HILARY S. FRANZ

COMMISSIONER OF PUBLIC LANDS

Washington Geological Survey Spotlight

Alex Steely, PhD, LG,
Assistant State Geologist
Assistant Director of Geologic Hazards and Mapping
and
Tricia Sears
Geologic Planning Liaison

Puget Sound Regional Council, Regional Staff Committee, May 16, 2024

Washington Geological Survey

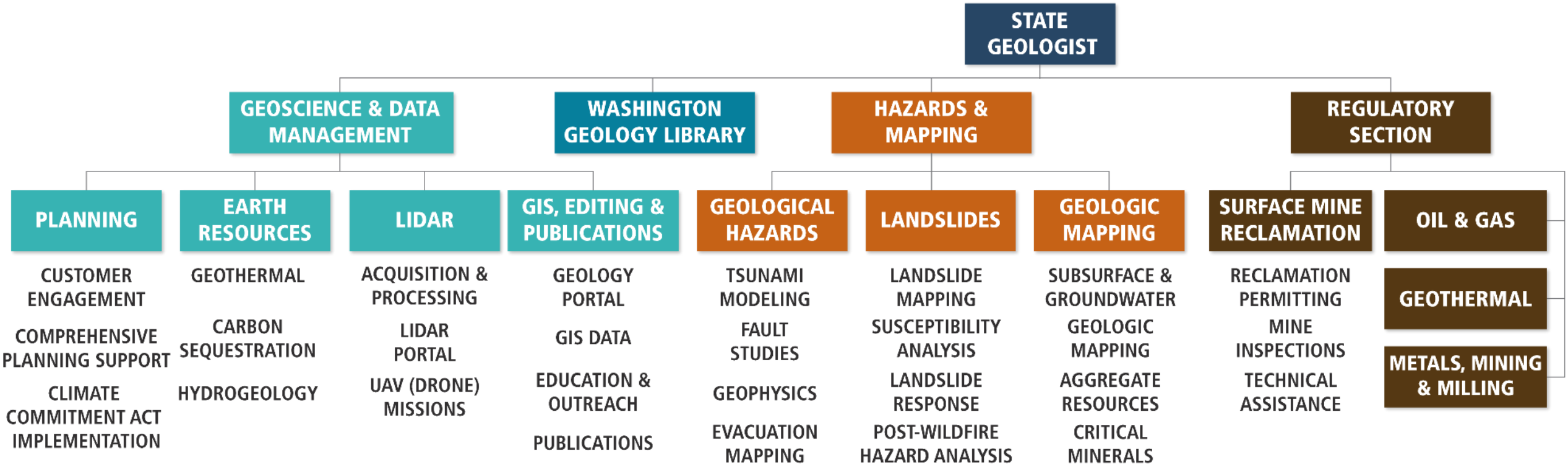
MISSION

To collect, develop, use, distribute, and preserve geologic information to promote the safety, health, and welfare of the people of Washington, protect the environment, and support its economy.

VISION

Fostering a safer, more productive and resilient society that incorporates geology into its regular thought and decision-making processes.

Washington Geological Survey

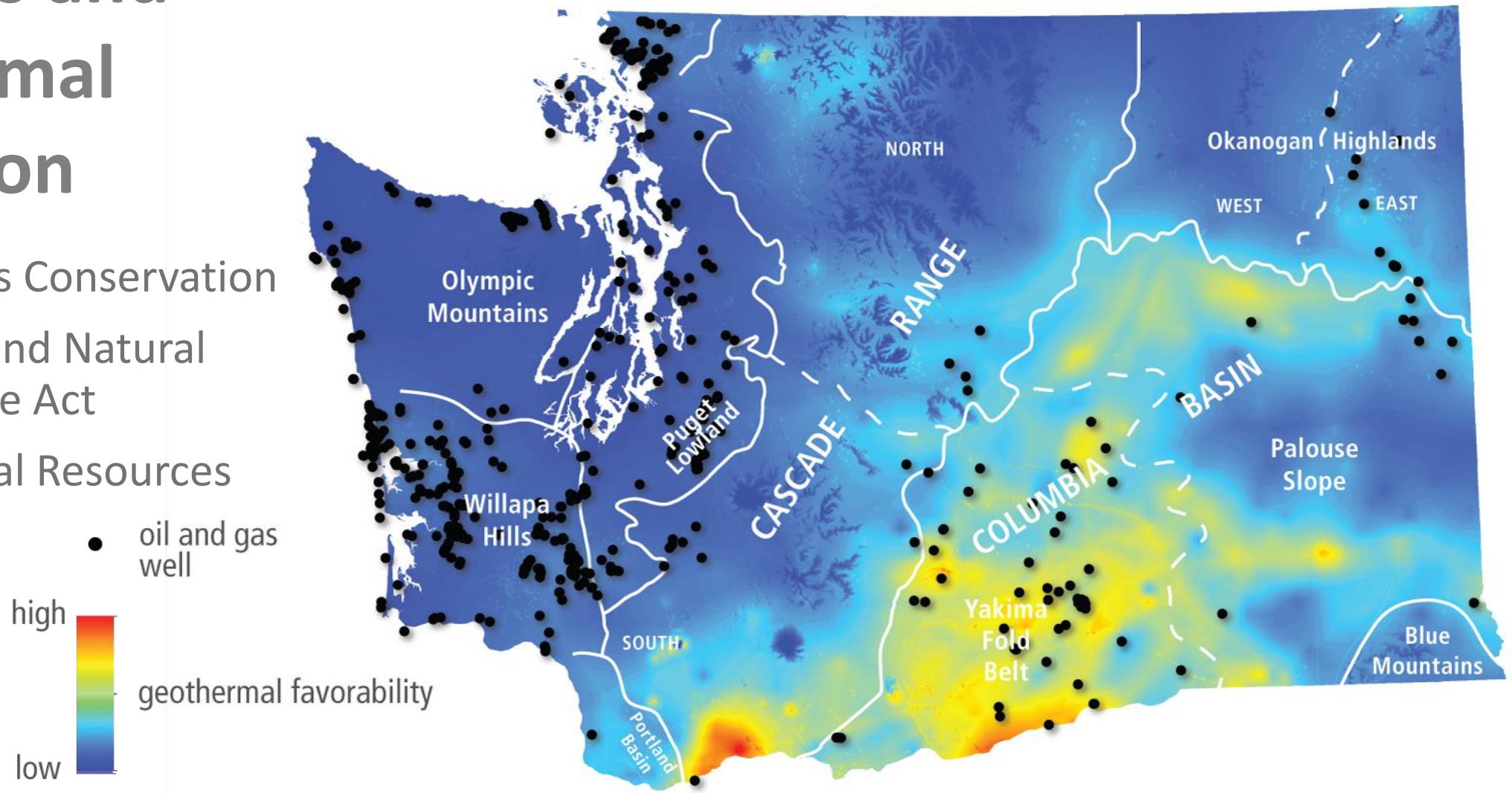


REGULATORY PROGRAMS

- Oil & Gas Conservation Act (78.52)
- Geothermal Resources Act (78.60)
- Surface Mining Act (RCW 78.44)
- Metals Mining & Milling Operations Act (78.56)

Oil & Gas and Geothermal Regulation

- Oil and Gas Conservation
- Underground Natural Gas Storage Act
- Geothermal Resources

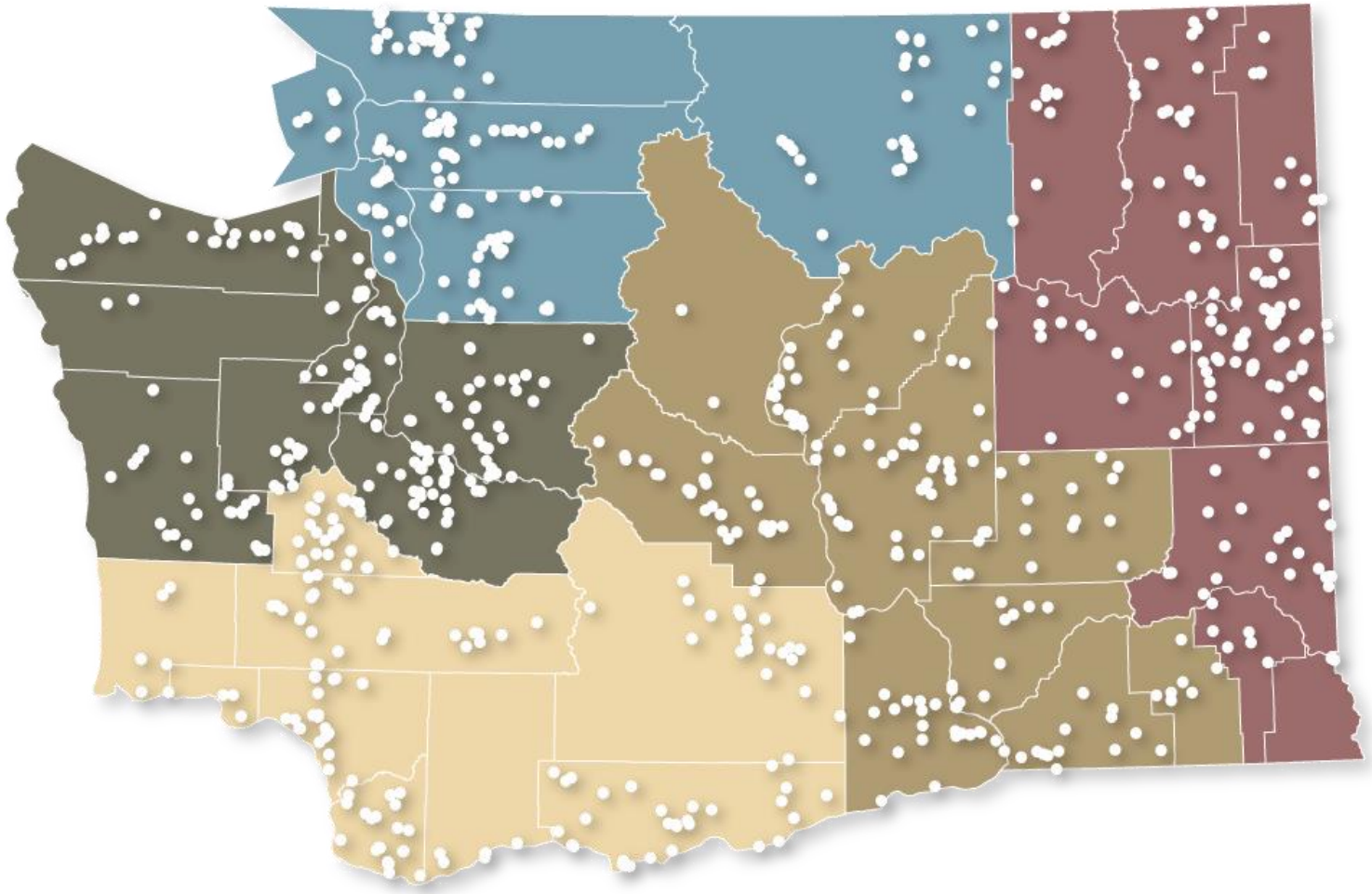


Surface Mining Act
Metals Mining & Milling Operations Act

- Rehabilitate for the appropriate future land use
- Reestablish the vegetative cover, slope stability, and water conditions
- Prevent or mitigate future environmental degradation

Surface Mines, Metal Mines, Milling Operations

- Permit Application Review
- SEPA
- Mine Inspections
- Technical Assistance
- Permit Holder Compliance
- Enforcement Actions
- Stakeholder Relations



Mine Regulation in WA

- Metals Mining & Milling Operations Act
- Surface Mining Act

RCW 43.92 Geological Survey

STATE GEOLOGIST .010

"There shall be a geological survey of the state that shall be under the direction of the commissioner of public lands who shall have general charge of or of the survey a geologist of established reputation, to be known as the state geologist."

OBJECTS OF SURVEY .020

"The geological survey shall have for its objects:

1. an examination of the economic products of the state, including: gold, silver, copper, lead, and iron ores, as well as buidling stones, clays, coal , and all mineral substances of value;
2. an examination and classification of soils, and the study of their adaptability to particular crops;
3. an investigation and report upon the water supplies, artesian wells, and water power of the state, gauging the streams, etc., with reference to its application for irrigation and other purposes;
4. an examination and report upon the occurrence of different road building material;
5. an examination of the physical features of the state with reference to their practical bearing upon the occupation of the people;
6. the preparation of special geological and economic maps to illustrate the resources of the state;
7. the preparation of special reports with necessary illustrations and maps, which shall embrace both the general and detailed description of the geology and natural resources of the state; and
8. the consideration of similar scientific and economic questions that in the judgment of the state geologist, is deemed of value to the people of the state."

INTENT .900

"It is the intent of the legislature that there be an effective state geological survey that can produce essential information that provides for the health, safety, and economic well-being of the citizens."

COOPERATION .060

"The state geologist may make provisions for topographic, geologic, and hydrographic surveys of the state in cooperation with the United States geological survey in such manner as in the opinion of th estate geologist will be of the greatest benefit to the agricultural, industrial, and geological requirements for the state. However, the director of the United States geological survey must first agree to expend on the part of the United States upon such surveys a sum equal to that expended by the state."

TECHNICAL ASSISTANCE .025

"In addition to the objectives stated above, the geological survey must conduct and maintain an assessment of seismic, landslide, and tsunami hazards in Washington. This assessment must apply the best practicable technology, including light detection and ranging (lidar) mapping, to identify and map volcanic, seismic, landslide, and tsunami hazards, and estimate potential hazard consequences and the likelihood of a hazard occurring.

