

Montana Bureau of Mines and Geology
Ground-Water Assessment Program: Progress Report
Environmental Quality Council
Land Use and Water Policy Subcommittees
May 5, 2000

Program History

The Legislature established the Ground-Water Assessment Program (85-2-901 et seq.) in 1991 after considering the recommendations of a Ground-Water Task Force organized by the Environmental Quality Council in 1989. Within the Assessment Program, it specifically created the **Ground-Water Monitoring and Ground-Water Characterization** efforts as mechanisms to improve understanding of Montana's ground-water resources. As part of the mandate to make ground-water information more available, the Assessment Program includes the **Ground-Water Information Center** databases at the Montana Bureau of Mines and Geology (MBMG). The Legislature also created an interagency Steering Committee to address the need for better coordination among the state, federal and local government units and to oversee progress in the Assessment Program.

To address the problems shown below, the Legislature decided to "systematically assess and monitor the state's ground water and to disseminate the information..." 85-2-902(2) MCA. The Legislature recognized that ground-water information is the key to dealing with the problems listed below.

- "Montana's citizens depend on ground water..."
- "ground-water supplies are threatened..."
- "there is **insufficient information** characterizing..."
- "**ground-water information deficiencies** are hampering..."
- "...focus on preventing ground-water contamination...but **better ground-water information** is required"
- "there is a need for better coordination among those numerous units of state, federal, and local government..."

(85-2-902(1) MCA)



Ground-Water Information Center (GWIC)

Data collected by the Characterization and Monitoring Programs and other ground-water projects are of less value if not made easily available to the public and other data users. Consequently, all data gathered by the Monitoring or Characterization Programs and many other MBMG projects are immediately stored in GWIC and become available to the people of Montana. Other agencies also may use GWIC to store data. For example, the Department of Natural Resources and Conservation used GWIC to archive data from projects such as the Flint Creek Return Flow and Beaverhead Ground-Water studies. Several times each year DNRC forwards field data from miscellaneous site investigations to GWIC.

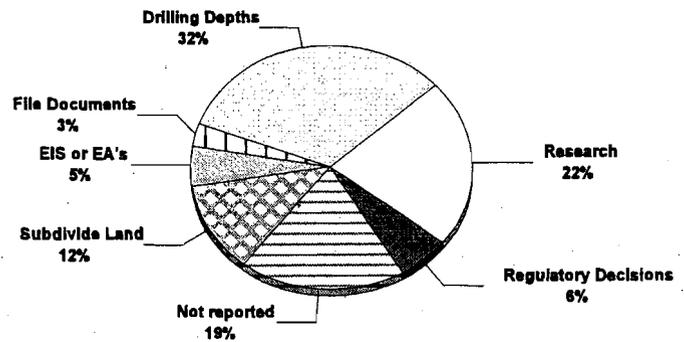
Information Center staff update records in the Ground-Water Information Center (GWIC) databases daily. They also have serviced about 120 calls for information each month since January 1, 1999. Some types of data that can be obtained from GWIC are shown below.

- Information for almost 164,000 wells.
 - Results from 22,300 water-quality analyses from about 12,000 sites
 - Water level measurements from more than 5,500 wells for periods as long as 40 years.
 - Descriptions of materials encountered in more than 88,000 wells.
 - High-quality data for about 4,388 wells visited by Characterization Program staff.
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Who are GWIC customers, what questions do they ask, and how frequently do they call?

The GWIC website (mbmggwic.mtech.edu) logged more than 9,550 user sessions between January 1, 1999 and March 28, 2000. Additionally, GWIC staff serviced about 1,800 direct calls during the same period. Of the calls directly answered by GWIC staff, about 240 came from the general public, 102 came from drillers, 469 came from real estate agents and businesses, 545 came from consultants and engineers, and 204 came from government scientist or regulators. About 250 of the callers were not identified. The calls serviced by GWIC staff are not included in the table below because it is difficult to match the callers to individuals who also are using the website directly.

GWIC website users tell MBMG how they use ground-water data.



GWIC customers come from all parts of Montana and have questions ranging from “Can you locate my well log?”, to **Can I drill an irrigation well for the cemetery at Chinook, Montana?**, to **Can you send me all completion information for public water supply wells in Montana?**, to **How deep is the last potential aquifer northwest of Billings, Montana?**”

As part of allowing access to the GWIC website, users are asked to provide information about who they are and what they plan to do with any data that are retrieved. The table below shows that database users consistently return for more information as their data needs and projects change. The chart above shows what customers tell us about how they use data retrieved from GWIC.

That ground-water data provided by GWIC have value is shown by customers consistently contacting the website for more information. About 940 customers logged onto GWIC more than 9,550 times between January 1, 1999 and March 28, 2000. The average number of logins in each of those months was 640. Each user who contacts GWIC, makes almost 4 queries of the data base.

