February 3, 2021

To: Joint Committee on Ways and Means, Natural Resources Subcommittee

RE: House Bill 5010

Co-Chairs Senator Taylor and Representative Reardon, members of the committee,

Thank you for the opportunity to submit testimony on House Bill 5010, the budget bill for the Department of Geology and Mineral Industries. We represent more than 72,000 people who work in the State of Oregon, approximately 22,000 of which are State Workers. This includes the incredibly hard-working folks at DOGAMI. This testimony represents my comments from the hearing earlier today; appended at the end of this document is a longer letter from DOGAMI staff (Appendix A).

I want to first acknowledge the shift in approach for this Agency that happened on Monday. I recognize that the path forward is still not entirely clear, but our members sincerely appreciate the recognition by this committee that their work is valuable, and that there is cause to reevaluate the Governor's proposal to dissolve DOGAMI as a standalone agency and transfer its programs to DEQ and DLCD. Our members at DOGAMI have been participants in the two-year conversation that has led us to this point about the future of their Agency, and they reaffirm their commitment to participating in this ongoing conversation as well.

What follows is a letter from staff at DOGAMI to the Committee:

We want to share an example of some recent events in hopes that it will provide a practical application of DOGAMI's work.

Three weeks ago (January 13, 2021) a massive storm brought intense rainfall onto the areas of the Columbia Gorge burned in the 2017 Eagle Creek Fire. This caused dozens of landslides which buried the Historic Columbia River Highway and Interstate 84. One of these landslides tragically led to the death of a local nurse as she was driving home, when her SUV was swept away by mud, boulders, and trees in a debris flow that was estimated to be 10 feet deep.

DOGAMI scientists are currently seeking federal funding to prevent future tragedies such as this in both the Gorge and the areas devastated by the 2020 Oregon wildfires. Working collaboratively with the cities, counties, and communities impacted by the fires, scientists can help identify which people, homes, and roads are at greatest risk from post-wildfire landslides. They can help local emergency managers and the National Weather Service to issue warnings to these communities when a major rainstorm is coming and provide guidance to ODOT in triggering road closures when conditions are hazardous for drivers.

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Oregon is likely to experience more large-scale wildfire due to climate change. As a result, we will also likely see more landslides. Now is a time to invest more in the resilience of Oregon communities so that they are best prepared for the challenges ahead.

As Oregon's only independent geologic survey, the agency provides critical services to our cities and counties that do not have the resources to provide on their own. They rely on DOGAMI's research and expertise to keep Oregonians safe. For this reason, Tillamook, Lincoln, Coos, and Clatsop County Commissioners have already passed resolutions condemning this change and voicing support for DOGAMI.

In addition to public safety, the research of DOGAMI is also important to Oregon's economy. Businesses in Oregon benefit from DOGAMI's programs such as:

- The collection of thousands of square miles of high-resolution lidar topographic data annually, used by many in the public and private sectors including professional scientists, planners, surveyors, engineers, academics, conservationists, forest managers, transportation departments, map makers, and so many more
- Collaborative support to permittees and industry partners in meeting permitting and compliance requirements

DOGAMI's Mineral Land Regulation & Reclamation (MLRR) program is 100% fee-based, and supported administratively by the DOGAMI Business Office. An MLRR program fee increase approved in 2020 avoided immediate staff layoffs. However, the full benefit of the increase has yet to be realized, and the MLRR program continues to lack the capacity to conduct field inspections at a rate sufficient to meet key performance measures.

Our members at DOGAMI are grateful for the interest that this committee has taken in their work, and hopeful for their ability to continue providing these vital services to our state. They are so appreciative of the support we are seeing from the community and the legislature. Unfortunately, as you all know, this is a familiar circumstance for them. The department is in desperate need of a sustainable funding mechanism.