The survey must:

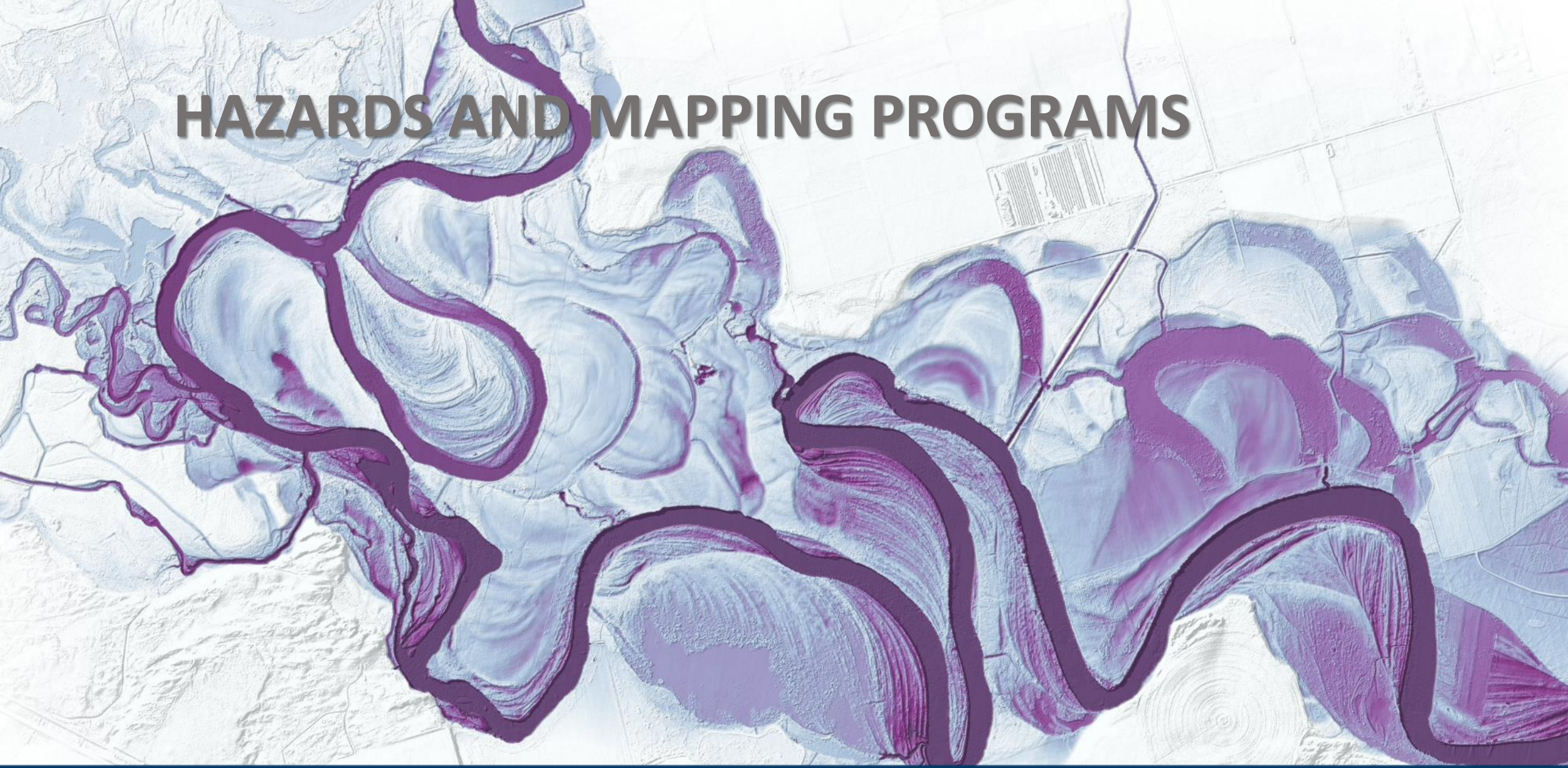
a. Coordinate with state and local government agencies to compile existing data, including geological hazard maps and geotechnical reports, tending to inform geological hazard planning decisions;

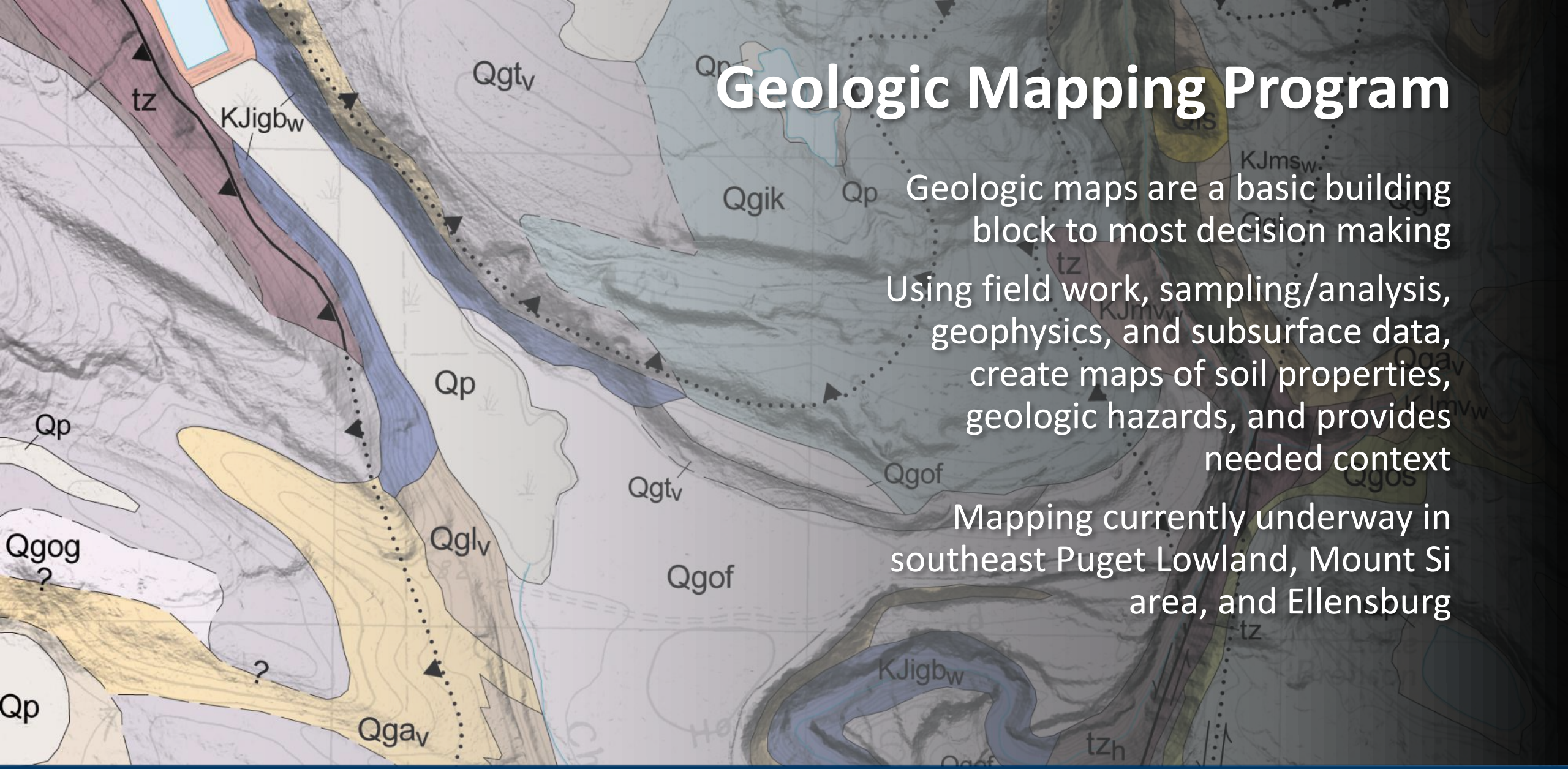
b. acquire and process new data or update deficient data using the best practicable technology, including lidar;

c. create and maintain an efficient, publicly available database of lidar and geological hazard maps and geotechnical reports collected under (a) and (b) of this subsection; and

d. provide technical assistance to state and local government agencies on the proper interpretation and application of the results of the geological hazard assessment."

HAZARDS AND MAPPING PROGRAMS





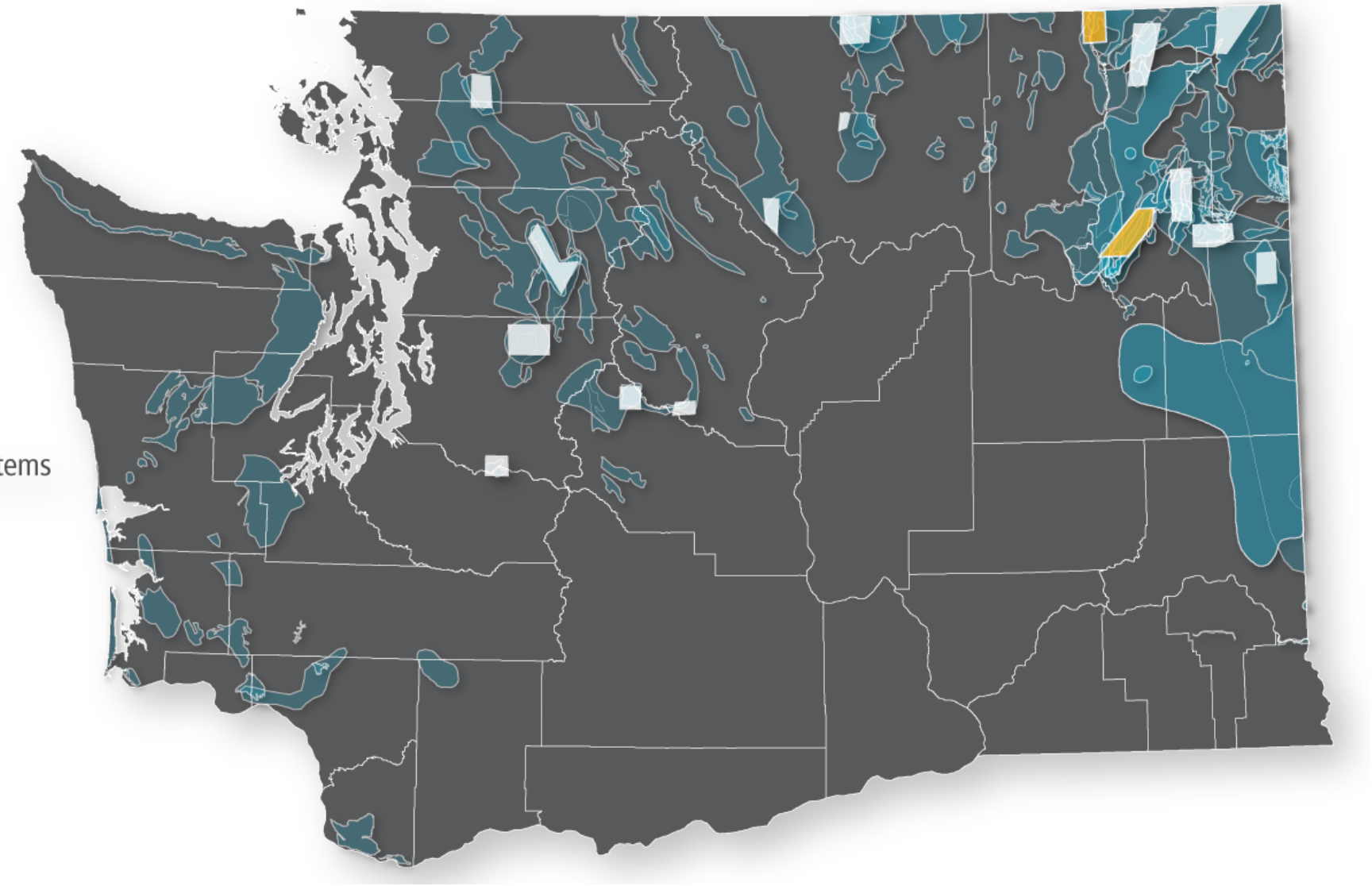
Geologic Mapping Program

Geologic maps are a basic building block to most decision making

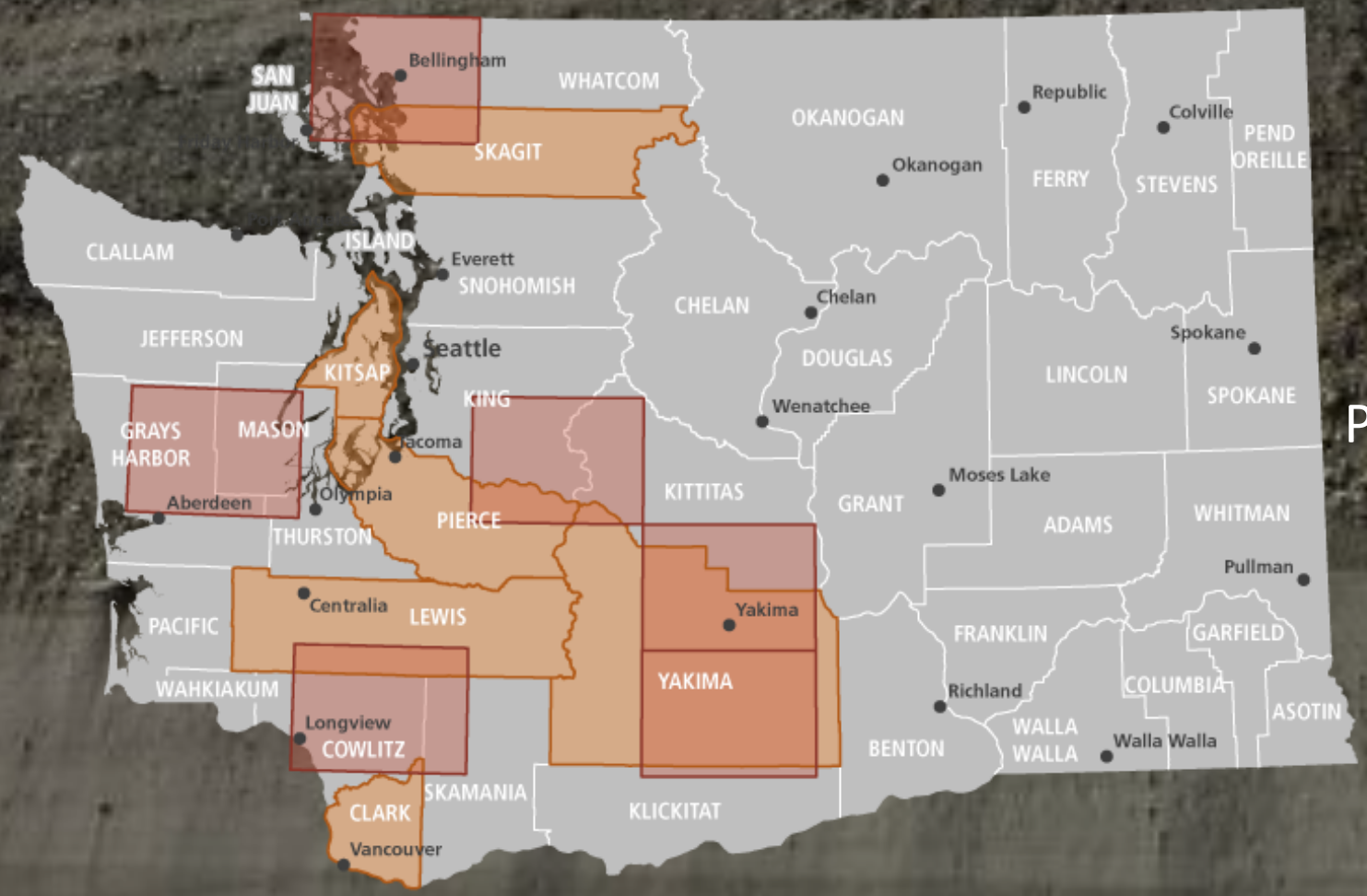
Using field work, sampling/analysis, geophysics, and subsurface data, create maps of soil properties, geologic hazards, and provides needed context

