Mismatches in Water Quality Data and Public Perceptions of Rivers

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MILES
Managing Idaho's Landscapes for Ecosystem Services

OBJECTIVES

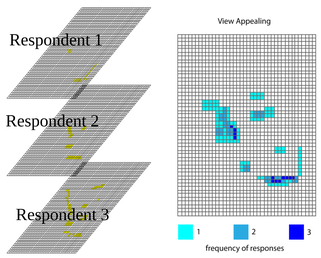
Our objectives were to determine how citizens of Pocatello, Idaho USA, perceived flood risk, water quality and restoration options along the Portneuf River. We examined how their perceptions related to flood insurance maps and a 15 year water chemistry dataset.

METHODS

~ 4,000 attendees
~ 100 respondents

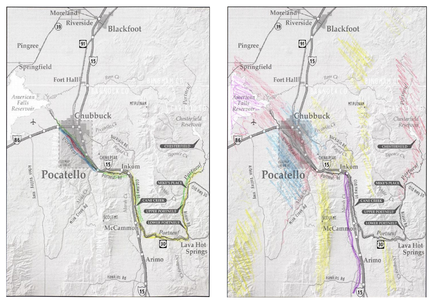
We asked visitors to take a 5 min survey regarding their views of the local Portneuf River. The survey consisted of:
--a sketch map to highlight perceived flood risk, water pollution, & aesthetics.
-- several survey questions (options list) about their river perspectives and demographics.

We counted the frequency of "yes" responses for each cell that corresponded to a location on the map. We grouped all responses together on a single hotspot map.

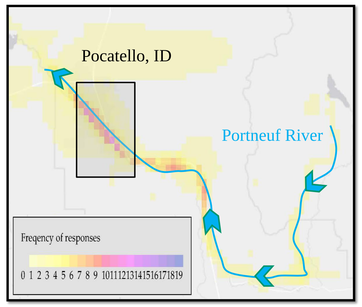


Where is risk of flooding the greatest?

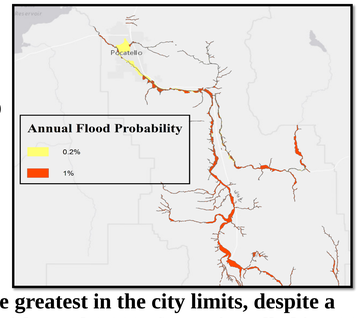
Survey examples (red sketches)



Perceptions Map (n=71)



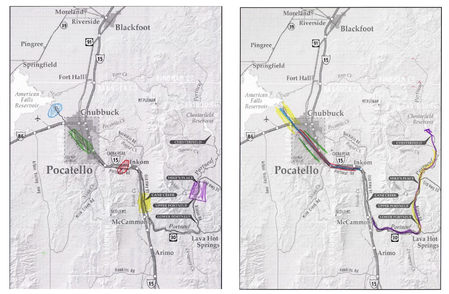
Flood Insurance Map (FEMA)



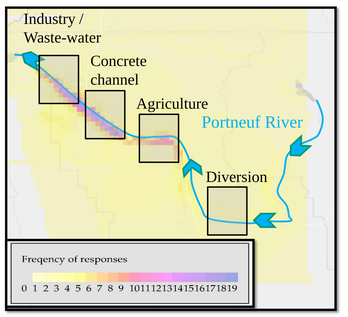
Flood risk perceptions were greatest in the city limits, despite a concrete channel that can withstand 6,000 cfs was installed in 1965. The maximum recorded flood was 2,990 cfs (118 year record). Flood insurance suggests the concrete channel has <0.2% flood probability.

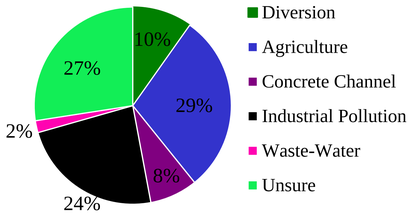
What is the main factor impacting water quality?

Survey examples (blue sketches)

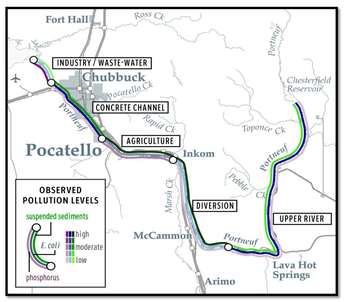


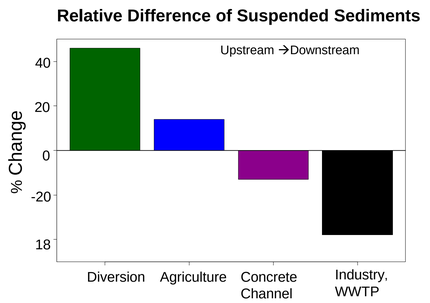
Perceptions Map & Questions (n=71)





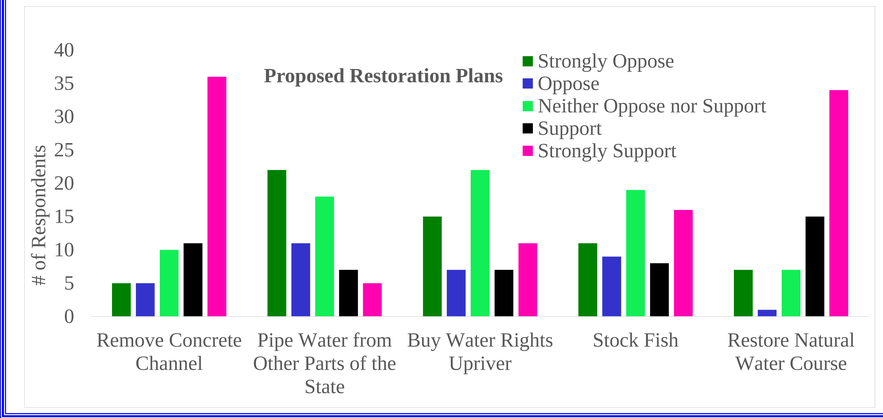
Water Quality Map & Data n= ~144 samples



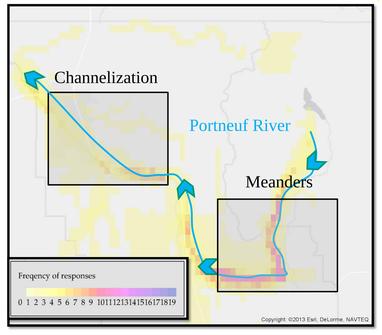


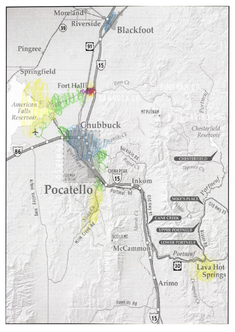
The diversion caused the greatest change to some water quality parameters, but only 10% of respondents claimed this was the largest impact. Some unmeasured parameters, like heavy metals from industry or pharmaceuticals from waste-water, may be perceived as the greatest impact. More detailed surveys questions would clarify.

What are your levels of support or opposition to the following river restorations?



Where are the most appealing views?
(yellow sketches)





People supported removing the concrete channel & restoring meanders. Respondents found the upper river most appealing, which had natural meanders, water quantity, riparian vegetation, & recreation.

CONCLUSIONS

Despite that respondents were concerned about flooding & didn't believe the concrete channel strongly affected water quality, they supported its removal. Participants had mixed responses about increasing water quantity, which could dilute pollution. Therefore, the public's perceptions on river status and causes do not consistently match scientific data. They may support restoration that minimally improves water quality but create "a natural-looking river", which is a desirable trait.

ACKNOWLEDGEMENTS

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