

Montana Bureau of M

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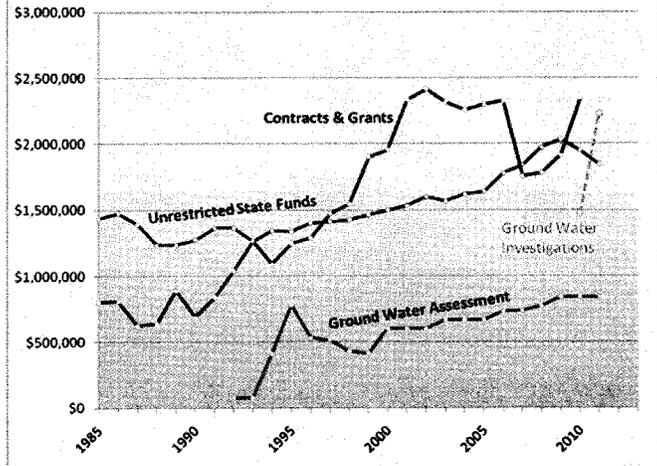
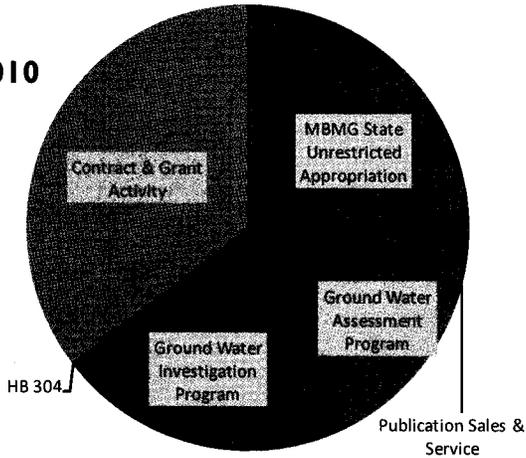
EXHIBIT 7
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 HB _____



Since it was established in 1919, the Montana Bureau of Mines and Geology (MBMG) has fulfilled its mandate to **collect and publish** information on Montana's geology to promote orderly and responsible development of the **energy, groundwater, and mineral resources** of Montana. A non-regulatory state agency, the MBMG provides extensive advisory, technical, and informational services on Montana's geologic, mineral, energy, and water resources. We bring this scientific information to the public.

Funding

2010



What do we do for Montana?

Geologic Mapping

Digital geologic maps based on substantial fieldwork are essential for all the research we do. Since the 1980s we have mapped **77%** of Montana, and all these maps are now available digitally. In the past biennium, the MBMG's geologic mapping program:

- Completed **18 new geologic maps in 16 Montana counties**: Beaverhead, Broadwater, Cascade, Dawson, Deer Lodge, Gallatin, Granite, Jefferson, Lewis and Clark, Madison, McCone, Missoula, Powell, Prairie, Silver Bow, and Yellowstone, totaling **over 2,150 sq miles**.
- Assisted with and released 7 Montana maps created by university students from across the U.S.
- Our maps are used by industry, the general public, professors and students, and local County, State, and Federal agencies for such purposes as groundwater investigations, mineral and energy resource assessment, geologic hazards assessment, locating sand and gravel deposits, and geological research.

Ground Water Assessment Program (GWAP)

GWAP was established as a statewide program by the 1991 Legislature to characterize, monitor, and assess the groundwater of Montana and make groundwater information widely accessible to the public. How are we doing?

- GWAP has made **~9,000 site visits** to collect information and added **~2,100 water-quality analyses** to Montana's knowledge base.
- GWAP has published **52 maps and reports covering 22 Montana counties**. Customers have downloaded our products **~17,600 times** this biennium.
- GWAP regularly visits about **950 wells** to provide data that show long-term response to climate variability and groundwater development.
- The Ground Water Information Center website (GWIC) provides information on about **230,000 wells**, has **19,370 registered users**, and each month answers **~34,000 queries**, including the delivery of **~3,100 groundwater-level trend charts**.
- GWIC customers include farmers, ranchers, banks, attorneys, contractors, water-well drillers, engineers, land surveyors, legislators, students, realtors, teachers, and state and local government agencies.
- **Based on a fall 2010 customer survey, 139 of 141 respondents said the value of GWIC groundwater data far exceeds the cost to the taxpayers.**

Ground Water Investigation Program (GWIP)

GWIP provides complex, locally defined hydrologic studies across Montana.

