

DIVISION OF GEOLOGY AND EARTH RESOURCES RESPONSE TO THE SR 530 LANDSLIDE



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CHAPTER 43.92 RCW GEOLOGICAL SURVEY

Legislative Intent

- *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.*

HAZARDS

- Earthquakes
- Tsunami
- Volcanoes
- Landslides
- Hazardous Minerals
- Abandoned Mines

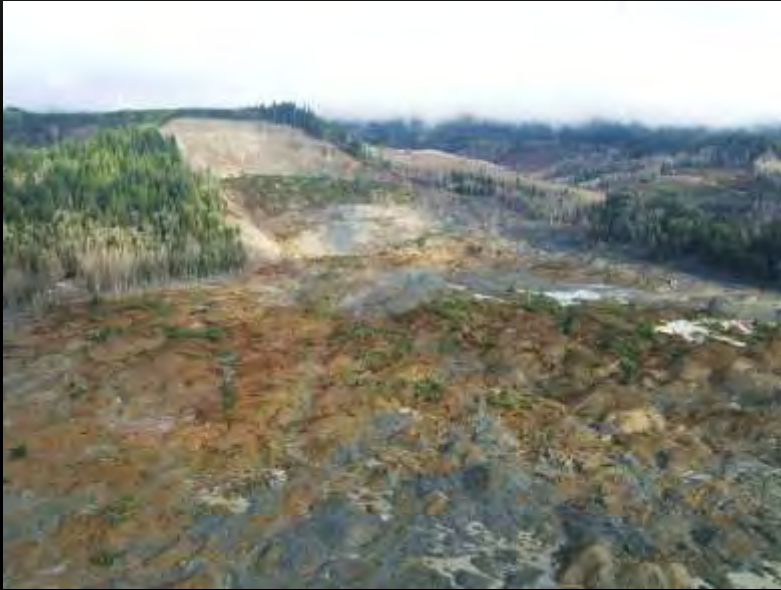


RESPONSE TO HAZARD EVENTS

- State's designated geological science agency for disasters
- Help for Local government
- Work closely with EMD and local government during hazard events