Mapping currently underway in southeast Puget Lowland, Mount Si area, and Ellensburg

Geologic Mapping Program



Geologic Mapping Program



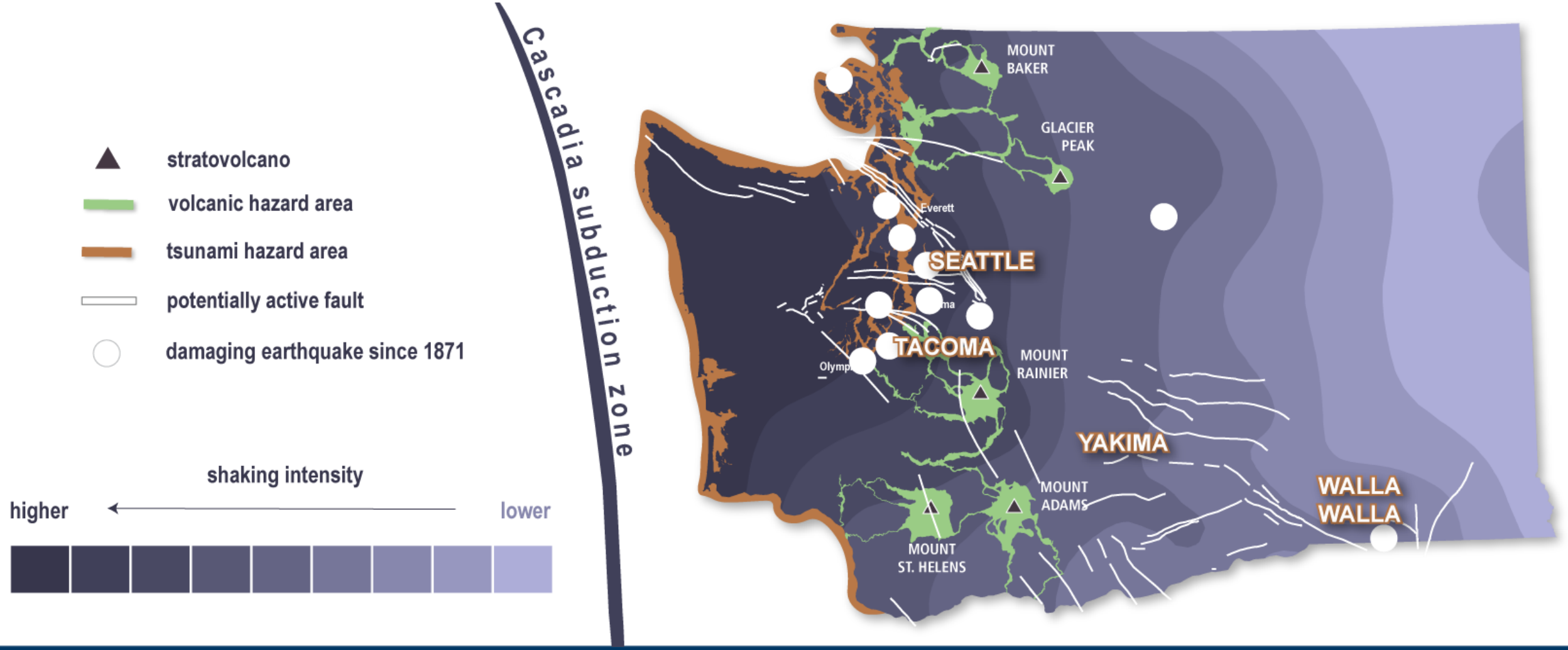
AGGREGATE MAPPING

Uses geologic mapping, subsurface data, materials testing, and mine information

Provides estimates location and quality of sand and gravel

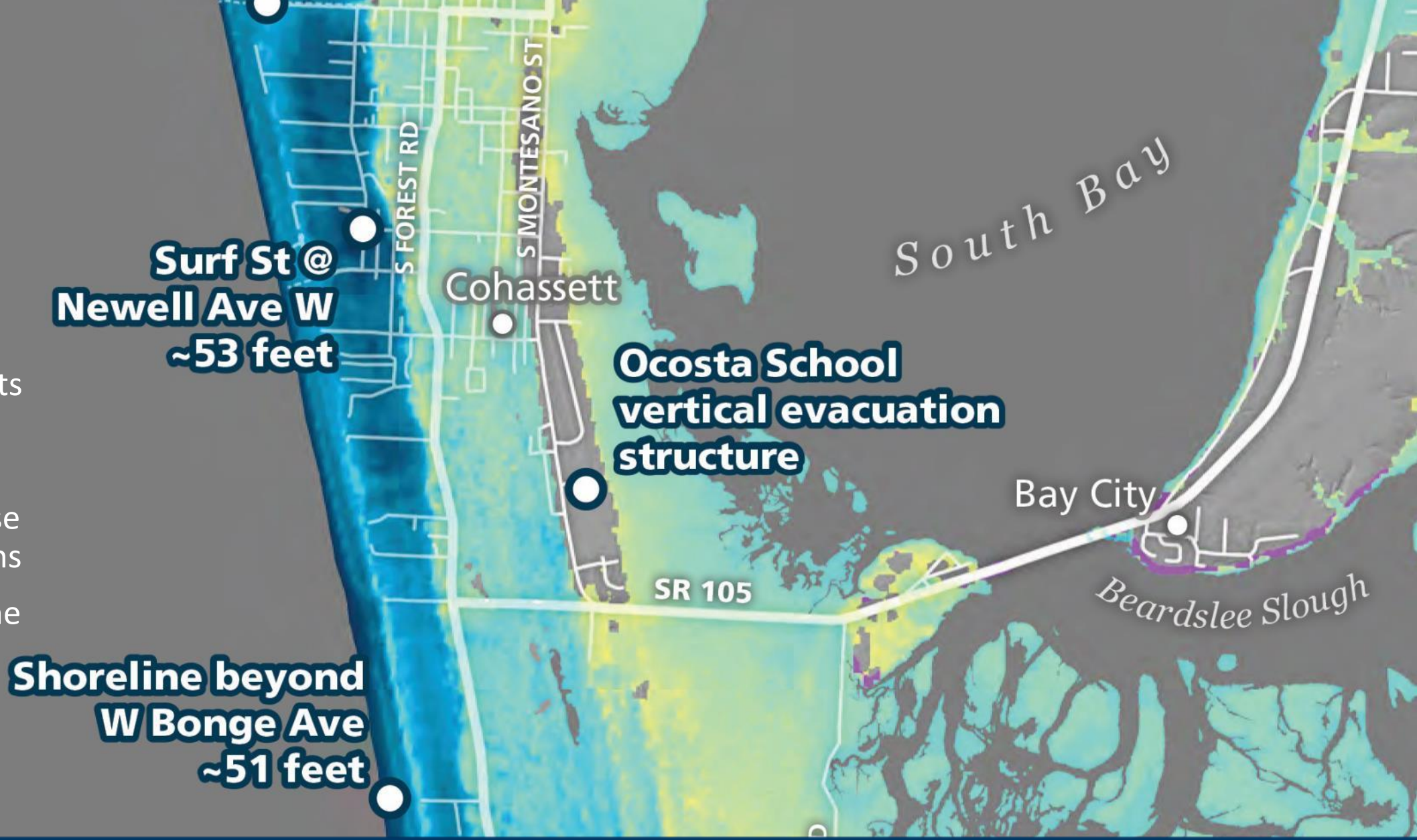
Ideally used by local jurisdictions in mineral lands designations

Geologic Hazards Program



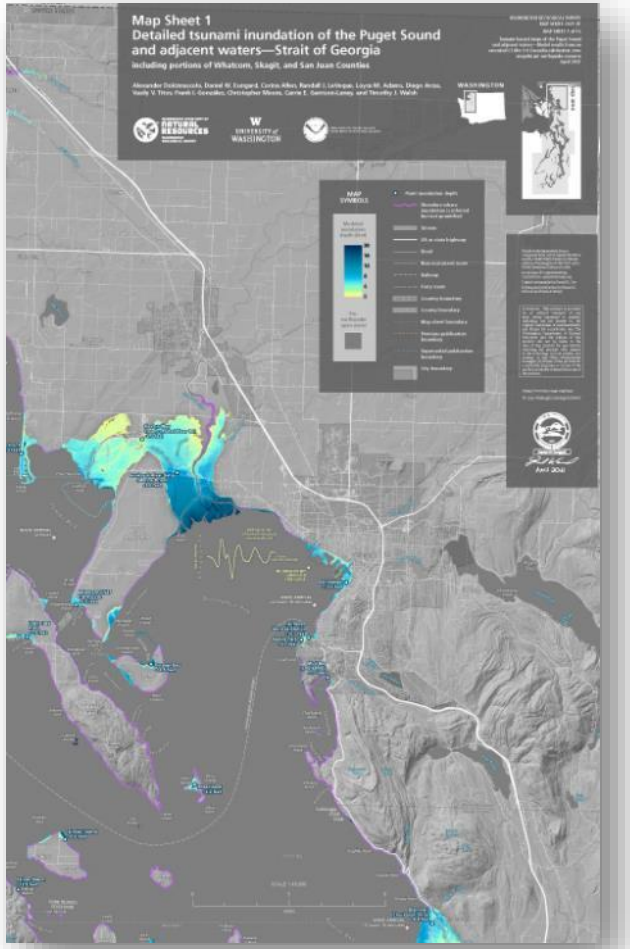
Tsunami Hazards

- WGS models tsunami inundation on land and in ports
- Assists emergency managers devise evacuation plans
- Data informs the Washington State Building Code

