Program Highlights

Introduction. The Idaho Geological Survey has a statewide mission as the lead agency for collecting and disseminating geologic and mineral data in the state. In addition to its main office in Moscow at the University of Idaho, the Survey has branch offices in Boise at Boise State University and in Pocatello at Idaho State University. Staff geologists conduct applied research with a strong emphasis on producing geologic maps and providing technical and general information about Idaho's geology. Externally funded projects enhance this research.

The Survey publishes a variety of maps, books, and articles catalogued in the annual *List of Publications* that includes over 570 titles produced since 1919. In addition to handling on average 60 public inquiries a day, the staff makes numerous presentations and reports throughout the year.

Launching the Web site—*www.idahogeology.org*. This spring the Survey embarked on the World Wide Web with a "black and white" prototype of its inaugural Web site. Our intention was first to get something basic started and then during the summer finish the design and content originally planned. The result is now viewable on the Internet. Interest in the site has been strong from the beginning and is expanding through an ever-widening network of links.

The Web site offers multiple opportunities to get information before the public. For example, a current *List of Publications* is always on line. The WWW provides electronic access to digital geologic maps, GIS databases, and wide-ranging information such as geologic hazards and earth science education. The Survey intends to make the Web site an active "work in progress."

Geological mapping and related research. Central to the Survey's applied research is geologic mapping and related topical studies that together form the technical content of digital geologic maps, databases, reports, and publications. Since 1985 the Survey has been conducting detailed geologic mapping in selected urban areas of Idaho. The Survey participates in the U.S. Geological Survey's STATEMAP program, which has augmented geologic mapping in Boise, Coeur d'Alene, Lewiston, Moscow, Pocatello, and Twin Falls. From July 1999 through June 2000, seven 7.5-minute quadrangles were newly mapped in urban areas. These digital geologic maps are printed in color and, after GIS attributes are completed, the maps will be available in digital form.

As funds become available, the Survey sets priorities for regional geologic mapping in the large areas of Idaho that have never been studied in detail. The Coeur d'Alene, Idaho City, and St. Maries 30' x 60' quadrangle digital compilations were completed in fiscal year 2000. These projects were funded in part by STATEMAP and the U.S. Geological Survey's Headwaters project.

In cooperation with several universities, the Survey endorsed three EDMAP proposals for student geologic mapping in Idaho and participated for the second year in the student mentoring program sponsored by the Association of American State Geologists and the National Science Foundation.

Digital geologic maps. The Survey's digital mapping and GIS laboratory performs services ranging from digital cartography to spatial data management. The lab uses computer-aided design and GIS software to produce maps for publication and to fashion existing geologic maps into digital map compilations. New production techniques have allowed the Survey to publish digital geology as full-color, print-on-demand maps, thus improving map quality while reducing storage, inventory, and printing costs. The Survey participates in the North American Data Model Steering Committee that is developing digital legend design for geologic maps.

Hydrogeology. In selected areas of Idaho such as Pocatello, Boise, and Coeur d'Alene, the Survey works in cooperation with other agencies and university programs to better understand the geologic controls on recharge, flow, and transport of ground water and to provide technical information for ground-water protection.

To improve predictive models of ground-water contaminant transport at the Idaho National Engineering and Environmental Laboratories, the Survey is developing statistical correlation models for the lithology and permeability of the eastern Snake River Plain aquifer.

Building on the recently completed characterization of the Portneuf valley aquifer, the Survey works closely with Bannock County, the cities of Pocatello and Chubbuck, the Fort Hall Tribes, and citizen groups to protect and manage the ground-water resources in the region. The work includes designing and applying an environmental GIS database for aquifer vulnerability assessment.

In addition to mapping the surficial geology of the Rathdrum Prairie, the Survey completed new gravity profiles in the valley to help characterize the Rathdrum Prairie and the Spokane Valley aquifer near Coeur d'Alene.

Databases, bibliographies, and collections. Many of the digital geologic maps are also available as GIS databases. Other databases include Mines and Prospects, with data on more than 8,300 Idaho mines, and the state's earthquake database, earthquake observatory, and landslide database. Digital geologic databases and earthquake information are available on the Survey's Web site. Several technical bibliographies have been published, and an electronic bibliography on the state's geology with 11,000 references has been compiled. Many of these references, such as a complete collection of theses and dissertations on Idaho's geology, are available in special collections at the Moscow Office.

