SR 530 MUDSLIDE

LONG-TERM RECOVERY
EXECUTIVE SUMMARY

On March 22, 2014, a catastrophic landslide affected several communities in northwest Washington when an unstable hillside gave way. A wall of mud buried an entire neighborhood, taking 43 lives and closing State Highway 530, the physical and economic lifeline for the region. In response to the disaster, Washington State University (WSU) assembled a multi-disciplinary team to support the long-term recovery of the impacted communities. WSU’s efforts have included:

- ECONOMIC DEVELOPMENT: WSU helped craft an award-winning regional Economic Redevelopment Plan that has become the basis for leading the community to the final stages of a $10 million competition.

- BROADBAND COMMUNICATION: WSU assessed regional telecommunications and is working to improve regional broadband access.

- COMMUNITY DEVELOPMENT: WSU’s Darrington-based coordinator integrated the University’s efforts with local entities to bolster infrastructure, tourism, and recreation projects.

- ORGANIZATIONAL DEVELOPMENT: WSU assisted the community in creating a natural resource STEM program to support middle and high school students.

- YOUTH DEVELOPMENT: WSU’s programming helped youth cope with the tragedy of the slide while allowing them to stay in their community.

- TRAUMA-INFORMED SCHOOLS: WSU is working with schools in Darrington to address students’ long-term emotional recovery from the slide.

- WSU STUDENT ENGAGEMENT: WSU students have made significant contributions to recovery efforts through community internships, fundraising, and volunteer service trips.

- GOVERNOR’S LANDSLIDE COMMISSION: WSU facilitated a 12-member commission toward the swift completion of a report which identified critical lessons learned from the slide.

- SAUK-SUIATTLE TRIBE: WSU is developing a design to be used by the tribe to expand their reservation beyond its current flood-prone location.

Over $1,436,883 in external funding has been generated by WSU and community entities to support the work. These efforts have garnered national awards and resulted in national scholarly presentations to disseminate the lessons learned in response to the mudslide.

WSU’s work surrounding the SR 530 slide illustrates Extension’s ability to play a powerful role in disaster recovery. While WSU’s sustained effort to support recovery in the Stillaguamish Valley stretched Extension resources, the return on that investment, for the communities, for Extension, and for the University, has been manifold. A good part of WSU’s activities have run their course, but there are still opportunities to assist as the needs of the communities evolve and additional funding becomes available.
BACKGROUND

On the morning of Saturday, March 22, 2014, a portion of an unstable hill collapsed, causing the most deadly natural landslide in US history. A wave of mud and debris, 25 feet high and traveling 60 miles an hour, engulfed an entire neighborhood four miles east of Oso, Washington. It swept across the Stillaguamish River and buried State Route 530, cutting off communication and transportation to small communities east of the slide. The slide covered nearly a square mile, destroyed 49 homes, and took 43 lives. President Elson Floyd quickly committed the resources of Washington State University to assist in the recovery, and asked WSU Extension to be on point for the institution.

In April 2014, as emergency response efforts turned toward long-term recovery strategies, WSU formed the interdisciplinary SR 530 Mudslide Recovery Team. Co-led by WSU Snohomish County Extension and the WSU Division of Governmental Studies and Services (DGSS), the team included members from the WSU Extension Community and Economic Development (CED), Youth and Family, and Agriculture and Natural Resources Program Units; the WSU Energy Office; WSU North Puget Sound at Everett; and CAHNRS Communications—all with diverse experience and backgrounds. The Team collaborated with elected leaders, tribal officials, area non-profit leaders, state and federal agency personnel, and local citizens, making relevant expertise from across WSU available to aid in the rebuilding efforts and helping the communities move toward self-reliance and sustainable economic futures. The uniqueness of the WSU effort lies in the depth and diversity of team members who worked collaboratively to positively impact the community.

WSU’s initial response included one-year tuition waivers for students from the region, the placement of WSU-paid student summer interns in the communities, and the implementation of youth and economic development programming. Almost immediately, the WSU team started planning for transition from direct service to a more sustainable model.