Customer Group	Customers in Group	Number of logins	Repeat-login Frequency
General Public (homeowners, landowners, students)	157	582	3.7
Water Well Drillers	30	754	25.1
Industrial/Commercial (real estate agents, businesses)	184	1,365	7.4
Consultant/Scientists (engineering and technical firms)	288	2,675	9.2
Government/Scientists (regulators and scientists)	281	4,174	14.9



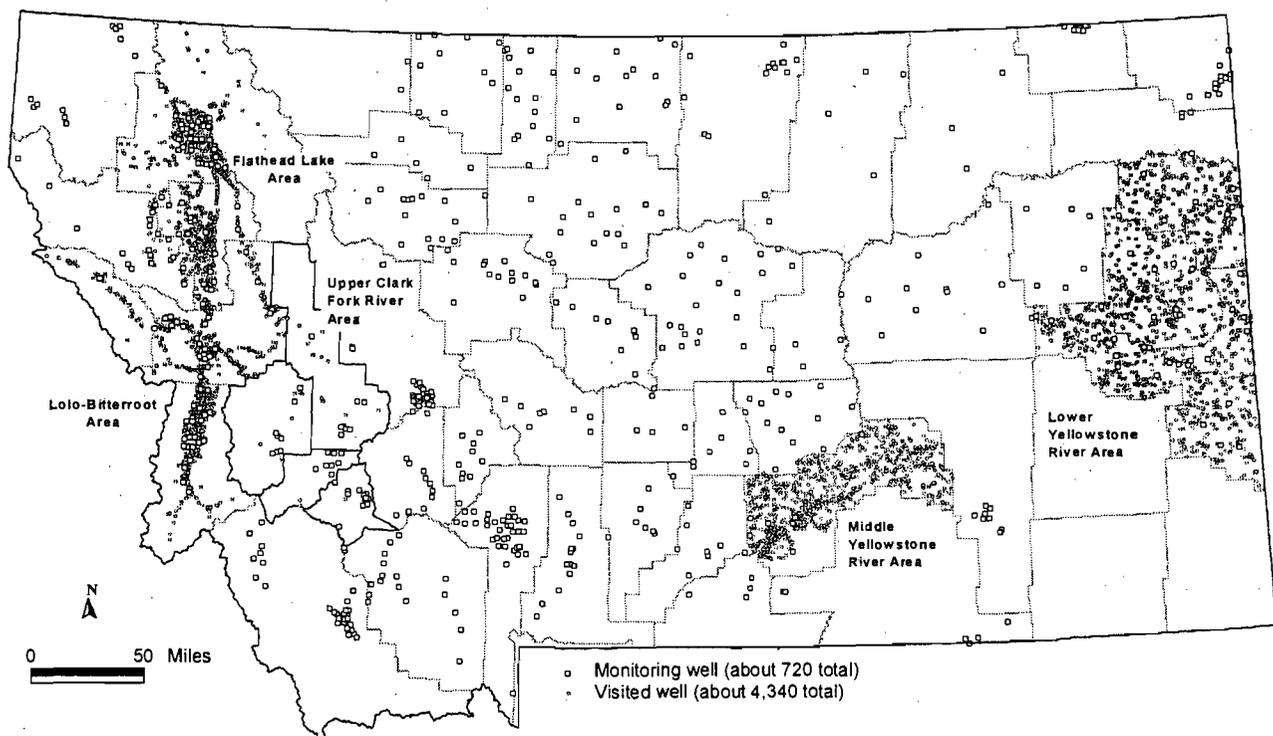
The Bureau has released 10 maps describing the hydrogeology of the Lower Yellowstone River Area. In addition, Characterization Program staff have visited about 4,340 wells in its four study areas. Work completed is described below.

- 10 maps and one printed atlas detailing the hydrogeology of the Lower Yellowstone River Area.
- Well-visit data for 1,451 wells and results from 188 new water-quality analyses for the Lower Yellowstone River Area.
- 2 maps and well-visit data for 974 wells and results from 253 new water-quality analyses for the Flathead Lake Area.
- Well-visit data for 1,015 wells and results from 172 new water-quality analyses for the Middle Yellowstone River Area.
- Well-visit data for 863 wells and results from 261 new water-quality analyses for the Lolo-Bitterroot Area

