



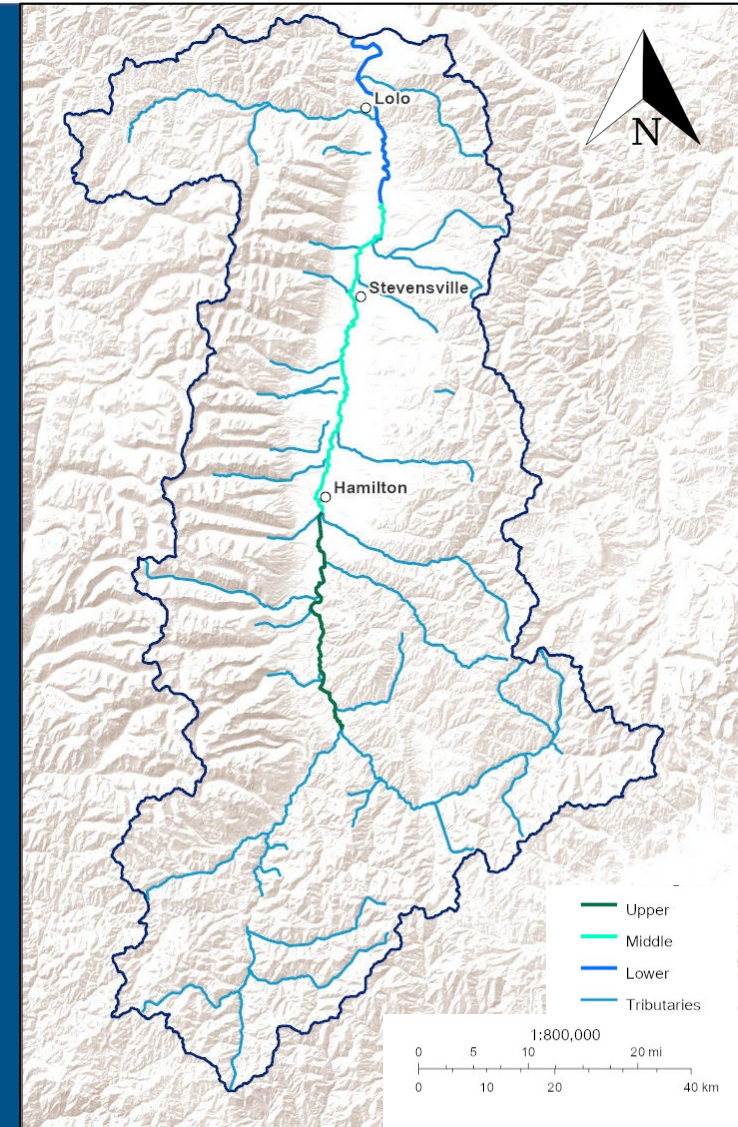
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2021 Lower Bitterroot River Lead Monitoring Results

