

Reducing Water Pollution in the Malheur River Basin and Middle Snake-Payette Subbasin



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Background

The Malheur River is located in southeast Oregon. It is a tributary of the Snake River, which forms the border between Oregon and Idaho. This fact sheet summarizes DEQ's efforts to reduce pollution in the Malheur River and its tributaries, as well as nearby small streams which drain directly into the Snake River.

The Malheur River Basin is approximately 4,700 square miles in size. Most of the Malheur River Basin is located in northern Malheur County, with the northern and western portions located in Baker, Grant, and Harney Counties. Elevations range from approximately 8,600 feet on the southern flank of Strawberry Mountain in the northwest portion of the basin, to approximately 2,100 feet at the confluence of the Malheur and Snake Rivers. The Middle Snake-Payette subbasin covers approximately 100 square miles in two low-elevation areas located north and south of the confluence of the Malheur and Snake Rivers in Oregon.



Malheur River Basin/Middle Snake-Payette Subbasin TMDL Area.

Water quality problems identified

Section 303d of the federal Clean Water act requires each state to develop a list of water bodies that do not meet water quality standards, and submit this list to the U.S. Environmental Protection Agency. The list is updated every two years. A number of streams in the Malheur River Basin and Middle Snake-Payette Subbasin are listed as "water quality limited" for bacteria, chlorophyll-a, toxics (the pesticides DDT and Dieldrin), dissolved oxygen, and temperature. The 303(d) listings for bacteria, chlorophyll, and toxics are found in the Lower Malheur and its major tributaries, Bully Creek and Willow Creek. Bacteria 303(d) listings also occur in Jacobson and Shepherd Gulches in the Middle Snake-Payette Subbasin. Temperature listings occur on the mainstem Malheur and tributaries above Warm Springs Reservoir, the North Fork Malheur and tributaries above Beulah Reservoir, Cottonwood Creek and Pole Creek (tributaries of the Lower Malheur River), and Basin Creek tributary of Willow Creek. The Malheur River is 303(d) listed for low dissolved oxygen throughout its length.

A plan to improve water quality

The federal Clean Water Act requires DEQ to develop a plan with goals and pollution control targets for improving water quality in watersheds where water quality standards are not met. DEQ is doing this in the Malheur River Basin and Middle Snake-Payette Subbasin by establishing limits known as Total Maximum Daily Loads – often referred to as "TMDLs" – for each pollutant entering the water. A TMDL describes the amount (load) of each pollutant a waterway can receive and still meet water quality standards. A TMDL takes into account the pollution from all sources.

Total Maximum Daily Loads

The Malheur River Basin/Middle Snake-Payette Subbasin TMDLs address the violation of standards for three water quality parameters: temperature, bacteria, and chlorophyll a (a product of excessive algae growth). Controls on total phosphorus were used to address chlorophyll a in the Malheur River and its receiving waterbody, the Snake River.

In the **temperature** TMDL, the pollutant is heat. Water temperature can be greatly affected by a variety of human activities. The principal human-caused source of stream heating is the removal of trees and other shade-producing vegetation from stream banks. This allows direct sunlight to heat the water. Removing vegetation can also cause stream bank erosion that can result in a wider stream channel and disconnection with the floodplain, which can also result in higher stream temperatures.

In the **bacteria** TMDL, the pollutant is *E coli* bacteria from warm-blooded animals. Principal sources are from non-point sources such as livestock and wildlife which occur throughout the landscape.

In the **chlorophyll** TMDL, the pollutant is phosphorus that results in increased growth of algae. Phosphorus mainly moves to streams attached to soil particles. Significant increases in phosphorus loading occur when soil erosion increases, especially in agricultural areas. Stream temperature and water clarity are also significant contributing factors to the growth of algae.

Analysis of an extensive set of available data resulted in the determination that the Malheur River meets the applicable **dissolved oxygen** water quality criteria. It has been recommended for removal from the 303(d) list for this parameter.

Due to insufficient data, a TMDL was not developed to directly address the **toxics** listings for the Lower Malheur River. It was determined that the best management practices needed to manage sediment loading to reduce phosphorus concentrations, and the riparian vegetation improvements needed to address high stream temperatures, will reduce the loading of DDT and Dieldrin to streams.

Allocating loads

The TMDLs define the amount of heat, bacteria, and phosphorus that can be added and still be protective of the river. These amounts are known as "loads." The TMDLs divide these load amounts among the various sources. The result is called the load allocation. There are no point sources in the basin which discharge during critical periods when water quality standards are not met.

For **temperature**, DEQ has allocated most non-point source loading to natural sources. This approach requires that nonpoint sources manage near stream areas to achieve *site potential*

conditions, where any human-caused increases in stream temperature are minimized. The means of achieving these conditions is through restoring and protecting riparian vegetation and, where appropriate, increasing stream flows and narrowing stream channel widths.

For **bacteria and phosphorus**, load duration curves were used to determine the amount of load reduction that is needed to meet water quality criteria. Agricultural best management practices are proposed as the principal method for meeting water quality criteria.

Plan implementation

State water quality standards require that a water quality management plan be developed and implemented by all sources that may impair water quality in the Malheur River Basin and Middle Snake-Payette Subbasin. The plan explains the roles of various land management agencies in implementing the actions necessary to meet the allocations in the TMDLs.

Plan implementation in the Malheur River Basin and Middle Snake-Payette Subbasin will primarily be covered by activities on private agricultural land and on federal land. An Agricultural Water Quality Management Area Plan, which addresses agricultural activities on private lands, has been adopted for the basin by the Oregon Department of Agriculture. Water quality impairment on federal lands will be addressed through water quality restoration plans which will be developed by the Burns and Vale Offices of the Bureau of Land Management, and the Malheur National Forest.

Public process and participation

DEQ has conducted numerous meetings with stakeholders during the development of the TMDLs including a public hearing to be held in the near future. DEQ also distributes information to the public by direct mailing to interested parties and posting on the Malheur River Basin TMDL web page at:

http://www.deq.state.or.us/WQ/TMDLs/malheur_river.htm

If you would like to be placed on the mailing list or have questions regarding the TMDL documents or process, please contact John Dadoly, Basin Coordinator, at (541) 278-4616 or by email: dadoly.john@deq.state.or.us

Alternative Formats

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