In the two and a half years since the slide, the work of the original team members has expanded to include additional WSU staff, who are fostering new opportunities in the communities as recovery efforts evolve to embrace a longer term vision of prosperity. This report provides a brief overview of WSU’s initial engagement and highlights the University’s work since the mudslide.

ECONOMIC DEVELOPMENT

For nearly a century, the timber industry formed the foundation for a prosperous regional economy; however, by the 1980’s, conservation efforts and changes in land management had curtailed the industry. After the slide, with attention focused on the region, elected officials thoughtfully combined slide recovery efforts with broader initiatives to improve the long-term economy of the region. WSU has both participated in, and led, many of these economic development initiatives.

Less than a year after the slide, the community secured a $150,000 grant from the federal Economic Development Administration to develop a long-term plan for diverse and sustainable economic development. With WSU and other cross-sector partners at the table, the North Stillaguamish Valley Economic Redevelopment Plan (ERP) was undertaken—a comprehensive plan with implementation strategies addressing infrastructure, industries, employment, resilience, and place-based initiatives such as tourism. The plan was completed in July of 2015 and named the winner of the Puget Sound Regional Council’s VISION 2040 Award, recognizing regional innovations in 2016.

While stakeholders were crafting the ERP, the America’s Best Communities Competition (ABC) was announced. The multi-year $10 million competition, sponsored by Frontier Communications, The Weather Channel, CoBank, and DISH Network, seeks to revitalize smaller communities across the US by emphasizing long-term vision and community engagement. The mayors of Arlington and Darrington saw the ABC competition as a way to help the community move forward after the slide by engaging local residents directly in regional economic development efforts.

Memorial tree at the site of the slide

1 Names that appear in red have associated web links. See Web Resources, p.6
Bob Drewel, then Chancellor of WSU North Puget Sound at Everett asked WSU’s Metropolitan Center for Applied Research and Extension to provide leadership throughout the ABC competition, beginning with authoring the initial application in March of 2015. In the next stage of the competition, WSU facilitated the community engagement and strategic planning required to create an ABC Community Revitalization Plan, which intentionally built upon the broader ERP. This plan earned Arlington and Darrington a place in the semi-finals.

From an initial field of 135 communities, Arlington and Darrington are now one of eight finalist communities implementing their Community Revitalization Plans and vying for a $3 million grand prize. In this final stage of the competition, WSU is providing broad vision and technical assistance to community leaders as they implement the 11 strategies in the ABC plan. DGSS has also been contracted to conduct an evaluation of the project, which will conclude with the announcement of the winning communities in April of 2017. WSU’s role in this effort is well captured in the Winter 2016 issue of Washington State Magazine.

While no longer the region’s dominant industry, timber remains an important regional economic driver. Darrington Mayor Dan Rankin envisions the region becoming a “hub of innovation in forest resources” through economic and educational initiatives and partnerships. WSU is helping achieve that vision. A broad coalition from across the state is working to accelerate a market for the sustainable production and use of Cross Laminated Timber (CLT) and other mass timber products in the Pacific Northwest. Together, coalition partners are seeking to expand knowledge and understanding of the product’s potential and opportunities to address barriers to its use. WSU is helping to develop a research-based workforce development plan, which includes securing funding to establish CLT-related certificate and degree programs and creating student training opportunities.

**BROADBAND COMMUNICATION**

The SR 530 mudslide severed the single fiber optic cable serving the Darrington area, cutting off wireline and wireless communications services to Darrington and the Sauk-Suiattle Indian Tribe. Several communications companies joined together to restore temporary service and the later permanent restoration. At the request of the mayors of Arlington and Darrington, DGSS staff conducted an initial assessment of the impacts of the loss of service to share with the Federal Communications Commission. This report noted the lack of redundant telecommunications in the region and identified areas with limited internet access. As part of ABC, DGSS is co-leading the creation and use of two Wi-Fi hotspots to offer internet services to residents and businesses. Additionally, DGSS staff has engaged with the Broadband Initiative for North Cascade Communities, a grassroots group hoping to increase regional broadband access.

“We’re going to do everything that we possibly can to lend a helping hand. As we approach the end of two years, if there is still significant work that is outstanding and ways in which we can continue to help in your recovery, we’re going to do that.”