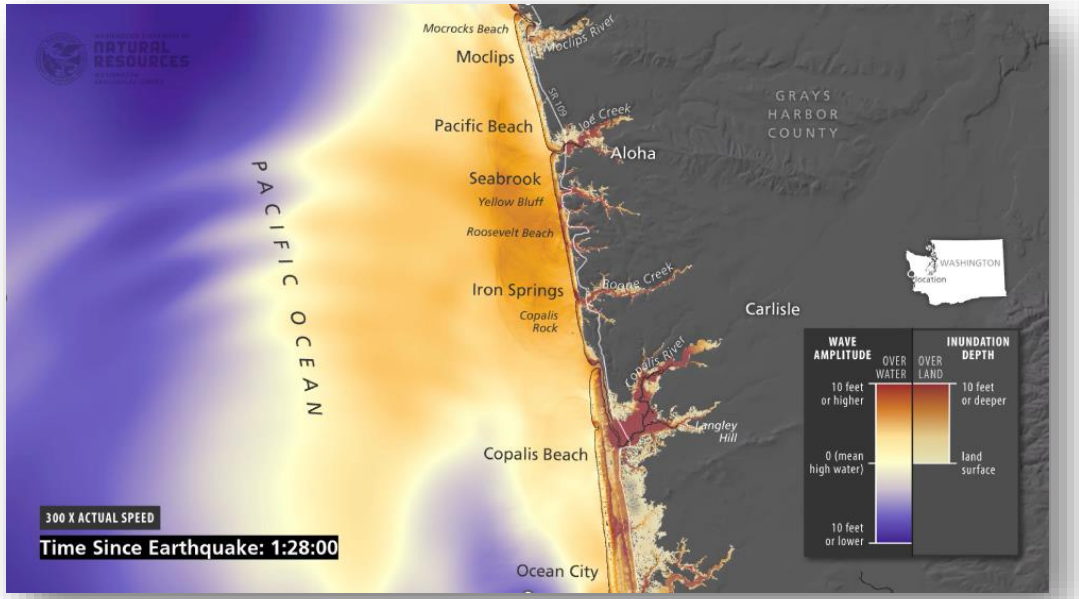


Tsunami Products

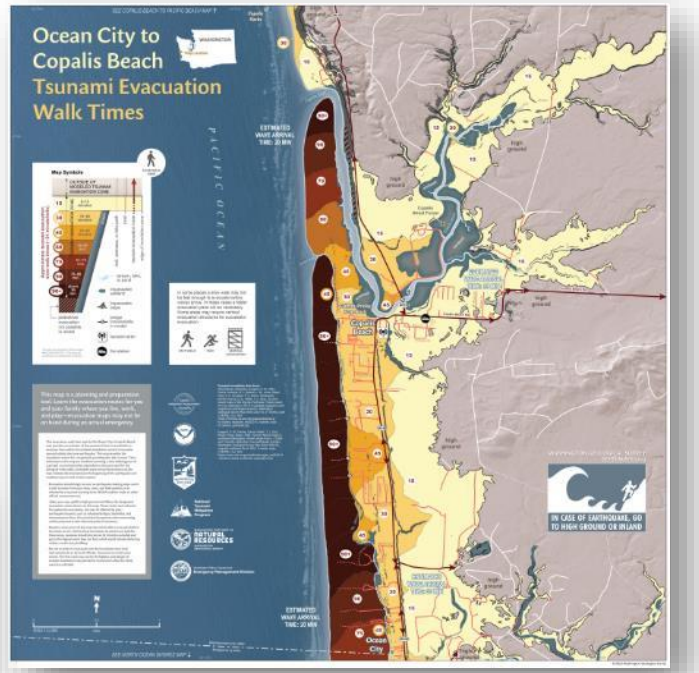
Tsunami Hazard Assessments



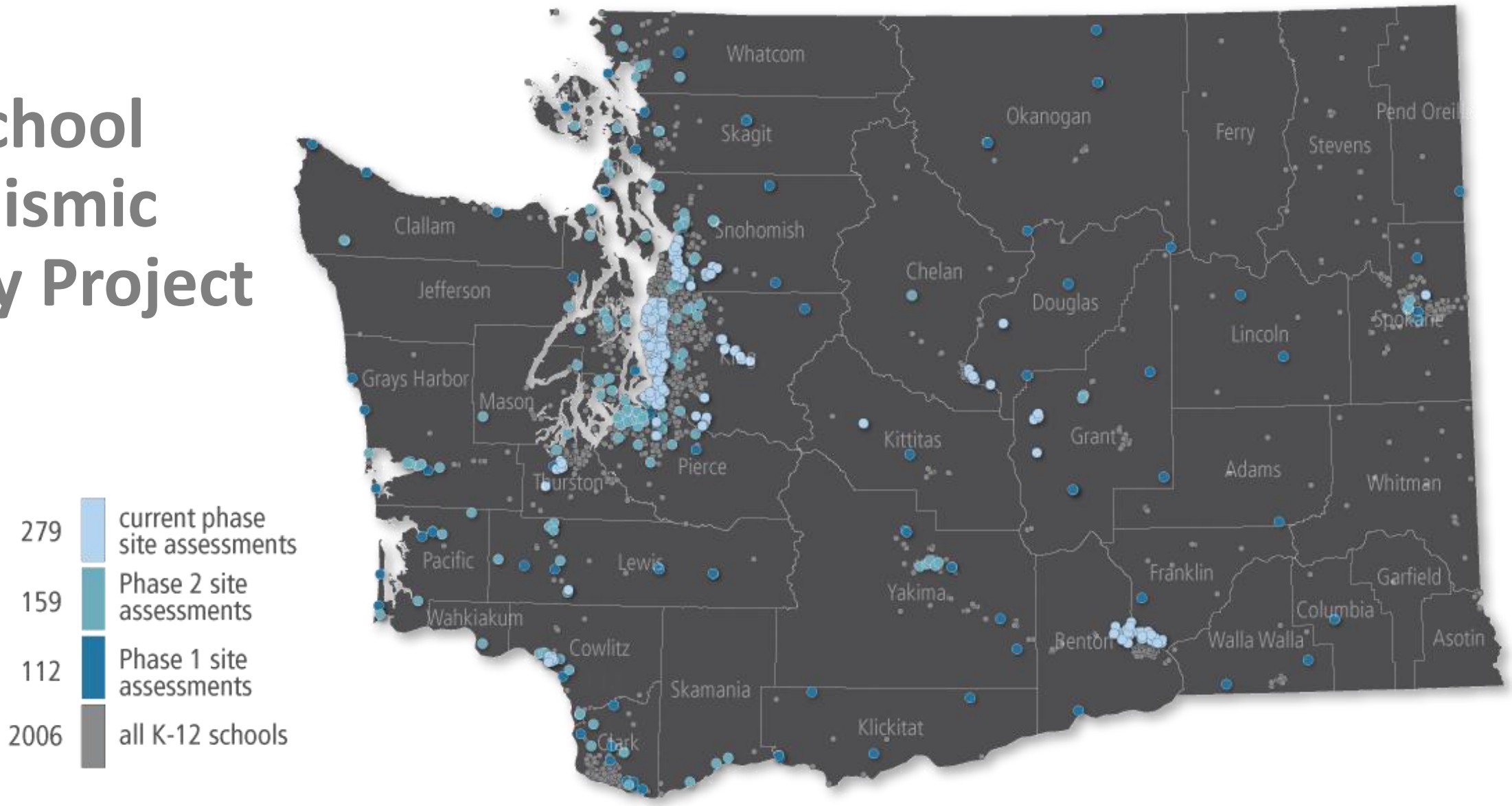
Tsunami Simulations



Tsunami Walk Maps

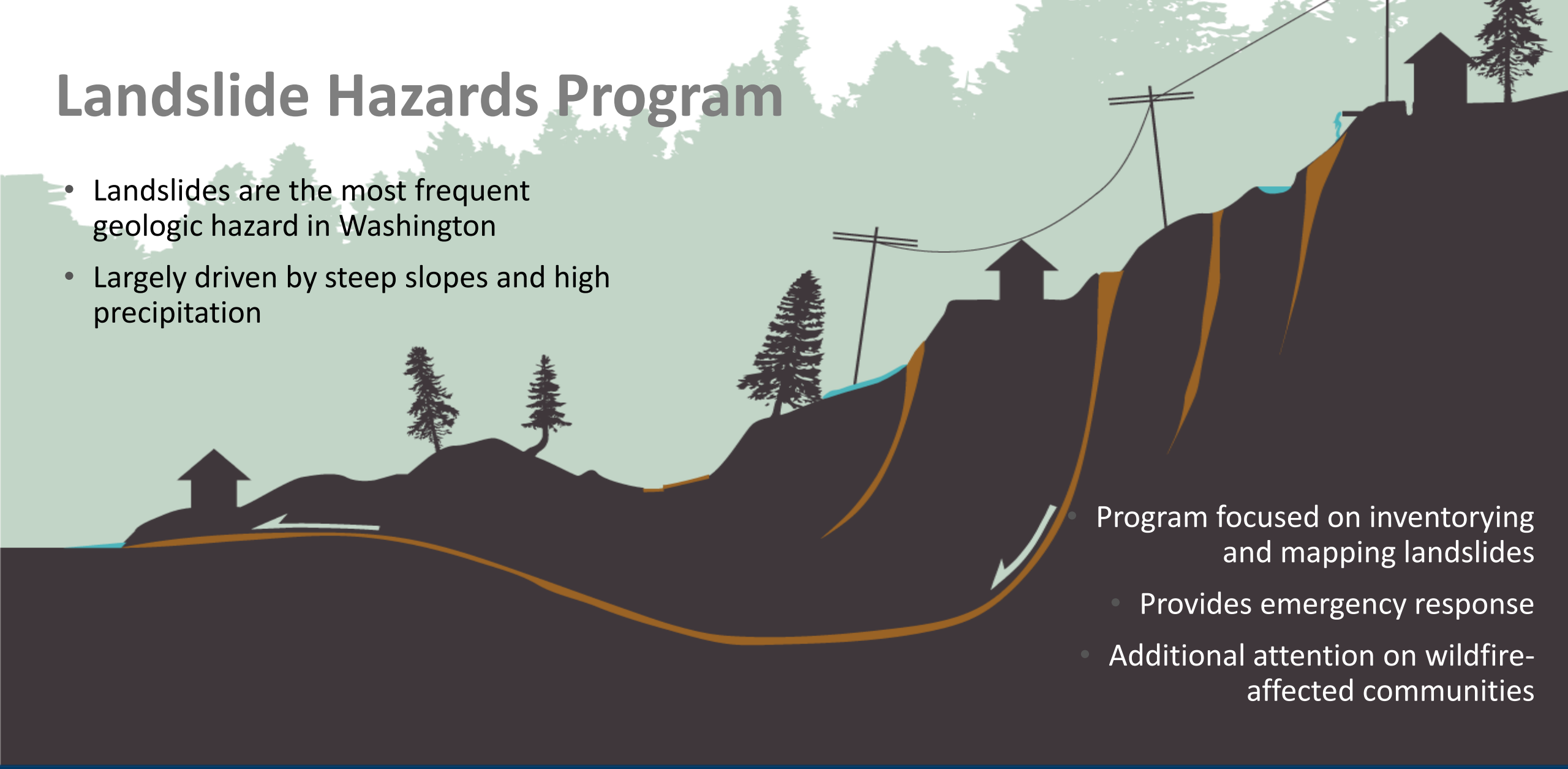


School Seismic Safety Project



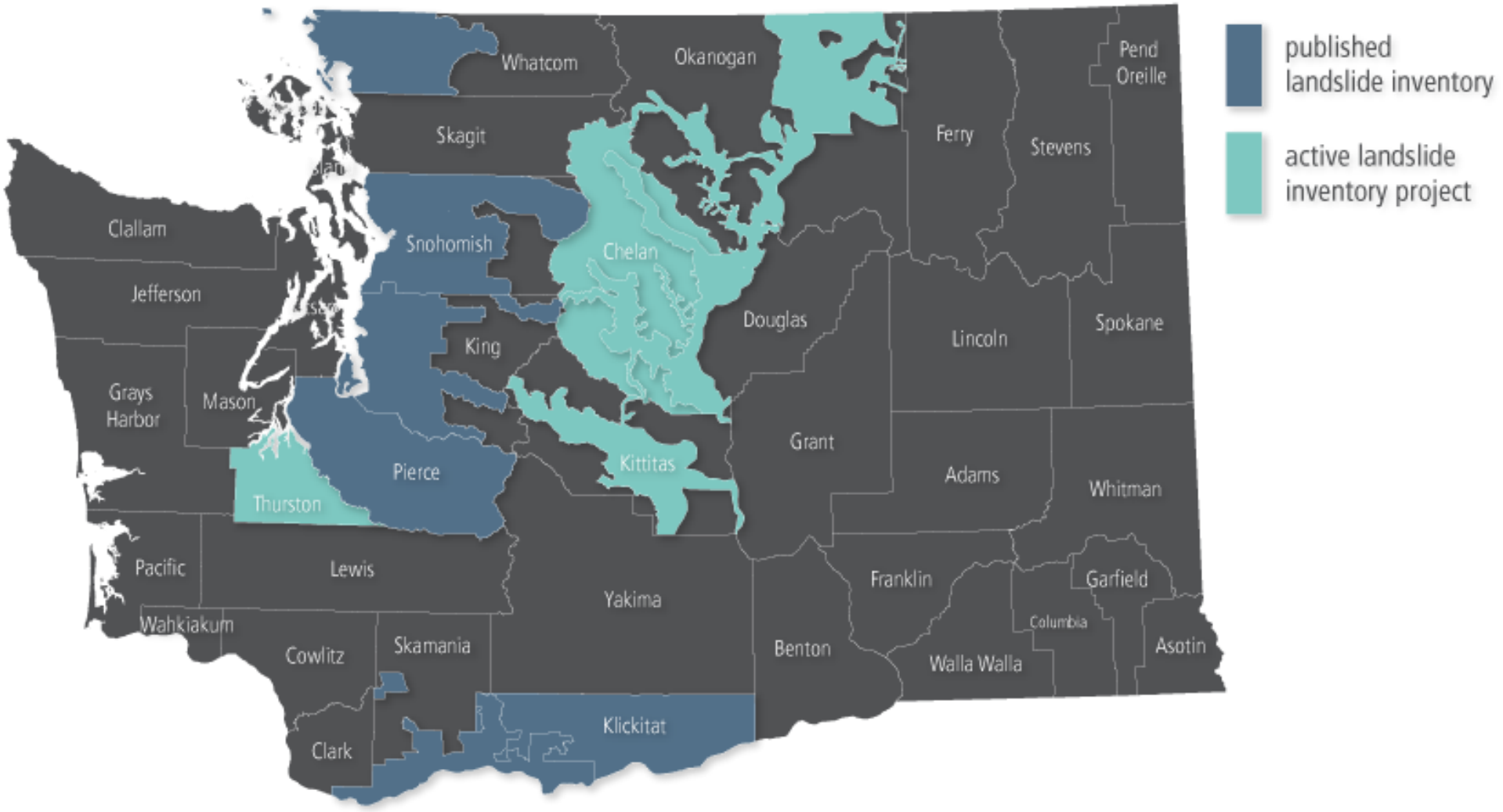
Landslide Hazards Program

- Landslides are the most frequent geologic hazard in Washington
- Largely driven by steep slopes and high precipitation

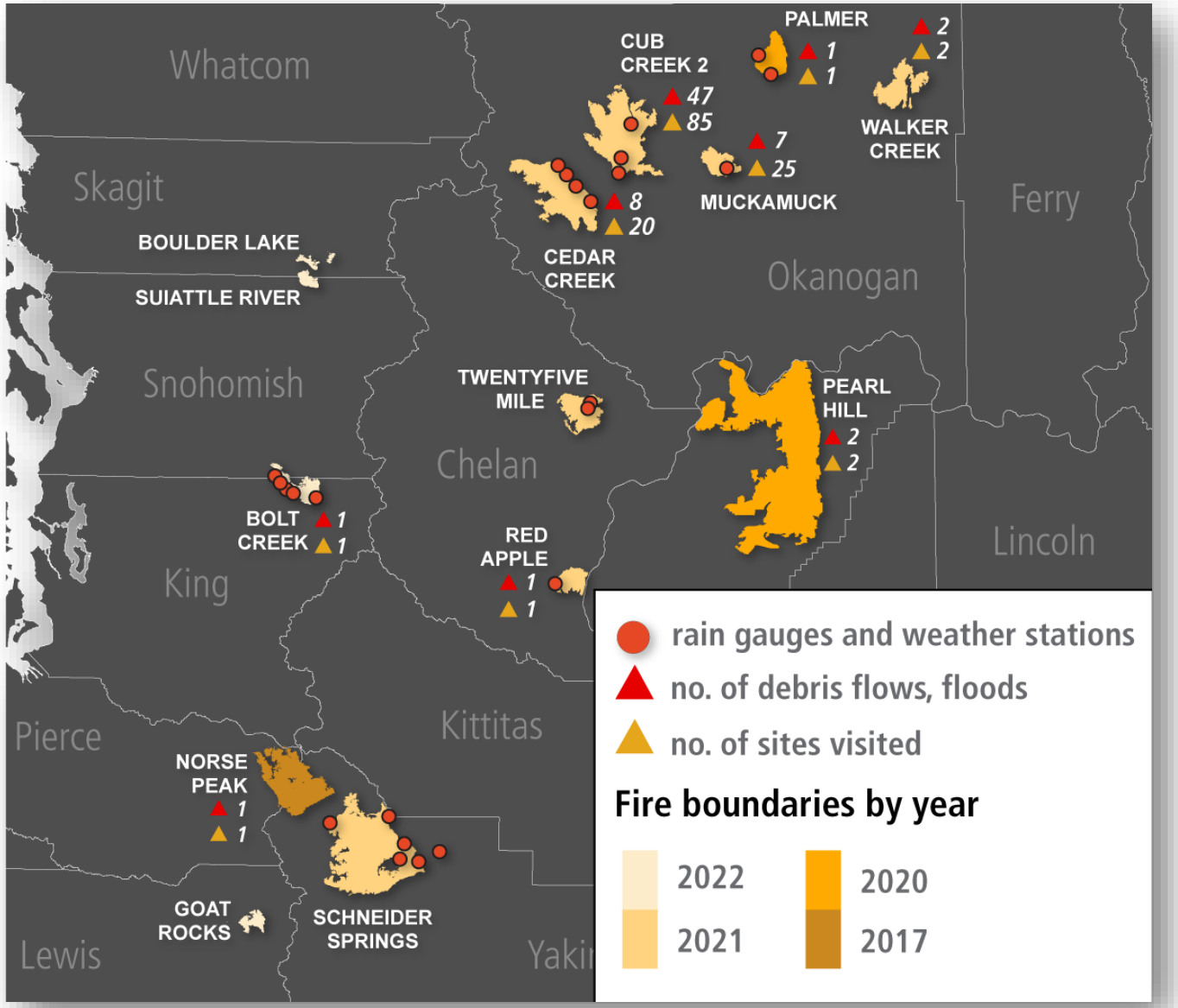


- Program focused on inventorying and mapping landslides
- Provides emergency response
- Additional attention on wildfire-affected communities