For context, to illustrate the potential impacts of a proposal to dissolve the Agency and transfer its programs, here is what would be lost:

- The state will no longer be able to consistently produce hazard maps and risk assessments
- Outreach and partnerships with local communities will be minimal
- The Oregon lidar program would be eliminated and this data would no longer be collected for continued use by professionals in the public and private sectors.
- Our state would no longer have a full-time earthquake hazards expert. Last year, DOGAMI's layoff of the only state Resilience Engineer was a major setback in public safety and the proposed GRB cuts would continue this trend, stalling further efforts towards making Oregon a safer place for all.

We live in an amazing state full of endless beauty and natural diversity. As our environment becomes less stable, understanding the geologic hazards around us is

becoming more and more important. This information is fundamental to public health in our state and to a large sector of our economy. Knowing the hazards, and how to plan for them, can save lives and hundreds of millions of dollars. We urge you to continue investing in the prosperity and resilience of our state by fully funding the work of DOGAMI at the current staffing levels.

In closing, I want to leave you with one suggestion, and a few questions:

- It is clear that there is widespread public support for this Agency and the work that it does. I would like to put forward to you that any discussion or process about its future be conducted in a public way, that allows for public input and the input of the folks who work at DOGAMI.
- Additionally, I encourage you to consider the following questions, as you move forward in evaluating the options for DOGAMI's future:
  - First, as the Legislature and our state grapple with not only how to recover from competing crises, but how to build an Emergency Management Infrastructure that makes us more resilient and responsive in the future; what message would it send to diminish the capacity of an Agency that is critical to that work?
  - Second, if we truly believe as a state that these functions and this Agency are critical - what is its worth to us? Do we believe that we should fit the Agency to the budget, or consider a budget that supports the work that should and needs to be done?
  - And finally, in the conversation about the instability of grant funding and the need for a more sustainable revenue source, what role has the uncertainty around this Agency's future played in limiting opportunities for, and what work can be done to mitigate that impact?

I thank all of you for your time, your leadership, your consideration of this issue and the opportunity to submit testimony.

Sincerely,

Courtney Graham

Political Strategist

SEIU Local 503, OPEU

APPENDIX A:

In Oregon, DOGAMI serves a key role in improving public safety by mapping natural hazards, effective regulation of mineral and energy resource extraction, and advancing science. Oregon is a geologically diverse state that is vulnerable to many hazards, including Cascadia subduction zone earthquakes. Working closely with local communities and counties, DOGAMI provides cutting-edge scientific information on earthquakes, landslides, floods, tsunamis, toxic minerals, and other hazards to ensure Oregon is prepared for natural hazards. The agency also coordinates the collection of lidar data, which produces three-dimensional models of the surface of the earth. This information is fundamental to many types of scientific work ranging from modeling tsunamis to mapping landslides.

Since 1937, DOGAMI has published 1,300 maps, reports and databases, and over 2,000 short articles - all of which are available to the public online at no charge. In the last 12 years, this includes 363 maps and reports. The map below shows where these studies provided data for each county in Oregon and each county is labeled with the number of recent studies that provide data in that county. DOGAMI has also been responsible for collecting lidar data throughout Oregon by building extensive funding partnerships. The shaded area of the map shows the nearly 40% of the state currently covered.

The DOGAMI website serves as an important resource for the public. In 2020, there were more than 430,000 page views by over 125,000 users. The main DOGAMI website is: https://www.oregongeology.org/

The agency's publications can be downloaded for free at: https://www.oregongeology.org/pubs/pubsearch.htm

Interactive maps are also available: https://www.oregongeology.org/gis/index.htm

Below are examples of these recent DOGAMI projects:

