

Nov 2, 2023 at 12:20:53 PM
391 N Standstill Dr S
Hoodsoort WA 98548
United States

Cushman #1 Rock Fall Mitigation

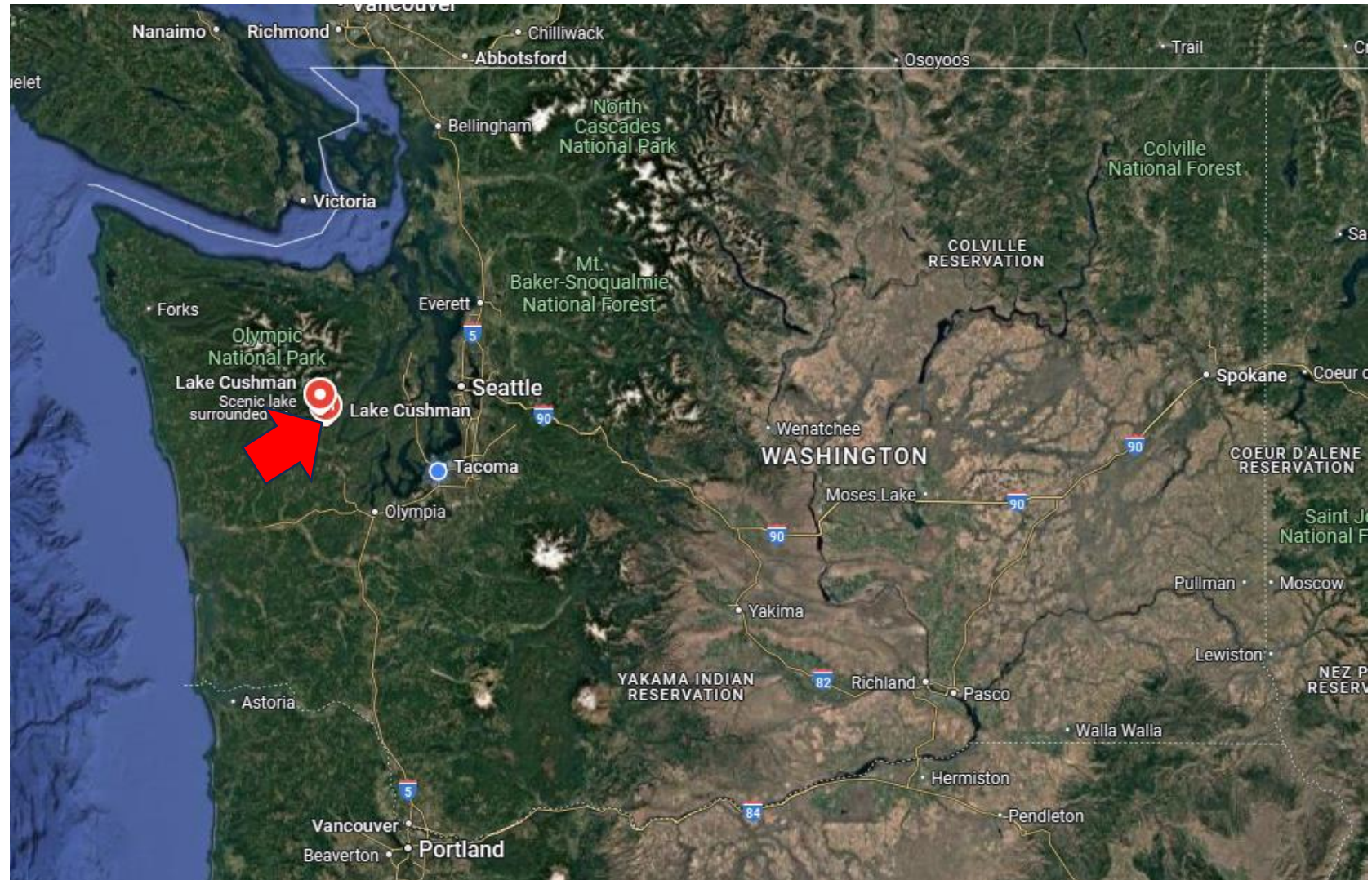
Dealing With the Aftermath

2025 NWA Technical Workshop