Ellson Floyd
Former WSU President

**COMMUNITY DEVELOPMENT**

Shortly after the slide, WSU hired a Darrington resident to serve as a Community and Economic Development Coordinator to ensure the integration of WSU’s efforts with local government and non-profits and to more directly assess the community’s needs. The coordinator has developed new partnerships and strengthened existing ones among local, state, and federal agencies. Additionally, the coordinator has supported the efforts of the Darrington Prevention Intervention Community Coalition to decrease underage substance use and promote community awareness of alcohol and drug use. The coordinator has also helped move local infrastructure projects forward, such as improved downtown lighting. However, the coordinator’s greatest impact has been bolstering economic development through tourism and recreation, such as stewardship projects in the Mt. Baker-Snoqualmie National Forest with the Darrington Area Resource Advocates (DARA), and the Mountain Loop Highway paving project.
The Mountain Loop Highway is a 95-mile scenic byway that travels through the western Cascade Mountains. The highway is paved, except for a narrow 12-mile dirt and gravel section near Darrington. Paving this stretch of the highway has long been seen as a way to increase tourism. However, previous initiatives to pave the highway have been unsuccessful, primarily due to funding and environmental and maintenance concerns. Acting as a liaison for DARA, the community, and other stakeholders, the CED Coordinator helped generate resolutions to these challenges. The result is a $500,000 Federal Lands Access Program grant to the US Forest Service and Snohomish County to conduct a feasibility study and potentially develop a detailed plan for paving the road.

ORGANIZATIONAL DEVELOPMENT

The Darrington Collaborative is a diverse partnership of forest stakeholders that formed after the mudslide to tackle historic forest conflicts in a new way. The Collaborative works to balance maintaining an ecologically resilient forest with sustainable timber harvests; investigate emerging wood product industries such as CLT; and to provide educational opportunities for youth through Glacier Peak Institute (GPI). GPI is a natural resource-based STEM (science, technology, engineering, and math) program that takes students out of the classroom and into the woods to develop a sense of belonging in nature and expand their knowledge of scientific research techniques, influencing their future studies and careers. GPI now serves over 60 percent of the students in the Darrington School District from kindergarten through high school, and 75 students during the summer. WSU has been the incubator for GPI—providing organizational development expertise, fiscally housing employees, helping to garner extramural funds, and writing curriculum which was adopted by the school district. In two short years, WSU has taken GPI from a loose collaboration of local partners to an organization finalizing its federal non-profit designation.

YOUTH DEVELOPMENT

In the summer after the mudslide, WSU 4-H offered a number of programs for youth within Darrington, helping them cope with the tragedy while allowing them to stay physically close to their families and connected to their community. In the subsequent two summers, WSU, in collaboration with local partners, offered a free day camp to over 60 youth which included robotics, nutrition, and portable Challenge activities. Over 100 elementary students in Darrington learned about food, fitness, and health through the Food Smart Families program taught by a WSU intern, and middle school students participated in the First Lego League competition which emphasizes science, technology, engineering, and math.

The Forestry Institute, administered in Darrington by WSU, is a high school summer forest management program that provides students with real-world experience in the field of natural resource management while earning a stipend. Designed to help youth learn how to obtain and keep employment, every stage of this “earn and learn” program—from applications to work expectations—is designed so that students learn what is expected of them in the working world. Now concluding its third year in Darrington, the Forestry Institute has served approximately 55 high school-aged youth, two of whom obtained summer positions with the US Forest Service, and another with the Darrington Collaborative. The program works in collaboration with the Forest Service, North Counties Family Services, and the Stillaguamish Tribe of Indians.

TRAUMA-INFORMED SCHOOLS

Three months after the Oso Landslide, school and community leaders in Darrington invited the WSU Child and Family Research Unit (CAFRU), a nationally recognized leader in the field of trauma-informed schools, to help them address both the long-term recovery from the landslide and persisting challenges that placed the well-being of the community at risk. Now in its third year supporting the Darrington community, CAFRU staff have worked in monthly multi-day visits to support the recovery efforts of the community.