Earthquake Hazards and Seismic Preparedness

https://www.oregongeology.org/earthquakes/earthquakehome.htm

- Detailed Earthquake Impact Analysis for Clackamas, Multnomah, and Washington Counties: In partnership with the Regional Disaster Preparedness Organization (RDPO), DOGAMI was able to greatly improve understanding of the potential impacts of Cascadia and Portland Hills Fault earthquakes for the region by estimating injuries and fatalities, building damages, disruptions in lifelines and other impacts resulting from a major earthquake in the Portland metropolitan. This study is being used by communities, the region, and the state to prepare for, respond to, and recover from major earthquakes.
- Statewide Earthquake Modeling: In 2013, DOGAMI prepared a simulation of the effects of a Magnitude 9 Cascade earthquake for use by the Oregon Seismic Safety Policy Advisory Commission in preparing the Oregon Resilience Plan. The resilience plan was a landmark document that for the first time provided a science-based estimate of the dire statewide impacts of a great earthquake on the Cascadia Subduction Zone. DOGAMI subsequently published that extensive and detailed hazard data for use by engineers, planners and emergency managers, and also made it available through a user-friendly web map (HazVu) for the general public. Currently, DOGAMI is updating that collection of hazard data to get the best available science into the hands of users.
- Statewide Seismic Needs Assessment: DOGAMI evaluated all universities, community colleges, public K-12 schools, fire stations, police stations, emergency operation centers, and hospitals buildings for seismic deficiencies. These are now used to prioritize and retrofit these buildings to improve their safety during and usability after the next major earthquake. DOGAMI partnered with the Oregon University System including faculty and students at Portland State University, Oregon State University and University of Oregon to perform this rapid visual screening. This project will result in many hundreds of lives saved when we have the M9 Cascadia Earthquake. At this time, DOGAMI staff are seeking funding to expand this assessment and review all publicly owned buildings in Oregon.
- Active faults: Using high-resolution lidar topographic data, DOGAMI scientists have discovered more than a dozen previously unknown active faults in the Cascades and Eastern Oregon. These faults remain largely unstudied, because DOGAMI does not have discretionary funds to support this work, and there are no grant programs targeting this critical hazard information need.

- Additional partnerships with organizations including the Oregon Health Authority, State Resilience Officer, Department of Land Conservation and Development, Regional Disaster Preparedness Organization, and the Oregon Department of Energy have focused on post-disaster fuel planning and lifeline infrastructure resilience, preparing coastal hospitals of Cascadia, developing the Oregon Resilience Plan, and the state's Seismic Rehabilitation Grant Program, promoting tsunami vertical evacuation structures, updating the Oregon Natural Hazards Mitigation Plan, and more.

Landslide Hazards

https://www.oregongeology.org/Landslide/landslidehome.htm

- Statewide Landslide Inventory: DOGAMI maintains a database of over 50,000 mapped landslides, made up of >350 individual studies. This database is called SLIDO and is statewide, downloadable, and has an associated, user-friendly webmap. This includes records of over 14,000 landslides that have occurred in the past 150 years.

- Detailed Landslide Hazard and Risk Studies include detailed, published maps and reports on ~1,610 square miles in parts of Clackamas, Clatsop, Coos, Lane, Multnomah, Tillamook and Washington Counties and the cities of Silverton and Astoria. Current projects include sections of coastal Clatsop, Lane, Douglas, and Coos, Benton, Marion, Washington, Morrow, Wasco and Grant Counties. The modern lidar-based landslide mapping and susceptibility modeling has had a foundational improvement of our understanding of landslide hazards in Oregon. These studies are conducted in coordination with communities and counties. Many of the methods to assess landslides developed at DOGAMI are being used by other US state geological surveys.

- Statewide Landslide Susceptibility Map: These maps characterize the potential of a region or area to have landslides based on geology, topographic characteristics, and knowledge of historical landslides. The statewide map provides a generalized map and is used to help focus future work in hazardous areas. More detailed mapping is available for some regions of Oregon that depicts both shallow and deep landslide susceptibility.