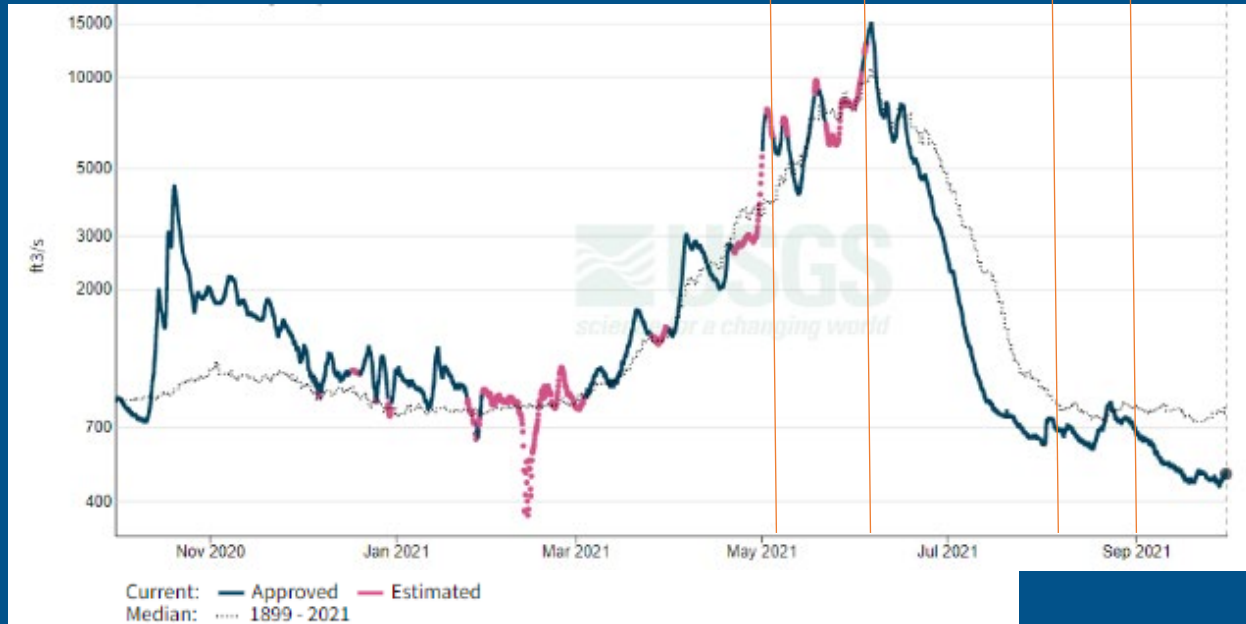
Background

- DEQ assesses water quality on the Bitterroot River relative to three different assessment units
 - The lower segment is the only with a metal impairment, only for lead
- Data for the lead impairment determination came