

## **B. Water Resources Data Development, Collection and Management**

### ***Introduction***

Accurate and comprehensive water resource data are critical to planners and decisionmakers at all levels of government, researchers, developers and the business community. Now more than ever, the increasing need to manage our precious natural resources is driving the need for more detailed water and natural resources data for many areas of the state. This issue discussion describes some of the current data development, collection and management efforts in Nevada, current and future challenges facing data managers and users, and recommendations for meeting these challenges.

### ***Background***

At this time, state and federal agencies, counties, municipalities, universities and industries collect and maintain extensive water resource data. However, some of these data are not readily available to others, datasets may be missing information which decrease their usefulness to other agencies, or access is time consuming or cumbersome. As a result, planning and management efforts, such as development of the *State Water Plan*, become difficult. Many agencies are starting to address the data issue by providing data directories and data downloading capabilities through their Internet websites. It is anticipated that the Internet will be the most significant tool for improving data sharing capabilities in the future.

Improved data development, collection, management, coordination and sharing offer direct and indirect benefits to all Nevadans. For example, decisionmakers, planners, regulators and the public can become better informed which may lead to improved decisions, future *State Water Plan* releases can be improved, and the State's ability to assist local planning efforts can be enhanced (See "Water Planning Assistance to Local Governments" discussion in Part 3 of the *State Water Plan*). Also, improved data access and sharing between agencies can result in reduced duplication of efforts, thereby saving tax dollars.

For purposes of this discussion, data are divided into three types: temporal, textual and spatial data. Temporal data are those data related to a particular point in time or period of time. Examples include streamflows, groundwater levels, and precipitation data. Textual data consists of text-based information such as directories, library bibliographies and inventories. Spatial data are those data related to space which can be shown on a map, and are commonly maintained by Geographic Information Systems (GIS). GIS is a computer system for assembling, storing, manipulating, and displaying spatial data which includes information on the physical locations (geographic coordinates) of features and information about those features. GIS was once viewed as an expensive toy, but is now considered an indispensable planning and management tool.

*Metadata*, or information about the data in a dataset, is a critical component of information management. With metadata, the characteristics of a dataset are documented so that potential users can determine the appropriateness of the data for their particular purpose. Metadata can include a variety of information such as the agency responsible for the data; measurement, collection and laboratory methodologies; and data accuracy.

### ***Major Water Resource Data Collection, Management and Distribution Programs***

Brief descriptions of some of the major water resource data collection, management and distribution efforts currently underway follow. Separate discussions are provided for temporal, textual and spatial data.

#### **Temporal Data**

Temporal data are those data related to a particular point in time or period of time. Examples of temporal data include streamflows, groundwater levels and precipitation data. Following are examples of some major temporal datasets as maintained by various agencies.

**Nevada Division of Water Resources.** The Nevada Division of Water Resources (NDWR) collects, compiles and maintains a variety of data including water rights information, well logs, groundwater levels, and water use information.

- **Water Rights Database.** NDWR maintains an electronic database of water rights within the State. Of the more than 73,000 records, over 60,000 have been entered into the database. The database includes information on place of beneficial use, point of diversion, allowable diversion rates and volumes, and other ancillary data. Direct access to the database is limited to internal users, however others can obtain database query reports upon request.
- **Well Logs Database.** Since the 1940s, well logs have been submitted to the NDWR. These well logs include a variety of information such as: well location, drilling method, proposed use, well depth, and depth to water. In 1994, NDWR and USGS cooperatively developed a computer database for managing the well log information. Direct access to the database is limited to internal users, however, others can obtain database query reports upon request. Currently, the database contains information on approximately 50,000 wells in Nevada. The computer database does not contain any detailed information on the subsurface geology. However, this information can be obtained from paper copies of the well logs. The database does not account for all existing wells logs. While all wells in southern Nevada are recorded in the database, only those well drilled since 1984 are accounted for in the database.
- **Groundwater Levels.** NDWR collects groundwater level data in about 73 basins. Much of this information is collected once a year, typically in the spring. Only a portion of the NDWR level data are stored in an electronic database maintained by USGS. The remaining data are stored in paper files.
- **Water Use Data.** NDWR compiles and develops a variety of water use data. According to the

State Engineer's Office, water use data submitted to the Office and calculated by staff in the pumpage and crop inventories accounts for about 90 percent of the total groundwater usage. These data are utilized by the U.S. Geological Survey in their development of statewide water use estimates.