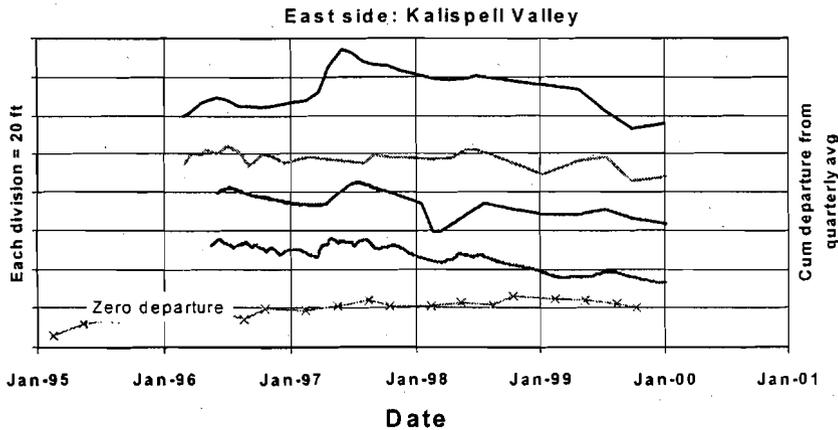
Ground-Water Characterization

Final hydrogeologic maps and a 35 page ground-water atlas have been released for the Lower Yellowstone River Area, 2 open-file maps have been released for the Flathead Lake Area, and data are being interpreted and maps being prepared for the Middle Yellowstone River Area. Data collection is complete in the Lolo-Bitterroot Area.

Characterization Program staff began work in the Upper Clark Fork River Area in the spring of 2000 with the establishment of an extended network of wells from which water-level data are being collected. Visits to the first of between 800 and 1,000 wells will begin in June and is expected to be completed in the summer of 2001. When not in the field, staff assist with data interpretation, map preparation, and collection of water-level and water-quality data from the monitoring network.



About 2,470 wells visited by the Characterization Program staff are evenly distributed across the Lower Yellowstone River and Middle Yellowstone River areas. Another 1,840 visited wells in the Flathead Lake and Lolo-Bitterroot areas are clustered within the major valleys in those study areas. The squares represent the locations of about 720 wells from which water levels are measured at least quarterly by the Monitoring Program. Data for all of these wells are available from the Ground-Water Information Center.



Water-level data from wells along the east side of the Kalispell valley show that water levels have fallen as much as 20 feet since mid-1996. The bottom-most line is the cumulative departure from the 40-year quarterly average precipitation for Montana.

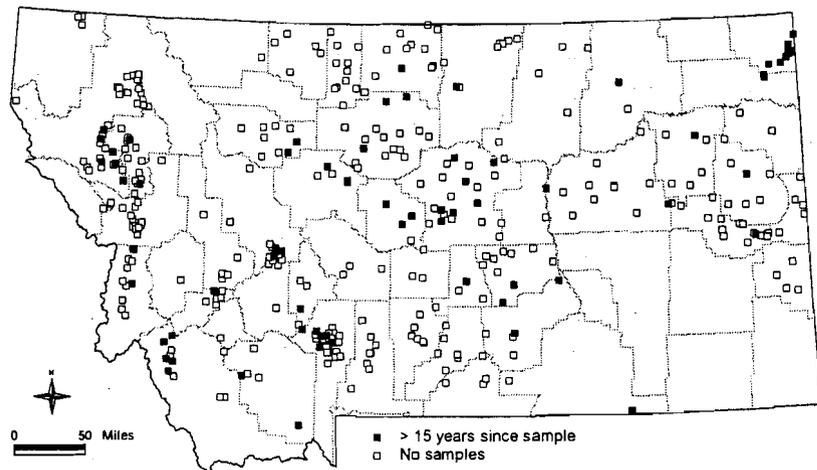
and climatic changes, or other factors such as increasing population. Cooperators in collecting the water-level data include the U.S. Geological Survey, the Department of Natural Resources and Conservation, the Lewis and Clark County Water Quality District, the Missoula Valley Water Quality District, and Montana State University.

Water-level Monitoring

The Ground-Water Monitoring program measures water levels in about 720 wells quarterly (previous page). The network is not yet complete because of past funding limitations but recently several wells in north central and northeastern Montana have been added. Long-term records of water-levels in wells are like long-term records of stream flow or precipitation. Long-term records provide better understanding of how the ground-water resource responds to seasonal

Water-Quality Monitoring

The Monitoring Program is also designed to create long-term records of base-line water quality. Originally, plans were to collect 70 samples each year (from about 10 percent of the network) and to eventually re-sample all wells in the network every 10 years. About 140 samples were collected in the first 2 years of the Ground-Water Assessment Program but few samples were collected during the last 2 biennia because of funding limitations. Monitoring and Characterization program staff are currently in the field collecting about 100 samples for inorganic constituents, radon, and nitrate analysis. In addition to monitoring-network samples, GWIC contains water-quality data for about 10,000 ground-water sites. About 20% of these sites have more than one set of sampling results available.



Many wells in the monitoring network have not been sampled for water quality or have not been sampled within the last 15 years. In 2000 the Monitoring Program will collect about 100 samples— 75 from wells not previously sampled and 25 from wells sampled more than 15 years ago.