- Debris Flow Mapping: Debris flows are a very dangerous and deadly natural hazard in Oregon. DOGAMI has a current project to come up with a novel debris flow hazard map to aid communities in risk reduction. The recent 2020 fires create conditions conducive to debris flows, a potential fatal type of landslide. DOGAMI was going to propose a research project with ODOT on debris flows in Oregon. This is unlikely to happen if the agency is disbanded due to staffing shortages. These landslides not only pose a risk to lives, but also to infrastructure, commercial properties, homes, and drinking water systems.

- Other collaborations include working with:

- Oregon State University professors and students on a Coast Range landslide-lifeline risk assessment and novel semi-automated landslide mapping model
- University of Oregon professors and students on a multi-year, federally-funded project to identify and date landslides caused by previous Cascadia earthquakes
- Portland State University students
- Bureau of Land Management (Coos Bay district): employing students to map landslides, giving students experience and providing BLM much needed landslide maps
- US Geological Survey: mapping landslides in the 2017 Eagle Creek burn area and the 2020 fire areas of Riverside, Beachie-Lionshead, Holiday Farm, and Archie Fires
- Department of Land Conservation and Development (DLCD): published a landslide hazard land use planning guide together
- Washington Geological Survey (WGS): created a Homeowner's Guide to Landslides

Tsunamis and Coastal Hazards

https://www.oregongeology.org/tsunamis.htm
https://www.oregongeology.org/Coastal/CoastalHazardsMain.htm

- Tsunami inundation maps: DOGAMI staff have created state-of-the-art, second generation tsunami inundation maps that span the entire coast. No other state has accomplished this yet. Using these maps, more than 50,000 residents and up to 150,000 additional coastal visitors potentially have been identified within the tsunami hazard zone. Inundation maps and signs have been posted in public locations across the coastline and DOGAMI staff regularly provide outreach to local communities.
- Tsunami evacuation maps: Completed tsunami evacuation mapping of virtually every community on the Oregon coast in order to provide needed information about the likely effects of the next Cascadia tsunami, including: how much time communities have to respond, which routes to take to reach high ground, and at what speeds do they need to travel to reach high ground before being killed by the tsunami. DOGAMI worked with the Northwest Association of Networked Ocean Observing Systems (NANOOS) to develop a dedicated tsunami evacuation map portal and smartphone application to ensure coastal residents can safely locate themselves in the tsunami zone, and importantly make informed decisions about where to evacuate.
- Coastal erosion hazard maps in Lincoln, Tillamook and Clatsop counties: The erosion hazard maps are used by cities and counties when planning for future protection of natural resources and development
- Tsunami risk assessments in Clatsop, Tillamook and (pending) Lincoln counties: These data are critically important for cities, counties and Community Emergency Response teams and are used to develop pre- and post-disaster emergency

plans (e.g. mass-care plans, debris plans) for the next Cascadia earthquake and accompanying tsunami that will devastate the Oregon coast.

- Long-term coastal change and erosion monitoring: Oregon Beach Shoreline and Mapping Analysis Program (OBSMAP) to document coastal change and erosion hazards at seasonal, multi-year, and multi-decadal timescales at numerous sites along the Oregon coast. These data are critically important and were identified as a need by local Government and state agencies such as Oregon State Parks, who manage the public beach and must make informed decisions about the use of coastal engineering; the data are also used by geotechnical consultants who in the past have invariably operated with limited data on which to base decisions about future coastal erosion at specific sites.
- Many other projects that include collaborations with ODOT, USGS, Hatfield Marine Science Center, OSU, and local cities to address issues including coastal erosion, landslide hazards along the coast, and map and monitor long-term coastline and dune changes.

