

The Lahontan Regional Water Quality Control Board is in process of addressing a fecal bacteria water quality impairment in Bishop Creek.

Overview

In 2013 the U.S. Environmental Protection Agency (USEPA) announced a new collaborative framework for implementing the Clean Water Act (CWA) Section 303(d) program called the [Long-Term Vision for Assessment, Restoration, and Protection under the Clean Water Act Section 303\(d\) Program](https://www.epa.gov/sites/production/files/2015-07/documents/vision_303d_program_dec_2013.pdf) (https://www.epa.gov/sites/production/files/2015-07/documents/vision_303d_program_dec_2013.pdf) [The Vision]. The Vision focuses attention on priority watersheds with known water quality problems and acknowledges a suite of flexible restoration tools beyond traditional Total Maximum Daily Loads (TMDLs). The goal of The Vision is to apply these tools in a manner which will attain water quality restoration and protection. In 2015, Lahontan Regional Water Quality Control Board (Water Board) identified Bishop Creek as a candidate to be addressed through the Vision Program (Vision Project). The Vision Project Plan is scheduled to be completed by 2022.

Why has Bishop Creek been selected as a Vision Watershed?

The Water Board assesses water quality data collected from surface waters to determine if Beneficial Uses (BUs) are supported. Surface waters with pollutants that exceed water quality objectives (WQOs) are determined to not support BUs and are placed on the CWA 303(d) List of Impaired Waters. Placement on this list requires the Water Board to develop an action plan to address the BU impairment. The Water Board's Surface Water Ambient Monitoring Program (SWAMP) routinely collects surface water samples throughout the Lahontan Region. Bishop Creek samples collected in 2011 revealed elevated levels of fecal indicator bacteria (FIB), prompting staff to implement a monitoring program designed to determine the magnitude and extent of FIB pollution in the creek. Approximately sixteen locations throughout Bishop Creek were sampled for FIB several times per month between 2012 and 2016. Concurrently, the Water Board retained the Sierra Nevada Aquatic Research Lab (SNARL) to investigate sources of fecal bacteria in surface waters throughout the Eastern Sierra Nevada, including Bishop Creek. Data collected from Bishop Creek by SNARL and the Water Board revealed that elevated concentrations of FIB are likely generated by several sources, and contamination begins in the area known locally as West Bishop and continues through the City of Bishop to Bishop Creek Canal. FIB concentrations consistently exceed both the statewide WQO for *E. coli* bacteria designed to protect the Water Contact Recreation (REC-1) BU, and the Lahontan Region fecal coliform bacteria WQO which protects the Municipal and Domestic Supply (MUN) BU.

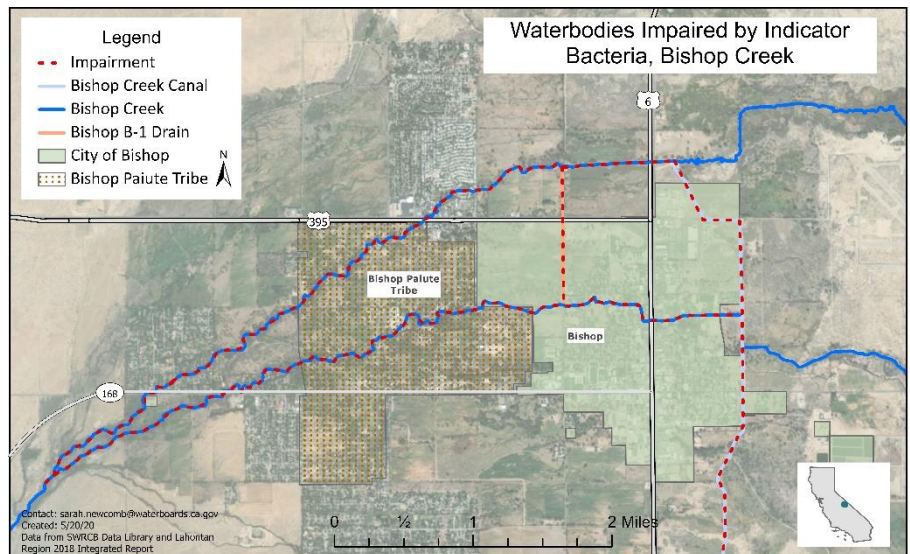


Figure 1: Bishop Creek Watershed, Inyo Co. CA.

Multiple locations along Bishop Creek are used as water contact recreation venues during warmer months, and elevated concentrations of FIB in the creek present illness risks in humans. In 2014 Inyo County Health Dept. posted caution signs at several locations on the creek warning bathers of the risks of swimming due to fecal bacteria contamination. Based on Water Board monitoring data, a recommendation of the 2018 Integrated Report was to place Bishop Creek on the 303(d) List because BUs are impaired as demonstrated by FIB concentrations.

What are some of the potential sources of bacterial impairment in Bishop Creek?

The Water Board acknowledges that FIB in Bishop Creek likely comes from a variety of sources, including cattle grazing, hobby ranching, recreation, residential uses, and from wildlife contributions. Beginning in 2011, the Water Board retained SNARL to perform Microbial Source Tracking (MST), a technique which uses genetic markers to identify the sources of FIB recovered in sample water. MST data from Bishop Creek indicates that “ruminant derived fecal contamination, including that from cattle, was common in the study streams and often in high concentrations” ([Knapp & Nelson, 2016, https://www.waterboards.ca.gov/lahtontan/publications_forms/available_documents/microbial_report.pdf](https://www.waterboards.ca.gov/lahtontan/publications_forms/available_documents/microbial_report.pdf)).

Cattle grazing occurs directly adjacent to Bishop Creek in several locations. Besides ruminants and cattle, MST data from Bishop Creek also identified human sources of FIB. To investigate sources of human FIB, in April 2018 Water Board staff conducted two sanitary sewer surveys. The surveys did not indicate that the wastewater collection system in the Vision Project area is leaking, and staff conclude that it is unlikely that fecal material from the collection system is impacting Bishop Creek. In July 2018, the Water Board adopted the Inyo County Local Agency Management Program (LAMP) to regulate new and existing septic systems in the county. During this process data regarding the existence of septic systems in the Bishop watershed was gathered. No septic systems exist within Bishop city limits, while two potential sites were identified in West Bishop. Lahontan staff are in process of investigating these septic sites as sources of FIB. Residential uses, recreators, and transient communities are also under investigation as sources of human FIB in creek waters.

What happens next?

Water Board staff are working with local partners to address the bacteria pollution in Bishop Creek. Collaboration with interested parties and community members is critical to improve watershed health. Water quality will improve when actions that reduce bacteria delivered to creek waters are taken on land uses that have been identified as sources of FIB, such as on grazing properties. Examples of actions to reduce bacteria pollution include providing off-channel water for livestock, limiting the direct access of livestock to creek waters, and providing community education about best practices for preventing human and pet wastes from entering surface waters. Staff have developed framework documents for the project including a Problem Statement, a Project Charter, a Stakeholder Collaboration Plan and this Fact Sheet. Staff are in process of developing the Vision Project Plan which is scheduled to be completed by September 2022.

The Water Board welcomes your comments and questions about this project. Please contact Cindy Wise (cindy.wise@waterboards.ca.gov/530-542-5408) or Ed Hancock (ed.hancock@waterboards.ca.gov/530-542-5574). To sign up to receive project emails please visit www.waterboards.ca.gov/resources/email_subscriptions/reg6_subscribe and select the Bishop Creek – *Pathogens* tab. For the latest project updates please visit the project website at https://www.waterboards.ca.gov/lahtontan/water_issues/programs/tmdl/bishopcreek.html