

## Pollution Limits and Water Quality Plan for the John Day River Basin

### Background

Many streams and rivers of the John Day Basin do not meet water quality standards during part or all of the year.

The Department of Environmental Quality has identified several water quality concerns in the basin, including high temperature and bacteria levels, low oxygen concentrations and impaired biological conditions.

This fact sheet summarizes DEQ's plan to improve water quality in the John Day Basin to ensure that the streams are healthy for humans, fish and wildlife.



The streams marked in red do not meet water quality standards.

DEQ has listed impaired waters throughout Oregon, including streams of the John Day Basin. The Federal Clean Water Act requires DEQ to develop pollution control targets and improvement plans for impaired waters. The targets, known as Total Maximum Daily Loads, or TMDLs, are established for each pollutant in a waterbody.

A TMDL assessment uses scientific data collection and analysis to determine the amount and source of each pollutant entering streams. A TMDL is the maximum amount of pollutant that can be present in a waterbody while meeting water quality standards. These maximum allowable pollutant loads are assigned to contributing sources, typically to land use authorities.

Since 2002, DEQ has been working with Oregonians in the John Day Basin to assess water quality in rivers and streams. DEQ completed a TMDL assessment and a companion water quality management plan in November 2010.

Stream pollution is closely tied to land use. In the John Day Basin, 45 percent of the land is forested and more than 50 percent is in agricultural use. Other uses include urban, rural residential, parkland and industrial, each of which occur in a small fraction of basin area. The TMDL planning applies to all land uses that contribute pollution to the basin's streams and rivers.

### Temperature TMDL

The temperature TMDL sets limits that protect healthy conditions for salmon and trout at all life stages. These cold-water fish are particularly sensitive to stream warming.

Water temperature is the most widespread concern in the basin. The causes of stream heating are excess solar radiation, decreased groundwater interaction and instream flow reduction. These result from human-related stream modifications such as vegetation disturbance, irrigation withdrawal and channel straightening. The TMDL plan calls for increased stream shade and a more natural channel shape to reduce water temperatures. DEQ encourages water conservation and flow restoration as well.

The streamside landscape provides shade that reduces solar heating of the water. The TMDL estimates the amount of natural, streamside vegetation needed to reduce solar heating to acceptable levels. Vegetation species and heights are determined by considering climate, soils, slope, elevation, historic vegetation and protected areas.

### Bacteria TMDL

The bacteria TMDL calls for target concentrations that protect recreational uses such as swimming. The measure of success is reduced *Escherichia coli* (*E. coli*) concentrations. *E. coli* is used as an indicator of disease-causing bacteria.



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Elevated *E. coli* concentrations have been measured most frequently in the upper mainstem, above the City of Dayville. The most likely bacteria sources are livestock, urban runoff, rural residences, recreational areas and wildlife. The TMDL sets limits throughout the basin, and calls for phased reductions of 69 and 83 percent, with prioritization on the upper mainstem.

### **Other TMDLs**

Current planning also addresses dissolved oxygen and biologic conditions. Low oxygen levels are harmful to salmon, trout, insects and other animals that live in the streams. The biologic condition is assessed through sampling of streambed insects and fish counting.

The TMDL analysis demonstrates that temperature TMDL implementation will address both low oxygen levels and impaired biologic conditions.

### **Pollution sources**

The widespread pollution from runoff and solar heating is commonly referred to as nonpoint source pollution. Nonpoint source pollution is by far the largest cause of water quality degradation in the basin.

Though slight in comparison, wastewater discharges from facilities, commonly referred to as point sources, have potential to decrease water quality as well. Temperature and bacteria limits are included in the TMDL for basin point sources, addressing four municipal sewage treatment plants, three animal feedlots and various other facilities with water quality permits.

TMDL implementation is carried out through two primary mechanisms: water quality permits for facilities and water quality management plans for nonpoint sources. DEQ administers the water quality permits, except for animal feedlot permits. The confined animal feeding operations permits in the Basin are jointly issued by DEQ and the Oregon Department of Agriculture. The ODA administers the permits.

### **Water quality management plan**

The TMDL document includes a water quality management plan with strategies and approaches for implementing the TMDLs. The plan designates organizations to prepare and carry out source-specific TMDL implementation plans.

The organizations designated to prepare and carry out TMDL implementation plans include the U.S. Forest Service and Bureau of Land

Management, the Oregon Departments of Agriculture and Forestry, Counties, Cities and others.

The timeline for submittal of these plans is generally 18 months following issuance of the TMDL.

### **Public process**

DEQ organized a community discussion series representing a range of basin stakeholders during 2009-2010. Prior to this, discussion and informational gatherings were held throughout the basin over the course of several years. In addition, DEQ has participated in local planning and restoration efforts and encouraged public participation in stream monitoring efforts. Local officials have helped to guide DEQ's outreach process.

### **For more information, please contact:**

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### **Alternative formats**

*Alternative formats (Braille, large type) of this document can be made available. Contact DEQ's Office of Communications & Outreach, Portland, at 503-229-5696, or toll-free in Oregon at 1-800-452-4011, ext. 5696.*

