

The Official

AEG Nisqually Chapter Newsletter

Meeting Details

Wednesday, October 21 st

Location: Mercato Ristorante

111 Market St NE

Olympia, WA

[Google Maps Link](#)

5:30pm Social hour and buffet

6:30 pm Presentation

7:30pm Brief Q&A

\$30 Member or Non-Member

\$15 Educators or Job Seekers

\$5 Student

\$5 Online

Please RSVP Online by
Clicking [This Link Here](#)

Upcoming Meetings:

November 18th, 2026

December 16th, 2026



Enhanced Monitoring of High-Risk Unstable Slopes Using Remote Sensing and AI-Assisted Change Detection

Transportation agencies across mountainous regions face a growing challenge: many high-risk unstable slopes threaten highways, yet the cost to fully mitigate these hazards can exceed available funding by tens of millions of dollars. In Washington State, mitigation of several high risk slopes and repair of damaged geotechnical assets is estimated to exceed \$100 million, making immediate stabilization impractical for many sites. As a result, transportation agencies increasingly rely on enhanced monitoring programs to manage risk and detect early signs of slope instability.

To address this challenge, the Washington State Department of Transportation (WSDOT) State Geotechnical Office has initiated an expanded monitoring program focused on high-risk slopes identified through the agency's Geotechnical Asset Management Plan (GAMP).

These slopes were prioritized using likelihood and consequence factors including rockfall frequency, roadway exposure, traffic volumes, and maintenance records. The monitoring program integrates remote sensing techniques including terrestrial lidar scanning, unmanned aerial systems (UAS), fixed camera monitoring, and satellite observations to collect high-resolution point clouds and imagery of slope conditions.

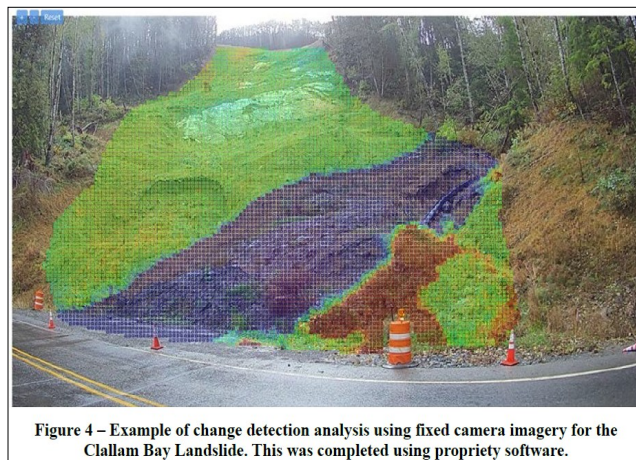


Figure 4 – Example of change detection analysis using fixed camera imagery for the Clallam Bay Landslide. This was completed using propriety software.

A key objective of this effort is evaluating automated and AI-assisted change detection techniques to process large monitoring datasets. Algorithms compare repeat lidar scans, analyze pixel-level changes in imagery, and identify potential movement or rockfall source areas indicating developing instability.

This presentation presents the framework for WSDOT's enhanced monitoring program and applications of remote sensing and change detection techniques. The work explores how automated analysis can improve interpretation of monitoring data, support earlier hazard detection, and guide mitigation strategies where full stabilization is not immediately feasible.

Biography: Katelyn Card

Katelyn “Kat” Card is a geoscientist on the engineering geology staff at the Washington State Department of Transportation (WSDOT), where she has worked for four years in the Unstable Slope Management System (USMS) program starting as an intern to her now permanent position. She earned her M.S. in Applied Geoscience through the MESSAGE Program at the University of Washington. Her work focuses on the characterization, monitoring, and mitigation of unstable slopes and other geologic hazards affecting transportation infrastructure, with interests in remote sensing and enhanced monitoring technologies. Her previous research has including developing methods for estimating rock slope scaling quantities and evaluating post-wildfire impacts to constructed geotechnical assets including development of an NCHRP research problem statement on the topic. Kat is also a member of the Transportation Research Board’s Engineering Geology Committee (AKH18), where she leads the committee’s working group on AI, Data, and Digital Tools.



