 5 NTU.

Based on previous studies, such as those from the Spokane Conservation District and Ecology’s Hangman Creek TMDL, the source of the majority of the turbidity in Hangman Creek is anthropogenic (see attached reports and letter). This study shows that these turbidity values translate in some cases into high turbidity in the Spokane River, as Hangman Creek flows directly into the Spokane River. This contribution of turbidity can exceed the Water Quality Standards.

We have attached our WY 2020 and 2021 Turbidity Reports that detail the potential effect on aquatic life. We believe that the turbidity levels we found in the Spokane River negatively impact our native redband trout. The data exceeds aquatic life criteria designed to protect redband trout. We state in the attached 2020 sediment study report:

“Using the extrapolated TSS data from our turbidity data, we find that the Spokane River at TJ Meenach Bridge contains sediment levels that impact trout in the “sub-lethal effects” range. The highest effects seen were approximately a score of five over a 24 hour period, showing “minor physiologic stress” on trout. This suggests that trout populations in the Spokane River downstream of Hangman Creek are affected by the sediment load polluting the Spokane River. This effect, during this below-average flow year, is concerning. High flow years on Hangman Creek may deposit six times as much sediment in the river (SCCD, 2000), increasing the harm to native trout.”

The “minor physiologic stress” includes changes to feeding behavior and rates, growth rate, predator prey interactions, leading to changing in population dynamics in already decreasing redband trout population. Source? Coitation?)

Not only do turbidity and sediment levels exceed criteria for non-anadromous redband trout, they do so during spawning and in a location of prime spawning beds.

“Our measurements for water year 2021 demonstrate influence of Hangman Creek turbidity to Spokane River turbidity as we see correlating spikes in turbidity at TJ Meenach Bridge downstream from the Hangman Creek confluence that are not present at Sandifur Bridge upstream (Figures #-#). In the 2003 count, 64 of the 130 rainbow trout redds below Monroe Street Dam were found in this impacted area (Parametrix 2003). Our Washington State Administrative Code (WAC 173-201A-200 (1) Aquatic life uses (e) Aquatic life turbidity criteria) states that we have a water quality standard for Salmonid [includes salmon, trout, chars, freshwater whitefishes, and graylings]”

If there are further questions or you wish to discuss the data and issues raised in this letter, please do not hesitate to email or call.

Sincerely

 9/22/22

Jule Schultz
Spokane Riverkeeper