from one site near the mouth of the Bitterroot
 - Potential sources: abandoned mines, relocated gravel from an abandoned mine, car body rip rap, ammunition & fishing weights, local geology

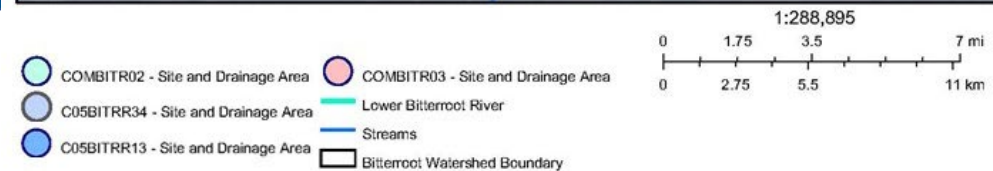
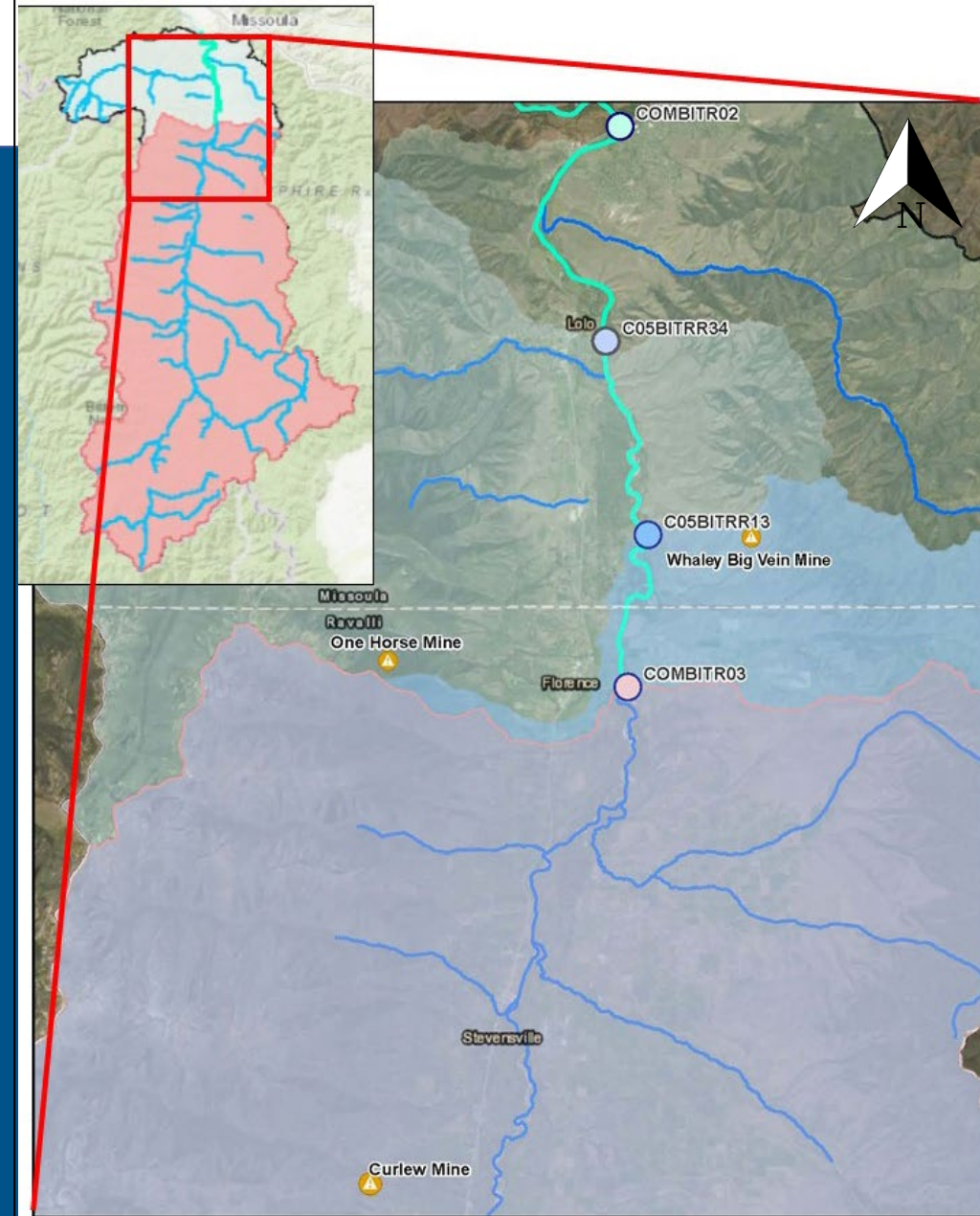