Landslide Hazard Group Projects



Post-Fire Debris Flow Hazards



GEOSCIENCE & DATA MANAGEMENT PROGRAMS

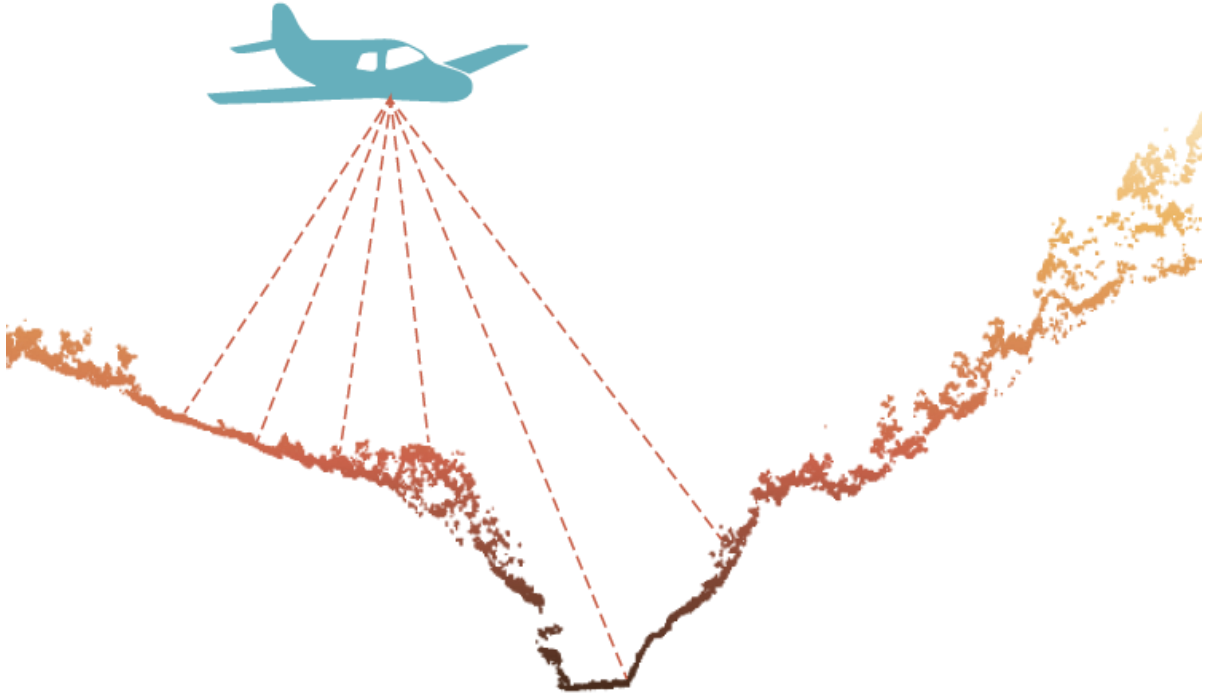
WASHINGTON STATE DEPARTMENT OF
NATURAL RESOURCES

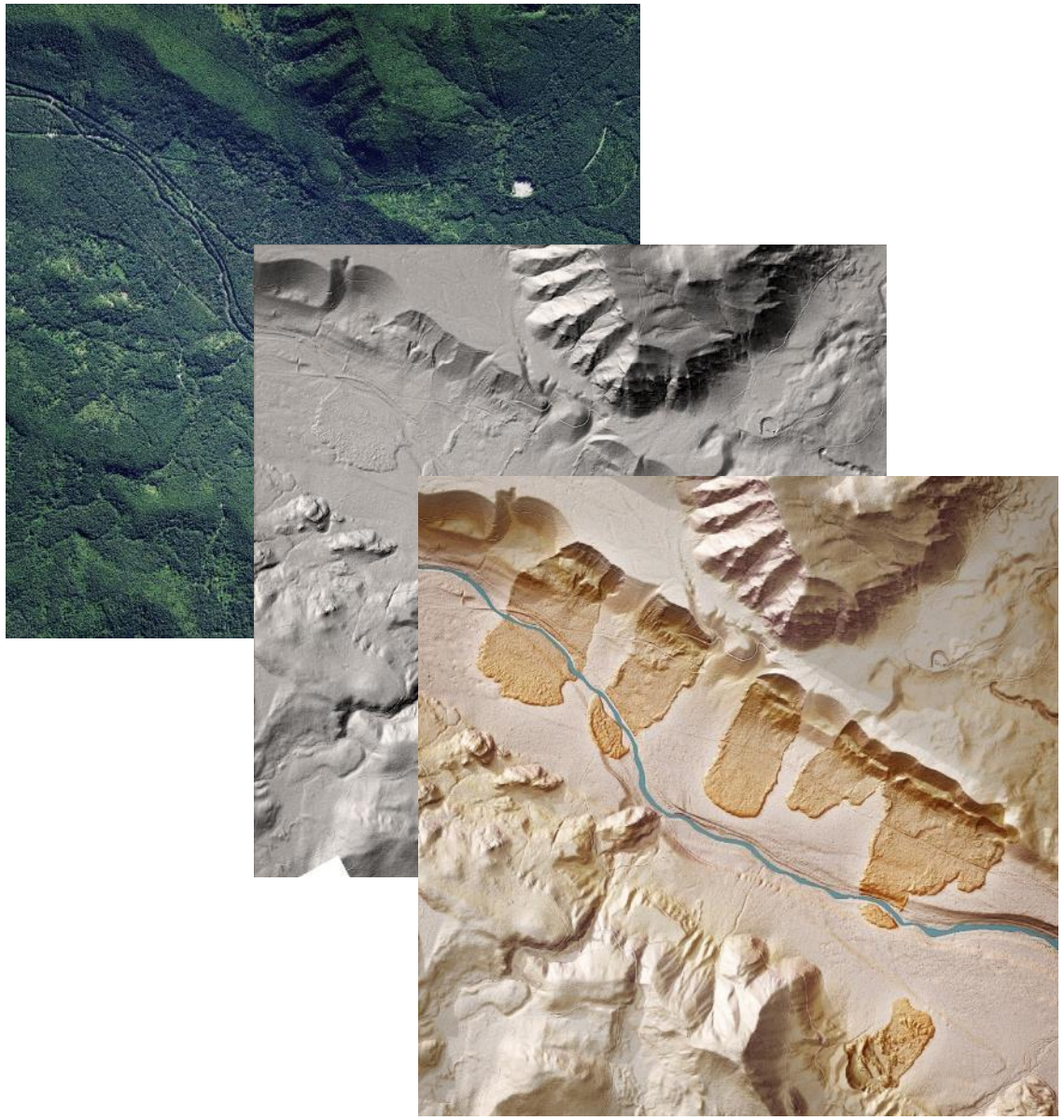
Hilary Franz, Commissioner of Public Lands

dnr.wa.gov

Lidar Program

Lidar is a technology that collects high-resolution topographic information of the Earth's surface, and can see through Washington's dense vegetation to the bare earth.





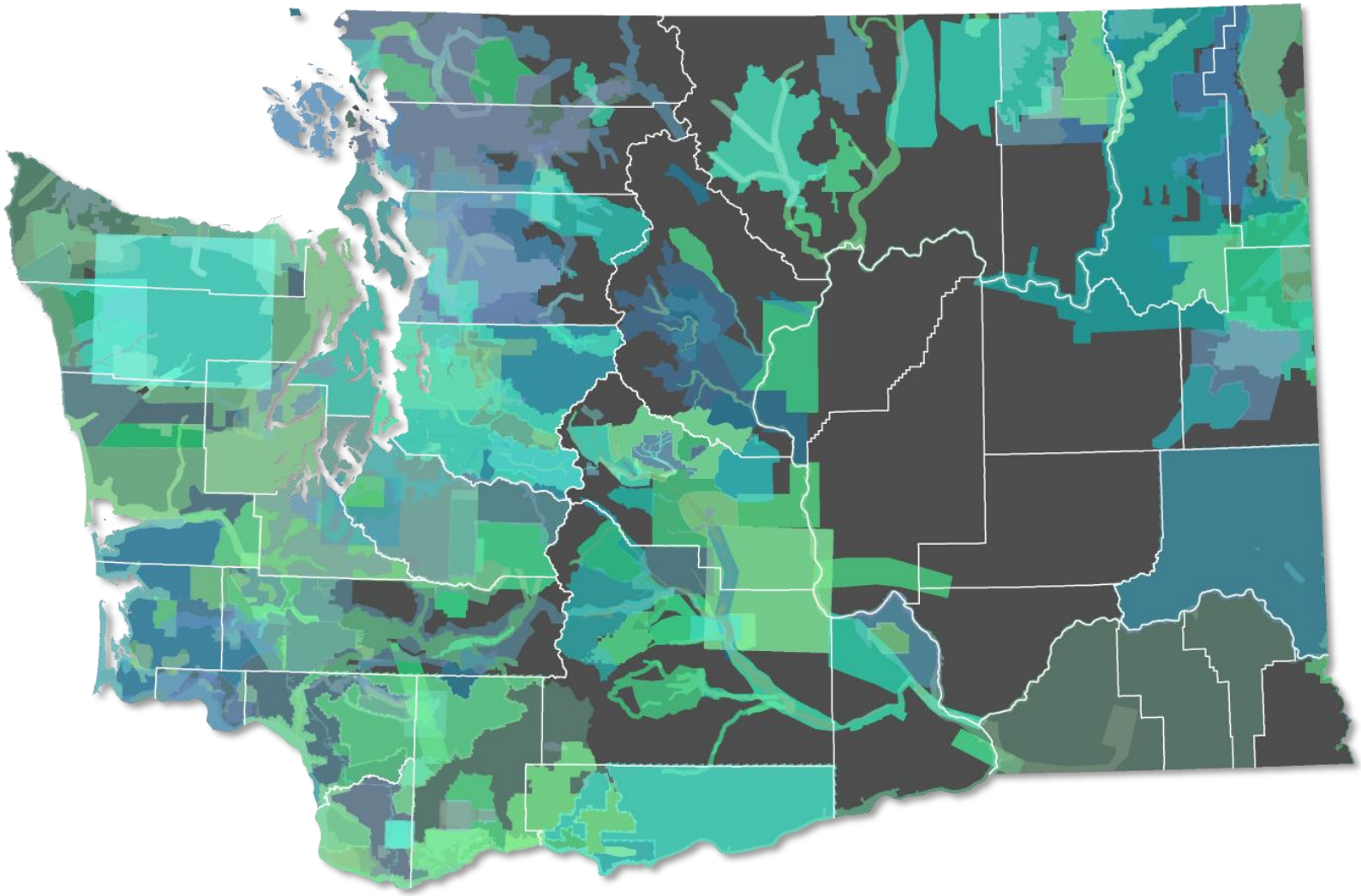
Lidar Program

Used for:

- All geologic hazard mapping
- Forest health
- Flood mapping
- Shoreline mapping
- Agriculture
- Etc.

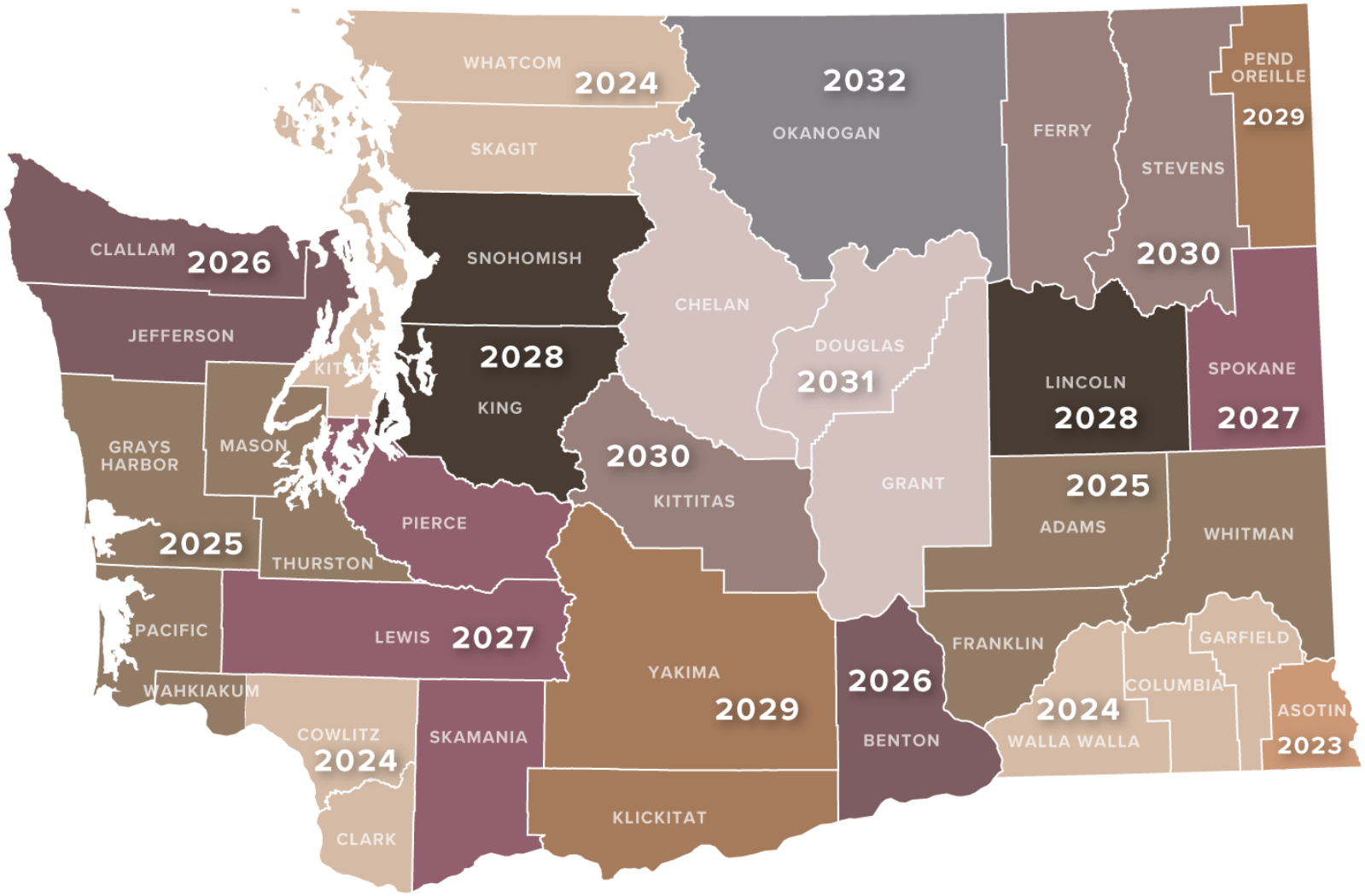
WGS has its own master contract for lidar

