WYOMING WATER DEVELOPMENT COMMISSION Summer 2002

# Water Planning News

## Powder-Tongue and Northeast River Basin Plans Unveiled

### Inside this issue:



**Special points of interest:**

- **Learn about the Madison Formation Aquifer in News from WWDC.**
- **Read about the 2002 Water Systems Survey in News from Water Resources Data System.**
- **As always look for activities in your area in the Water Planning Calendar.**

River basin plans for the Powder-Tongue and Northeast Basins (Little Missouri, Belle Fourche, Cheyenne, and Niobrara) were recently presented at public meetings held in Sheridan and Upton respectively. The plans were the culmination of an 18-month planning process authorized by the 2000 Wyoming State Legislature. HKM Engineering out of Sheridan, WY and Billings, MT were the principal consultants for this planning effort, which was directed by the Wyoming Water Development Commission (WWDC). The Wyoming State Engineer's Office and the Water Resources Data System at the University of Wyoming each played significant roles in the planning process as members of the planning team. The Powder-Tongue Basin Advisory Group and the Northeast Basin Advisory Group, made up of citizens within the basin(s), provided critical input and direction during the process.

Presentation of the plans began with an introduction by Mr. Jon Wade, Administrator for River Basin Planning at the WWDC, who thanked the group for their attendance not only at the final plan presentation, but also throughout the planning period. Mr. Wade then ntroduced Mr. Wade Irion of HKM, who walked attendees through the basin plan.

During the presentation, water uses in the basin were characterized and discussed, including agricultural, municipal, domestic, industrial, recreational and environmental uses. The methods of data collection were explained as well as the level of detail that was incorporated for each water use type. The surface water hydrology of the basin was then discussed and the modeling efforts that were undertaken. The spreadsheet model was also demonstrated for the group.

The consulting team continued by covering the available surface and ground water resources of the basin, and then discussed the effects of the compact(s) on availability. Demand projections were detailed using three scenarios, low, moderate and high growth regimes. Future water use opportunities in the basin were then characterized, including the steps by which the planning team and the basin advisory group arrived at the short list of opportunities.

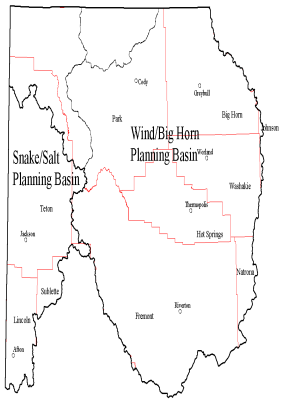
In conclusion, it was noted that the river basin plans created for the Powder-Tongue and Northeast Basins would be used for understanding the basin water resources; planning and decision making; establishing purpose and need for projects; funding considerations; and identifying study and evaluation needs.

Individuals desiring further information on this or any other basin planning efforts being undertaken by the WWDC across the state, are encouraged to visit the water planning website at http://waterplan.state.wy.us Powder-Tongue and Northeast final basin plans, technical memos, GIS coverages, and spreadsheet models will all be available for download from the website later this year.

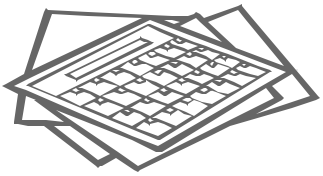
# Progress Report from the Snake/Salt and Wind-Bighorn River Basins

The Wind/Bighorn River Basin Plan consultant, BRS, has completed several of their data collection/ compilation tasks. Under Task 2 of their contract they have completed the irrigated lands mapping, and most of that work has been incorporated into a GIS format for analysis. The water rights attribution work, and incorporation into a GIS format, is also nearing completion. Surface Water Modeling is underway, and the period of record for modeling purposes has been selected. Diversion and flow data has been collected, and is being entered into an electronic format for use. The socio-economic profile of the basin is in draft form, which included interviews with some of the major water users in the basin. The consultant has a meeting set in May with the economic sub-consultant from the Snake/Salt River Basin Planning process to discuss consistency in form and process between the basin plans. The next W/B BAG meeting is set for June 11th from 3 to 6 pm in Lander.