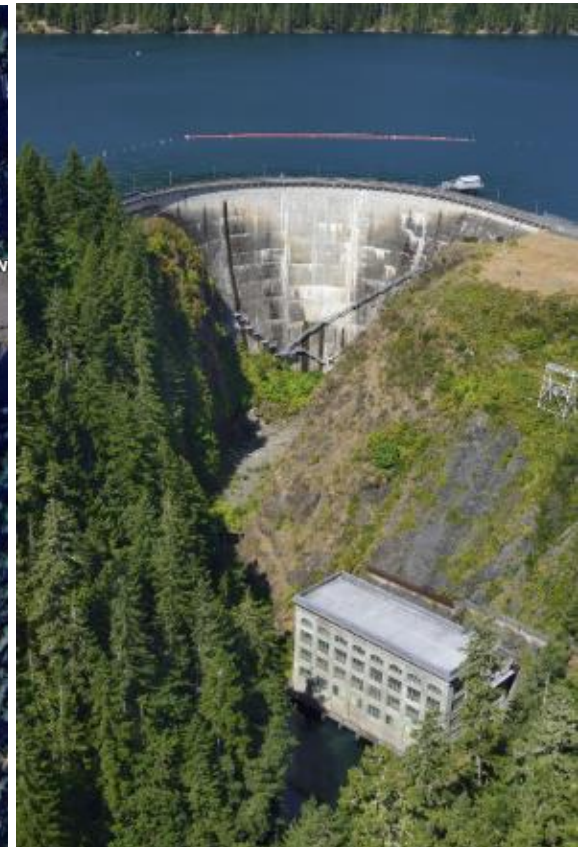
Seth Doull, PE Tacoma Power



Cushman Project



Cushman #1

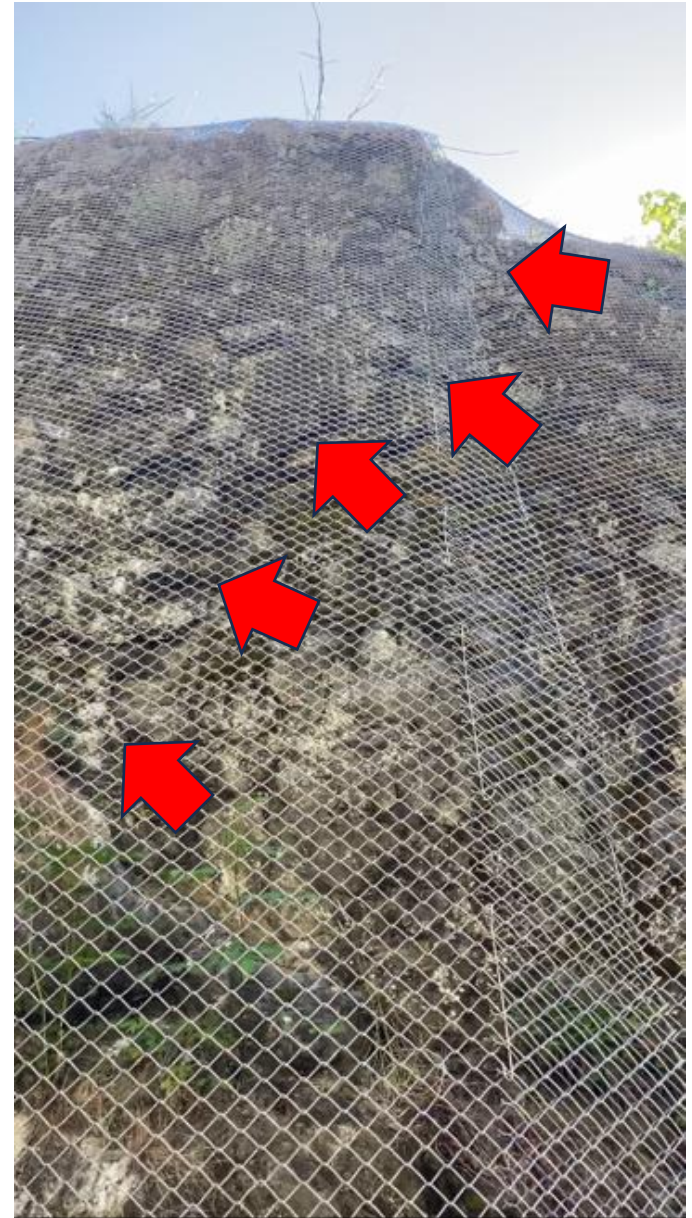
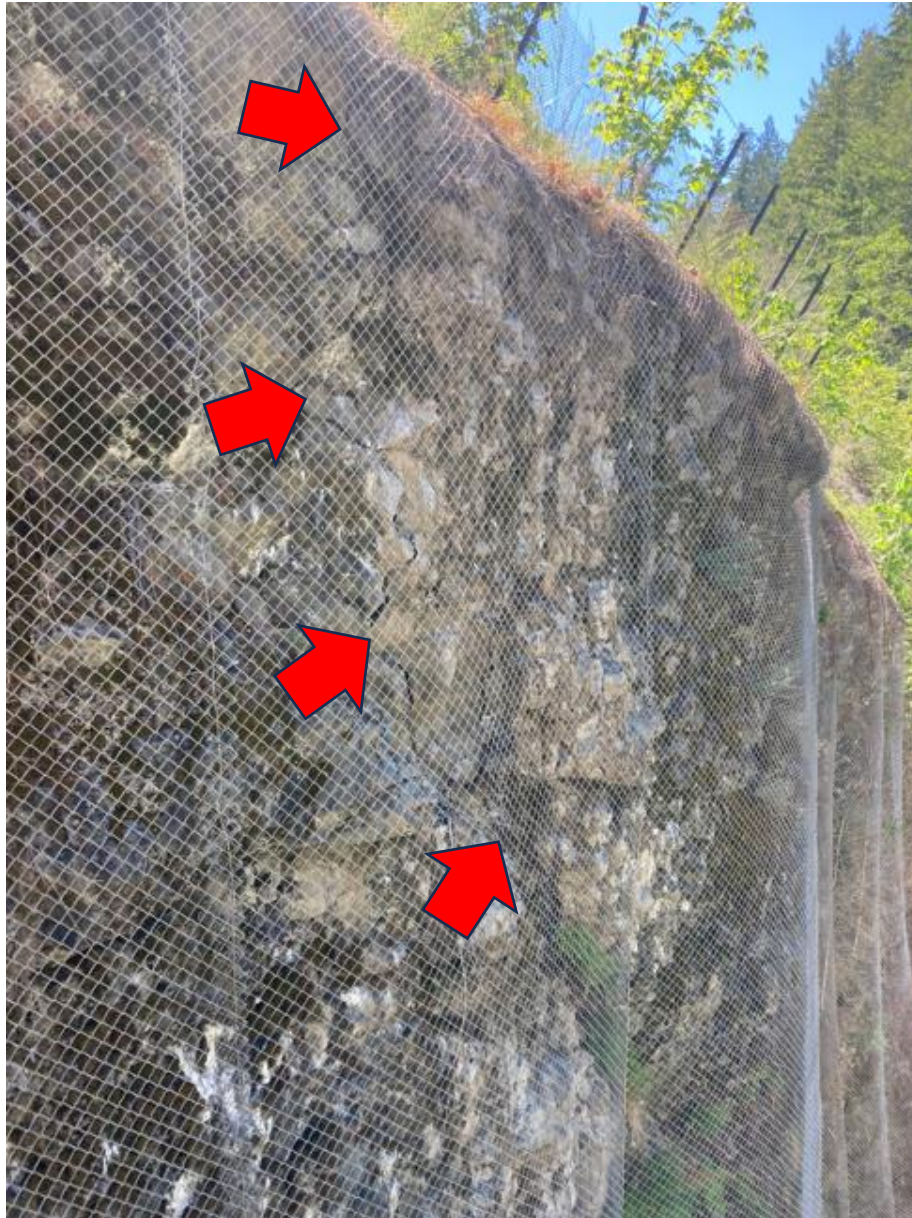




