

Groundwater: A Limited Resource

Oregon’s groundwater supplies are showing signs of stress and, in some locations, aquifer systems are not capable of sustaining additional development. The State has designated more than 20 groundwater administrative areas where groundwater levels were declining at unsustainable rates. In other areas, groundwater availability is limited because additional groundwater development will further affect already fully-appropriated surface water bodies to which groundwater is tributary and constitutes a critical component of summer surface water baseflows. Groundwater administrative areas in Oregon are identified in

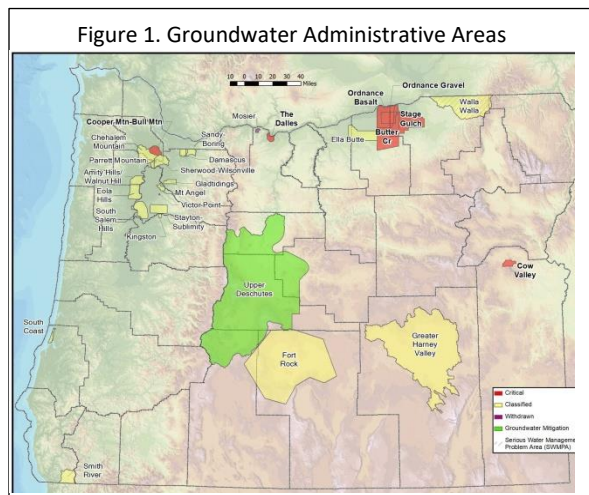


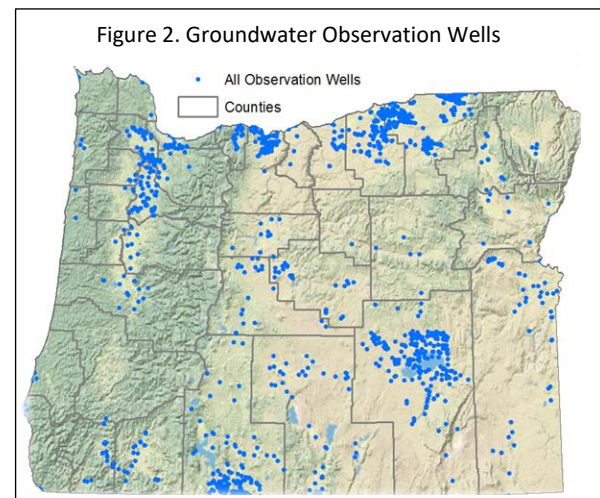
Figure 1.

Groundwater Management and Data

The Oregon Water Resources Department monitors and manages groundwater. The Department’s hydrogeologists collect and analyze data and information on the state’s

groundwater resources, provide technical input into groundwater right transactions and regulation, and help facilitate solutions to water supply challenges.

Groundwater is a complex resource; therefore, the Department uses a number of data sources, as available, to understand it. These include water-level measurements from more than 1,400 observation wells state-wide (Figure 2), geologic maps, geophysical logs, drill cutting analysis, spring discharge and stream baseflow data, and other technical data. In addition, in some basins, the Department has conducted in-depth basin-scale groundwater studies. Additional work remains to characterize groundwater resources in many areas of the state.



Basin Studies

To better understand and manage the resource, Oregon’s Integrated Water Resource Strategy (IWRs) calls for additional groundwater investigations and improved water resources data collection.

The Department typically evaluates groundwater and surface water resources

through cooperative, cost-share science programs with the U.S. Geological Survey (USGS), Oregon Department of Geology and Mineral Industries (DOGAMI), and other scientific partners. State funds are leveraged through federal cost-match funds when partnering with these agencies.

Basin studies help define the overall groundwater budget, including groundwater recharge from surface water, groundwater discharge to surface water, and available water for new allocation. The studies develop a broad understanding of surface and groundwater systems and the results are published in peer-reviewed reports. Information obtained through studies is used by the Department to manage the State's increasingly limited groundwater resources, and maximize the consumptive and non-consumptive beneficial uses of water in each basin.

The Department currently has resources to engage in one cooperative groundwater basin study with the USGS at any given time. Its current model relies on engaging five to six Department staff to work with three to five staff from the USGS to intensify data collection in the study area over an approximate three-year period, and then subsequently transition to data analyses and report publishing over an approximate two-year period. Development of a numerical groundwater flow model may follow to assess the impacts of future water management scenarios.

Since 2004, the Department has participated in five groundwater basin studies:

1. Upper Deschutes Basin Groundwater Study; completed in 2004
2. Klamath Basin Groundwater Study; completed in 2012
3. Willamette Basin Groundwater Study (includes the Sandy Basin); completed in 2014

4. Harney Basin Groundwater Study; scheduled to be completed in 2022
5. Walla Walla Basin Groundwater Study; initiated in 2020; ongoing

There are eleven areas based on current information that the Department has identified as a priority for groundwater basin study work in the future. The highest priority basins are the Walla Walla Basin (initiated in 2020) and the sedimentary aquifer system of the Lower Umatilla Basin. These basins present groundwater allocation and management challenges related to over-appropriation of water resources and declining groundwater level trends. This group is followed by subbasins or regionally important aquifer systems with documented declining groundwater levels limiting availability of new groundwater permits or with emerging groundwater management challenges. This tier includes basalt aquifers in portions of the Hood, Lower John Day, and Umatilla basins, the Deschutes Basin aquifer system underlying the rapidly urbanizing Bend-Redmond-Prineville area, the sedimentary aquifer systems of the upper John Day Basin, and the northern Goose and Summer Lakes Subbasin. Finally, aquifer systems in the Grande Ronde Basin and the Rogue Basin are tributary to State Scenic Waterways, and local officials from the Powder Basin have asked the Department to identify potentially available groundwater resources.

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