

UTAH GROUND WATER CONDITIONS 2003

Ground Water Importance: Drought conditions appear to be continuing as Utah is experiencing above normal temperatures and below normal precipitation again this winter. Last year, Governor Michael O. Leavitt declared a “State of Emergency” and a “Statewide Agricultural Disaster” to exist in the State of

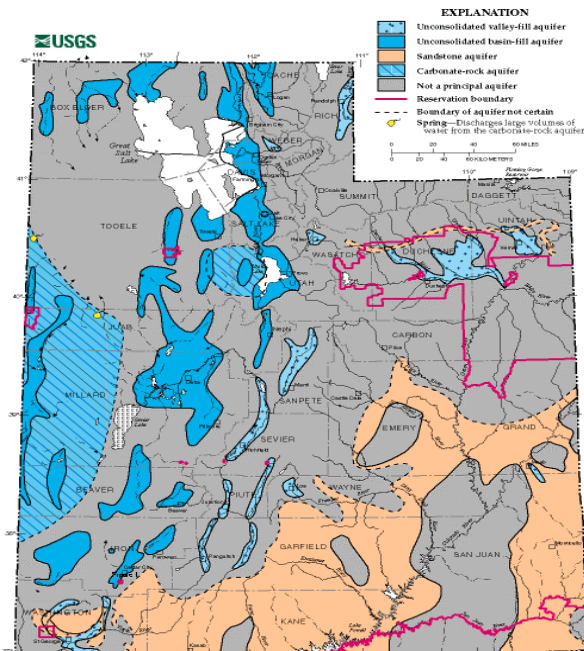


Figure 1: Utah Aquifer Types

Utah. State Water Officials agree that what appears to be a 4th year of an ongoing drought cycle will have severe impacts to our limited water supply. The majority of the State streams are now running at 10% of normal and southern streams commonly below 1%. This is Utah’s worst drought in recent history. Water shortages are predicted to continue throughout 2003 regardless of rain and snow amounts in the next several months. State officials are keeping close watch on our more weather resilient and dependable ground water resources, which has shown no regional impacts from the multiyear precipitation deficiency. Over 60 percent of Utah residents depend on ground water for culinary use. Seventeen of the State’s twenty-nine counties are almost entirely dependent on ground water for household use. Of the total 390 public water supply systems approximately

350 are ground water dependent. Utah has over 1600 wells and springs that serve as public drinking water sources (Figure 2). Approximately 100,000 residences of the state are served by their own private well or spring. A significant future concern is that Utah’s explosive growth rate will further increase our reliance on ground water. Because ground water appropriations are already restricted in more than half of the State, future growth will require conservation and reuse. Ground water also provides the majority of the base flow to streams in many areas of the state and is essential to watershed ecology.

Where is it? According to the USGS, Utah has four principal types of aquifers: unconsolidated valley-fill and basin-fill deposits, sandstone, and carbonate rocks (Figure 1). The valley fill and basin-fill aquifers provide supplemental water supplies to most major cities and to much of the irrigated land. More than 85% of the State’s total withdrawal by wells is from the unconsolidated aquifers. Less than one percent of the withdrawals are from the sandstone aquifers, however these resources are seeing rapid development. The remaining withdrawals are from the carbonate-rock aquifers and from miscellaneous aquifers that are not classified.

How Good is the Water? According to the USGS, water from basin-fill and valley-fill aquifers generally has less than 1,000 mg/L dissolved solids, is fresh and is suitable for most uses, including public supply. Ground water containing less than 250 mg/L dissolved solids occurs in the recharge zones of the basin-fill and valley-fill aquifers adjacent to the Wasatch Range and other high mountain areas. Slightly saline ground water generally underlies the lowest parts of valleys, where ground water discharges to the Great Salt Lake and playa areas of western and northwestern Utah. Southern Utah’s water supply for irrigation and public water supply generally comes from sandstone aquifers. Water quality is generally less than 1,000 mg/L dissolved solids in the recharge areas, but where sandstone is deeply buried the concentration may be greater than 35,000 mg/L. High concentrations are likely

caused by vertical movement of more saline water from older and younger formations into the sandstone aquifers. This can occur both naturally and due to pumping above sustained yields.

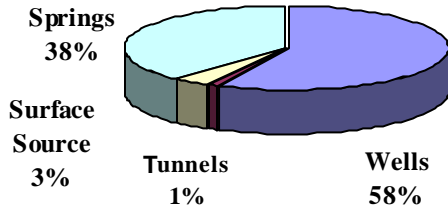


Figure 2: Sources Serving Utah Public Drinking Water Systems

What Are We Doing To Protect Ground Water? Numerous point sources are regulated through the State Ground Water Protection Regulations adopted in 1989. In addition to point source regulation, these rules outline a process for aquifer classification (which has been completed by six areas of the State) and establish corrective action procedures and ground water quality standards. Concentrated Animal Feeding Operations are the fastest growing and largest sector of ground water point source activities permitted under the State program (Figure 3). The contaminants of concern from these lots include nitrate, nitrite, ammonia and other naturally occurring inorganic ions. Statewide cleanup costs from other point sources include two multi-million dollar efforts to restore over 150,000 acre-feet of ground water.

Ground water contamination by non-point sources (NPS) are more difficult to monitor, assess and control. Salts, sediments, nutrients, and other substances, both natural and man made, washed from land during snow melt or rainstorm runoff can result in degradation of ground water aquifers over time. Natural processes contribute approximately 60% of the NPS problem in the State with the remaining 40% related to man's impact on land. Amongst the NPS activities causing this degradation are septic tank drain fields and agricultural practices.

Ground water protection educational activities scheduled for 2003 include completion of source water protection assessment for many water systems, the 9th annual State Ground Water Conference co-sponsored by numerous State, local and private entities including the Utah League of Cities and Towns. In response to the drought the 1st annual Utah Water Conservation Coordinators Conference was held in January. Last year the Governor's Conservation Team help educate local residents to conserve 12% more water than the previous year.

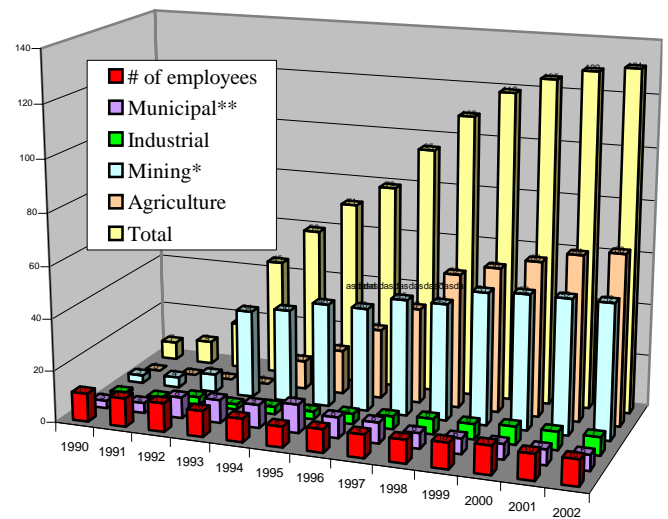


Figure 3: Ground Water Permitted Activities By Sector

Growth Impacts on Ground water: With Utah's continued growth in its economy and population there is a possibility of ground water contamination becoming a more frequent occurrence if proper safeguards are ignored. A continued increase in financial support will be required to insure the State's emphasis remains on prevention, rather than correction after contamination. The State must continue to encourage ground water classification, create partnerships with other water related agencies and support land use planning by local governments.