Cracking noticed by staff



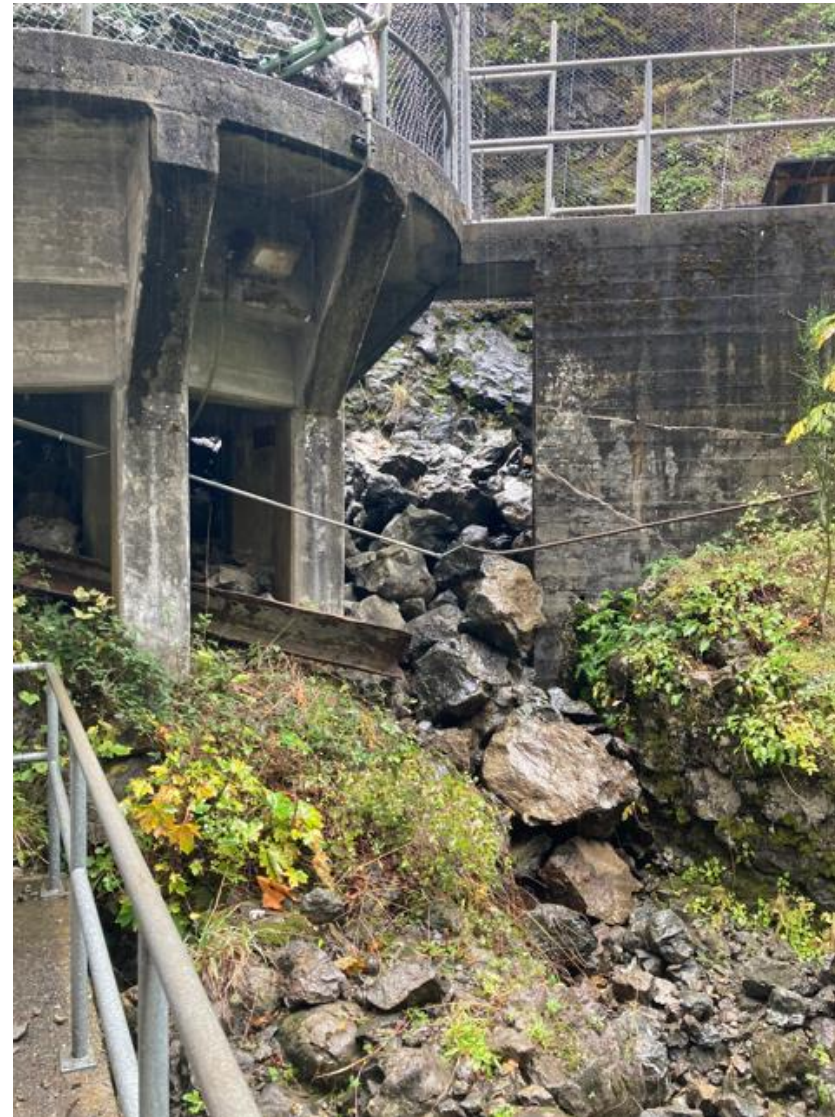
Converging cracks - The type you don't want to see