NDWR estimates the total groundwater pumpage within about 16 of the 256 hydrographic areas. Generally these groundwater pumpage inventories are based upon a mixture of both actual measurements and estimates. These data are maintained in electronic spreadsheet files.

NDWR estimates irrigated crop acreages and associated water withdrawals within about 30 of the 256 hydrographic areas. These data are currently stored on paper.

Surface water and groundwater pumpage data are submitted to NDWR by some water right holders as a requirement of water right permit conditions within about 80 of the 256 hydrographic areas. These data are specific to particular users and may not account for all water uses within a hydrographic area. A majority of the uses reported are for public supply systems, mining operations and miscellaneous commercial and industrial operations. These data are maintained in electronic spreadsheet files. NDWR is researching the possibility of entry of these data into an electronic database with links to the water rights database.

**Nevada Division of Environmental Protection.** Nevada Division of Environmental Protection (NDEP) conducts surface water quality monitoring of major water bodies. Water quality parameters are monitored by NDEP at about 100 sites throughout Nevada. These data are stored in EPA's STORET database (see later discussion on STORET).

A variety of other data are compiled under NDEP programs. NDEP's Underground Injection Control (IUC) program requires groundwater quality characterization data in the permit application. The Solid Waste program, Resource Conservation and Recovery Act (RCRA) hazardous waste facilities oversight, mining-related permitting and state groundwater permitting programs all require some amount of groundwater monitoring in the absence of any contaminant release. Facilities such as wastewater treatment plants and industrial operations with permitted discharges to the surface water are required to monitor effluent quality and to submit discharge monitoring reports to NDEP. Currently, most of these data are stored on paper in files. NDEP's Bureau of Water Quality Planning has initiated efforts to encourage all NDEP programs to automate current data collection and management activities.

**Nevada Division of Water Planning.** The Division of Water Planning maintains a variety of socioeconomic databases and has taken steps to improve water resource data distribution.

- **Socioeconomic Databases.** The Nevada Division of Water Planning maintains over 20 socioeconomic databases containing information such as population, employment by sector, agricultural production and mining production. These data are obtained from a variety of sources and are available on diskette from the Division in spreadsheet format.
- **Data Access.** Recognizing the need for centralized access to water resources data and information, the Nevada Division of Water Planning has developed an Internet homepage which

provides links to websites for other agencies and data sources such as streamflow, precipitation and snowpack conditions.

**Health Division and State Health Laboratory.** As required by state and federal drinking water regulations, public supply systems routinely submit water samples to laboratories for analysis. The laboratory results are then sent as paper copies to the Nevada Health Division which has primary enforcement authority for drinking water regulations. Depending upon the public supply system, analyses are performed by either the State Health Laboratory or by private laboratories. The State Health Laboratory maintains analysis results in an electronic database, but these data are not readily available to other agencies. However, others can obtain database query reports upon request.

Currently, the Nevada Health Division is planning for the implementation of a comprehensive electronic data management system. Under this proposed system, data generated by the laboratories will be electronically transferred to the planned Health Division system. This program is being funded with federal monies and may take a number of years to implement.

**U.S. Environmental Protection Agency.** STORET (STOrage and RETrieval) is a computerized information system residing on U.S. Environmental Protection Agency's (EPA) computer at Research Triangle Park, North Carolina. STORET contains information for over 800,000 sampling sites throughout the United States, and consists of several software programs which allow users to store and retrieve water quality data, and analyze these data. Currently, STORET data are downloadable by selected users. EPA is in the process of making STORET data available via the Internet.

As discussed above, the Nevada Division of Environmental Protection (NDEP) operates a surface water quality monitoring network of about 100 sites throughout Nevada. NDEP utilizes STORET for the maintenance of these data.

**U.S. Geological Survey.** The USGS Water Resources Division routinely collects water discharge data for gaging stations on streams, canals and drains; peak-flow data at miscellaneous sites and springs; water elevation and contents for lakes and reservoirs; water levels in wells; and water quality for stream, canal and drain sites and wells. These data are maintained in a number of electronic databases and published in an annual data report. Only the streamflow data are available to the public via the Internet. Other data such as groundwater levels and water quality information can be obtained in electronic format only upon request. USGS is currently working on an application for Internet access to statewide groundwater level information. There are no current plans to provide Internet access to their groundwater and surface water quality data.

**Other Agencies.** A number of agencies provide climatological (precipitation, temperature, snowpack conditions) data via the Internet such as the U.S. Natural Resources Conservation Service, National Weather Service, National Climate Data Center and Western Regional Climate Center.

