



WASHINGTON STATE DEPARTMENT OF
Natural Resources
Doug Sutherland - Commissioner of Public Lands

DGER NEWS

DIVISION OF GEOLOGY AND EARTH RESOURCES
"Washington State's Geological Survey since 1890"

Website: <http://www.dnr.wa.gov/geology/>

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THE ROCK CREEK LANDSLIDE NEAR STEVENSON

A massive landslide northwest of Stevenson, Wash., in the Columbia Gorge made the news on about the first of February (Fig. 1). The slide, probably caused by heavy rains in November, is a reactivation of part of an ancient landslide complex. It affects about a quarter mile of the Rock Creek gorge wall, sending mud, boulders, and 80-foot trees into the gorge. No one knows exactly when it started moving again.

On Feb. 5, DGER geologists were called in by the Washington Emergency Management Division to consult and to assist Skamania County and the town of Stevenson.

The slide endangered the home of Bill and Annette LaCombe (Figs. 2–6), which had to be abandoned even though it had been moved back 200 ft from the edge of the gorge last year to prevent this very problem.

The Washington side of the Columbia Gorge has long been known as a landslide-prone area, the largest being the Bonneville landslide that blocked the Columbia River more than 700 years ago where the Bridge of the Gods is now. (See "Dating the Bonneville Landslide", *Washington Geology*, v. 29, no. 3/4, p. 11, <http://www.dnr.wa.gov/geology/pdf/3news01.pdf>.)

"This is one of the most famous landslide provinces in the world," says DGER geologist Tim Walsh. "Wet climate, weak bedrock, steep terrain, and a regional dip of 5° to 30° toward the Columbia Gorge create perfect conditions for landslides. This slide occurred on water-saturated clay layers under permeable conglomerate in rocks mapped as the Eagle Creek Formation.

"The Stevenson area serves as a bedroom community for Portland and Vancouver. As a growing population spreads into previously undeveloped hillsides, they are encroaching onto geologically hazardous areas," Walsh said.

State Geologist Ron Teissere pointed to a lack of safeguards for future homeowners. "It's very expensive to do the kind of geological assessment that's needed to make sure people build on safe ground," he said.

Real estate fliers advertise \$500,000 homes with "panoramic mountain views" on a slope across from the slide area. With all this new development, Washington is already behind the curve in identifying slide-prone slopes such as the one in Stevenson. Continuing population growth worsens the problem statewide, Teissere said.



Figure 1. An overview of the Rock Creek landslide area with an inset map showing its location in Washington State. The approximate area of the landslide is delineated with a red dashed line. Debris from the slide has been carried downstream where it threatens the bridge over Rock Creek Drive and the sewage treatment plant. Photo courtesy of the Washington Emergency Management Division.

According to Teissere, the state Office of Financial Management expects Washington's population to increase by 30 percent in the next 20 years, from an estimated 6.3 million as of last April to 8.3 million in the year 2026. "We've got to put those people somewhere, and they have a tremendous interest to live near the river with a good view," he said.

"Under the state's Growth Management Act, local governments are supposed to identify slide-prone areas and regulate development accordingly. The Association of American State Geologists (AASG) has noted that smaller communities such as Stevenson often don't have the

expertise or financial resources to follow through.

"Local jurisdictions have been somewhat reluctant to designate these areas because, in many cases, they didn't feel like they had good information," Teissere said.

DGER has submitted a request to the State Legislature for another \$1.3 million to hire geologists to provide hazard maps for rural communities lacking the resources to do it themselves. Once the slide-prone areas are identified, home buyers would be able to check for properties at risk and developers could be required to spend money mitigating the hazard. ■



Figure 2. A close-up of the head of the slide on Feb. 6, showing about a 10 ft vertical drop. The LaCombe house can be seen just above the scarp. The house had to be abandoned because of the danger of further sliding. Note the sandbags and the rootball of a toppled tree. Photo by Dave Norman.



Figure 3. An aerial view, taken on Feb. 6, of the LaCombe house perched just above the head of the landslide, about 250 feet above the bottom of the gorge. A waterfall is visible on the left. Photo by Dave Norman.



Figure 4. The same general view taken a week and a half later on Feb. 17. The head of the landslide has dropped about 80 ft vertically and eaten back into the driveway. Many trees have now been toppled. Photo courtesy of the Washington State Department of Transportation (WSDOT).



Figure 5. A frontal view of the slide (red dashed line) on Feb. 6. The LaCombe house is visible just above the headscarp. Photo by Dave Norman.



Figure 6. A similar view of the slide (red dashed line) two and a half weeks later (Feb. 23). Notice the increase in headward growth and movement and toppled trees in the body of the slide. Photo courtesy of WSDOT.

TSUNAMI WARNING AND EDUCATION ACT SIGNED

Two years after a devastating tsunami claimed the lives of almost 250,000 people in twelve Indian Ocean countries, the U.S. Congress took action to help prevent a similar tragedy by passing the Tsunami Warning And Education Act.