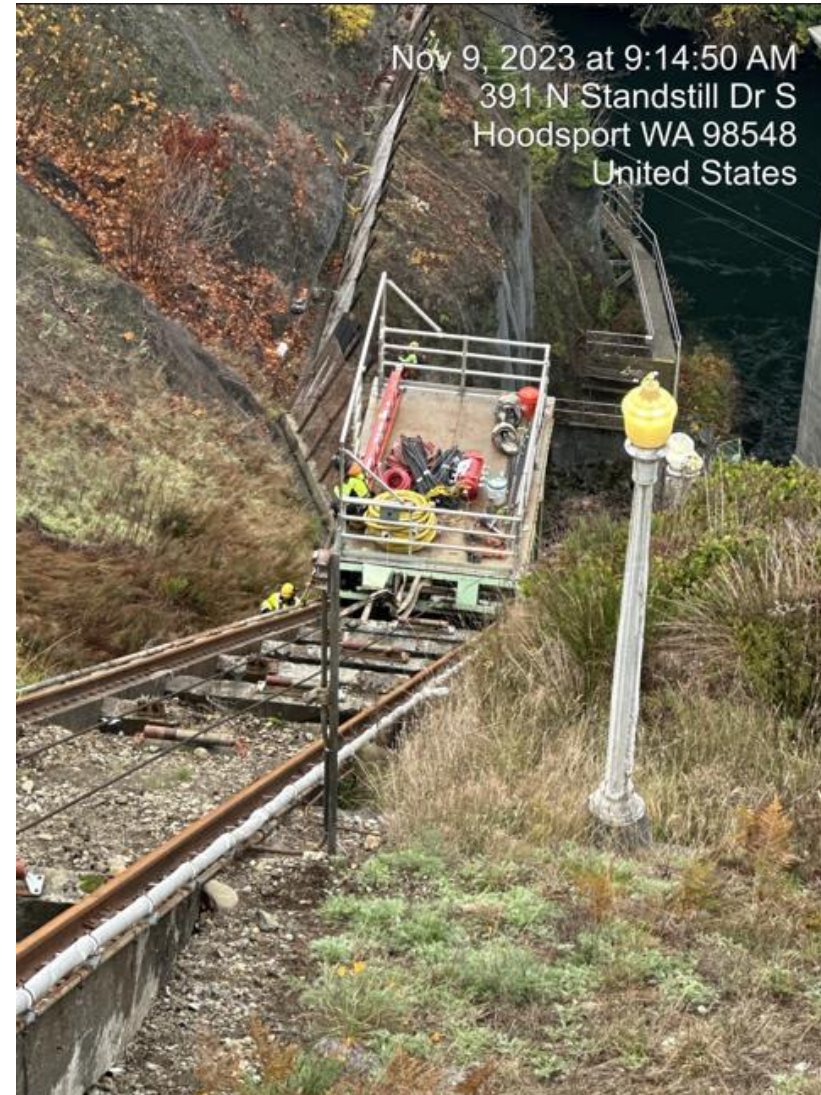
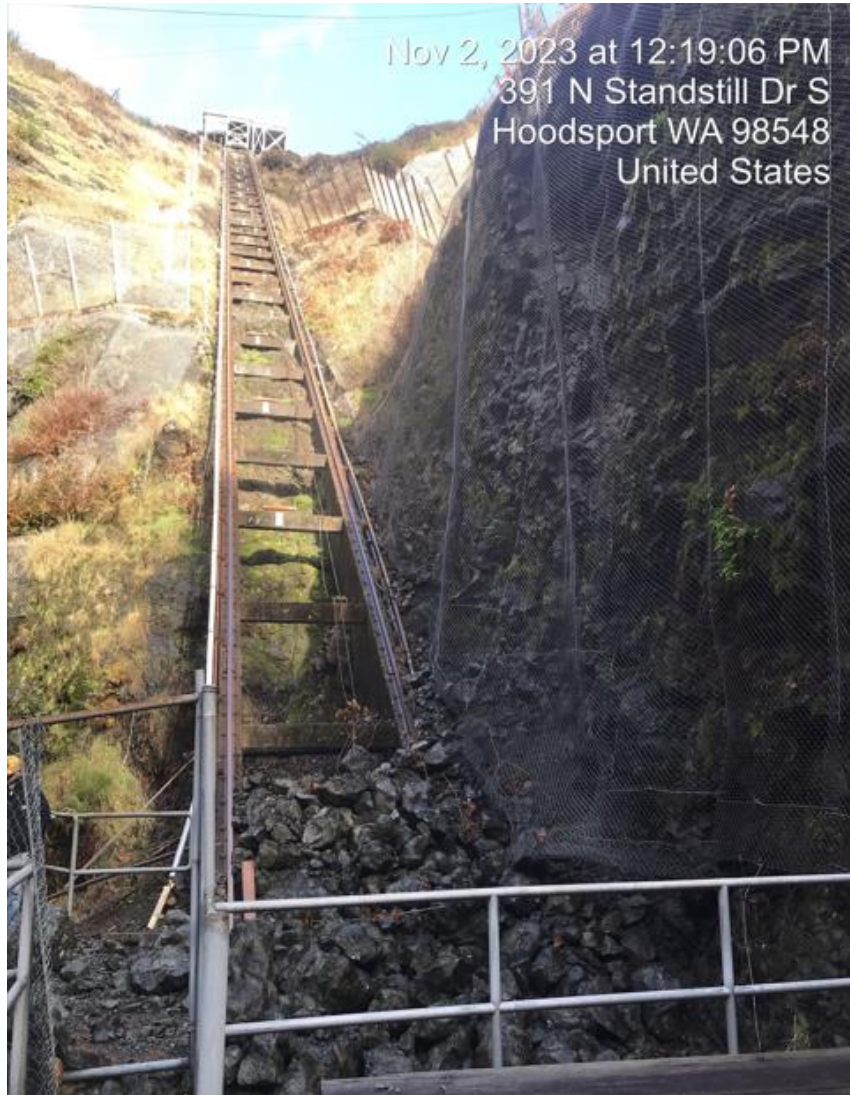
Well, it fell