### **Textual Data**

Textual data consists of text-based information such as directories, library bibliographies and inventories. Following are examples of some major textual datasets as maintained by various

agencies.

**Nevada Division of Water Planning.** The Division is in the process of developing a directory of professionals working in the water resources field and will provide information on occupation, areas of specialty and access. The directory will be produced in a database format and be available over the Internet.

The Division maintains a library of over 4,000 water resources related documents. The documents are indexed by major hydrographic region and subject area. The library includes water planning documents from many other states as well as many state, federal and local agency reports and publications. A detailed document listing is maintained within an electronic database. The Division is in the process of providing Internet access to the library document listing.

**Biological Resources and Research Center (BRRC).** BRRC's Effort Gap program is a database of biological research efforts in the Great Basin. The program's goal is to provide an easily accessible information center to agencies, organizations, and individuals involved in biological research. The database is accessible via the Internet and contains a variety of information such as contacts, project descriptions and directories of available data.

### **Spatial Data**

Spatial data are those data related to space which can be shown on a map, and which are commonly maintained within a Geographic Information System (GIS). Following is a discussion of some past and ongoing GIS development and coordination efforts.

**GIS data development.** Many agencies and organizations in Nevada are developing GIS data files which are of use in water resource planning and management. Such agencies include:

- Department of Conservation and Natural Resources
- Division of Water Resources
- Division of Environmental Protection
- Division of Wildlife
- Division of State Lands
- Division of State Parks
- Natural Heritage Program
- Division of Water Planning
- Legislative Counsel Bureau
- Department of Transportation
- University of Nevada System
- Tahoe Regional Planning Agency
- Desert Research Institute
- U.S. Geological Survey
- U.S. Forest Service
- U.S. Bureau of Land Management
- U.S. Bureau of Reclamation
- U.S. Natural Resources Conservation Service
- Nevada Bureau of Mines and Geology

Few of these agencies provide Internet access to their GIS files or directories. No comprehensive list of all available GIS files held by these agencies exists at this time.

**GIS Data Coordination and Distribution Efforts.** Following is a discussion of some recent GIS data coordination and distribution efforts.

- **State GIS Task Force.** In 1995, the Department of Information Technology (DoIT), then the Department of Information Services, created a GIS task force in concurrence with the Department's strategic plan. The overall objectives of the task force were to:
  - document GIS hardware and software requirements;
  - develop standards for hardware and software;
  - set direction for future GIS users;
  - establish a standard data format for GIS data for the state;
  - provide recommendations to enable GIS information transfer among all agencies within the state who demonstrate a need;
  - establish a clearinghouse for GIS data; and
  - establish guidelines and recommendations for GIS training and education.

The GIS Task Force consisted of about 50 representatives from state, local and federal agencies with meetings facilitated by DoIT staff. DoIT staff produced a draft report of conclusions and recommendations, but the report and its recommendations have not been finalized. One of the draft recommendations calls for the creation of a Geographic Information Board to take a leadership role in the coordination of state GIS functions.

- **Department of Conservation and Natural Resources GIS Committee.** The Department of Conservation and Natural Resources has formed a committee to coordinate departmental GIS issues.
- **Federal Geographic Data Committee.** The Federal Geographic Data Committee, established by Executive Order in 1994, was charged with three major activities:
  - establishment of a National Geospatial Data Clearinghouse;
  - development of standards for data documentation, collection, and exchange making data sharing easier; and
  - development of procedures and partnerships to decrease duplication of efforts in data development, and fill in areas where data gaps exist.

The National Geospatial Data Clearinghouse is accessible via the Internet and provides access to a network of spatial data directories and libraries as maintained by a variety of participating agencies. The Clearinghouse does not maintain any data but merely provides the means to locate and obtain the data maintained by others. At this time, approximately 25 states are participating in the National Geospatial Data Clearinghouse program. The State of Nevada is in the process of developing a link to the Clearinghouse.

- **Nevada Bureau of Mines and Geology/State Mapping Advisory Committee.** The Nevada Bureau of Mines and Geology (NBMG), on behalf of the State Mapping Advisory Committee (SMAC), received a grant from the Federal Geographic Data Committee (FGDC) in 1997 to support a study of how we use and share our digital geographic data in Nevada. NBMG mailed out surveys to GIS users throughout Nevada. These surveys indicated that most GIS users are not satisfied with existing coordination activities and that more formal coordination and data accessibility efforts are necessary. As a start to addressing this issue, NBMG in cooperation with

SMAC established an Internet website as a rudimentary geographic information clearinghouse. The NBMG website does not directly provide any GIS file listings or file access capabilities, but rather provides links to the homepages of agencies which maintain GIS and related data. Although a number of these agencies maintain GIS systems, data listings and access information may or may not be available from their homepages.

