

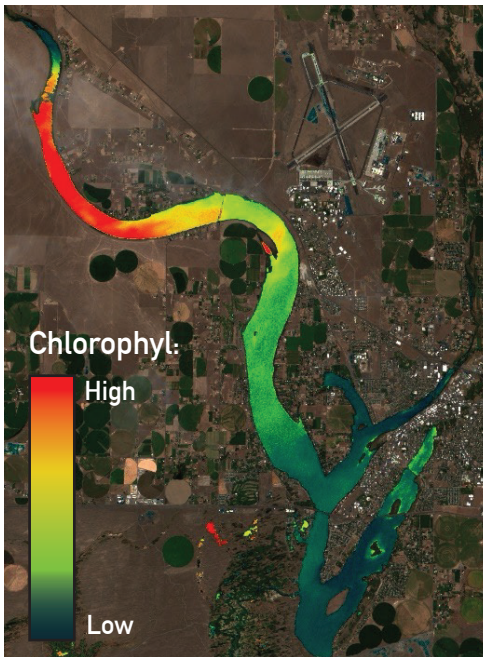
Moses Lake Phosphorus Mitigation Project 2024

The Columbia Basin Conservation District is spearheading a phosphorus mitigation project on Moses Lake in 2024 to improve water quality and help reduce harmful algae blooms which will improve recreational opportunities and economic benefits for the community.

Water Quality Issues & Impacts

Moses Lake is a 6,800-acre lake and experienced poor water quality and harmful algae blooms (HABs) dating back to the 1960s. Previous improvements in water quality included diversion of wastewater in the 1980s and decades of Columbia River Water routed through the lake which dilutes excess nutrients. Yet in recent years, as documented by monitoring and news reports, HABs continue to occur across the lake which degrade water quality and produce toxins that are a risk to humans, pets, and wildlife and have strong negative impacts on recreation, property values, and the local economy. Moses Lake is an important waterbody to the community for recreation, wildlife, and the economy. Regional estimates indicate that tourism and recreation contribute

greater than \$300 million per year in economic activity. Studies have determined that Moses Lake suffers from excessive internal cycling of phosphorus from the lake sediments and watershed phosphorus sources. Phosphorus is a key limiting nutrient to plant production in aquatic systems. Research has shown that one pound of phosphorus can support the growth of 500 pounds of algae! The northern part of Moses Lake (i.e., Rocky Ford Arm) is one area of the lake where there are significant phosphorus issues. In this area the introduction of Columbia River Water has a limited dilution impact on these nutrients, allowing for high concentrations of nutrients to remain. Due to these nutrient levels, HABs establish earlier and to more severe levels, which then can spread to the lower parts of Moses Lake.



Moses Lake HAB heat map determined from satellite imagery taken August 20, 2022

Disclosure: Image contains modified Copernicus Sentinel data 2020 for Sentinel data

Project Overview

- Total Project Award: 3.1M
- Goal: Mitigate 14,400 lbs. of available phosphorus impacting Moses Lake
- Results: Improved water quality and reduction in HABs
- Implementation Dates: April - October 2024



Dense HAB accumulated on Moses Lake shoreline

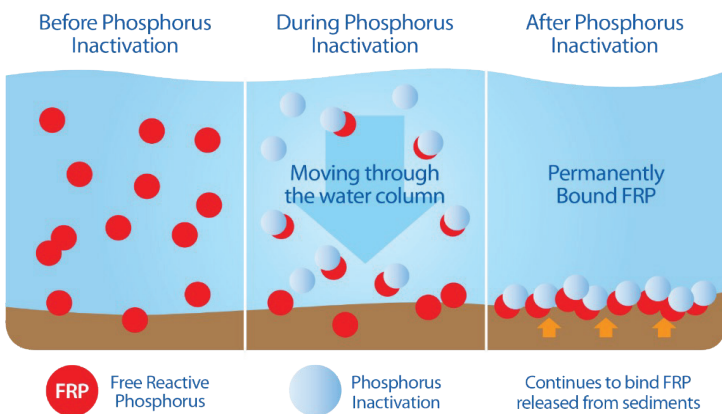
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Phosphorus Mitigation Project Details

Additional in-lake management of phosphorus is needed to improve water quality at Moses Lake in the short-term while long-term solutions are identified and implemented. Columbia Basin Conservation District (CBCD) has spearheaded a \$3.1 million phosphorus mitigation project to start addressing these issues. Project funding was secured through the advocacy and efforts of Rep. Dan Newhouse, who included CBCD's Community Project Funding Request in H.R. 8239 as part of the FY2023 Agriculture, Rural Development, Food and Drug Administration, and Related Agencies Appropriations Bill. EutroPHIX, a division of SePRO Corporation and Aquatechnex LLC have been selected through a proposal process to undertake this project. This project will include a lake treatment to significantly reduce phosphorus cycling from the sediments in the northern part of Moses Lake and treatment system on Rocky Ford Creek to mitigate phosphorus inputs. This will improve water quality in Moses Lake and help mitigate HABs .



