

WATER AND WASTEWATER INFRASTRUCTURE NEEDS 2007 INFRASTRUCTURE INVENTORY RESULTS

Oregon's Water and Wastewater System Profiles

Protection of Oregon's waters involves a partnership among several state agencies – most notable the Department of Environmental Quality (DEQ) and the Department of Human Services (DHS). Jointly these departments are responsible for assuring that the state's waters – either ground or surface - are drinkable, fishable and swimmable through the state's water quality standards programs. Funding for these activities is largely facilitated through federal funding flowing to the state either under the Clean Water State Revolving Fund or the Drinking Water State Revolving Fund. OECDD's Water/Wastewater Fund Program also provides significant funding to communities seeking financing for projects to correct compliance issues.

There are an estimated 2,699 public water systems¹ in Oregon that are subject to regulation under the federal Safe Drinking Water Act. Of these, 882 are community water systems² that serve an estimated three million Oregonians; 346 are considered nontransient noncommunity water systems consisting of schools or workplaces with independent water supply systems; and the remaining 1,471 are transient noncommunity water systems such as campgrounds, parks or restaurants with their own independent water supply systems. An additional 921 very small water systems, those supplying 4 to 14 homes or serving 10-24 people each and representing approximately 16,000 Oregonians, are subject only to state water standards under the Oregon Drinking Water Quality Act. Not covered by either state or federal drinking water standards are an estimated 600,000 Oregonians who get their drinking water from individual home wells. Additionally, there are an estimated 208 publicly-owned wastewater collection/treatment systems serving the majority of Oregon's urban centers; however, more than one million Oregonians, or about 35 percent of the state's population, use on-site sewage systems, also known as septic systems.

DHS, in conjunction with DEQ, has compiled a database with GIS capability that contains information on the occurrence and location of over 15,000 facilities or land uses that may release contamination to the 2,038 identified public drinking water sources throughout the state. This information is used to implement strategies that reduce the risk of contamination of the source waters supplying the public systems. DHS/DEQ also utilize the data to evaluate the susceptibility of each well, spring or intake to those potential sources of contamination that are located within each public water system's drinking water source area. The overall susceptibility of each drinking water source (well, spring, or surface water intake) was determined based on the number and type of potential contaminant source within each drinking water source area and the level of sensitivity of the aquifer or watershed area.

¹ In Oregon public water systems are not defined by ownership but rather are systems that supply piped water to the public for human consumption that have more than three service connections or that supplies water to a public or commercial establishment that is used by 10 or more people at least 60 days per year. Public water systems also means a system that supplies water for human consumption through constructed conveyances other than pipes that regularly supplies 15 or more service connections or serves 25 or more people daily for at least 60 days per year. A public water system is either a "Community water system", a Transient Non-Community water system; a Non-Transient Non-Community water system; or a "State Regulated water system."

² Community water systems are defined as a public water system that has 15 or more service connections used by year-round residents or regularly serve 25 or more year-round residents.

There are a total of 211 surface water drinking water sources (intakes) being utilized by public water systems throughout Oregon. Of these 211 surface water sources, a third are considered to be of either high or moderately high risk (susceptibility) to sources of contamination identified within the water system's drinking water source area in which they are located.³ Groundwater supplied through wells and springs are the other source of drinking water for Oregon's public water systems. There are approximately 2,000 public groundwater sources (wells and springs) in Oregon and an estimated 200,000 to 350,000 individual home (domestic) water supply wells⁴.

Of the almost 2,000 groundwater public drinking water sources, two-thirds are considered to be sensitive groundwater sources with just under a half identified as highly sensitive based on the characteristics of the well or spring and of the aquifer that serves the well or spring.⁵ Domestic drinking water supply wells are not routinely tested for water quality, but state law requires testing at the time of a real estate transaction.⁶

Water and Wastewater Project Results of 2007 Infrastructure Inventory

Various estimates exist on the cost to Oregon's communities to meet water and wastewater infrastructure improvement needs. All are estimates – whether based on a survey conducted by U.S. Environmental Protection Agency of representative wastewater systems indicating need⁷ or, as in the case of OECD's 2007 Infrastructure Inventory Needs Survey (Inventory), conducted regionally through voluntary participation. Since not all communities chose to participate, the Inventory is not a complete and comprehensive list of all of Oregon's wastewater needs. The projects entered into the Inventory tended to be projects for which the community needed financing assistance to either repair or replace an antiquated system or construct system improvements