Challenges:

- Economic development requires water
- Increased reliance on senior water rights and stream flow caused regulatory innovations on development
- Increasing competition for water and unclear distinction between sources

Solution:

- State Legislature mandated scientific investigations (GWIP)
- 43 projects authorized to date across entire state / nearing completion
- All projects funded (see 10) with state completion by 2020 at \$1.5 M per biennium, estimate 2114
- Topics of greatest value (2005-2009) are:



Statewide Gallatin County (example)

Population density	30,000	10,000
New subdivisions	36,637	4,300
Residential wells	20,652	1,200

Earthquake Studies

The MBMG Earthquake Studies program is the only seismic center for Montana.

- We operate a network of **38 seismic monitoring stations** across the state.
- Over the past biennium, the MBMG seismic network recorded **2,920 earthquakes** in Montana with magnitudes ranging from 0 to 4.2.
- Our seismic information is used by Montana Disaster and Emergency Services, Montana Dam Safety Program, Confederated Salish and Kootenai Tribes Safety of Dams Program, the U.S. Geological Survey, the media and the public.
- Real-time views of seismic activity are always available on our website: <http://mbmg-quake.mtech.edu>

Energy Resources

The MBMG is working on many projects to find and investigate possibilities for using both alternative and traditional energy sources:

- Mapping **deep coal (underground coal gasification)**—at least 60% of Montana's vast coal resources lie more than 500 feet below the surface.
- Identifying geologic sites that might provide **permanent storage and use of CO₂ to reduce greenhouse gases**.
- Providing geologic data, maps, and other information to industry, legislators, and the public for oil, gas, and coalbed-methane studies.
- The MBMG monitors **28 springs and over 200 wells** within and near areas of coalbed-methane development, to evaluate impacts on Montana's water.
- **Geothermal energy**—we are participating with the U.S. Department of Energy in a national effort to compile Montana's geothermal data and used oil-well logs to map subsurface temperatures in eastern Montana.

Mineral Resources

Since its inception in 1919, the Montana Bureau of Mines and Geology has been heavily involved in providing mining and mineral resources information to Montanans.

- The Mineral Museum on Montana Tech's campus, run by the MBMG, has 1500 mineral specimens on display.
- The MBMG has performed investigations on Montana's **sapphires, titanium, zinc, zeolite, barite, talc, bentonite, sillimanite, fluor spar, graphite, vermiculite, and other minerals**.
- The MBMG develops and maintains files on mineral properties and gathers information on **current exploration and mining activities** throughout Montana.
- Our staff assists thousands of individuals and companies with mining plans, data interpretation, permitting, short- and long-term planning, and advice on a multitude of other mining-related subjects. **We act as the primary source of information and assistance for small miners.**
- Geologic maps provide information for all minerals investigations as well as increasing **sand and gravel issues** important to Montana.

What do we put back into the Montana economy?

- **Products:** The MBMG provides reports, maps, geologic maps, and valuable databases for Montanans.
- **Answers:** If consultants, drillers, students, citizens, or legislators want to get information about groundwater, earthquakes, mining, minerals, or natural resources, they call us! MBMG researchers answer thousands of information requests each year.
- **Research:** The MBMG provides research on local water supplies, problems with high salinity and selenium, acid mine drainage mitigation, superfund cleanup issues, organic waste-water chemicals, and many more areas.
- **Students:** In 2010 alone, we hired 64 students to help with our work, paying them more than \$165,000.
- **Tourism:** The MBMG's Mineral Museum had an estimated attendance this biennium of ~18,000 visitors. We assisted the MT Department of Transportation in producing geologic highway signs to inform the public about Montana's stunning geological features. We also produce guidebooks, and last year released a geologic field guide of Montana.
- **Support of Local Economy:** In 2010, about 30% of the MBMG's funding went directly into the local economy as contracted services and supplies.

How are our reports used?

Publications sold this biennium:

- 1553 titles, 10,979 items sold

Files (maps, pdf, data) downloaded for free:

- 643 titles, 434,357 files (almost double last biennium!)

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Please visit our website at <http://mbmg.mtech.edu> for detailed information on our programs and projects, including a full 2008–2010 biennial report and up-to-date factsheets for the GWAP and GWIP programs.