2021 Project Area

- 4 sampling locations

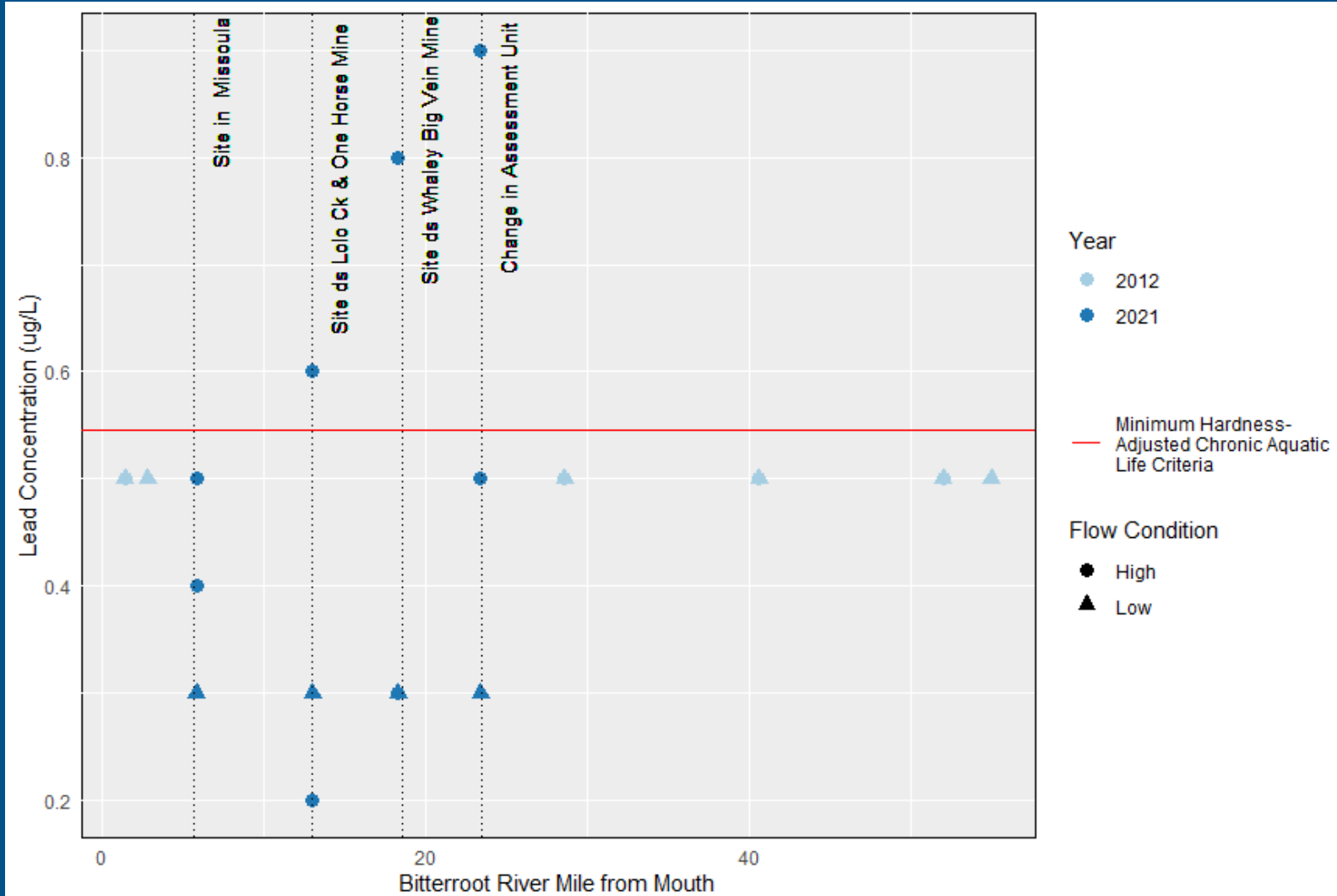


- Parameters: TR lead, calcium, magnesium, total suspended solids
 - Low flow sampling included sediment lead