The Snake/Salt River Basin Plan consultant, Sunrise Engineering, has completed incorporation of irrigated lands mapping into a GIS format. Water rights attribution work is complete, and surface water modeling is underway. Diversion records are being compiled, however they are not very extensive in most areas. The Agricultural Use, Municipal & Domestic Use, Recreation Use, Reservoir, and Industrial Use Technical Memorandums are being prepared. Stream gaging data for 2001, while still provisional, was reviewed and utilized because it was one of the driest on record. Water use data from municipalities, industries, agriculture, and various government agencies has been collected, and is being reviewed to help determine growth trends for the water use sectors. In addition, economic and population data are being utilized




to help predict future water demands in the basin. The next SS BAG meeting is set for June 12th from 6 to 9 pm at the Grand Targhee Ski Area near Alta.



## Water Planning Calendar

**July 15, 2002** – Bear Interim Basin Advisory Group Meeting - Kemmerer, WY, 6 p.m.

**July 16, 2002** – Green Interim Basin Advisory Group Meeting - Kemmerer, WY, 10 a.m.

**July 17, 2002** – Powder/ Tongue Interim Basin Advisory Group Meeting - Dayton, WY, 6 p.m.

**July 18, 2002** – Northeast Wyoming Interim Basin Advisory Group Meeting - Lusk, WY; 1 p.m.

**August 13, 2002** – Wind/ Bighorn Basin Advisory Group Meeting - Worland, WY, 3 p.m.

**August 14, 2002** – Snake/ Salt Basin Advisory Group Meeting - Moran Junction, WY, 6 p.m.

**August 16, 2002** – Wyoming Water Development Commission/ Select Water Committee Joint Meeting - Rawlins, WY, 8:30 a.m.

**October 8, 2002** – Wind/ Bighorn Basin Advisory Group Meeting - Thermopolis, WY, 3 p.m.

**October 9, 2002** – Snake/ Salt Basin Advisory Group Meeting - Alpine, WY, 6 p.m.

**November 18, 2002** – Bear Interim Basin Advisory Group Meeting - Evanston, WY, 6 p.m.

**November 19, 2002** – Green Interim Basin Advisory Group Meeting - Green River, WY, 10 a.m.

**November 20, 2002** – Powder/Tongue Interim Basin Advisory Group Meeting -Sheridan, WY, 6 p.m.

**November 21, 2002** – Northeast Wyoming Interim Basin Advisory Group Meeting - Moorcroft, WY, 1 p.m.

# News from WWDC

GROUNDWATER IN WYOMING – The Madison Formation Aquifer

The major topographic river basins of Wyoming are underlain in the subsurface by various bedrock materials that capture, convey, and store significant quantities of usable water resources in structured groundwater basins. Groundwater basins in the state may simply share those same boundaries as its common river basin or may cross surface divides depending on the subsurface geologic structure (e.g. the contiguous Powder River geologic basin splits surface drainage to the Yellowstone River and the Missouri River). Or, a river may cross groundwater basin divides such as the Wind-Bighorn River crossing from the Wind River geologic/topographic basin to Big Horn geologic/topographic basin through Owl Creek Mountains via Wind River Canyon.

Over the past fifty years, one groundwater source has "saved our bacon" as a resource for drinking water supplies and other uses in this state. The Madison Limestone Formation stands prominent as a source aquifer in terms of yields and water quality where it is developed on basin margins. Key municipal supplies that depend on Madison wells or springs include Worland, Gillette, Greybull, Hulett, Glenrock, Douglas, Newcastle, Sundance, Basin/Manderson, Ten Sleep, Hyattville, Moorcroft, Pine Haven, Kaycee, and Afton. The Madison Formation has also been an important source to the state's oil and gas industry for enhanced recovery purposes (water floods).