All of the data is publicly available on WGS's Lidar Portal

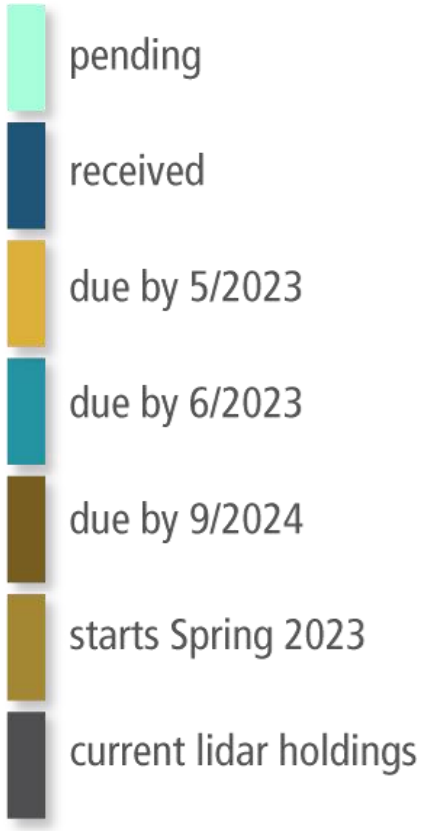


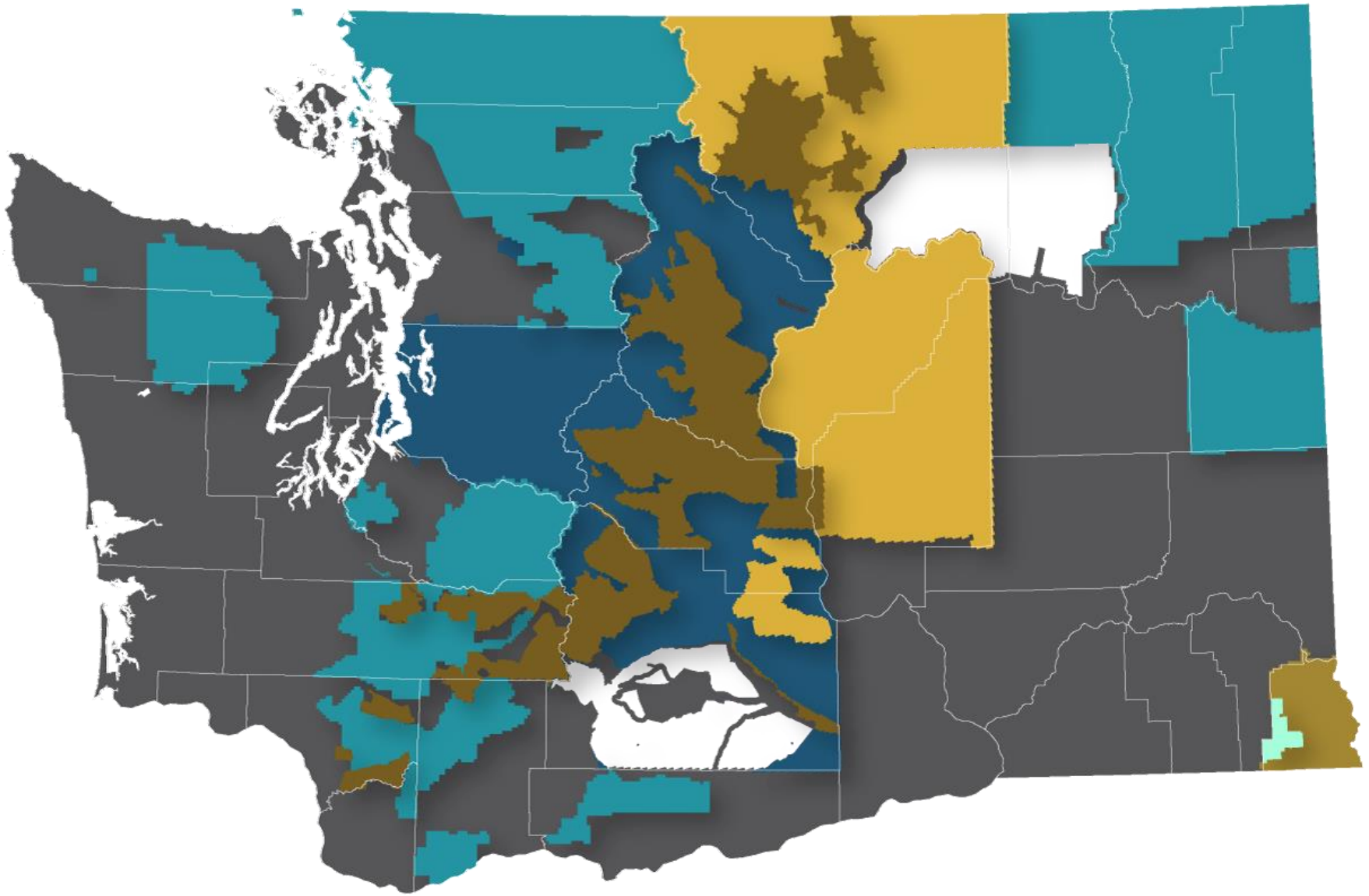
The Future of Lidar Refresh in Washington

- Target of 10-year statewide refresh of high-quality lidar with additional state funding.
- Aiming to leverage existing and new partnerships to speed it up even more, to a 6-year refresh