Flood and Channel Migration

https://www.oregongeology.org/flood/default.htm

- Channel migration zone maps in Hood River, Multnomah, Clackamas, and Coos Co. and (pending) Marion, Morrow, Benton, and Washington counties: These maps identify areas susceptible to future channel movement and erosion based on lidar, underlying geology, historical maps and aerial photographs. They are used by local emergency managers, planners, and resilience coordinators to identify threats to life, property, and potential new development within the floodplain and to educate current landowners on flood and erosion risks. They can also guide conservation of key riparian habitat and help identify environmental restoration sites. DOGAMI staff aims to create new maps in Lane, Umatilla, and additional areas of Clackamas and Multnomah Co.
- Flood Risk Assessment for the Columbia Corridor Drainage Districts in Multnomah County: This study determined the modern impact of a potential levee breaches along the Columbia River in north Portland, Gresham, and Sauvie Island (near the site of the historic Vanport flood). DOGAMI found that if the modern levee system failed during a major flood, hundreds or thousands of residents could be displaced, millions or billions of dollars of damage could occur, and thousands of employees would be unable to return to work at businesses such as the Portland Airport and shipping facilities. This study has helped the Multnomah County Drainage Districts understand what is at risk if the levees should fail, informed cost-benefit analysis of maintaining the levees, and aided in emergency planning.
- Statewide Levee Database: DOGAMI created the first comprehensive inventory of mapped levees and levee-like features in Oregon, primarily in western Oregon. This is an important resource for assessing flood risk, flood mitigation planning, and emergency response during flood events. It also benefits ecological restoration efforts by helping locate levees to remove or breach to expand habitat for aquatic species. DOGAMI staff would like to expand this mapping effort to include levees in central, southern, and eastern Oregon.

- Coastal Flood Hazard Studies in Lane, Douglas, Clatsop, Lincoln, Curry, and Tillamook counties: DOGAMI used lidar data to map coastal and river flood hazards within the counties, to produce revised Digital Flood Insurance Rate Maps and a revised Flood Insurance Study report, and to produce other mapping products useful at local, state, and federal levels for mitigation planning, risk analysis, and disaster response.

Geologic Mapping Program

https://www.oregongeology.org/geology/index.htm

- Geologic maps are essential to solve practical problems, including deciphering Earth history and processes (volcanoes, floods, seismic), evaluating resources (water, mineral/energy/geothermal), and preparing for hazards (landslides, earthquakes, volcanic eruptions). Recent geologic mapping by the Oregon Department of Geology and Mineral Industries (DOGAMI) has focused upon several key areas of Oregon.
- Geologic mapping in the Walla Walla Valley of Northeast Oregon: This project is occurring to support ongoing groundwater resource investigations by the Oregon Water Resources Department. Significant groundwater development and groundwater declines have been recognized in the area surrounding the city of Milton Freewater over the past several decades. Geologic mapping by DOGAMI is adding significant detail about the 3D geometries of subsurface rock aquifers beneath the Walla Walla Valley. Mapping is also revealing the extent, character, and age of fault zones contribution to our understanding of regional earthquake hazards. This work is being done in collaboration with the Oregon Water Resources Department, Confederated tribes of the Umatilla Indian Reservation, and U.S. Geological Survey.
- Geologic mapping in the Harney Basin of SE Oregon, between 2015 and 2020 is supporting ongoing groundwater studies in the area being conducted jointly by the Oregon Water Resources Department and the USGS and the citizen led Harney Basin Groundwater Study Advisory Committee. The Oregon Water Resources Department has recognized significant groundwater development and long-term groundwater level declines in the Harney Basin over the past few decades. A key element of developing a long-term hydrologic model for the basin is DOGAMI's geologists defining the 3D geologic framework and how it affects groundwater and surface water distribution and movement. This joint effort between DOGAMI, OWRD, USGS, and the citizens of Harney County will help the community to better understand and meet their water resource challenges and address current water resource management issues and concerns.
- Mt Hood Mapping: In 2020, DOGAMI published a new detailed geologic map detailing the geology and volcanic history of the east slope of Mount Hood Volcano. This mapping delineates a number of previously unrecognized and potentially active earthquake faults, outlines landslide, flood, and potential volcanic hazards along Oregon Highway 35, and details the early eruptive history of Mount Hood Volcano. This project was done collaboratively between DOGAMI, the U.S. Geological Survey Cascades Volcano Observatory, and faculty from Hamilton College New York.