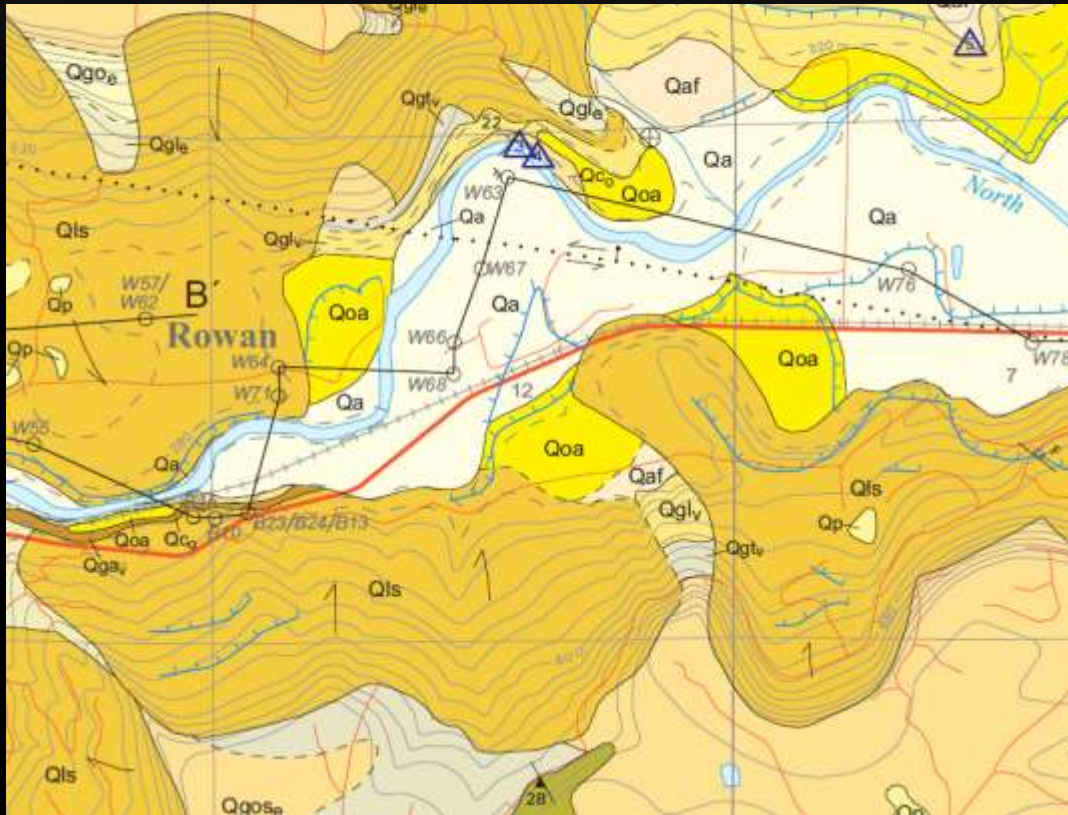


SR530 LANDSLIDE - MARCH 22, 2014

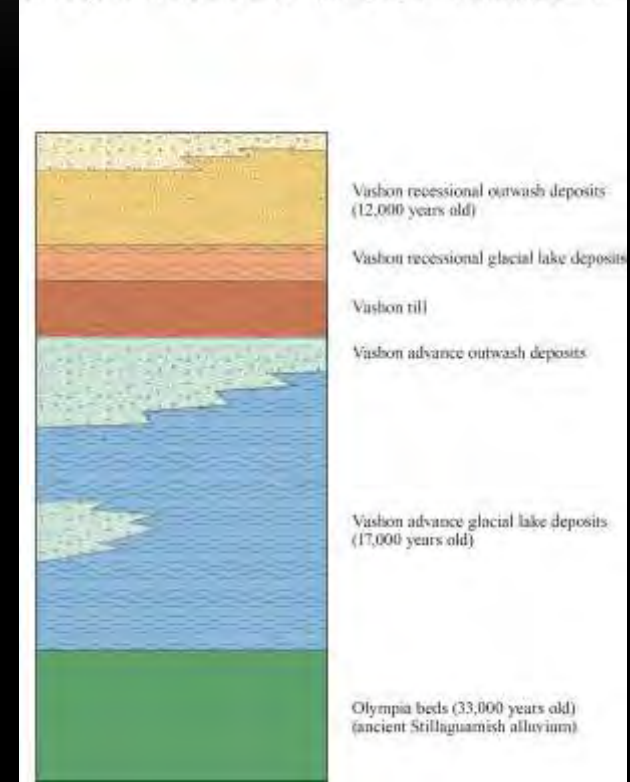


- Speed estimated at 60mph
- < 1 minute to cross valley
- 10 million cy
- Landslide area: 286 acres, 0.45 mi²
 - Flooded area .6 sq. mi.
 - Total impacted area ~ 1 square mile
- Geologists worked under Incident Command System
- Over 900 personnel working at one time
- 28 geologists – County, state, and federal
- >\$120,000,000 spent so far

GEOLOGY



SR 530 LANDSLIDE STRATIGRAPHIC COLUMN



THINGS WE WERE CONCERNED ABOUT AS WE FLEW INTO THE LANDSLIDE AREA

- Safety implications for the first responders
- Stability of the landslide
- What was happening with the landslide dammed lake and river
- What was happening with other landslides in the valley.



