OREGON DEPARTMENT OF GEOLOGY AND MINERAL INDUSTRIES

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The mission of the Oregon Department of Geology and Mineral Industries is to provide earth science information and regulation to make Oregon safe and prosperous.

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New geologic map highlights faults, volcanoes, landslides in Oregon City

Portland, Oregon: The Oregon Department of Geology and Mineral Industries (DOGAMI) has released **GMS-119, Geologic Map of the Oregon City 7.5' Quadrangle, Clackamas County, Oregon,** by Ian P. Madin, Oregon Department of Geology and Mineral Industries.

The Willamette River plunges 46 feet over the top of the uppermost flow of the Sentinel Bluffs Member of the Grande Ronde Basalt at Willamette Falls. As much as 60 cubic miles of water flowed past this site to fill the Willamette Valley during the largest Missoula floods, or about 50 times more water than the largest floods on record.

This new geologic map of the Oregon City area is one of the first geologic maps in Oregon to be prepared using a laser based terrain mapping technology called lidar. Lidar (light detection and ranging) was used both to interpret and map the geology, but also as a base map on which to display geologic information. As a result, it is one of the most detailed and accurate geologic maps published in Oregon to date.

"The map shows new details about the many young volcanoes in the area, some as recent as 1.2 million years ago, as well as providing a detailed look at the Bolton Fault, which is one of the more active faults in the Portland area," said Ian Madin, Chief Scientist with DOGAMI and author of the new map. "The map also shows literally hundreds of landslides of all sizes, many not seen before, that were mapped using the new lidar data."

The Bolton Fault is one of the best-known faults in the Portland Area, and is responsible for the straight, abrupt front of the hills west of Hwy 43 between Lake Oswego and West Linn. Although the Bolton Fault offsets the 2.4 million year old basalt of Canemah by 28 to 55 meters, it does not appear to have moved since the Missoula Floods, some 15 to 20 thousand years ago.

Beginning about 20 thousand years ago, the massive Missoula Floods roared down the Columbia River and actually traveled up the Willamette Valley over 100 miles. Deposits from these floods can be found 400 feet above the Willamette River throughout the mapped area.

"The large landslide complexes ringing the canyons of Beaver Creek, Abernethy Creek and Root Creek are the most significant landslide hazards in the area. Although these landslides are old and long-lived, and are not currently active, incautious development could reactivate them," said Madin.

Of the many volcanoes on the new geologic map, one of the most obvious is just north of Redlands Road, at the head of Potter Creek.

The oldest rocks on the map are the Columbia River Basalt Group flows with an age of around 16 million years old. These rocks can be seen at Willamette Falls and Mompano Reservoir, where the Bolton Fault has dredged them up from far underground.

Creating geologic maps is commonly confused with surveying, and making road maps and topographic maps, which show hills, valleys, roads, and other natural and man-made features on the Earth's surface. Geologic maps, however, use a combination of colors, lines, and symbols to depict the composition, distribution and relationships of rocks and sediments at and near the Earth's surface. Geologic maps also reveal the structure of the rocks below the Earth's surface by depicting faults and the orientation of the rocks. Understanding this third dimension is particularly important for the discovery and assessment of mineral and energy resources; the locations of geologic hazards such as landslides and faults; and the locations and types of resources such as sand and gravel, ore deposits, and ground water.

GMS-119 is available on CD-ROM for $15. It can be purchased online from the Nature of the Northwest Information Center (NNW) at ***http://www.naturenw.org***. A printed copy of the map is available for $25. For all non-internet orders, please contact the Oregon Department of Geology and Mineral Industries at (971) 673-1555. There is a $4 shipping and handling charge for all mailed items.

Learn more about Oregon's geology by going online at:
http://www.oregongeology.org

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