Geologic hazards. As the state's population has grown and disaster losses have increased, the Survey devotes increasing amounts of time with geologic hazard mitigation. The agency works in close cooperation with the Idaho Bureau of Disaster Services both formally and informally to mitigate, respond to, and recover from the impacts of floods, fires, landslides, and earthquakes, and to provide technical analysis when needed.

The Survey's digital mapping laboratory designed a statewide landslide database for use by state and federal agencies, local planners, and emergency response personnel. The design was tested in a pilot project in the Little Salmon River drainage. In addition, an inventory of landslides in the

Coeur d'Alene Lake basin has begun.

The Survey has conducted earthquake research in the Boise, Idaho Falls, and Pocatello metropolitan areas. Digital data capture for the Idaho active fault map has been completed, and a preliminary version of the map has been reviewed. The mapped faults are linked to an extensive database as well as a seismic reference collection.

As an active participant in the Western States Seismic Policy Council and regional planning groups of the Advanced National Seismic System, the Survey is involved in organizing and planning several hazard mitigation projects throughout the state, including the Federal Emergency Management Agency's Project Impacts for the communities of Boise, Kamiah, and Blaine County.

Mitigation of natural hazards is a major component of the Survey's annual summer workshop for teachers. Training activities provide knowledge of Idaho's tectonic setting and classroom safety and response. The Survey has expanded the geologic-hazard education component to include testing of classroom activities by master teachers.

Mines and the geology of mines. The Survey maintains a working knowledge of the geology of all active mines in Idaho. Information and statistics on Idaho's mines are collected and published annually. The Survey cooperates with the U.S. Geological Survey in collecting and interpreting mineral statistics and mining data and presents the results at the Northwest Mining Association's annual meeting. The Survey's summaries of Idaho's mining and exploration activity are published annually in the May issue of *Mining Engineering*, the U.S. Geological Survey's *Mineral Yearbook*, and the Idaho Department of Commerce's *Idaho Facts*.

Abandoned and inactive mines in Idaho are being evaluated and inventoried by the Survey in the Panhandle, Owyhee County, and the Hailey and Challis areas. The projects are conducted in cooperation with the U.S. Forest Service Region 1, the U.S. Bureau of Land Management, the Idaho Department of Lands, and the U.S. Environmental Protection Agency. The results identify physical as well as environmental hazards, and many mine histories are recorded for future analysis and remediation. Interest and concern over the physical hazards and potential environmental risks associated with abandoned mines have increased due to the expected influx of visitors, especially during the upcoming bicentennial of the Lewis and Clark Expedition.

The Survey's abandoned and inactive mines project, in cooperation with the U.S. Forest Service, also includes preparing detailed histories for several of the key mines in the Region 1 forests. These histories are available for inspection at the Moscow office and are being published in the Staff Report series.

Earth science education. The Survey staff supports geologic education efforts of public and private agencies, professional organizations, school classes, hobbyists, local clubs, and youth groups. Through close working relationships with the geology departments at the three state universities, Survey geologists make their expertise available by participating in seminars, field trips, and workshops, by teaching selected upper-division courses, and by directing graduate

student research.

This year the Survey has hired an Earth Science Education Coordinator to further our efforts to enhance earth science education in elementary and secondary schools. The Survey is primarily engaged in promoting earth science education with the state's teachers through the Idaho Earth Science Teachers Association, through its Web site (www.idahogeology.org), and through field workshops conducted around the state so that teachers can observe the methods and science of geology in Idaho's own outdoor laboratory. Idaho is one of a handful of states in which the state geological survey and earth science teachers work closely to enhance the teaching of earth science. The highlights of this partnership include Earth Science Week activities in early October and the summer field workshop. As part of the workshop, the Survey cosponsors and incorporates hazards mitigation education in cooperation with the Idaho Bureau of Disaster Services. The summer of 1999 marks the twentieth teacher workshop the Survey has conducted since 1986.