March 23



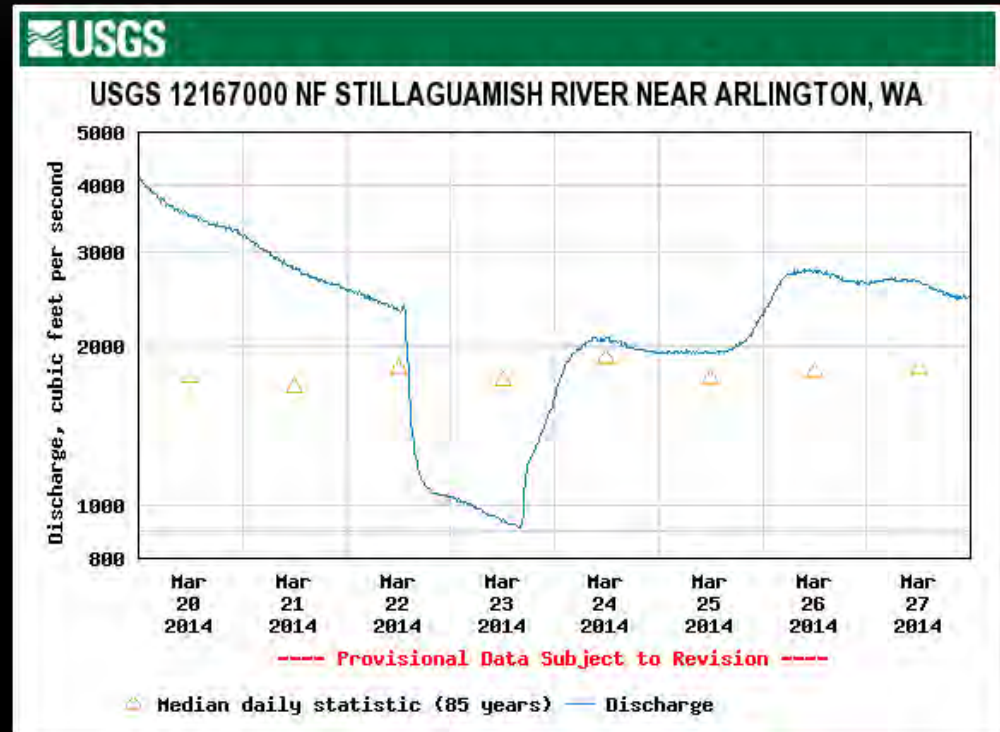






THE STILLAGUAMISH RIVER

- Landslide Blocked the NF Stillaguamish River for a day and half
- Slow incision for an additional day
- Helicopter was the only means to observe the lake