And made quite the mess



Challenging access made more difficult



Evaluating stability of overhanging rock





A dedicated team of rock surgeons



Carefully removing overhanging hazard



Scaling, cleaning, drilling, and anchoring



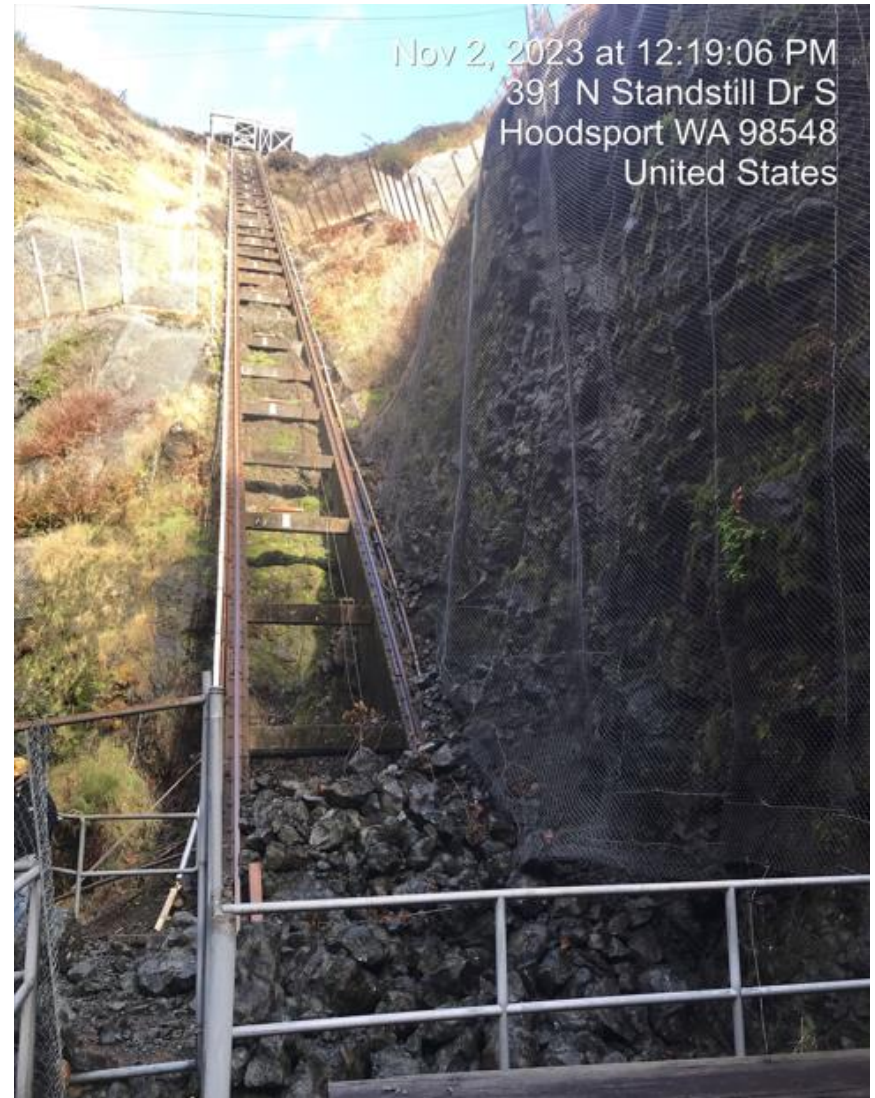
Add pinned mesh



Rock hazard finally secured



- How to remove all of the rock?