³ The Drinking Water Protection Program ranks surface water watersheds into four tiers with Tier 1 representing the susceptibility of sources with the highest priority. Of the 211 surface water drinking water sources in Oregon, 47 intakes fall within Tier 1; 40 intakes fall within Tier 2; 31 intakes within Tier 3; and 83 intakes within Tier 4. Source water assessment data is maintained by the public water systems on the remaining 10 intakes and thus the DEQ and DHS do not track their susceptibility.

⁴ Water Resources Department reports that there are currently 205,000 operating domestic wells. This includes only licensed wells and does not include most wells installed prior to 1955 when licensing started. WRD estimates that there are another 150,000 wells that are unlicensed. This means that approximately 350,000 domestic private wells in use in Oregon.

⁵ Wells and springs are considered sensitive if they meet one of four criteria: (1) they draw from aquifers that were identified as sensitive in the source water assessment; (2) the well or spring has significant deficiencies with respect to construction; (3) the entry point for the well or spring has had chemical detection(s) of a volatile organic compound or synthetic organic compound; or (4) the well or spring is classified by DHS as groundwater under the direct influence of surface water.

⁶ Homeowners selling a property with a drinking water well must test the water for nitrate and total coliform bacteria. According to Oregon's 2004 Water Quality Assessment Section 305(b) Report, prepared by ODEQ's Water Quality Division, July 2004, between 1989 and 2003, about 24,633 nitrate tests were done by homeowners. Nitrate sample results indicate that most domestic well tests (82%) show nitrate levels below 2 mg/L and reflect background groundwater quality.

⁷ For example, for publicly owned wastewater treatment facilities (systems that are either wastewater collection and treatment facility systems or just wastewater collection systems) the draft results from the 2004 US Environmental Protection Agency's Clean Watersheds Needs Survey conducted by the Oregon Department of Environmental Quality documented a total cost need of \$2,874,819,000. These costs are for projects that are needed for a system to either come into compliance with existing federal/state standards or projects needed to be undertaken within 20 years to meet growing demand or anticipated increased standards. Finally, the survey was conducted over a 10-month period in 2004 and the results represent the expressed needs of 77 publicly owned wastewater systems.

sufficient to come into or maintain compliance with state and federal regulations. Regardless of the methodology used, the combined total project costs to meet Oregon’s water and wastewater infrastructure improvement needs exceed \$4.48 billion.⁸ Of this total cost, just over one third or \$1.58 billion is attributed to costs associated with (1) repairing or replacing antiquated systems/facilities and (2) complying with state and federal regulatory standards. The remaining estimated \$2.9 billion represents total costs necessary to address projects arising from development, population growth and immediate job creation/retention pressures.

Of the estimated \$1.58 billion needed to repair or replace antiquated systems/facilities and/or comply with state and federal regulatory standards, approximately \$1.1 billion is needed for wastewater infrastructure improvements and just over \$499 million for water infrastructure improvements. Further analysis of the estimated total project costs indicate that 80% or \$868 million is needed for wastewater system improvements by 2010 with 77% of these costs necessary for systems to meet or remain in compliance with state and federal regulations. For water system improvements, 43% or \$223 million is needed by 2010 with 75% of these costs needed to either replace or repair antiquated systems/facilities.