Project map for phosphorus mitigation project in 2024

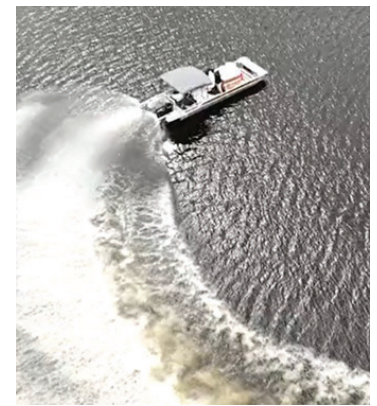
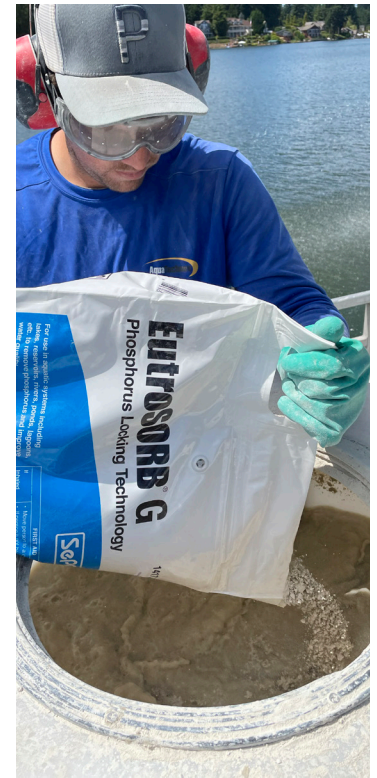


Phosphorus Binding

Phosphorus mitigation utilizing materials that bind with phosphorus is a widely used lake management technique to rapidly improve water quality with decades of research supporting its use. All applications of phosphorus binding materials are regulated and permitted through Washington State Department of Ecology before use. These materials are applied across standing or flowing waters to bind phosphorus in the water column and settle to the lake sediments where they can continue binding phosphorus until the material reaches capacity.

Lake Treatment

The sediments in the northern part of Moses Lake will be targeted for mitigating available phosphorus. This is approximately a 2,300-acre area beginning at the small island 2.5 miles south of Connelly Park and extending north to the mouth of Rocky Ford Creek. This treatment will take place during the first two weeks of June 2024. Application boats and equipment will be staging and operating out of Connelly Park boat launch to apply 250 tons of a phosphorus binding material, EutroSORB®G. The Connelly Park boat launch will be closed to public use during the application process, the rest of the park will remain open. The treatment area will remain open for all uses such as boating, fishing, swimming, livestock, and irrigation during the application process. Application crews require the public to maintain an adequate distance away from application craft and minimize boat wakes so they may perform their work unimpeded. Application boats will maintain at least a 50ft buffer from the shore and docks while they spray the material in a wide pattern and drive transects in the lake. EutroSORB G is a novel high-efficiency lanthanum modified bentonite containing 10% lanthanum embedded inside a clay matrix (90%). EutroSORB G is highly specific to binding phosphorus, does not directly impact water chemistry, and is safe for humans and wildlife. EutroSORB G disperses and sinks through the water column binding free reactive phosphorus rapidly, then settles on the bottom. Available binding sites will continue to bind phosphorus released from the sediments and incorporate into the sediment over time. EutroSORB G bound phosphorus transitions to a stable mineral, monazite (LaPO_4) which is essentially permanent and non-bioavailable under any typical environmental conditions. EutroSORB G treatments have been tested and assessed to provide a wide margin of safety for aquatic organisms, fish, birds, mammals, and humans. Over 100 peer-reviewed publications exist on lanthanum modified bentonite and it has been independently reviewed by Washington State Department of Ecology to permit and support its use with essentially no restrictions. Hundreds of lakes have been treated worldwide and numerous lakes and waterbodies utilize lanthanum modified bentonite on an annual basis in the United States.



Example solar powered SATT system within a locked temporary fence.

Rocky Ford Creek Treatment

Rocky Ford Creek is a significant nutrient source to Moses Lake containing a high concentration of phosphorus. A small treatment system with monitoring equipment will be temporarily deployed at the Drumheller Dam to bind phosphorus before entering Moses Lake. This treatment system will operate from mid-April through October 2024 to inject EutroSORB®WC into Rocky Ford Creek. EutroSORB WC is a liquid mineral-based phosphorus binding agent proven to rapidly bind and strip phosphorus from the water column. The phosphorus becomes tightly bound and forms a stable and inert insoluble compound that integrates into the sediment. EutroSORB WC binds to soluble phosphorus in surface waters with a high efficiency rate without impacting other water quality parameters. EutroSORB WC treatments are safe for aquatic organisms, fish, birds, mammals, and humans. A third-party environmental and human health assessment of EutroSORB® WC for use in aquatic settings determined there are high safety factors for fish and aquatic invertebrates, does not present a hazard to waterfowl and birds, and low chronic toxicity with high safety factors to exposures for mammals and humans. Washington State Department of Ecology will consider and review available information to permit this application.

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Project & Community Outcomes

The community can expect to notice some changes in the water quality of the lake in 2024. This project should provide an immediate water quality benefit to northern part of Moses Lake and a residual impact that will last multiple years after. This project provides a tremendous benefit to the local community from improving recreation, impacts to the local economy, and protecting this valuable resource. This project will be meticulously monitored to determine the amount of improvement in water quality and effectiveness of the treatments. There will be twice monthly sampling of Rocky Ford Creek and the northern park of Moses Lake along with collection of lake sediments. Changes in the algae community will also be monitored through the project with the expectation there will be a reduction in HABs extent and severity. These data will be used to inform future management of Moses Lake. The results will be available from CBCD at the conclusion of the project. While the project is occurring, you may notice a slight increase in water clarity in the treatment zone a few weeks after the lake treatment is performed. We ask the public to allow our contractors the space and time on Moses Lake needed to perform this important work effectively. Please reach out to CBCD for information, additional supporting literature can be provided.

Project Partners



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