- About 100 yards or 250,000 lbs



Cool idea! Helicopters!



- Chinook Helicopter
- 24k pounds lifting
- \$125k mobilization
- \$16k per hour flight time; 3hr minimum



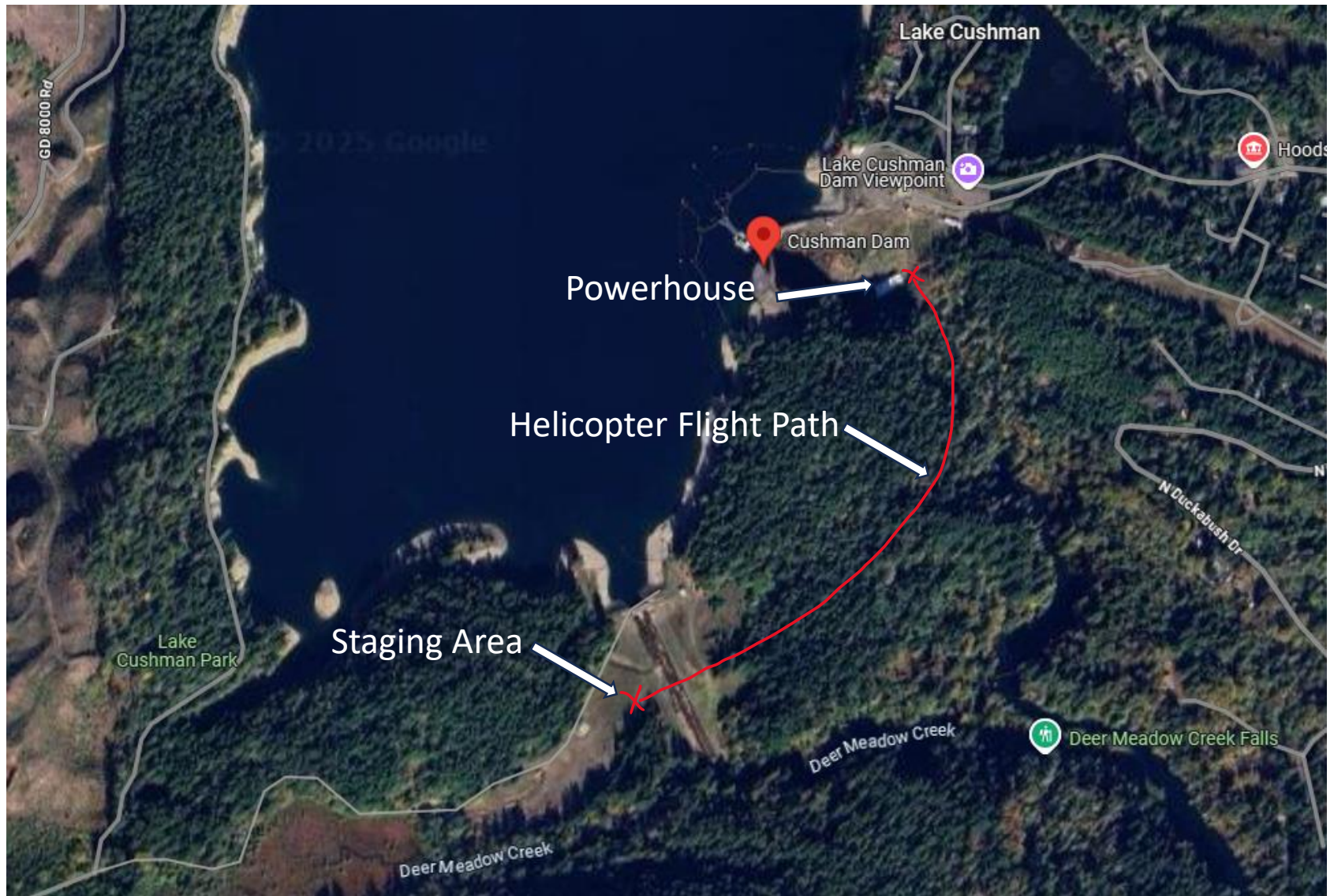
- Erickson S-64 Skycrane
- 24k pounds lifting
- \$80k mobilization
- \$16k per hour flight time; 3hr minimum
- Unavailable due to fire fighting