The intervention model developed by CAFRU is Collaborative Learning for Educational Achievement and Resilience (CLEAR), designed not only to address the persisting developmental risks resulting from significant chronic childhood adversity but also the impact of acute traumatic events. CLEAR collaboratively guides whole school improvement and develops the skills in educators to address the effects of trauma on child success.

CAFRU’s partnership with the Darrington community has included serving as a conduit of information to federal disaster response and specifically to Senator Murray’s
office through regular updates. In part because of the Darrington work, Senator Murray identified CAFRU and WSU by name in successful legislation to re-authorize the National Child Traumatic Stress Network.

WSU STUDENT ENGAGEMENT

WSU students have made significant contributions to the long-term mudslide recovery through their internships, fundraising, and volunteer service trips. In 2014 and 2015, 10 WSU student interns were funded by WSU colleges each summer to support city, county, and non-profit organizations. Although they had different assignments, each intern increased community and agency capacity, contributed to long-term positive impacts, gained real-world experience, and became an ambassador for WSU in the community. On the WSU Pullman campus, students raised $15,716, which supported WSU efforts and funded three student-led service trips to Arlington and Darrington. These student service trips connected WSU students with community organizations for projects such as wetland restoration, trail clearing, and painting. The trips brought together over 50 WSU student volunteers who, along with volunteers from local community organizations, worked on 15 different service projects while contributing over 1,300 hours of service work. All of these efforts were organized by students, with help from WSU staff, and emphasized collaboration with the local community.

GOVERNOR’S LANDSLIDE COMMISSION

The SR 530 Landslide Commission was created by Washington State Governor Jay Inslee and Snohomish County Executive John Lovick in July of 2014 to review the landslide and the collective response while providing recommendations for future response efforts. CED’s William D. Ruckelshaus Center facilitated the 12-member commission which operated independently and did not determine cause or fault. The Commission’s report, released in December of 2014, identified key lessons learned and translated those lessons into 17 prioritized recommendations including landslide hazard and risk mapping; sustainable funding for Washington’s emergency management system; and laws to support front-line responders at non-fire emergencies. Two of the final recommendations have already been positively addressed by the legislature.

SAUK-SUIATTLE TRIBE

WSU outreach following the SR 530 mudslide resulted in new relationships with the Sauk-Suiattle Indian Tribe (SSIT) and a request to explore the reservation’s telecommunications needs and opportunities. This has led to continued work with the SSIT related to broadband, emergency management, and a project to assist the tribe in expanding their reservation beyond an area that is prone to flooding and wildfires. With the help of the WSU School of Design + Construction’s Rural Community Design Initiative (RCDI), the WSU team facilitated a community-based, culturally sensitive workshop to design a reservation expansion. RCDI is currently developing a design concept model that, when approved by the tribal staff and council, will be used to secure funding for professional plans and construction costs.
CONCLUSION AND NEXT STEPS

WSU’s work surrounding the SR 530 slide illustrates Extension’s ability to play a powerful role in disaster recovery and local economic recovery.

- Extension can serve as a direct partner in the local response. At the same time, Extension can also play a very meaningful role in bringing the unique resources of the University to bear on long-term recovery.

- Extension played a pivotal role in mobilizing campus and University interest and resources to support this long-term recovery effort. While Extension is generally recognized as the front door to the University, this experience demonstrates that Extension is also the portal to community involvement for the University. The door swings both ways.

- Extension is an effective vehicle for student engagement. Both paid interns and student volunteers learned valuable skills, provided much-needed support, and gained life-changing experience. Only Extension has the local connections and credibility, coupled with the presence on campus, to provide the linkages necessary to support this student engagement.

- Extension is now seen as a resource at the state level which can be counted on to provide expertise, presence, and credibility that are essential to efficient and effective disaster response, management, and recovery.

Building on lessons learned from Extension’s response to the mudslide, the Extension Disaster Capacity Program (EDCP) was created to support communities impacted by the 2015 wildfires in eastern Washington. EDCP enhances WSU’s capacity to support and coordinate long-term disaster recovery, and leverages Extension’s long-standing relationship with the national Extension Disaster Education Network.