In addition to being asked for total project costs, the Inventory also requested that respondents indicate their estimated outside financing need – in other words, financing beyond local revenues set aside by the system for infrastructure improvements. The Inventory data indicated the estimated outside financing needed to address wastewater system improvements and water system improvements specific to repair/replacement of antiquated systems/facilities and to comply with state/federal regulations to be \$829 million and \$396 million respectively. Of the \$829 million in outside financing needed for wastewater system improvements, 79% or \$653 million is needed by 2010 with 73% or \$477 million necessary to comply with state and federal regulations. For water systems, 49% or almost \$200 million in outside financing is needed by 2010 of which 73% or \$142 million would be used to either replace or repair antiquated systems/facilities. Finally, the outside financing need of communities represents an estimated \$1.23 billion gap between what communities have in local revenues to finance themselves and the total cost of the improvements. Most notable, this gap represents one third of the total estimated cost of water/wastewater infrastructure improvements since the additional costs of growth on water and wastewater systems were not included in this analysis. For many of Oregon’s small- to medium-sized communities struggling to afford water and wastewater infrastructure improvements, especially those located outside of the Portland, Salem, Bend, Eugene and Medford/Ashland metropolitan areas, the impact on the economic competitiveness of the community is enormous.

Infrastructure Project Type	Year Needed By					
	2010			2015		
	Total (millions)	Financing Needed (millions)	% of Total Cost	Total (millions)	Financing Needed (millions)	% of Total Cost
Water						

⁸ Data taken from OECDD’s 2007 Infrastructure Inventory Needs Survey which asked respondents to choose one of the primary reasons for the project according to five primary categories: (1) antiquated system/facility; (2) federal/state regulation compliance; (3) development/population growth; (4) quality of life; (5) job creation.

-Antiquated System	\$166.5	\$141.6	85 %	\$191.2	\$141.3	73.9 %
-Federal/State Compliance	56.7	53.1	93.6	25.2	21.0	83.3
Wastewater						
- Antiquated System	201.5	176.4	87.5	52.8	36.3	68.8
- Federal/State Compliance	667.3	477.5	71.6	112.7	97.6	86.6
Total	\$1,092.0	\$848.6	77.7 %	\$3,81.9	\$296.2	77.6 %

Of the 116 public community water systems that submitted projects to OECDD’s Infrastructure Inventory Survey, 78% or 90 systems serving almost 500,000 Oregonians have been identified by DHS and DEQ as having either surface water or groundwater sources or both with either high or moderately high risk of susceptibility or sensitivity to sources of contamination.

As previously noted, approximately \$2.9 billion of total water and wastewater (including stormwater) infrastructure projects costs will be in response to development/population growth, and immediate job creation/retention needs. Moreover, communities indicate a need to seek financing for 56.6% of these costs or approximately \$1.64 billion in order to ensure completion of these infrastructure improvements. Between 2000 and 2025, Oregon’s population is estimated to grow by 1.89 million⁹ with the greatest increase in population expected to primarily occur in seven counties: Clackamas, Deschutes, Jackson, Lane, Marion, Multnomah and Washington. The following table compares the total cost of water and wastewater projects entered into OECDD’s Infrastructure Inventory by communities located in these counties with the estimated population increases anticipated to occur by 2025.

County	Type of Project	Estimated Total Cost (\$million)	Estimated Population Increase by 2025
Clackamas ¹⁰	Water	\$129.1	157,926
	Wastewater	196.0	
Deschutes	Water	121.9	97,879
	Wastewater	141.6	
Jackson ¹¹	Water	.780	71,681
	Wastewater	2.3	
Lane	Water	61.8	85,209
	Wastewater	38.7	
Marion	Water	5.9	102,598
	Wastewater	15.3	
Multnomah	Water	24.7	115,628
	Wastewater	14.2	
Washington ¹²	Water	972.8	274,419

⁹ Forecasts of Oregon’s County Population and Components of Change 2000 – 2040, prepared by Office of Economic Analysis, Department of Administrative Services, State of Oregon, April 2004.

¹⁰ Includes water and wastewater project costs for Wilsonville.

¹¹ Majority of Jackson County projects were categorized as necessary to address repair or replacement of antiquated systems or necessary to comply with state and federal regulations. Of these two categories, water projects totaled \$55,036,125 and wastewater projects totaled \$18,190,000.

	Wastewater	464.7	
Total		\$2,189.9	905,340

Finally, of the approximately \$34 million in water and wastewater infrastructure improvements necessary to respond to immediate job creation/retention opportunities by 2009, a financing need of \$18 million or 52.4% of total costs was identified.

¹² Includes water and wastewater project costs for Clean Water Services.