Technical Services

The Technical Services section facilitates the flow of information within the Division offices, among Division programs and to the public. It also conducts research, performs studies, administers publications and oversees the Division's Water Use Program. Although the Technical Services section emerged largely within the last decade, it has brought significant changes to the way the Division is structured, staffing assignments and how the Division interfaces with members of the water community.[130]

The Online Water Rights Record Database and Website

Technical Services maintains a comprehensive database of all water rights records in the state. A consistent and accurate collection of applications and water right records is the basis of the Division of Water Rights and critical to achieving its mission. The Division's Website has proved to be a valuable tool for state employees while providing the public with access to files that were once only available in hard copy. With access to the online database, the public has unrestricted access to water rights records and digital access from anywhere. The Division's Website allows water users to search for a water right, check the status of an application or obtain protest information among its many other features. The Website is instrumental in the everyday workings of the Division.[131]

The Water Rights Computer System Conversion Project from the mini-mainframe to the current SQL server configuration began in 2000 and was completed in three years. Currently, ten database systems are operational. Since around 2000, focused efforts have been made publishing digital water right records, Division research and maps to provide public access through the Division Website. In total, over one million documents associated with the water right files of record have been scanned and stored digitally by the Technical Services section while the 250,000 paper water right files remain the official files of record.[132]

In addition to housing the Water Right database, the Division's Website is a resource of timely and relevant resources for Division staff and the entire water community as the information and relevant data for all Division Programs can be accessed over the Internet. To highlight some of the information contained within the Website, Division and Department publications, new legislation, distribution records, and teaching tools from meetings, and workshops can be obtained digitally. The Division views its Website as a tool to raise the level of public understanding of the water rights process and increase public involvement. Moreover, the Website is an extensive resource for water users to best make decisions involving water rights.[133]

Current Studies

The Division participates in a cooperative studies program partnering with state, local and Federal entities in areas of common interest to increase the understanding of the water resources in the state. This collaborative effort offers best available science and engineering in water right administration and decisions of the State Engineer.[134] Table 4.9 describes current and ongoing studies as outlined on the Division's Current Studies Web page:

Table 4.9: Division of Water Rights Current Studies and Collaborative Efforts as Identified by Technical Services[135]

Curlew Valley Groundwater Hydrogeologic Framework

This is a cooperative study, released in November 2008 and conducted by the Utah Geological Survey in cooperation with the Division of Water Rights. The Report is available on the UGS Website (http://geology.utah.gov/online/ss/ss-126.pdf) or the Water Rights Publication Website (http://waterrights.utah.gov/cgi-bin/libview.exe?Modinfo=Viewpub&LIBNUM=50-1-491) for review. The study finds that a substantial increase in ground-water pumping for agriculture over the past 40 years, combined with lower-than-average precipitation during the past 10 years, are the most likely causes of the declining discharge at Locomotive Springs. The flow from Locomotive Springs at the northern end of Great Salt Lake in north-central Box Elder County has declined by about 80% since the late 1960s. Water levels and water quality in agricultural areas north of the springs have declined during the same time period.

Hydrogeology of Rush Valley, Tooele and Juab Counties

This study is a cooperative 3-year study conducted from 2008-2010 by the Utah Geological Survey and the United States Geological Survey that will characterize the hydrogeology of Rush Valley as it pertains to the flow of groundwater in the basin-fill aquifer with aquifer tests using existing wells in the basin.

Morgan Valley Groundwater Study

The Utah Division of Water Rights is conducting a co-op study with the Utah Geological Survey for a geologic and hydrologic study of the Morgan Valley drainage basin, Morgan County, Utah. The primary goals of the study are: (1) to characterize the hydrogeology of the Morgan Valley drainage basin as it pertains to the occurrence and flow of groundwater, with emphasis on delineating the thickness of the valley-fill aquifer and determining the water-yielding characteristics of fractured-rock aquifers in the study area, and (2) to develop a water budget for the drainage basin. The proposed work will require one and one-half years (18 months) of research, data collection, data analysis, and report preparation and will be complete in early 2010.