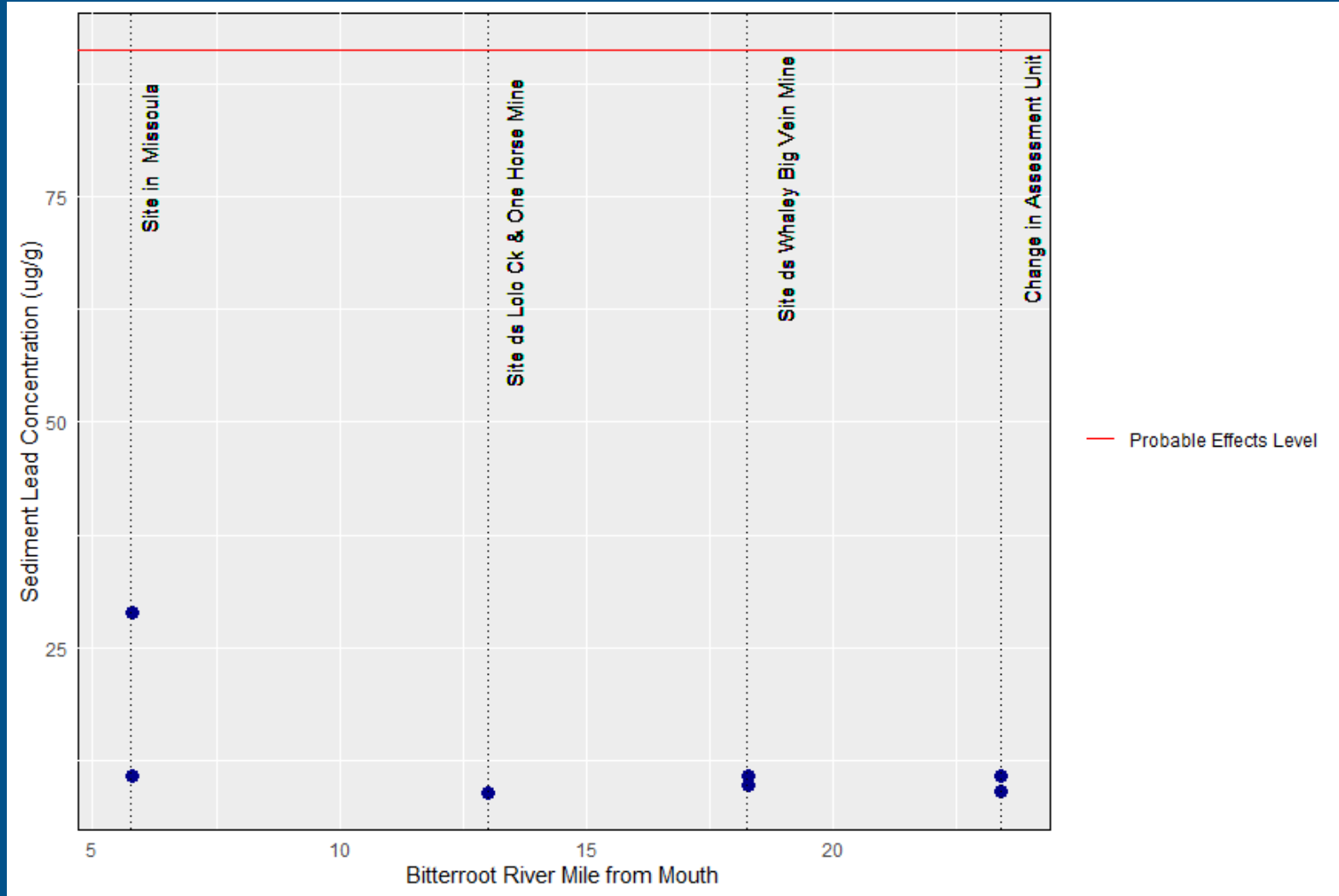
2021 Results

Is lead present throughout the lower segment, indicating that a widely distributed source of lead is possible? Or does lead concentration spike at any given site, indicating a more discrete lead source?



2021 Results

Is the lead originating from a sediment derived source?



Further Monitoring Recommendations

- Emphasis on high flow conditions (low flow still important to capture)
- To support the conclusion that lead concentrations are generally decreasing:
 - repeat lower and middle Bitterroot lead water chemistry sampling every 2-5 years
- To confirm the lead impairment is only limited to the lower Bitterroot, or aid in identifying a source:
 - Pair data from lower and middle Bitterroot and the mouths of tributaries (i.e., Willoughby/Big, Threemile, Bass, North Burnt Fork, Sweathouse Creeks)
- Include other common metals parameters such as dissolved, arsenic, copper, aluminum, and iron



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Monitoring & Assessment

DEQ monitors chemical, physical, and biological properties of our state's rivers, streams, lakes, and wetlands to support decision-making. DEQ monitors water quality to:

- Educate people about water quality;
- Inform watershed restoration and protection plans;
- Track trends in water quality;
- Investigate water quality problems, threats, and improvements;
- Assess whether waters meet water quality standards and support beneficial uses;
- Evaluate sources of pollution;
- Support studies that determine total maximum daily load (TMDL) development;
- Establish baseline conditions;
- Develop water quality standards.

VOLUNTEER MONITORING

Across Montana, trained volunteers monitor water quality in our rivers, streams, lakes, and wetlands. Volunteer monitoring is a fun and effective tool to educate people about protecting water quality and to engage communities in pollution prevention and restoration. Volunteer monitoring programs are administered by watershed groups, conservation districts, water quality protection districts, non-profit organizations, schools, and other entities. DEQ also provides volunteer monitoring opportunities.

Each volunteer monitoring program is driven by a unique set of monitoring objectives. Volunteers may collect chemical, physical, or biological parameters to evaluate water quality, aquatic habitat, and streamflow. Whether they collect high-quality data for decision-making, or monitor solely for educational purposes, DEQ values the contribution of volunteer monitoring programs.

DEQ's Volunteer Monitoring Support Program supports volunteer monitoring in several ways:

- Financial support, such as our Volunteer Monitoring Lab Analysis Program;
- Technical support, such as trainings and guidance documents;
- Administering volunteer monitoring opportunities; and
- Forming partnerships with other entities in the state that also support volunteer monitoring.

Volunteer Monitoring Lab Analysis Support Program



flbs.umt.edu/newflbs/outreach/mmw/monitoring-montana-waters/



Columbia River Basin Restoration Funding Assistance Program:
www.epa.gov/columbiariver/columbia-river-basin-restoration-funding-assistance-program