Cool idea! Helicopters!



- UH-60 Blackhawk Helicopter
- 8k pounds lifting
- \$0k mobilization
- \$8.5k per hour flight time; no minimum
- Existing State contract

Flight Plan





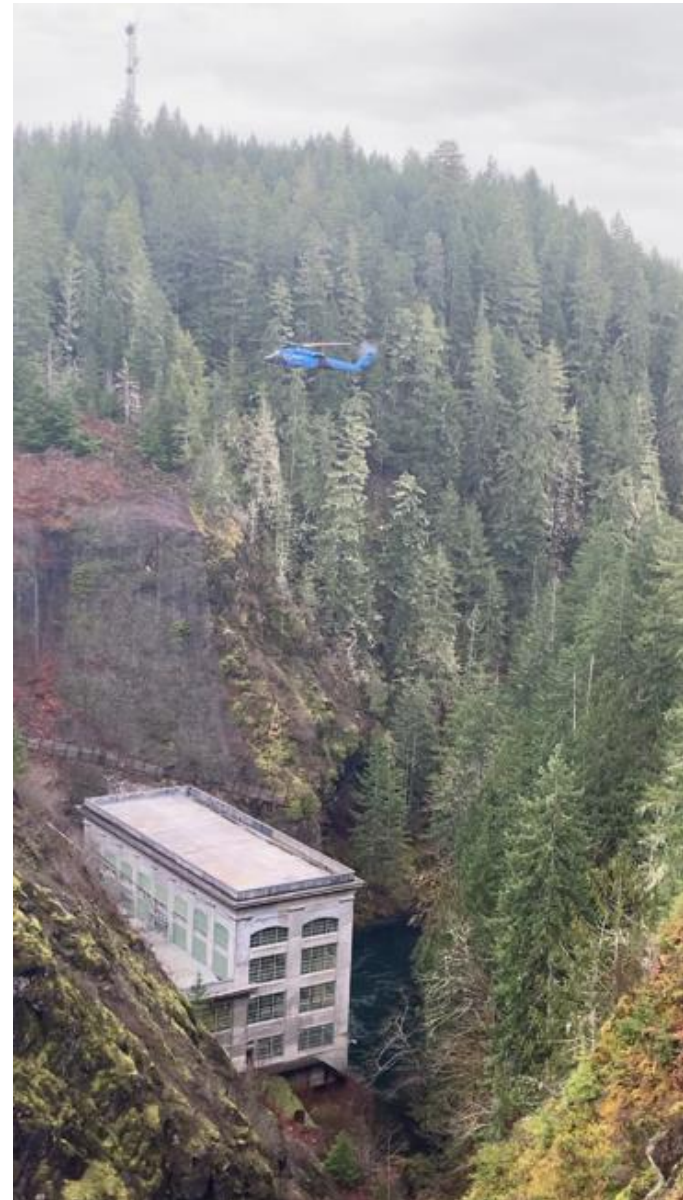


Staging