Well Cutting Logging

This is an ongoing co-op study with the Utah Geologic Survey to log cuttings from selected water wells in Utah to reveal relevant geologic characteristics and thickness of rock and sediment types.

Evaporation and Consumptive Use Estimate Update for Utah; 2008-2010

This co-op study with Dr. Hill of Utah State University will update a similar report done in 1994 and will consider 111 sites and elevation/topography in the calibration of maximum potential crop depletion rates and evapotranspiration. An electronic database of these uses will be developed for every PLS Section in the state in a GIS format. This study will extend from July 2008 – June of 2010.

Table 4.9 cont.

Stream Gage Accuracy Calibration and Automation; 2007-2008

This is a pilot co-op agreement with the Utah State University Water Lab to calibrate gages on sample river systems and make recommendations for their improvement and automation. This project will also involve USGS funding and other federal monies and will result in a presentation to the Water Users Workshop in 2009.

Dam Outlet Venting Requirements; 2005-2009

This is an ongoing co-op agreement with the Utah State University Water Lab and other federal monies to determine venting requirements for dam outlets and recommend a design procedure for these requirements. The project involves a literature search of existing procedures, the gathering of empirical information from existing Utah dams, and a model study to calibrate proposed design guidelines. This project was started in 2005 and will continue through 2008.

Oquirrh Mountains Groundwater Monitoring

This is a cooperative study with the United States Geological Survey and Kennecott Corp to monitor the groundwater flow and levels in the North Oquirrh Mountain and its interaction with the Tooele Valley alluvial fill. This is an ongoing project through 2009, at least.

Roosevelt//Neola Uinta River Stream Depletion Estimation; 2008-2009

This co-op study with the USGS, Roosevelt and the Ute Indian Tribe is designed to quantify the surface-groundwater interface near the Uinta River and the influence of the Roosevelt City wells in this area. This is a 4-season evaluation that should be completed by the end of 2009.

USGS Co-op Stream Gauging Program

This is a 100 year old, ongoing program between the USGS, the DNR, Water Rights, Water Resources and several other partners to maintain the existing, extensive, automated, real time stream-gauging program administered by the USGS. There is also a groundwater component and a water use component and a water quality component with the Department of Environmental Quality and the Department of Agriculture.

Sevier River Telemetry an Automation Project

The Utah Division of Water Rights supports the continued development of the Sevier River Telemetry and Automation Project. The Division provides cash and in kind services over a 2-year period as part of a local match cost-sharing proposal with the Natural Resource Conservation Service, " Conservation Innovation Grants" program. Funding provided by the Division will be used to extend and improve capabilities of the monitoring system in Utah. This project extends from 2008 to 2010. This study is in conjunction with the Bureau of Reclamation and the Sevier River Water Users Association.

Cedar Valley Groundwater Modeling

This is a cooperative study being conducted by the Utah Geological Survey that is current in the second of three years of study. This will be the first groundwater model developed by the UGS for the Division of Water Rights. The researchers have collected an extensive set of groundwater level data particularly in the northeast area of the valley. A cooperative groundwater-monitoring program with Eagle Mountain City is expected to add additional definition to groundwater system. It is anticipated this study will be published early in 2008.

Table 4.9 cont.

Northern Utah County Groundwater Study

This study is being conducted by the United States Geological Survey and is being funded almost entirely by local entities. The study is currently in the last year of a 5-year study plan. A progress report is available from the review meetings held August 31, 2006, February 16, 2006, September 8, 2005 and April 26, 2007.

Duchesne Distribution Water Right Model

The Division is developing a computerized water rights distribution model for the Duchesne River System. A software package called MODSIM is being used to assemble the information. Gertrudys Adkins is the project lead. The model is operational for planning purposes at present and will be used to develop day-to-day operational procedures on the river.

Cove Fort Area Hydrogeologic Framework

This study is conducted by the Utah Geological Survey. The study began July 2006 and is planned as a one-year study. It will look at the occurrence of groundwater in the study area, identify key components of the system, and the potential for additional groundwater development.