SMAC/NBMG recently obtained additional funding from the Federal Geographic Data Committee to establish a link to the National Geospatial Data Clearinghouse. Funding will be used to purchase the necessary computer hardware and to develop the Internet links to geospatial data providers in Nevada. As described below, the National Geospatial Data Clearinghouse does not maintain any data but merely provides information on where and how users may access data, information about the data (metadata) and links to data source Internet sites. The Clearinghouse link will be online mid-1999 and ready to receive metadata from agencies. Geospatial data providers in Nevada will need to submit metadata to the clearinghouse administrator in order for this clearinghouse to be an effective distribution tool.

- **National Performance Review (NPR) Project.** The NPR project is a cooperative effort between the U.S. Forest Service, University of Nevada-Reno, and the Nevada Division of Water Planning. One goal of this project is to provide access to information relevant to watershed planning and risk assessment in the upper Carson, Truckee and Walker watersheds. The project participants are compiling GIS information (physical, biological and cultural) for these watersheds, and plan to provide others access to the information via the Internet to the extent possible including basic viewing and downloading capabilities.
- **Biological Resources Research Center (BRRC).** The BRRC homepage provides a listing of GIS files maintained by BRRC. None of the data are accessible via the Internet, however GIS files can be requested from BRRC.

### ***Data Gaps and Research Needs***

While the management and dissemination of existing data is critical for effective decisionmaking, there is also the need to collect additional data and perform further research. In the following discussion, key data and research needs are presented.

## **Groundwater Quality and Water Levels**

The USGS and NDEP operate a network for monitoring surface water quality and flows. No such statewide network for monitoring groundwater quality and water levels exists in Nevada. Much of the available groundwater data are the result of special studies in specific areas, and monitoring required by State permitting programs and drinking water regulations. The USGS and NDWR are the primary agencies collecting groundwater level data on a statewide basis. Much of this information is collected once a year, typically in the spring.

A fundamental purpose for monitoring is to acquire data necessary for the protection of existing rights and planning to accommodate increased water usage. In some basins, the lack of continuous, long-term groundwater quality and level data makes it difficult to assess trends and manage the resource for current and future needs.

The need for a statewide groundwater level and quality monitoring network has been recognized for some time. In 1978, the USGS with NDEP produced a report titled “Ground-Water Quality in Nevada - A Proposed Monitoring Program” that outlined a program for systematically monitoring groundwater conditions in Nevada and defined procedures for prioritizing basins for monitoring.

## **Streamflow Gaging**

The U.S. Geological Survey (USGS) is the principal Federal agency which collects surface water data in Nevada. The USGS began collecting streamflow data in 1889 with the establishment of a gaging station on the Truckee River near the Nevada-California State line. During the next six years, additional gaging stations were established in the Humboldt, Carson, Walker and Truckee basins. As of 1997, the USGS surface water quantity monitoring network consists of water discharge measurements for 173 gaging stations on streams, canals and drains, 170 peak flow stations and miscellaneous sites, and six springs; and water levels and contents for 21 lakes and reservoirs. The general objective of the stream-gaging program is to provide information on, or to develop estimates of, flow characteristics at any point on any stream. The USGS and various entities in Nevada have had cooperative agreements for implementation of the gaging program. Assistance from these other entities has come in the form of funding and/or services. This program would not be viable without these cooperative agreements.

Other entities collect streamflow data for regional purposes. For example, the Clark County Regional Flood Control District operates a network of meteorologic and water depth monitoring stations as part of the District’s Flood Threat Recognition Program.

Streamflow records can be used for a number of purposes, such as:

- managing water supplies for various uses and minimum flow needs;
- administering compacts and decrees;
- operating and designing multipurpose storage facilities;
- characterizing water quality conditions, including sediment and chemical constituent loads;
- setting permit requirements for treated wastewater discharge;

- forecasting and managing floods;
- delineating and managing floodplains;
- designing highway bridges and culverts; and
- performing scientific studies for water quantity and quality planning and management purposes.