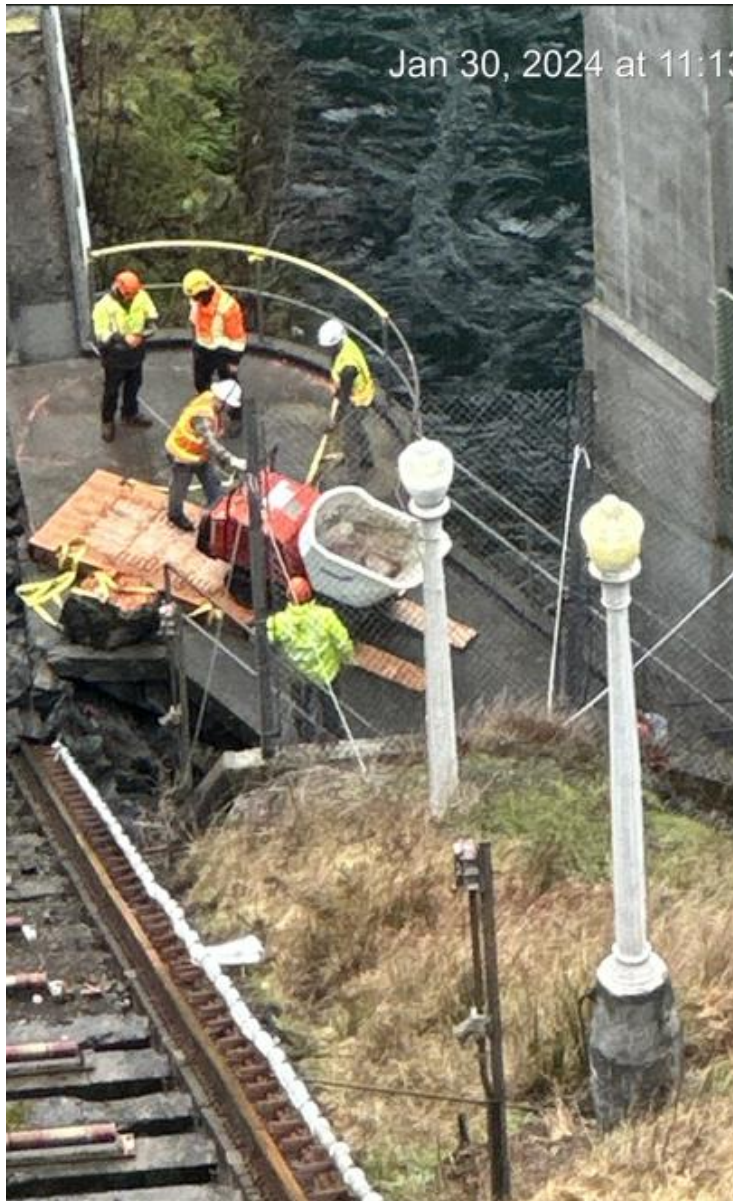
- Let's use equipment!
- Work smarter not harder



Flight delivery

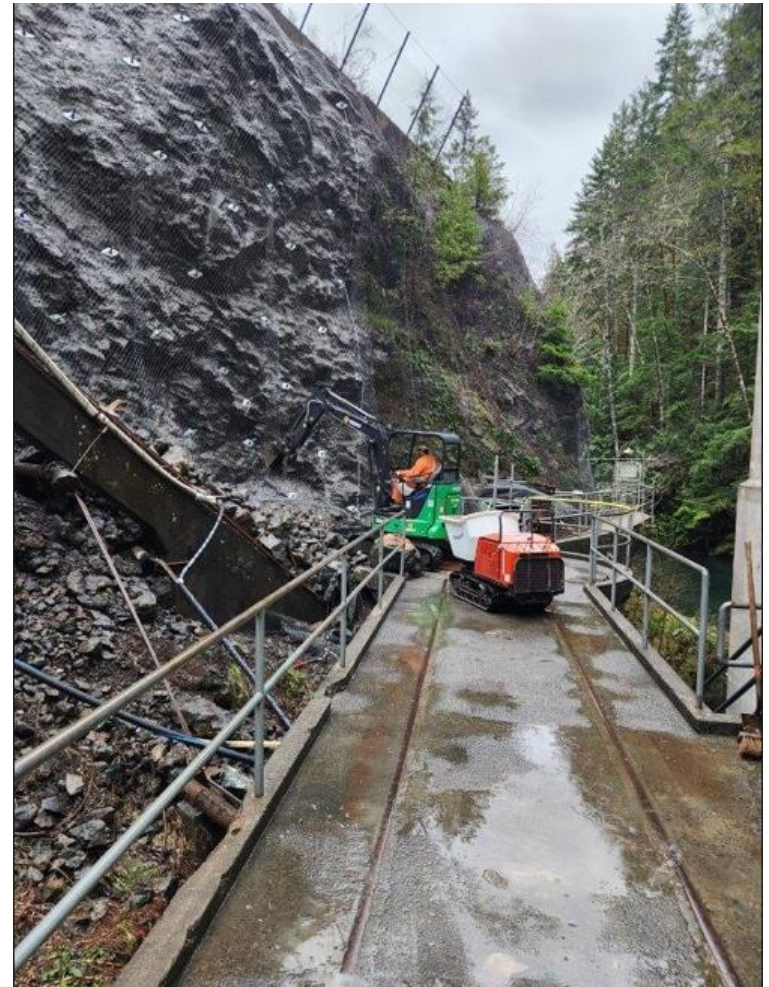


Unloading and Coordination



Tight fit!





Little by Little





Before and After