While WSU’s sustained effort to support recovery in the Stillaguamish Valley stretched Extension resources, the return on that investment, for the communities, for Extension, and for the University, has been manifold. While some of WSU’s work has run its course and direct support has been replaced by sustainable activities, there are still opportunities to remain involved as the needs of the communities evolve and additional funding becomes available.

“When I look back on it and think about the work that was done, in the timeframe that it was done, if anyone had told us that’s what we’d be doing I’d have said, ‘Great, where are the magic beans?’ WSU was the magic beans. They brought this depth and breadth that I don’t think any of us realized was available to us all along.”

Barb Tolbert
Mayor of Arlington

What began with a letter of commitment to the mayors of Darrington and Arlington, and a phone call from then-WSU President Floyd to Snohomish County Extension Director Curt Moulton is now a nationally recognized example of teamwork and University response. The SR 530 slide illustrates the power of a land-grant university to assist communities in crisis by building their capacity to craft and implement long-term, sustainable plans for economic growth and future resilience.
AWARDS, SCHOLARSHIP, AND FUNDING

The work of the WSU SR 530 team has earned the following awards:

■ 2015 National Association of Community Development Extension Professionals Excellence in Teamwork Award
■ 2015 National Association of Extension 4-H Agents Teamwork Award
■ Puget Sound Regional Council Vision 2040 Award

The following scholarly activities have taken place:


WEB RESOURCES

ABC Community Revitalization Plan

Metropolitan Center for Applied Research and Extension
http://metrocenter.wsu.edu/

North Stillaguamish Valley Economic Redevelopment Plan (ERP)

The SR 530 Landslide Commission’s report

William D. Ruckelshaus Center
http://ruckelshauscenter.wsu.edu/

Winter 2016 issue of Washington State Magazine
https://magazine.wsu.edu/2016/11/03/call-it-the-urban-extension/

WSU Child and Family Research Unit (CAFRU)
http://ext100.wsu.edu/cafru/

WSU Division of Governmental Studies and Services (DGSS)
https://dgss.wsu.edu/

WSU Impact Report: SR 530 Landslide Commission
http://extension.wsu.edu/impact-reports/sr-530-landslide-commission/

WSU Impact Report: Wildfire Response
http://extension.wsu.edu/impact-reports/wsu-wildfire-response/

WSU School of Design + Construction
http://sdc.wsu.edu/

WSU Snohomish County Extension
http://extension.wsu.edu/snohomish/

Additionally, four national conference presentations, three academic posters, two impact reports have been generated from this work.

EXTRAMURAL FUNDS OBTAINED:

A total of $1,436,883 in external funding has been generated as a result of WSU’s work on projects related to the SR 530 recovery efforts. Of that amount, $514,600 was awarded to WSU. The balance was awarded to municipalities, agencies, and organizations in the affected community. WSU has contributed $300,094 of internal funding or in-kind support to the recovery efforts. Details are provided on the following tables. WSU also received 65 cash and in-kind donations totaling $66,838 to support SR 530 efforts, including the $15,716 raised by WSU students and $9,960 contributed by the 4-H Foundation.
## SR 530 FUNDING

### SR 530 Funding to WSU or for which WSU was a co-applicant or significant partner

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<tr>
<th>SOURCE</th>
<th>TOTAL AWARD</th>
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<tr>
<td>Unmet Needs Committee</td>
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<td>$25,000</td>
<td>Forestry Institute</td>
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<tr>
<td>US Forest Service</td>
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<td>Forestry Institute</td>
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<td>Arlington Rotary</td>
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<td>$9,600</td>
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<td>America’s Best Communities</td>
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<td>ABC Competition</td>
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<td>Substance Abuse and Mental Health Services Administration</td>
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<td>CAFRU</td>
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<td>American Red Cross</td>
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<td>Joint SR530 Commission</td>
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<td><strong>$629,600</strong></td>
<td><strong>$514,600</strong></td>
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### SR 530 Funding to the community—leveraged on WSU’s activities or engagement

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<td>Federal Land Access Program</td>
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<td>WA State DOT</td>
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<td>Seattle University</td>
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<td>Darrington Downtown Lighting Assessment</td>
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<td>No Child Left Inside</td>
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<td>Glacier Peak Institute</td>
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<td>Mountaineers Foundation</td>
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<td>In-kind donations from equipment companies</td>
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<td>US Economic Development Administration</td>
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### Internal WSU funding or in-kind support contributed to recovery efforts

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<tr>
<td><strong>TOTAL</strong></td>
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</table>
The following WSU faculty, staff, and student interns have worked collaboratively to support the communities impacted by the SR 530 mudslide.