"In just a matter of hours, the 2004 Indian Ocean tsunami killed more people than all of the Atlantic hurricanes in recorded history, combined," said House Science Committee Chairman Sherwood Boehlert (R-NY), who introduced the bill with Rep. Jay Inslee (D-WA).

"The swiftness with which a tsunami can strike and the destructive force it can bring to bear on coastal communities is practically unrivaled among natural disasters. That is why it is imperative that we employ the most advanced technology available to ensure we detect a tsunami at the earliest possible moment and have the infrastructure in place that will allow the dissemination of a near-instant warning to those in harm's way. But we also need to ensure that those who live along our coasts know how to respond in the event that a tsunami warning is issued. This bill does all of that."

Rep. Inslee pointed out that on Dec. 24, 2004, scientists knew within minutes that a massive earthquake had taken place off the island of Sumatra, but they had no way of knowing it had generated a tsunami.

"The problem isn't technological—companies . . . in my district make components of buoys that can detect the smallest of tsunamis," said Inslee, who represents coastal residents in the Puget Sound area. "This bill will deploy the technology scientists need to detect waves and governments need to warn citizens."

GEOLOGIST LICENSING BOARD RELEASES REPORT GUIDELINES

The Washington State Geologist Licensing Board has just released "Guidelines for Preparing Engineering Geology Reports in Washington". This report is designed to be a resource for consumers who engage the services of engineering geologists and a reference for engineering geologists as they practice their profession. The guidelines are intended to improve the quality and consistency of engineering geology reports in Washington. A PDF version of the report is available online at <http://www.dol.wa.gov/business/geologist/georptguide.pdf>. ■

The Act will increase the number of tsunami detection devices near U.S. coastlines, require timely reports to Congress on malfunctioning equipment, fund educational programs on tsunami preparedness in the U.S., promote tsunami research at the National Oceanic and Atmospheric Administration (NOAA), and direct NOAA to help foreign nations improve detection and warning systems.

The Boehlert-Inslee bill was approved by a voice vote in the House on Dec. 6, 2006. A companion bill passed the Senate on Dec. 7, and the Tsunami Warning and Education Act (Public Law 109-424) was signed by President Bush on Dec. 20, 2006.

"This not only will bring peace of mind to people who live on shorelines in Washington State and other coastal areas, it also will present opportunities to innovators in our backyard who are developing more reliable, sensitive and cost-effective detection technologies," Inslee added.

GEOLOGIC MAP SYMBOL STANDARD NOW AVAILABLE!

The Federal Geographic Data Committee has just released the "FGDC Digital Cartographic Standard for Geologic Map Symbolization". This document is the new national standard for the digital cartographic representation of geologic map features. It is intended to support producers and users of geologic map information by providing line symbols, point symbols, colors, and patterns that can be used to portray the various features on geologic maps. The objective is to encourage geologic maps and related products that are consistent in both their appearance and their underlying database content throughout the U.S. This standard is available in PDF format at http://ngmdb.usgs.gov/fgdc_gds/. In the very near future, the printed version and the PostScript version (for use with Adobe Illustrator) will be available. The committee is also working with ESRI on the Arc version of this standard.

The standard contains descriptions, examples, cartographic specifications, and notes on usage for a wide variety of symbols that may be used on typical, general-purpose geologic maps and related products such as cross sections. However, the standard can also be used for special-purpose or derivative map products and databases that may be focused on a specific geoscience topic (for example, slope stability) or class of features (for example, a fault map). The standard is

The Act will strengthen the Nation's existing tsunami forecast and warning system in the Pacific and expand it to cover the Atlantic Ocean, Caribbean Sea and the Gulf of Mexico. It will also provide dedicated funding for and a greater emphasis on community outreach and education programs.

For the complete text of the legislation, visit: http://frwebgate.access.gpo.gov/cgi-bin/getdoc.cgi?dbname=109_cong_public_laws&docid=f:publ424.109.pdf. ■

LANDSLIDE CONFERENCE

The First North American Landslide Conference will be held in Vail, Colorado, from June 3-8, 2007. The theme is "Landslides and society—Integrated science, engineering, management, and mitigation".

For more information, go to <http://www.mines.edu/academic/geology/landslidevail2007/>. ■

scale-independent, meaning that the symbols are appropriate for use with geologic mapping compiled or published at any scale.

This standard is applicable to all geologic map information (in other words, geologic maps and databases) published by the federal government and federally funded contractors and collaborators. Non-federal agencies and private firms are also urged to adopt the standard. The standard applies to all forms of geologic map publications, whether they are released as (1) hard-copy products, in either offset-print or plot-on-demand format, or (2) digital products, either as files for spatial analysis in Geographic Information Systems (GIS), as Portable Document Format (PDF) files in online publications, or as browse-graphic files for display on the Internet. In particular, the standard applies to all geologic map products archived within the National Geologic Map Database (NGMDB), which is administered by the USGS. Geologic map products submitted to and incorporated within the NGMDB will need to conform to this standard.