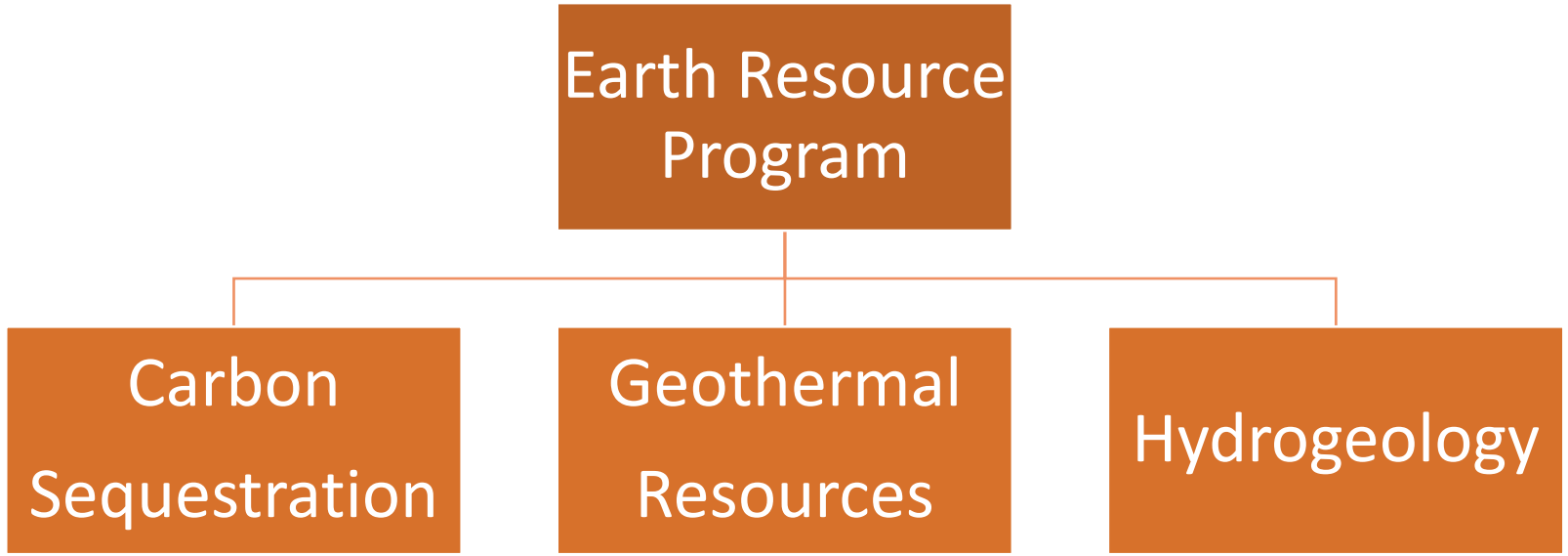
New and In-Progress

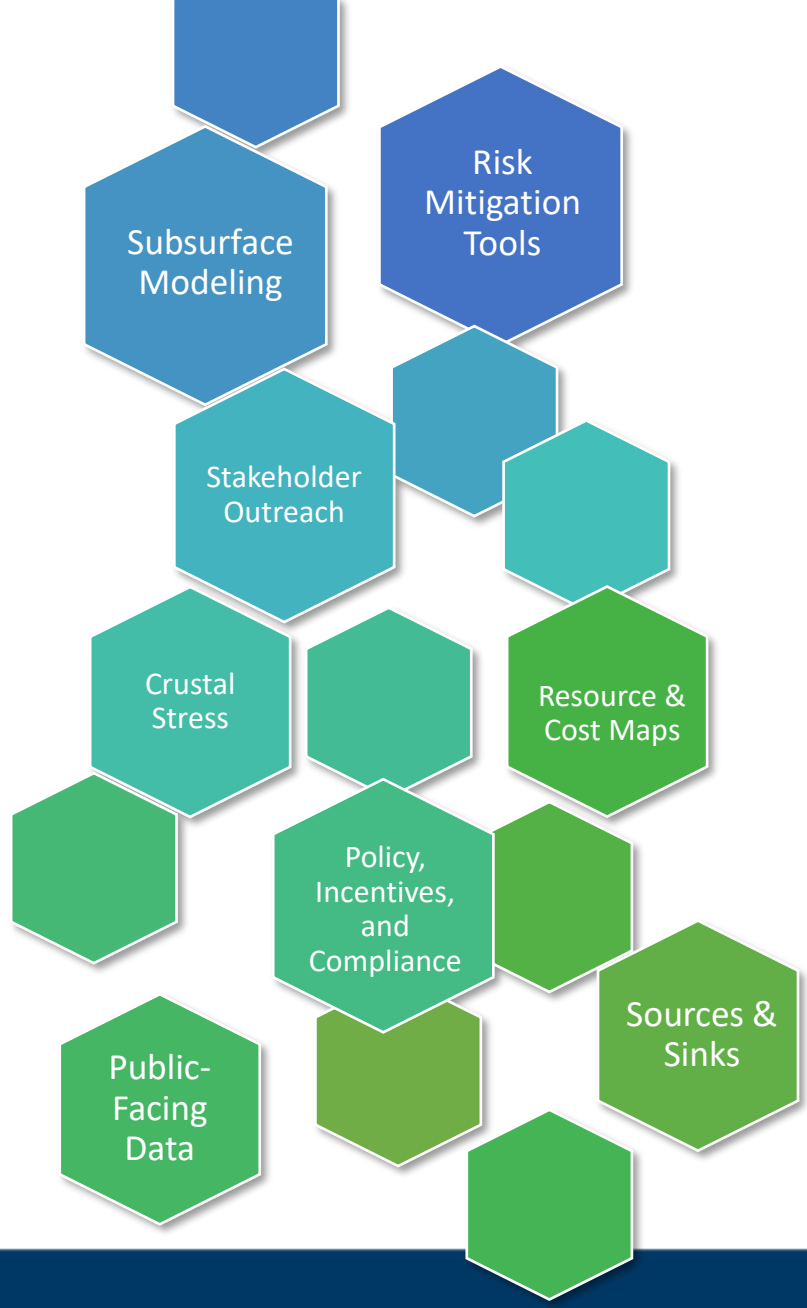




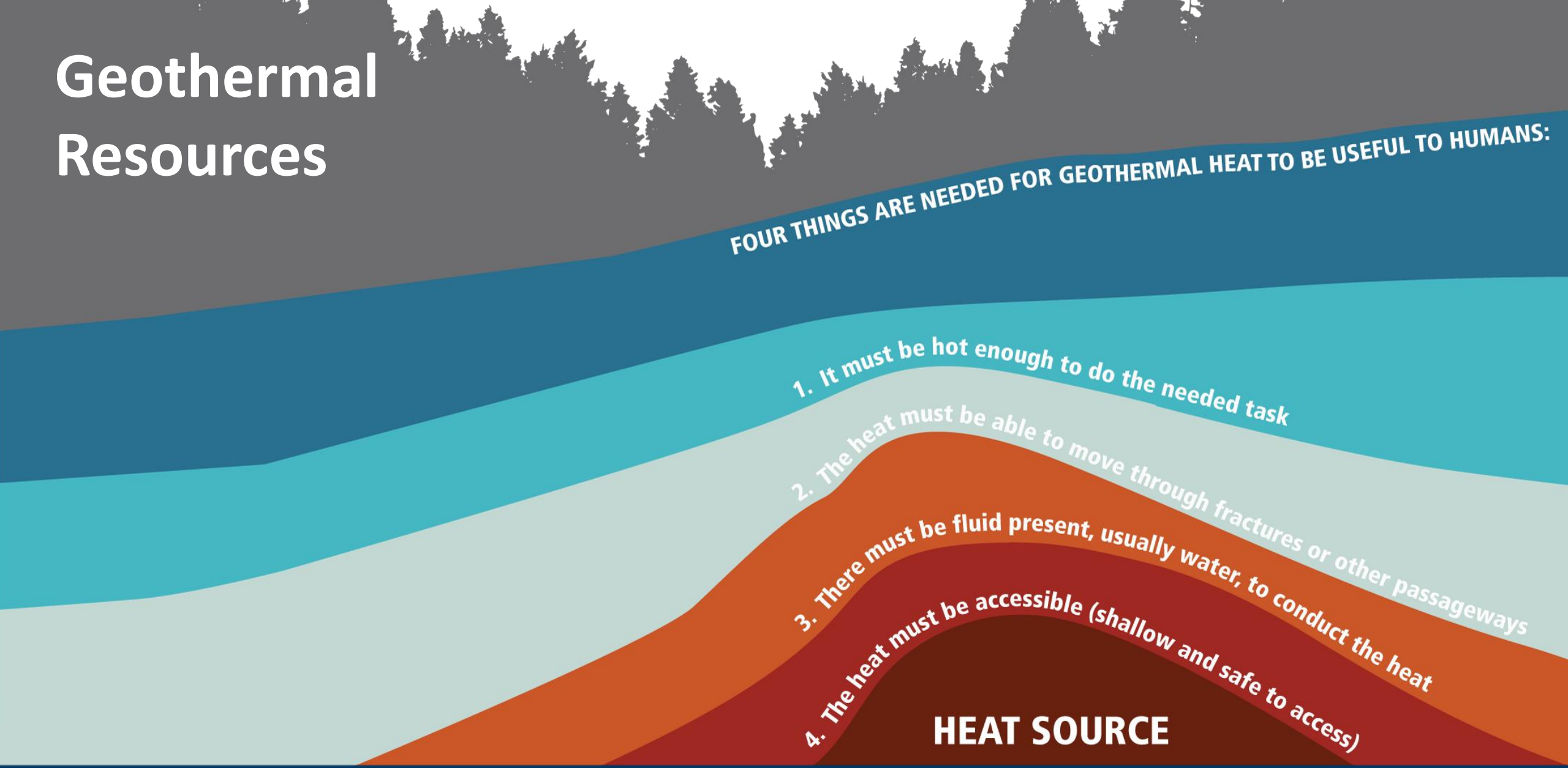
Earth Resource Program

- Science to support decision making
- Technical assistance





Geothermal Resources



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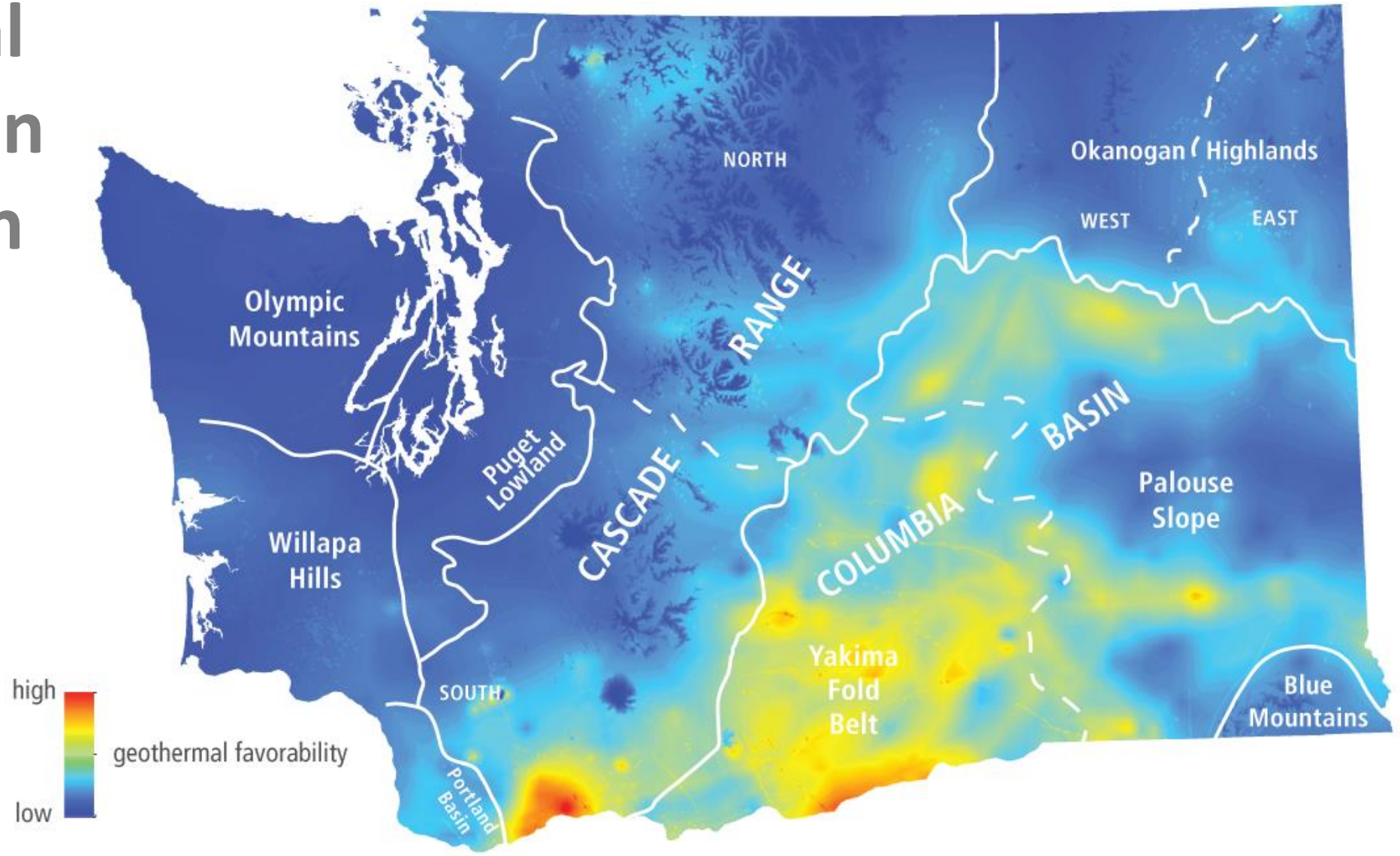
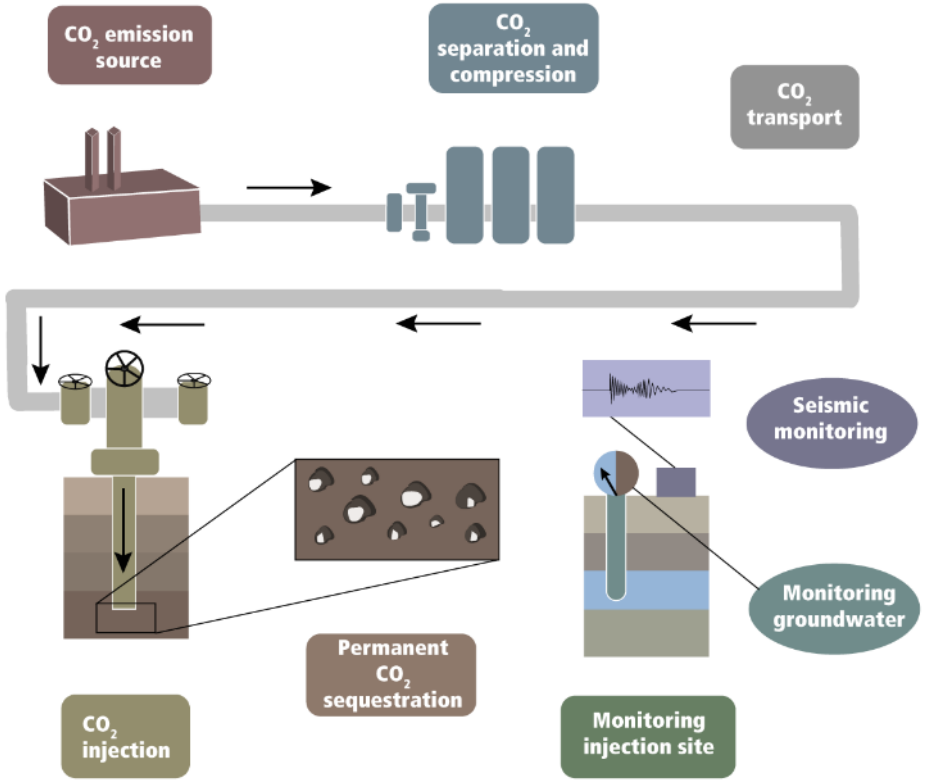
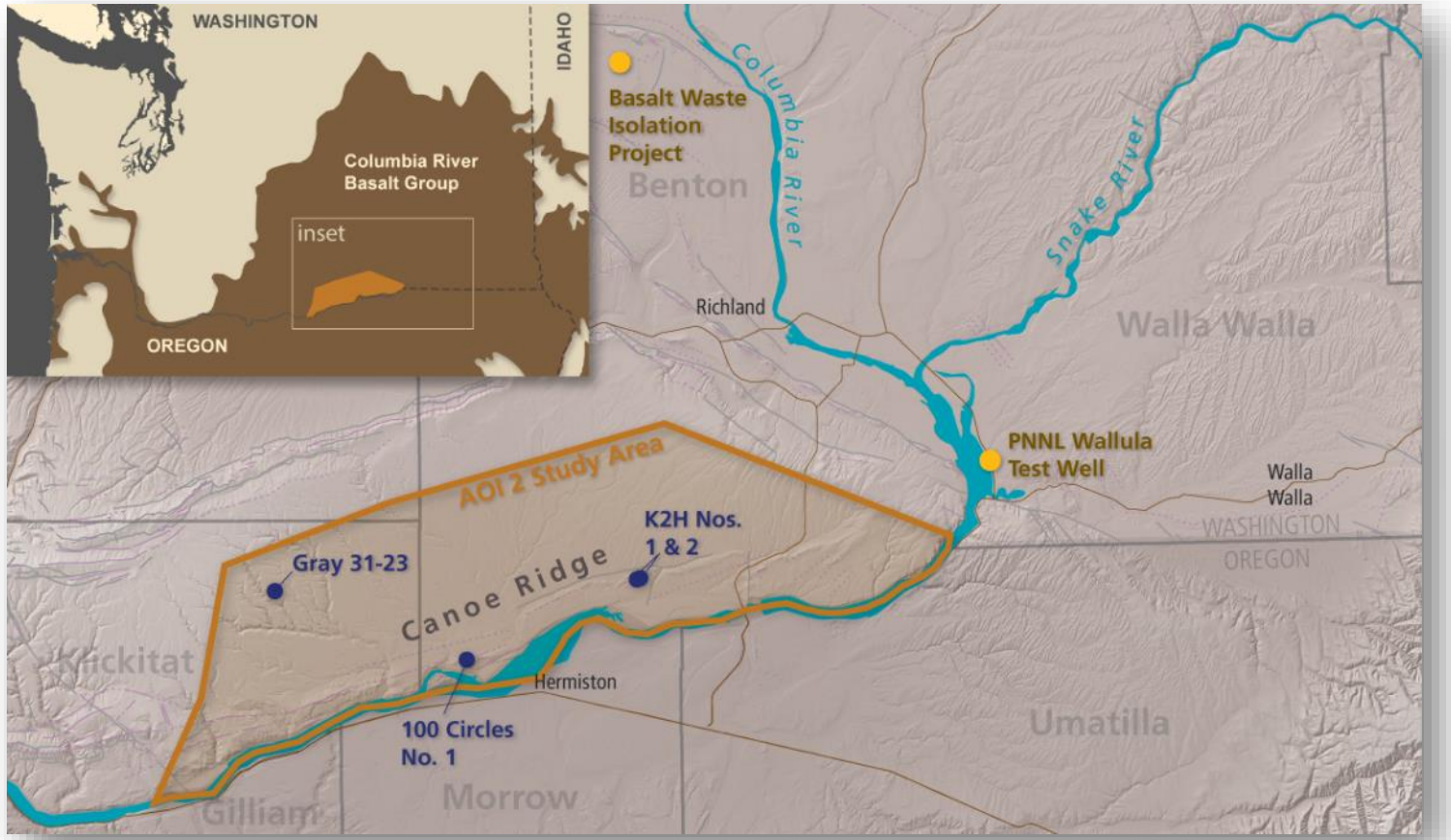
Geothermal Resources In Washington