Core team members (*) have contributed a combined total of 3.68 FTE from April 2014 through September 2016.

**WSU**

Elson Floyd, President (2007–2015)
Bob Drewel*, Special Assistant to the President
Paul Pitre, Chancellor, WSU North Puget Sound at Everett
Alexis Holzer, Assistant Director (former), WSU Economic Development

**Snohomish County Extension**

Curt Moulton*, County Director, CED faculty
Jana Ferris*, Interim County Director, Youth Development faculty
Chrys Bertolotto, Natural Resource Programs Manager
Judy Pendergrass*, Community and Economic Development Coordinator
Oak Rankin, Glacier Peak Institute Director
Phyllis Shulman, Intern Program Placement Coordinator
Janet Jayne*, Office Manager

**Division of Governmental Studies and Services**

Mike Gaffney*, Assistant Director WSU Extension, Director, DGSS
Christina Sanders*, Associate Director
Monica Babine*, Senior Associate, Program for Digital Initiatives
John Snyder, Community Outreach Specialist
Colby Cavanaugh*, student employee and intern
Grayson Parr*, student employee and intern
Devon Seymour*, student employee and intern

**Extension Community & Economic Development Unit**

Rob McDaniel*, CED Program Director
Cheryl Rajcich, Assistant Director for Operations
Dan Fagerlie, Tribal Relations Liaison
Debra Hansen, County Director, WSU Stevens County Extension
Jordan Tampien, Community Economic Development Specialist

**Metropolitan Center for Applied Research and Extension**

Brad Gaolach*, Director
Martha Aitken*, Senior Associate, Project Specialist
Anthony Gromko, Community Sustainability Specialist

**William D Ruckelshaus Center**

Michael Kern, Director
Amanda Murphy, Project and Research Lead
Raquel Espinosa, UW Evans School graduate student
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CAHNRS
Sylvia Kantor*, Science Writer (former)
Susan Kerr, Extension Specialist, Mt. Vernon R&E Center

Child and Family Research Unit
Chris Blodgett, Director
Natalie Turner, Assistant Director

Composite Materials and Engineering Center
Don Bender, Interim Dean, Voiland College of Engineering and Architecture
Mike Wolcott, Regents Professor
Todd Beyreuther, Assistant Research Professor (former)

School of Design + Construction
Robert Krikac, Associate Professor, Interim Program Head Interior Design
Kathleen Ryan, Clinical Assistant Professor, Interior Design
Tyler Lynch, student, Architecture
Tyler Reid, student, Landscape Architecture
Collin Schweikl, student, Landscape Architecture
Maria Vallejo, student, Architecture
Philip VanDevanter, student, Landscape Architecture

WSU Student Interns
College of Agricultural, Human, and Natural Resource Sciences
Cheyenne Hanshaw

College of Liberal Arts & Sciences
Katherine Fee
Hannah Hoffman
Kendra Knepper
Chelsea McTee
Devon Seymour
Sarah Vitvitskiy

College of Education
Anna Larson

Edward. R. Murrow College of Communication/College of Liberal Arts & Sciences
Colby Cavanaugh
Tesia Hummer
Makayla Markenzinis
Elizabeth Norris
Grayson Parr
Josh Robinson

Voiland College of Engineering and Architecture
Carson Covert Davis
Ian Davis

Carson College of Business
Justin Surber

College of Veterinary Medicine
Daneen Natac
This report was written by Martha Aitken with contributions from Mike Gaffney, Christina Sanders, Monica Babine, and Rob McDaniel, plus other faculty and staff supporting WSU’s SR 530 mudslide recovery efforts.