Taryn Lindquist and David Soller are the prime movers behind the standard. They invite you to have a look the standard and the supporting information and to send them your comments and suggestions for improvement to the standard (send e-mails to mappoint@flagmail.wr.usgs.gov). ■

STAFF NOTES

Liz Thompson has been hired as a GIS Analyst within the Editing/GIS Section. Her responsibilities include using her GIS skills to input, analyze, and maintain spatial and tabular geologic data and to generate geologic maps. She will also provide training and support to the Division's GIS users. Liz has 20 years of GIS experience, 18 with the Department of Natural Resources working with Information Technology, Aquatics, Resource Mapping, Forest Practices and Lands Management Divisions. Liz has a B.A. in geography from Western Washington University.



Lee Walkling, formerly a Library Information Specialist, was recently promoted to Archival and Library Professional 3 (old designation: Senior Librarian). She also received her pin for 10 years of service.



Jari Roloff has received the Sustained Excellence Award from the Thurston County Combined Fund Drive for her long-standing commitment to raising money for charity. She is the creative mind behind the Geology Division Basket Auction, snowflake pattern book, and humorous flipbooks. ■



OUR E-MAIL ADDRESSES HAVE CHANGED!

Our office e-mail is now geology@dnr.wa.gov. The change also applies to the e-mail addresses of all DNR personnel. DNR just finished converting its e-mail system from GroupWise to Microsoft Outlook. This migration allowed us to conform to state standard addressing scheme.

The new address will be: `firstname.lastname@dnr.wa.gov`. The change is to the portion of the address following the @ sign.

The old address will continue to work for an indefinite period. Mail to dnr.wa.gov and wadnr.gov will be delivered to the same mailbox. ■

WASHINGTON STATE GIS CONFERENCE

The 2007 Washington State GIS Conference, "Foundations for the Future!" will be held Monday through Wednesday, April 23 to 25, at the new Lynnwood Convention Center. Sponsored by the Washington State Chapter of the Urban and Regional Information Systems Association (WAURISA), the conference includes a day of educational workshops, access to leading vendors, and two days of informative speakers from all corners of the state. The conference is designed to help GIS (Geographic Information System) professionals learn from their colleagues, network with their peers, and build a solid GIS foundation for their career, company, or agency.

The Monday workshops offer in-depth technical training by some of the leading GIS practitioners from throughout the Pacific Northwest.

Tuesday opens with a keynote address by King County Executive Rom Sims. While on the County Council, he was instrumental in initiating the King County GIS program. As Executive, Rom Sims has strengthened the

foundation of King County's GIS, while challenging the County to become an innovative regional service provider. Ron Sims is a nationally recognized leader and highly motivational speaker who will share his vision for the future.

Following the keynote, the "GIS Person of the Year" will be announced and speaker sessions will begin. Topics include GIS management, lidar, transportation, utilities, small government, tribal government, web solutions, and crime analysis, as well as student papers.

In addition, there will be poster displays and a map competition to showcase some of the great work being accomplished around the state. Vendors will be on hand to demonstrate their products and answer any questions about the services they offer. Registration also includes lunch each day.

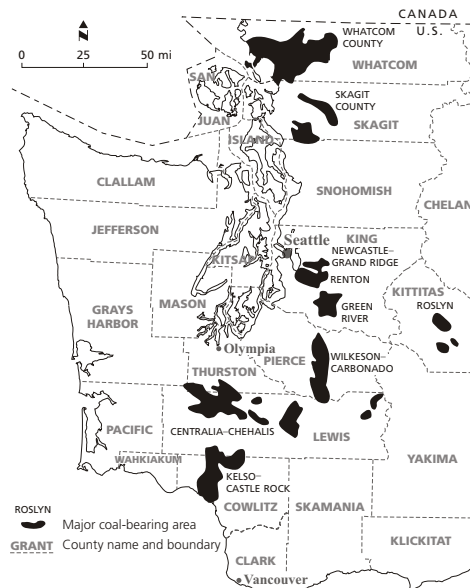
A Tuesday night social will be an opportunity to unwind and relax with colleagues in a friendly and fun atmosphere. For registration information, visit <http://www.waurisa.org/>. ■

COAL MINE MAP SCANNING PROJECT

DGER has an extensive collection of coal mine maps from the heyday of mining in the state. These maps are of great importance because many of these old mining areas are now being developed. The maps may pinpoint areas of hazard to be avoided.

The U.S. Department of the Interior, Office of Surface Mining, is funding DGER to scan the maps before this irreplaceable

source of information is gone. The project is approximately one-third finished with about six more months to completion. This estimate does not include maps that are not currently in the coal mine map catalog (Schasse and others, 1994) or the maps stored offsite, and it does not include integrating unlabeled maps into our system. These maps could add as much as two more months to the completion of the project.



Coal mining areas in Washington.

Reference

Schasse, H. W.; Koler, M. L.; Eberle, N. A.; Christie, R. A., 1994, The Washington State coal mine map collection—A catalog, index, and user's guide: Washington Division of Geology and Earth Resources Open File Report 94-7, 109 p. [<http://www.dnr.wa.gov/geology/pdf/ofr94-7.pdf>]. ■



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