One of the little-known "Wonders of Wyoming" is the City of Worland well field, located on a geologic feature known as the Paintrock Anticline at the eastern margin of the Bighorn Basin. The two flowing artesian wells that serve as Worland's sole supply were completed in the Madison Formation and were open-flow tested, when drilled, as collectively producing almost 20,000 gallons per minute. The City of Gillette's Madison well field, located on the flank of Wyoming's Black Hills a few miles south of Devils Tower, consists of 10 wells concentrated in an area less than 1 square mile that serve Gillette via a 42 mile long pipeline. A very rare geologic feature known as the "Periodic Spring" serves the Town of Afton in the Star Valley of western Wyoming. This "cold water geyser" is located about 5 miles west of Afton in the Salt River Range and issues from vertically standing Madison Limestone in periodic pulses or cycles of flow varying from zero flow to many cubic feet per second depending on the season, previous snowpack, etc.

Over the past 20+ years, the Wyoming Water Development Commission has provided funding for exploration and development of the Madison Formation aquifer. In recent years the WWDC has drilled approximately 2 Madison wells per year as new source supply development for sponsor entities. As normal demands for groundwater increase and/or as dry conditions force development of drought-proof source supplies, development of the Madison Formation aquifer is likely to remain at a similar rate or possibly increase. Madison Formation groundwater is particularly sought after as a source for drinking water supplies because of high yield potential, minimal treatment needs (chlorination only), and a high percentage of the total aquifer reservoir is unappropriated. Drilling costs are expensive however and locating new development wells requires intensive siting studies. Future river basin needs in Wyoming will focus and depend on reliable source supply from the Madison Formation.

# News from Water Resources Data System...

**The 2002 Water System Survey Report Nears Completion**

Initiated in the fall of 2001, the *Water System Survey Report* is nearing completion. This survey, conducted every other year by the Wyoming Water Development Commission (WWDC) and Water Resources Data System, summarizes information gathered from known municipal and non-municipal community public water systems in the State of Wyoming. Community public water systems include municipalities, special districts, private companies and homeowner associations. Over 150 public water systems throughout the State responded to this survey.

The *Water System Survey Report* provides valuable information to state agencies funding water system improvements and allows public water systems to compare rates, budgets, and operational procedures with other systems around the State. The report consists of six separate parts including contact information, source data, system use, billing rates, fiscal data, and wellhead protection / conservation information. For additional comparisons, statistical analyses are also included for a few of the fields within the report.

For more information on the *Water System Survey Report* or to request a copy, please contact the WWDC at (307) 777-7626. In addition, once finalized, the report will be available through the WWDC website at http://wwdc.state.wy.us

WYOMING WATER DEVELOPMENT COMMISSION

River Basin Planning Division
Herschler Building 4W
122 West 25th Street
Cheyenne, WY 82002

Phone: (307)777-7626
Fax: (307)777-6819
Email: waterplan@.state.wy.us

Visit our Website:
http://waterplan.state.wy.us/

# The Water Conservation Report...

Conservation has as broad a definition as there are varying interests and values. Its generic definition, however, is the planned management of natural resources. Wise use, beneficial use or multiple use can all be construed as meeting what is termed as conservation. Possibly, water conservation can be viewed as making efficient, effective and appropriate use of water resources that achieve economic, environmental, political and social benefits.

With that in mind, the Wyoming Water Development Commission, through the design, delivery and support of water related programs, is an agency of state government with a conservation focus. River basin planning, project planning and construction, surface water and groundwater development and watershed planning all have a conservation orientation. A new addition to this stable of programs soon to be available statewide from the Commission is the Small Water Project Program.

The Small Water Project Program was authorized and funded by the Wyoming Legislature during the 2002 session. The legislature appropriated one million dollars for the Small Water Project Program, half of which is for new development and half of which is for rehabilitation. Projects that have been identified as eligible for this program are small ponds and reservoirs, wells, pipelines and conveyance facilities, springs and wetland developments. Public entity sponsors eligible to participate in this program are local conservation or natural resource districts, watershed improvement districts, water conservancy districts, water and sewer districts, irrigation districts and municipalities.

Authorizing legislation outlined the development of this program through a pilot study process. As such, the Commission is engaging public entity sponsors, such as local conservation or natural resource districts, in the pilot stage of this program. The pilot stage will not only advance to construction some selected small water projects but will also provide the Commission staff an opportunity to work with local sponsors to refine the program's process prior to becoming a statewide opportunity for development of small water projects. Once the process is functional this program will promote water development and conservation in Wyoming for small projects not previously eligible for funding through the Water Development Commission.