Bothwell Pocket Water Quality Investigation

This study is conducted by the Utah Geological Survey. This project began in September 2006 and is funded as a one-year study. The study will consider the water quality history in the basin, look at sources of poor quality groundwater, and any changes in quality that may be occurring with the objective to provide information to manage the resource that will minimize potential for quality degradation.

Cache Valley

The Division in conjunction with Cache Valley and other entities is developing a proposal to improve groundwater characterization in Cache Valley. The component of the study of particular interest to the Division is the groundwater - surface water interaction and timing.

Salt Lake Valley Shallow Groundwater Resource

The Division needs to study the characteristics of the shallow groundwater resource, it's relationship to surface sources and the deeper resources, and identify parameters within which the resource can be developed without adversely affecting existing water rights.

Salt Lake Valley Water Right Uses Conversion

The Division needs to study parameters under which water uses can be changed from existing irrigation use to other uses particularly if the new use move to Utah County. The disposition of the carrier water is a particular concern. Should it remain in Utah Lake, be released downstream, or remain available to the user who gave up the use for support of the remaining right.

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The Colorado River, Information for Utah on the Division Website

In 2005, stream flow and reservoir conditions for the Upper Colorado River were made available by monthly report. In 2006, a Colorado River Information Page providing links to Utah's Colorado River information, data, and current operation. On this page, there are links to databases and other literature including specific links for Colorado River conditions, Lake Powell and Flaming Gorge storage history, climate change, and power generation, among other publication links. The Division Web page has compiled many sources to provide information to the public on Utah's stake in the waters of the Colorado River. The following is largely taken from the Colorado River main page.

Utah is signatory to the Colorado River Compact and the Upper Colorado River Compact. These compacts divide the river so the upper basin states (New Mexico, Colorado, Utah, and Wyoming) have an obligation to deliver to the lower basin states (Nevada, Arizona, and California) 7.5 million acre-feet of water per year as measured at Lee's Ferry (just below Glen Canyon Dam). The upper basin states are then entitled to deplete the next 7.5 million acre feet from the Colorado River basin, this amount being divided among the states by percentage (Utah's share is 23 percent). After accounting for reservoir evaporation losses and treaty obligations to Mexico, Utah's allocation is about 1.4 million acre-feet when the full amount is available. The many agreements, laws, and court decisions which constitute the rules for operation on the Colorado River are referred to as the "Law of the River."[136]

Water depletion accounting is an important component of current Colorado River operation. The United States Bureau of Reclamation (USBR) operates as a technical resource to the Secretary of Interior who has oversight over river project operations. The USBR also maintains federal project water records. Flaming Gorge and Lake Powell are federal storage projects on the Colorado River system in Utah which were constructed to generate power and to serve both in-state water needs and provide a buffer so the lower basin obligation can be met.[137]

Additionally, Utah is a participant in the Upper Colorado River Endangered Fish Recovery Program. This partnership works to preserve and recover populations of endangered fish species while allowing continued and future water development.[138]

Evaluation of the long-term water supply on the Colorado River is a topic of particular interest because the Division of water supplies mandated by the Law of the River is based upon an assumed hydrology that may not align with present or future conditions. Correlation with tree rings is being used to estimate long-term trends. Lee's Ferry stream flow reconstruction estimates extending back to 1490 are currently available and indicate the Law of the River evolved during a period of unusually high supply.[139]

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[130] Lindon, Matt. Interview by Kevin Arthofer, 18 December 2008. Division of Water Rights, State Engineer's Office, Salt Lake City, Utah.

[131] Ibid.

[132] Ibid.

[133] Ibid.

[134] Ibid.
[135] Current Studies [Internet]. Division of Water Rights Website [updated 2008 September 9; cited 2009 Jan 12]. Available from: http://www.waterrights.utah.gov/techinfo/studies.aspx
[136] Colorado River Information for Utah [Internet]. Division of Water Rights Website [updated 2007 Jan 2; cited 2009 Jan 12]. Available from: http://www.waterrights.utah.gov/distinfo/colorado/default.asp
[137] ibid
[138] ibid
[139] ibid