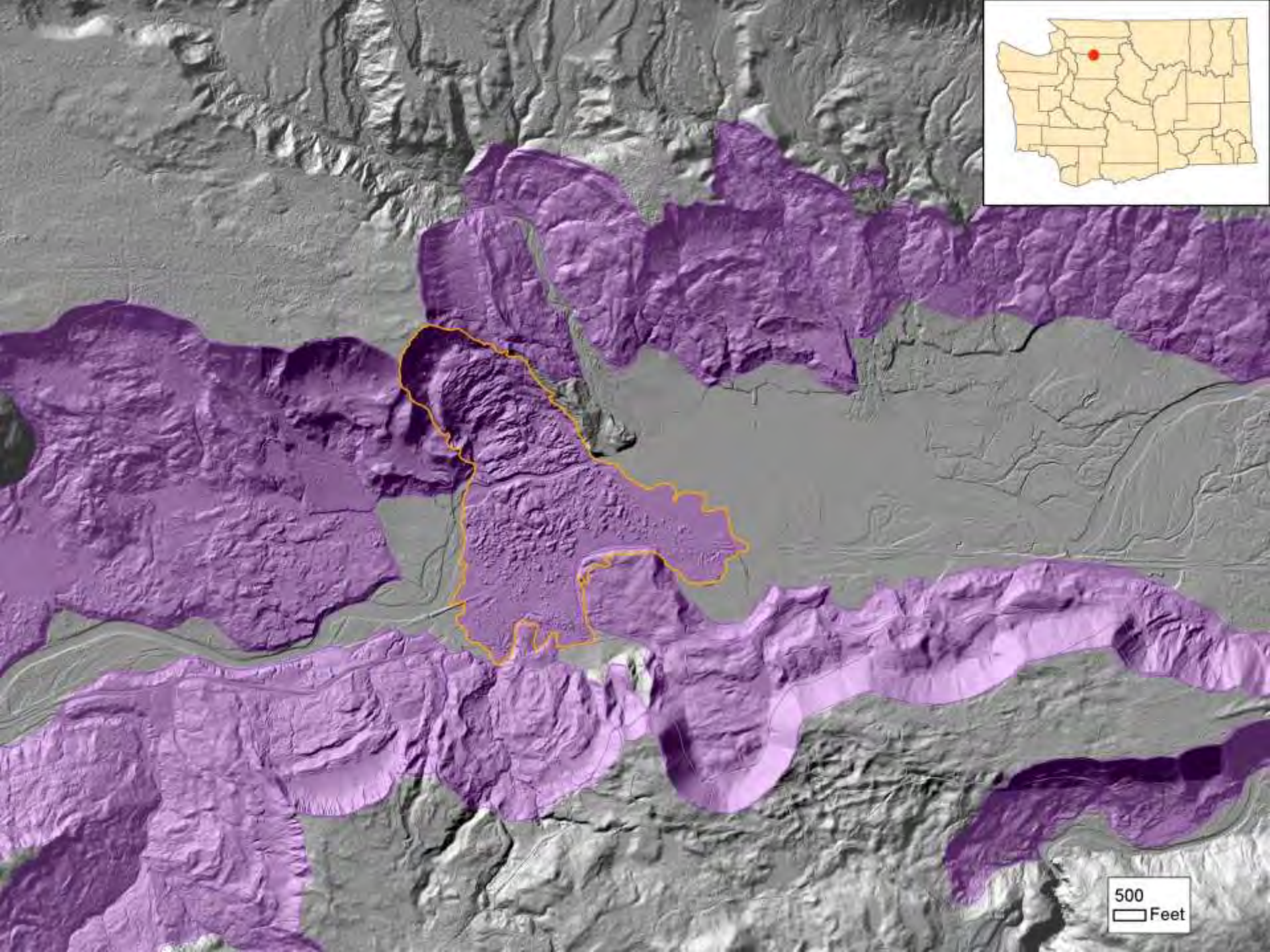




March 24





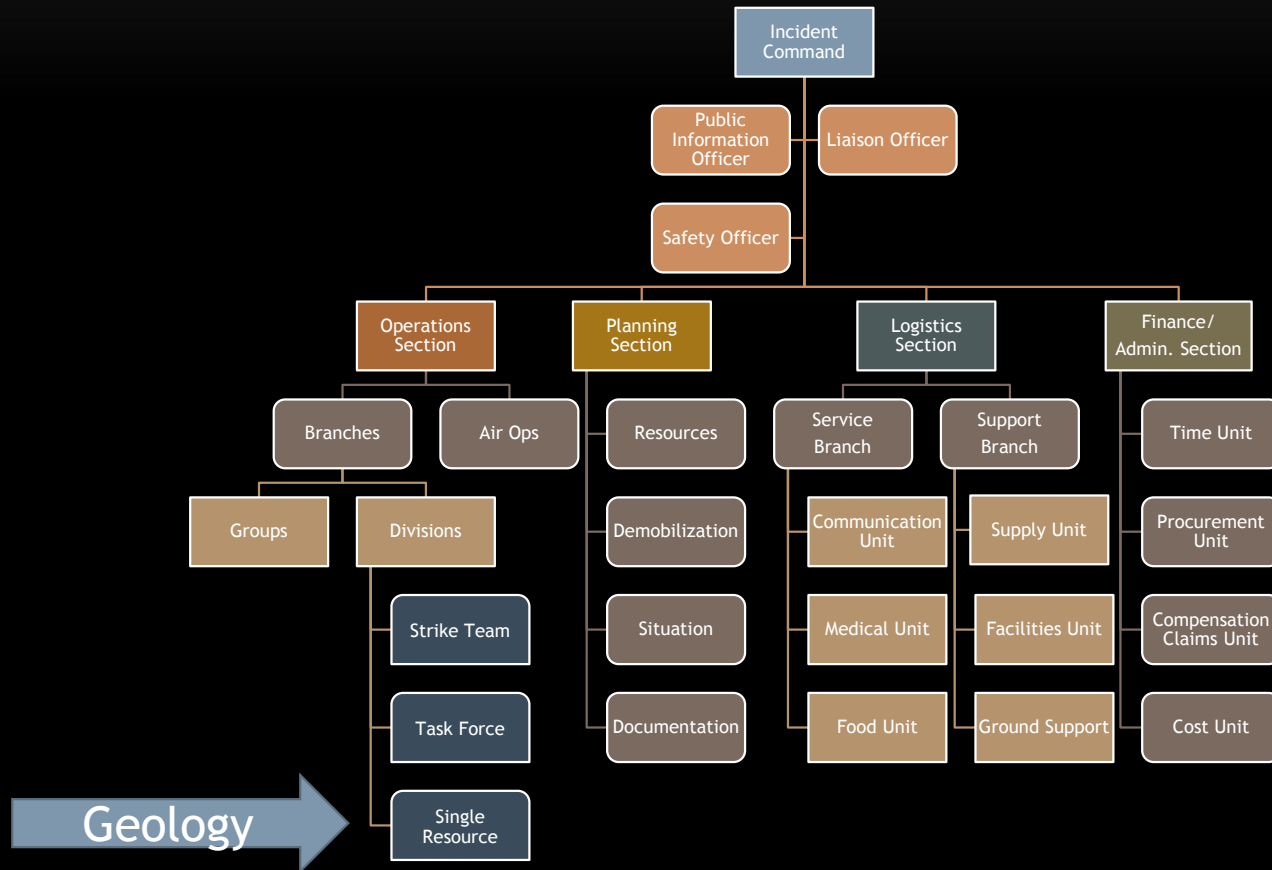


500
Feet

INCIDENT COMMAND SYSTEM (ICS)

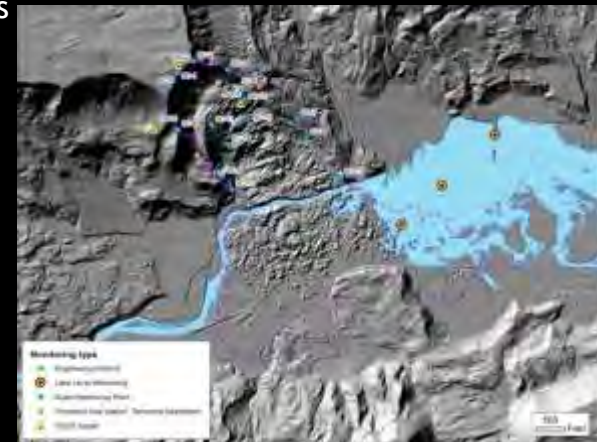
- Landslide was operated under an ICS
 - Incident Command Team (ICT) controlled landslide access and airspace
 - Only one geologist had extensive experience with ICTs which ultimately proved vital to working within the incident
 - All geologists worked under the umbrella of the ICT
 - Geologists were assigned to assist in the safety of first responder and search and rescue personnel working on the safety Recovery and response

THE INCIDENT MANAGEMENT TEAM (IMT)



MONITORING AND COORDINATION IN THE INCIDENT COMMAND SYSTEM

- WGS Coordinated all geologists for the event to ensure safety of the search and rescue workers
- Geologists were critical in providing GIS data that assisted directly with response efforts
- Continuous instrumentation provided
 - 3 USGS spiders (continuous GPS and seismometers)
 - 3 WSDOT extensimeters
 - 3 USGS lake level gages
- Daily, when personnel working on debris field
 - 15 survey reflectors
 - Daily meetings on landslide, river, and lake
 - 2 WGS geologists as lookouts with direct contact to Branch Chiefs
- Other
 - WSDOT terrestrial lidar
 - 2 DEM lidar flights
 - 3 aerial imagery flights



Monitoring







MONITORING STILL IN PLACE

