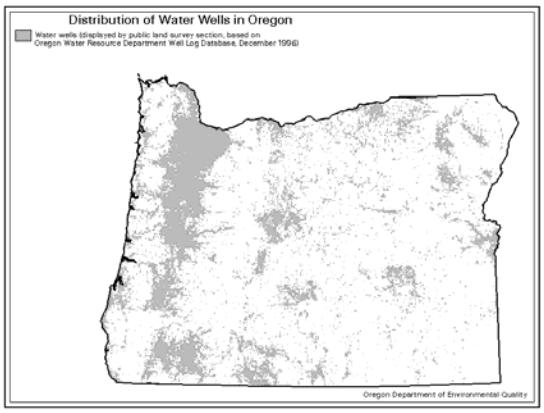
2003 OREGON GROUND WATER CONDITIONS

Importance of Ground Water: Ground water in Oregon is an important and valuable hidden resource. Approximately 95 percent of available fresh water is stored as ground water and a minimum of 200,000 recorded water wells in the state tap ground water for a variety of uses (Figure 1).

In 2002, ground water sources provided:

- 875 million gallons a day for irrigation,
- 89 million gallons a day for municipal water supplies,
- 89 million gallons a day for industrial and commercial use, and
- Unrecorded amounts for domestic and commercial uses that do not require authorizations or permits.

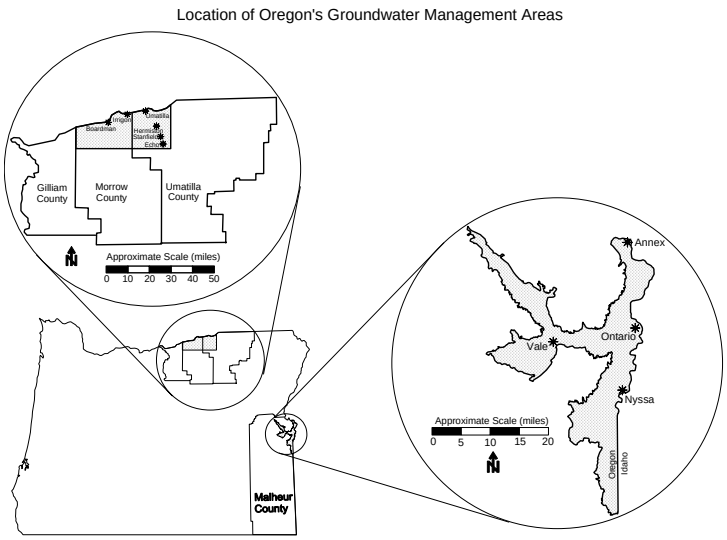


Ground water supplies 90% of rural residential drinking water in Oregon. About 2,500 public drinking water systems get their water exclusively from ground water. The large public water systems supply almost 3 million people and an additional 400,000 Oregonians get their drinking water from individual home water wells.

Ground water is important and linked to surface water in Oregon and supplies base flow for most of the state's rivers, lake, streams, and wetlands. In many streams, the inflow of cool ground water reduces stream temperatures to the range required by sensitive fish species. Studies in the Willamette River Basin, a major river basin in the populated western area of the state, estimate that 30 to 90 percent of the total stream flow is from base flow. In the Deschutes Basin, one of the fastest growing areas in central Oregon, scientists are evaluating the ground water/surface water relationship to understand the effect of present and future development on ground water availability and stream flow. Demand for water in the Klamath Basin in southern Oregon is highlighting the importance of ground water as a resource to augment or replace surface water uses without adversely affecting stream flow.

Ground Water Quality: Overall, little is known about the quantity and quality of Oregon's ground water resources and ground water/surface water interactions. The Oregon Water Resources Department (WRD) has assessed ground water supplies for approximately 15 percent of the state. In six areas of the state, ground water use has been restricted due to overdraft of the resource. The Oregon Department of Environmental Quality (DEQ) has assessed the ambient quality of ground water for less than 7 percent of the state's area. Ambient ground water quality studies done over the past 20 years along with routine monitoring data from public water supplies found 35 of 45 areas show some impairment or reason for concern. The data show nitrate is the most commonly detected contaminant, followed by pesticides, volatile organic compounds, and bacteria. Additional data collected from over 14,000 residential drinking water wells at the time of a real estate transaction show the percent of wells with nitrate levels above the federal drinking water standard (10 mg/L) varies from 0% to 18% in counties across the state. Oregon can declare a Ground Water Management Area if area-wide contamination due in part to nonpoint sources is found to exceed one half a drinking water standard, or 70% of the nitrate drinking water standard.

Two Ground Water Management Areas (Figure 2) were declared in the 1990s. In Malheur County in eastern Oregon, ground water was found to be widely contaminated with nitrates and the pesticide Dacthal. In the Lower Umatilla Basin in north central Oregon, nitrate contamination from nonpoint and point sources has affected a wide area. Action plans were developed for these areas to restore ground water and efforts are underway to monitor progress and trends in ground water quality. Ground water in the Willamette Valley in western Oregon is being studied after early assessments found a high percentage of water wells with nitrate contamination. Ground water in the La Pine area of central Oregon has been found to be vulnerable to contamination from the high density of on-site sewage waste disposal systems. A national demonstration project in this area is looking at innovative on-site systems and evaluating effects on ground water quality.



Potential site or point source threats to ground water quality in Oregon include: 2,834 hazardous substance release sites; 19,978 leaking underground storage tanks; 33 dry cleaner sites with solvent releases; 12 National Priority List sites with hazardous substance releases; 40,000 underground injection systems; 1,168 permitted wastewater disposal facilities; 230 facilities land applying treated effluent or biosolids; 480 solid waste landfills; one hazardous waste landfill; and 500 permitted confined animal feeding operations.

Efforts to Protect Ground Water: Oregon's Ground Water Quality Protection Act of 1989 sets a broad goal for the state to prevent contamination of the ground water resource, to conserve and restore this resource, and to maintain the high quality of ground water for present and future uses. Oregon implements a combination of programs through various state agencies including the Oregon Department of Environmental Quality (DEQ), Oregon Department of Human Services (DHS), Oregon Water Resources Department (WRD), and the Oregon Department of Agriculture (ODA). DEQ has primary responsibility for protecting ground water, cleaning up ground water polluted by point and nonpoint sources and hazardous substances, and monitoring and assessing ground water quality. DHS and DEQ implement Safe Drinking Water Act programs to develop source water assessments for public drinking water supply systems. WRD manages ground water to provide a sustainable resource, assess aquifers and available ground water in the state, and administers well construction, maintenance and decommissioning regulations. ODA regulates farming practices to protect ground water.

What Else is Needed?

Additional resources are needed in Oregon to develop and implement an action plan for ground water restoration in the southern Willamette Valley and to conduct state ambient ground water quality assessments. Source water protection programs will need additional resources to implement locally developed action plans. Additional resources would help assess aquifer characteristics and ground water quantities in areas of the state where ground water use is increasing.