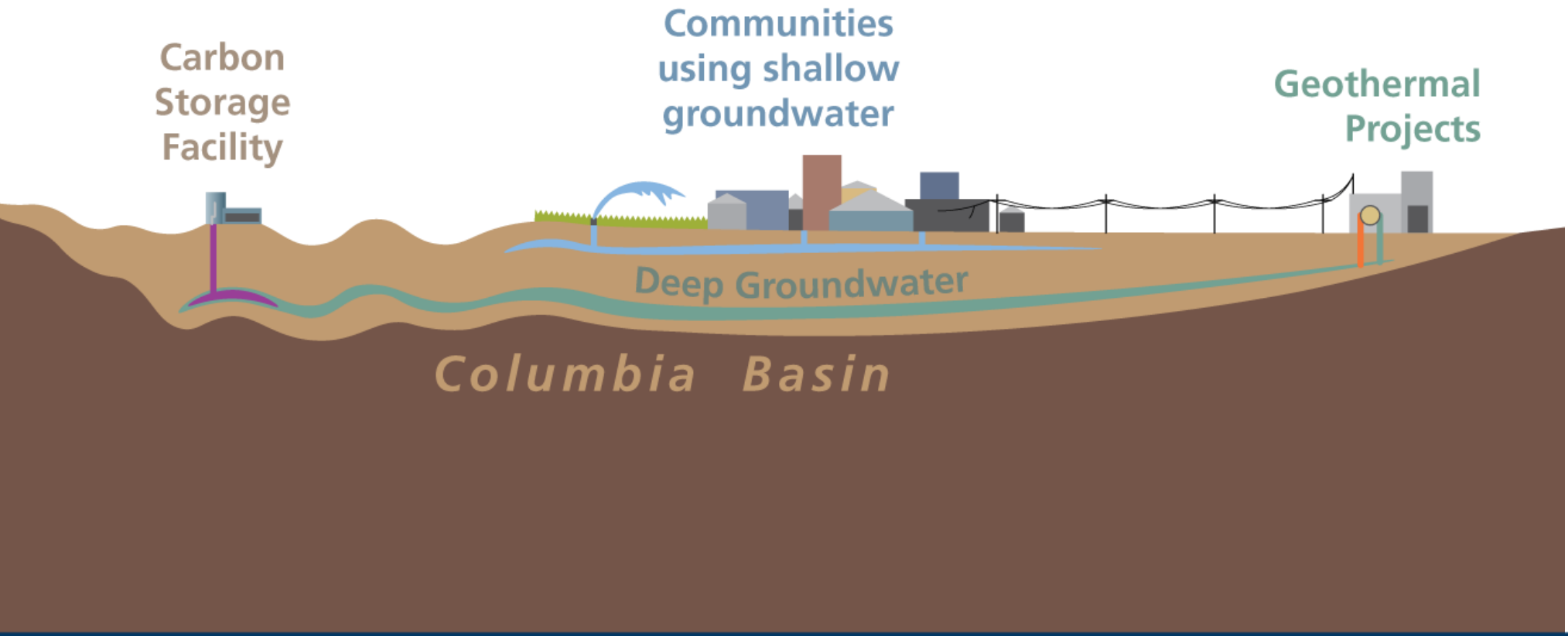


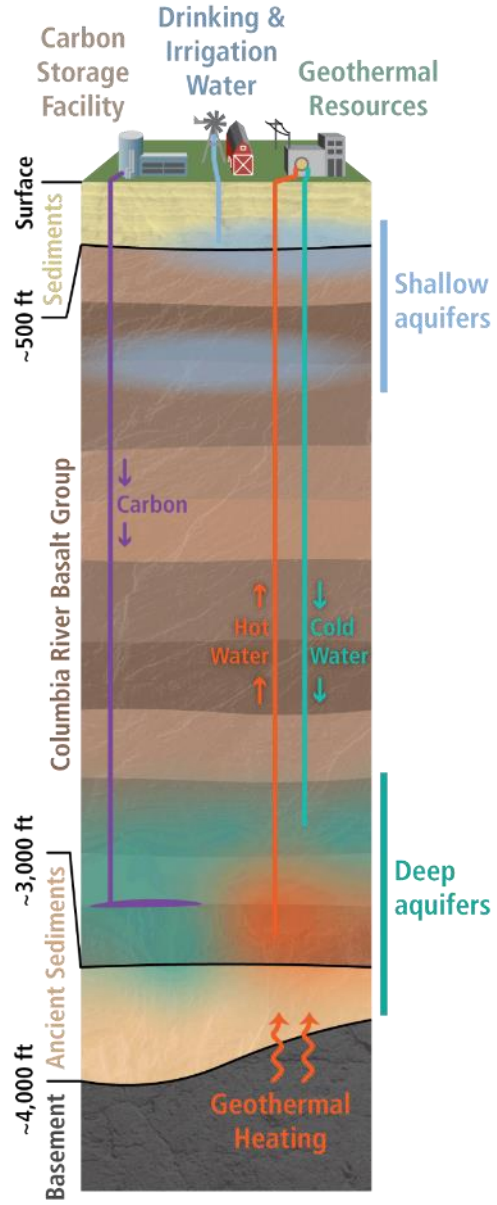
Geologic Carbon Sequestration





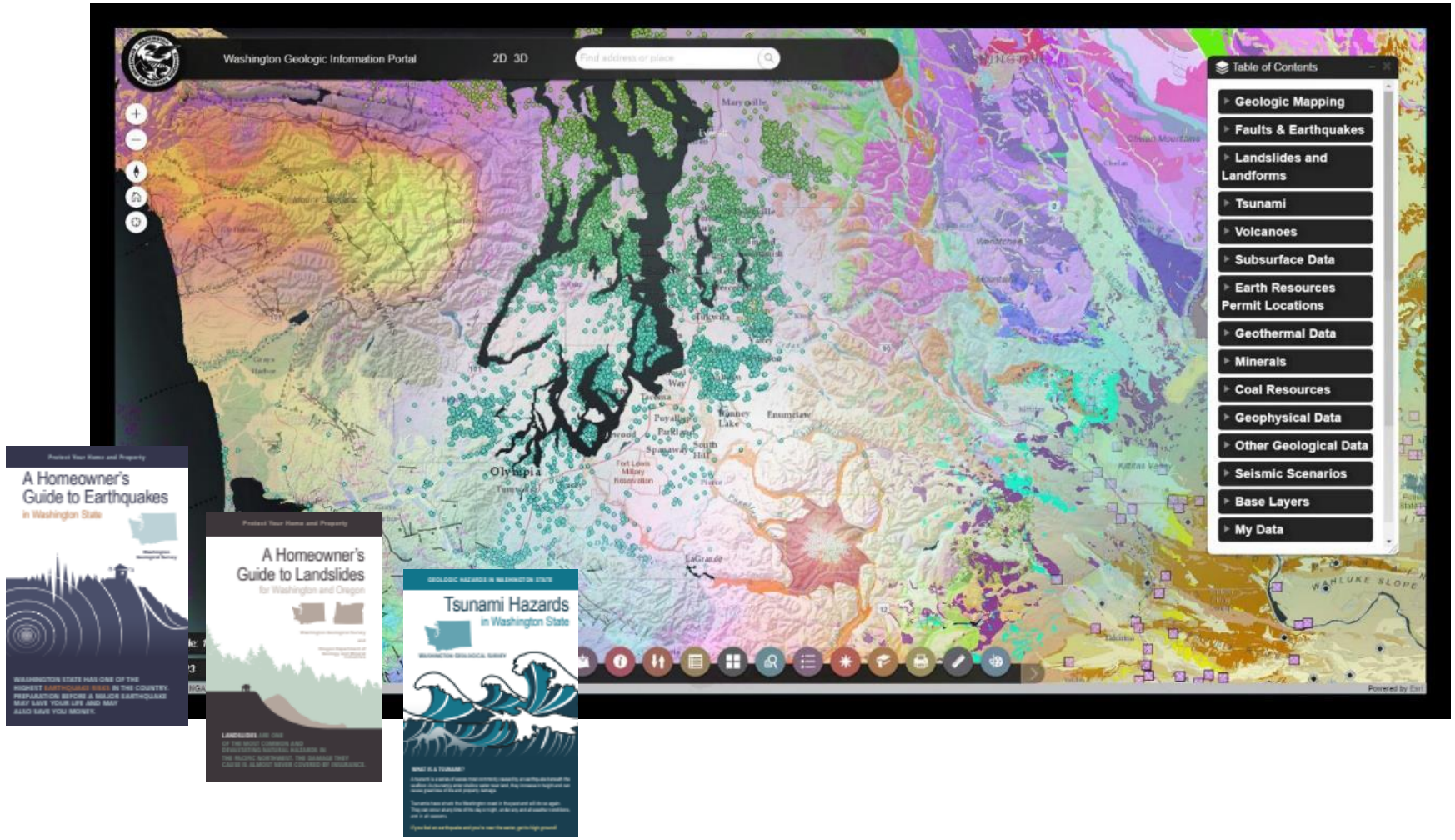
Geologic Carbon Sequestration





GIS, Editing & Publications

- Publications that distribute science to the public
- ~30 GIS datasets
- Geologic Information Portal
- Outreach materials
- ~60 webpages



Geologic Planning

Engagement with cities, counties, other state agencies, and tribes to exchange information, to gather feedback and to aid in understanding of our products

Guidance on

- Critical Areas: geologically hazardous areas
- Comprehensive plan and development regulations
- Mineral Resource Land designations

Assistance in statewide climate resilience efforts

Geologic Planning

Where Does WGS Contribute?

Critical Areas and Land Use:

- **Geologically Hazardous Areas (WAC 365.190.120)**
  - Erosion
  - Landslide Hazards
  - Seismic Hazards (includes tsunamis)
  - Areas subject to other geological events such as coal mine hazards and volcanic hazards including: mass wasting, debris flows, rock falls, and differential settlement.
- **Mineral Resource Lands (WAC 365.190.070)**
  - Sand, gravel, and metallic mineral resources

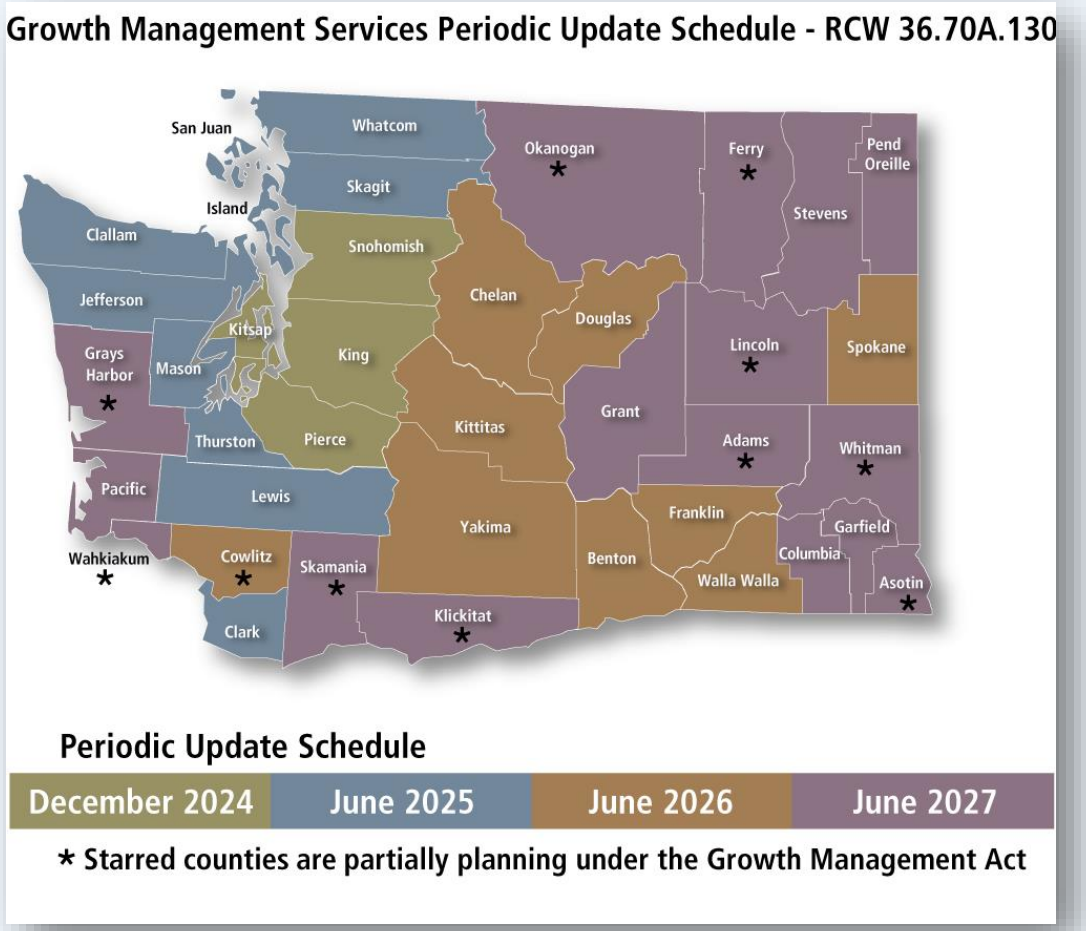
Climate Commitment Act Implementation

Geologic Planning

Critical Areas and Land Use:

WAC 365-196-830 Protection of critical areas, states the GMA “requires the designation of critical areas and the adoption of regulations for the protection of such areas by all counties and cities, including those that do not plan under RCW 36.70A.040.”

The map shows the current comprehensive plan periodic update schedule for the counties and cities.



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Critical Areas and Land Use:

GMA requires all critical areas be designated, and their functions and values protected using the best available scientific information—aka best available science (WAC 365-195).

WAC 365-190-120(4) states counties and cities should assess the risks and classify geologically hazardous areas as either:

(a) Known or suspected risk;
(b) No known risk; or
(c) Risk unknown - data are not available to determine the presence or absence of risk.

Geologic Planning

Mineral Resource Lands and Climate Commitment Act Implementation

Mineral Resource Lands (WAC 365.190.070)

- Sand, gravel, and metallic mineral resources

Climate Commitment Act Implementation

- Caps and reduces greenhouse gas emissions
- Puts environmental justice and equity at the center of climate policy
- Assistance to local jurisdictions on integrating climate change information

Geologic Planning

How Can We Help You?

- Provide the best available science for geologic hazards.
- Discuss the appropriate uses of our data and maps.
- Provide communication tools for local outreach about WGS science.
- Provide examples of codes and tools used by other jurisdictions.
- Review land-use codes related to geologic hazards.
- Assist with GMA periodic updates.
- Give us feedback on your needs and concerns

Geologic Planning

A Sample of Active Projects

- Aggregate resource mapping for Spokane County
- Landslide inventory of Thurston County
- Climate guidance and rulemaking

Resources

- Geologic Planning page [Geologic Planning | WA - DNR]
- Fact sheets: Aggregate Resources Mapping, Landslide Hazards Mapping, Geologic Planning
- Geologic Information Portal [Geologic Information Portal | WA - DNR]

CONTACTS

Alexander N. Steely, PhD, LG (he/him)
Assistant State Geologist
Assistant Director of Geologic Hazards and Mapping
Washington Geological Survey
Cell: 360-999-0115
alex.steely@dnr.wa.gov

Tricia R. Sears (she/her/hers)
Geologic Planning Liaison
Washington Geological Survey (WGS)
Cell: 360-628-2867
tricia.sears@dnr.wa.gov

Thank you!

QUESTIONS?

OTHER STAFF CONTACTS

Jessica Czajkowski, Assistant State Geologist, and Assistant Director of Science and Research – jessica.czajkowski@dnr.wa.gov

Rian Skov, Surface Mine Reclamation Program—rian.skov@dnr.wa.gov

Corina Allen, Geologic Hazards—corina.allen@dnr.wa.gov

Kate Mickelson, Landslide Hazards—kate.mickelson.@dnr.wa.gov

Abby Gleason, Lidar Program—abigail.gleason@dnr.wa.gov

Susan Schnur, GIS, Editing, and Publications—susan.schnur@dnr.wa.gov

Lee Florea, Earth Resources Program—lee.florea@dnr.wa.gov