

State of Oregon
Department of Environmental Quality

Memorandum

Date: April 7, 2010

To: Environmental Quality Commission

From: Dick Pedersen, Director

Subject: Agenda item D, Informational item: Update on the Lower Umatilla Basin groundwater management area
April 29-30, 2010 EQC meeting

Purpose of item This informational item provides the commission with an overview of the status of the Lower Umatilla Basin groundwater management area and next steps for the project.

Background Oregon's 1995 Groundwater Protection Act requires DEQ to declare a groundwater management area if groundwater contamination, resulting at least in part from nonpoint source activities, exceeds certain contamination levels. Oregon has three groundwater management areas, including this Lower Umatilla Basin area. The Lower Umatilla Basin groundwater management area exhibits widespread nitrate contamination.

DEQ identified five significant sources of nitrate loading to groundwater in the Lower Umatilla Basin in the mid-1990s. These include:

- Confined animal feeding operations
- Irrigated agriculture
- Land application of food processing wastewater
- Septic systems in rural residential areas
- The Umatilla Chemical Depot washout lagoon

A citizen advisory committee developed an action plan to reduce nitrate loading in 1997 with DEQ and Oregon Department of Agriculture oversight. The action plan detailed a voluntary program led by the local soil and water conservation districts to reduce nitrate concentrations to less than 7 mg/l. DEQ is one entity involved in the evaluation of the action plan's success every four years, and may impose regulatory requirements if the voluntary approaches in the action plan are not effective in controlling nitrate contamination.

In the 2002 and 2008 evaluations, the evaluation committee concluded that "sufficient progress has been made to continue the voluntary nature

of the Action Plan.” The committee is currently conducting the third evaluation, which is the first evaluation to include the goal of a decreasing area-wide trend for nitrate concentrations.

Key issues

Nitrate concentrations remain elevated above the groundwater management area action level, 7 mg/l, and above the drinking water standard, 10 mg/l, in many wells. Nitrate trends are generally increasing, but there is no systematic geographic correlation with changes.

The Lower Umatilla Basin, like many areas in northeastern Oregon, has both groundwater quality and groundwater quantity problems. Most nitrate contamination affecting quality is found in the shallow alluvial aquifer, which is the focus of the Lower Umatilla Basin groundwater management area. Most over-pumping affecting quantity is found in the deeper basalt aquifer, which is the focus of areas called Classified or Critical Groundwater Areas and regulated by Oregon Water Resources Department.

Recharge to the alluvial aquifer is mostly from irrigation water, through leaky canals or percolation through fields, and occurs within weeks, months or a few years. Recharge to the basalt aquifer is mostly from precipitation in the Blue Mountains, and takes centuries to flow to the lower portion of the basin.

There is great interest among local governments and the agricultural community and increasing action towards constructing the Umatilla Recharge Project. This project would involve diverting wintertime flows in the Columbia River to the alluvial aquifer where microorganisms could be filtered out, thus creating water that meets drinking water standards. That potable water could be injected into the basalt aquifer where it is stored for later retrieval and used to irrigate crops.

A potential environmental benefit of the Umatilla Recharge Project is the use of some recharge water to dilute and flush nitrate through the alluvial aquifer. Nitrate contamination levels in the groundwater management area are not yet improving, and irrigated agriculture is a large contributor to the regional nitrate problem. Making more water available through recharge and subsequent use as irrigation some mitigation efforts is counterproductive to the goal of reducing nitrate concentrations.

DEQ has produced an estimate of the relative contributions of each of the sources of nitrate in the Lower Umatilla Basin groundwater management area. Those sources can be classified into three tiers differing by approximately an order of magnitude:

- Tier one – Irrigated agriculture
- Tier two – Pastures, food processor wastewater, and on-site systems, and
- Tier three – Lawns, CAFO waste applied to dry land crops, vegetable gardens, and the Umatilla Depot washout lagoon.

DEQ is evaluating nitrate trends from regional sampling events and other specific wells. DEQ will assess the trends at more food processor wells and the wells at Three Mile Canyon Farms. Based on the data evaluated to date, more wells are increasing than decreasing, and the regional nitrate concentrations continue to increase.

Next steps

Once the data evaluation is complete, DEQ will prepare a trend analysis report and a third synoptic sampling event report. DEQ is in the process of meeting with representatives of the various agencies involved in the Lower Umatilla Basin groundwater management area. These meetings have resulted in recommendations, including:

- Form a new committee, likely with substantial overlaps with the first committee, and task it with developing a new action plan.
- Allow a new committee to finalize the draft document prepared by DEQ, OSU and ODA that estimates the percentage of nitrate from various sources.
- Focus the action plan on sub-regions based on hydrogeology and land use.
- Establish a strong outreach component within the action plan, including a more efficient way to store information.

EQC involvement

DEQ is not requesting EQC involvement at this time.

Attachments

None

Approved:

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