Message from the Chair

Hello, AEG Nisqually!

We are excited to welcome you back for another opportunity to gather as a professional community, network, hear presentations from local geologists, and enjoy a nice dinner together in downtown Olympia. First, we would like to thank **Kari Thomas** for volunteering to join the board as Secretary for this year! We are grateful to have Kari on board and appreciate her willingness to contribute to the chapter.

We are still looking for additional help, so please keep reading for ways you can get involved. We have a pretty fun board, and there are plenty of opportunities to participate at whatever level works for you.

Get Involved!

We have a strong board, but could absolutely use some additional support from our members.

There are many ways to get involved including:

- Contributing to, drafting, or reviewing the newsletter
- Writing an occasional column (Thank you **Tim Walsh** for already volunteering!)
- Helping with chapter outreach
- Supporting student involvement and engagement
- Suggesting speakers or presentation topics

Much of our calendar is already filled with speakers, but we are always looking for ideas. If there is someone you would like to hear from, or a topic you think would be valuable to the chapter, please let one of your board members know. And, of course, volunteering with the chapter is a great way to meet other geologists, contribute to our professional community, and, if you need a little extra incentive, get some experience to add to your résumé!

Thank you for your continued support of the chapter and for the work you do every day to advance the practice of environmental and engineering geology. We look forward to seeing many of you at our upcoming events.

Member Spotlight: Ken Neal, LG, LEG (Retired)

The AEG Nisqually Board would like to recognize Ken Neal, LG, LEG, for his many contributions to the Nisqually AEG chapter and to AEG as a whole.

Ken has had a long and interesting career, including private consulting with Shannon & Wilson and stints in engineering/geotechnical sections for the Willamette and Olympic National Forest. At the Olympic National Forest, he managed the Engineering Geology Section, then the Resource Geology Section, and later, the North Drill Management Area, which encompassed the six northernmost national forests in the region. During that time, Ken wrote the field-developed cross-section manual.



After serving with the Forest Service, Ken returned to private consulting with GeoEngineers, Inc. He became involved in geologist licensure and, for the next 10 years, coordinated the Washington Section AEG licensure effort. In 1993, Ken opened his own consulting firm, Kenneth Neal & Associates, in Olympia and provided engineering geology and geotechnical engineering services until 2013.

Ken's work has extended well beyond traditional consulting. He served as a disaster assistance employee for FEMA on federally declared disasters in Idaho, Washington, Oregon, Ohio, and New Jersey. Although he “mostly retired” in 2013, he has continued to contribute his expertise through occasional project work with other firms. He also served on the AEG Foundation Board from 2020 through 2022.

For AEG Nisqually, Ken has been a presenter, a valued member and contributor at meetings, and has offered his expertise in field-methods education. We are grateful for the knowledge, experience, and enthusiasm he has shared with our chapter over the years.

At our last meeting, we learned that Ken was absent because he was elsewhere receiving a national AEG award. Naturally, we did what any group of curious geologists would do: we scoured the network for information about the award. Unfortunately, our investigation came up a little short!

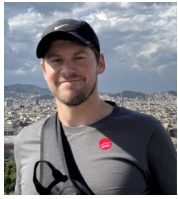
Ken, please let us know at the meeting about the award and the recognition you received. Congratulations, and thank you for all you have done for the Nisqually Chapter, the greater AEG organization, professional licensure, and all geologists.

We hope to see you all at the next meeting!

Sam Angel, LG

AEG Nisqually Chapter Chair

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Transportation



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National AEG webpage:
<http://aegweb.org>

The AEG Nisqually Chapter Newsletter

The Association of Engineering Geologists (AEG) contributes to its members' professional success and the public welfare by providing leadership, advocacy, and applied research in environmental and engineering geology. AEG's values are based on the belief that its members have a responsibility to assume stewardship over their fields of expertise. AEG is the acknowledged international leader in environmental and engineering geology, and is greatly respected for its stewardship of the profession.

AEG NISQUALLY CHAPTER NEWSLETTER is published monthly from September through May. Subscriptions are for members of AEG affiliated with the Nisqually Chapter or other Chapters, and other interested people. E-mail subscriptions are free.

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