Most of the USGS gaging stations have one primary purpose and can have several secondary purposes. In some instances, gaging station data are used for day-to-day operations. However the resulting data can also be useful for long-term studies in the future. All existing and potential uses of the data need to be considered prior to discontinuing the operation of any gaging station. The maintenance of a viable stream gaging program is an integral part of managing our natural resources. Future efforts to discontinue existing gaging stations must be closely scrutinized. We must not lose sight of the long-term value of a comprehensive stream gaging network.

### **Water Use**

Approximately 65 to 75 percent of the total water withdrawn annually from groundwater and surface water sources in Nevada is either measured with detailed diversion records maintained by various entities, or estimated by the State annually in detailed pumpage and crop inventories. Only a portion of these data are maintained in an electronic database and reported to any state planning agencies. Much of the available water use data are collected for regulatory purposes (compliance with permits, decrees, etc.) and may lack the detail needed to fully characterize water usage for planning purposes. Water use information (whether measured or estimated) is critical for effective water planning and management both at the state and local levels. Additional information on water use and measurement is presented in Part 3, Section 1, “Water Use Measurement and Estimation.”

### **Water Resources Research**

Ongoing research concerning Nevada’s water resources which utilizes new technologies and methodologies provides valuable information for improved water management and planning. Improved understanding of our water resources leads to enhancements in planning and management.

One particular research need is the updating of groundwater perennial yield estimates. A majority of the groundwater perennial yield estimates currently available were developed by the U.S. Geological Survey during the 1960's and 1970's as part of a reconnaissance investigation series. The resulting perennial yield estimates form the basis for the management of the groundwater quantity in Nevada. However, these reconnaissance investigations were never intended to provide definitive groundwater budgets for hydrographic areas in Nevada. Instead, these studies were intended to serve as guides for more comprehensive investigations when new data became available and more advanced methodologies were developed. Since the time of the original perennial yield estimates, developments in new methods and technology for estimating water resource availability and groundwater recharge and discharge have been significant. These new methodologies are considered to be more accurate and could result in higher perennial yield values than previously estimated. For instance, the U.S. Geological Survey has applied new procedures to 16 basins in east-central Nevada and now estimate perennial yield amounts at more than twice the previously recognized values for 14 of these basins.

Updated estimates of groundwater availability, recharge and discharge, will better facilitate economic development, protection of scarce water resources and optimal resource allocation.

### ***Data Management in Other States***

Many states have recognized the need for improved data management and distribution, and have taken steps towards meeting these demands. Responses to data management needs vary from state to state, but the Internet has become the primary instrument by which users can research available data in their state. Depending upon the state, users can view and/or search data directories, view associated metadata and in some cases can download both temporal and/or spatial datasets. About 25 states are participating in National Geospatial Data Clearinghouse efforts. Nevada is in the process of developing an Internet link to the Clearinghouse which will present GIS metadata.

Some states have coordinated statewide efforts for improving data distribution. For example, a number of states have created geographic information boards to develop their GIS management strategies and policies, and oversee data sharing activities. Board members typically represent a number of different state agencies. In other states, individual agencies have taken the lead on developing their own data distribution program. Some states have a state GIS coordinator who facilitates and coordinates the activities of an informal GIS task force. All states bordering Nevada have some form of GIS coordinating board whether formal or informal. Following are some examples of data management activities in other states.

#### **Wyoming**

In support of their state water plan development, the State of Wyoming recently completed a detailed inventory of temporal and spatial water data available in the state. The statewide data inventory is accessible via the Internet and allows water resource professionals and the general public to access primary data descriptions under specific themes in Wyoming river basins. Information on procedures for obtaining the data is also provided.

#### **Idaho**

In Idaho, the Department of Water Resources manages the Idaho Geographic Information Center in accordance with policies set by the Geographic Information Advisory Committee. Through the Center's Internet homepage, users can download spatial data generated by a variety of agencies, but maintained in a central location by the state.

## **Utah**

The Utah Division of Water Rights is the office of record for water rights in the State of Utah, and all records are available for public review. Through the Division of Water Rights' Internet homepage, users can access a variety of information and data including water rights information.

## **Florida**

In 1996, the Florida State Legislature created the Florida Geographic Information Board (FGIB) to facilitate the identification, coordination, collection, and sharing of geographic information throughout the state. The board develops solutions, policies, and standards to increase the value and usefulness of geographic information. In addition, FGIB maintains a data directory on the Internet from which interested parties can obtain metadata on available GIS files and information on obtaining electronic copies.