- Statewide Geologic Map Data Compilation: DOGAMI completed a new version of the statewide geologic map data compilation (OGDC-7) in 2020. The geologic compilation integrates and makes publicly available the best published geologic mapping for the state by combining the maps and data into a single consistent and maintainable digital database. Provides the basic geologic information necessary to better understand hazard and resource issues statewide. https://gis.dogami.oregon.gov/maps/geologicmap/

Lidar

https://www.oregongeology.org/lidar/index.htm

- Thanks to funding from more than 80 different city, county, tribal, state, federal, private and non-profit partners, DOGAMI and the Oregon Lidar Consortium has been able to collect lidar data for over 50,000 square miles, more than half of the area of Oregon, since its inception in 2006.
- 2020 lidar collection: DOGAMI organized the collection of more than 6,300 sq. mi. of high-resolution lidar data in Coos, Curry, Josephine, Umatilla, Grant, Wheeler, and Harney County. This data collection cost nearly $3 million. These projects will be used to perform flood mapping, channel migration zone mapping, Confederated Tribes of the Umatilla Indian Reservation land management and restoration projects.
- According to The National Enhanced Elevation Assessment (NEEA) (Dewberry, 2012), Oregon's economy sees an annual benefit of at least $45.7 million due to availability of lidar data. (http://www.dewberry.com/services/geospatial/national-enhanced-elevation-assessment, Appendix C). Those financial benefits include the lidar collection contracts which provide work to Oregon-based private companies.
- Lidar data is critical to a great deal of work and business in Oregon. Without lidar, many scientists, including the geologists at DOGAMI, could not perform their work and create lidar-based natural hazard maps. In addition, lidar is regularly used for infrastructure planning and management (e.g. solar development, designing public works projects) and ecosystem and resource management (forest inventory, evaluating farming practices, and environmental assessments and restoration) in Oregon.
- Lidar collection post-wildfire: Many communities in areas impacted by natural disasters, including the 2020 wildfires, want to work with DOGAMI to collect lidar topographic data to better understand the changes to the landscape. For example, DOGAMI submitted a grant application to acquire lidar data within the McKenzie Watershed in 2021 in areas impacted by wildfire. Unfortunately, the federal funding sources have declined to fund this project because of the uncertainty surrounding the Governor's Recommended Budget and the future of the agency. This information would have been used to inform new landslides, debris flow, and channel erosion hazard mapping as well as understand environmental impacts to the forest, habitat, and watershed.

Mineral Land Regulation & Reclamation

https://www.oregongeology.org/mlrr/default.htm

- MLRR regulates mineral exploration, surface mining, oil/gas well drilling and geothermal well drilling, to ensure development projects do not negatively impact adjacent natural resources or neighboring properties
- MLRR authority includes the ability to require a slope stability study to prevent mining-related activities from triggering landslides
- DOGAMI is the lead facilitating agency in the first chemical process mine permitting effort to be conducted in the state - involving local, state, federal and Tribal agency coordination and participation across multiple disciplines (i.e. air quality, cultural resources, environmental justice, wetlands, wildlife)
- Disturbed lands are required to be restored to post-project beneficial uses (i.e. agriculture or forestry) when the project is complete for enjoyment by future generations
- Regulation of oil/gas drilling activities includes tracking maintenance of existing wells in the Mist Gas Field, Oregon's only producing gas field. Natural gas fueled one-third of the state's net electricity generation in 2019 (https://www.eia.gov/state/analysis.php?sid=OR)
- MLRR monitors production and injection activities at Neal Hot Springs, the largest operating geothermal power plant in the state. Oregon's renewable geothermal potential is ranked third in the nation (https://www.eia.gov/state/analysis.php?sid=OR)
- MLRR supports Oregon's economy by providing for safe, effective, sustainable mineral and energy resource extraction activities that are the foundations of modern society