## ***Issues***

Good water resource management decisions require reliable and accessible water resource information and data. While agencies in Nevada have made important strides in gathering, compiling and sharing water resources information, more needs to be done to provide a common and accurate core of information to enable timely and wise decisions. Future State Water Plan releases would be significantly enhanced with improvements in data management and availability. Following are the main issues that need to be addressed:

1. The State lacks a comprehensive plan to coordinate development and dissemination of temporal, textual and spatial (GIS) information.
2. Data accessibility needs to increase. Some datasets are stored on paper or electronic spreadsheets which reduces their usefulness. Other datasets are managed using database systems, but access may be restricted.
3. Without a comprehensive data inventory, potential users have difficulties in identifying, locating and obtaining needed data.
4. Metadata (data about the data) are lacking in some instances, making it difficult for potential users to determine the appropriateness of the data for their particular purpose.
5. Data gaps exist in some areas due to the lack of a statewide groundwater quality and level monitoring network, and a comprehensive statewide water use estimation program.
6. The lack of a comprehensive water use estimation program may impede state and local water planning efforts.
7. A viable stream gaging program is an integral part of managing our water resources, yet funding

and maintaining the stream gages remains problematic.

8. Ongoing research on Nevada's water resources is needed for improved water management and planning. Current perennial yield estimates may be inaccurate for some basins and could be updated using newer technologies and methodologies.

### ***Recommendations***

The following recommendations are provided as possible means for improving water resources data management in Nevada:

1. The State should encourage and support agencies and local governments in the development of electronic databases for data currently stored on paper copies and in electronic spreadsheet files, and for future data collected. Data stored in spreadsheet files are more useful than data on paper, however the spreadsheet format does not lend itself to the types of manipulations possible with databases.
2. The State should create a new GIS task force of local, state and federal interests to evaluate in detail GIS issues and management needs. Their main task should be the development of a strategic plan which would address data coordination, collection and sharing needs, staffing and funding considerations, and provide recommendations to address these issues.
3. The State should support federal agencies, such as U.S. Geological Survey (USGS) and U.S. Environmental Protection Agency, in their efforts to provide Internet access to data. For instance, the Department of Conservation and Natural Resources should cooperate with the USGS to provide public access to USGS water quality data.
4. The Division of Water Planning should develop and maintain a detailed inventory of water resource datasets with Internet access to the inventory and access information. State agencies should develop and provide Internet sites for data sharing to the extent possible.
5. The State should support efforts by all groups to provide GIS data information via Nevada's connection to the National Geospatial Data Clearinghouse.
6. The State should encourage the development of metadata (information about the dataset) so that potential users can more easily determine the appropriateness of the data for their particular purpose.
7. The Department of Conservation and Natural Resources should develop and implement a groundwater quality and level monitoring network for priority basins. In some basins, water level information collected more frequently than once a year would be useful.
8. The State should improve water use measurement and estimation efforts through the program defined in the "Water Use Measurement and Estimation" issue discussion.

9. The Department of Conservation and Natural Resources should continue to support the cooperative agreements with the USGS for the funding of the stream gaging station network. Future efforts to discontinue existing gaging stations must be closely scrutinized.
10. The Department of Conservation and Natural Resources should continue to support further research projects as necessary, and should support efforts to update perennial yield estimates for priority basins.

***Index - Part 3, Section 5B - Water Resources Data Development***

Biological Resources and Research Center (5B – 5, 5B – 7)  
Data Management in Other States  
    Florida (5B – 11)  
    Idaho (5B – 10)  
    Utah (5B – 10)  
    Wyoming (5B – 10)  
drinking water regulations (5B – 4)  
Effort Gap (5B – 5)  
Federal Geographic Data Committee (5B – 6)  
GIS (5B – 5)  
Groundwater Quality (5B – 8)  
Internet (5B – 1)  
Metadata (5B – 2)  
National Performance Review (5B – 7)  
Nevada Bureau of Mines and Geology (5B – 7)  
Nevada Division of Environmental Protection (5B – 3)  
Nevada Division of Water Planning (5B – 3, 5B – 5)  
precipitation (5B – 4)  
snowpack (5B – 4)  
Socioeconomic Databases (5B – 3)  
Spatial Data (5B – 5)  
State Mapping Advisory Committee (5B – 7)  
STORET (5B – 4)  
Streamflow Gaging (5B – 8)  
temperature (5B – 4)  
Temporal Data (5B – 2)  
U.S. Geological Survey (5B – 4)  
Underground Injection Control (5B – 3)  
Water Levels (5B – 8)  
Water Resources Research (5B – 9)  
Water Use (5B – 9)