



Spirit Lake Outflow Safety Improvement Project

Gifford Pinchot National Forest



The purpose of the Project is to provide for the safety of downstream communities by reducing the risk of flooding and mudflows from a failure of the Spirit Lake debris blockage.

Following the 1980 eruption of Mount St. Helens, Spirit Lake's natural outlet to the Toutle River system was blocked by the landslide and debris flow from the eruption. The Spirit Lake tunnel was constructed under emergency conditions to address the imminent public safety threat posed by rising water levels in Spirit Lake. The tunnel is in an area of volcanic, geologic, hydrologic, and seismic hazards.

The geological pressures on the tunnel have caused rock heave, compression, cracking and support failures, necessitating periodic repairs. A failure of the tunnel would result in rising lake levels that could exceed the maximum safe operating level, at which point pressure from rising water levels could force the breaching of the natural debris blockage, putting the downstream population of approximately 50,000 people at risk of catastrophic flooding and mudflows.

Draft Decision

The Forest Service has selected Alternative 7 to meet the Project purpose and need. Alternative 7 includes drilling a new pressure tunnel through Harry's Ridge, testing pilot channels to support formation of a habitat channel reconnecting Spirit Lake and the North Fork Toutle River, and building a permanent access road along the Truman Trail. The Final EIS and Draft Record of Decision were released on July 7, 2026.

The decision considered recommendations of the National Academies of Sciences, Engineering, and Medicine (NASEM), NEPA scoping, stakeholder and technical meetings, Tribal consultation, interagency coordination, and work through the Spirit Lake/Toutle-Cowlitz River Collaborative.

Alternative 7 provides reliable, redundant lake level control; improves downstream public safety; supports adaptive sediment and water management; and maintains the Monument's scientific and ecological functions. Project implementation will depend on completion of administrative review, availability of appropriated funding, final engineering and construction planning, and completion of applicable consultations, permits, and approvals.



Image: Floating log mat on Spirit Lake

Alternative 7 establishes a phased, adaptive framework for evaluating and potentially implementing a future habitat channel connecting Spirit Lake and the North Fork Toutle. The new pressurized tunnel allows enhanced control of lake level including temporary reduction of lake level by up to 40 feet. Drawdowns will occur in response to planned or anticipated events, such as construction, maintenance, or major weather patterns. In this context, “as needed” or “temporary” means as required for construction (new tunnel, habitat channel), repairs, and uncommon operations (e.g., to accommodate anticipated hydrologic events such as back-to-back atmospheric rivers). Lake levels would be allowed to rise when the need for drawdown has passed. The habitat channel concept depends on this enhanced lake level control for safety. Its feasibility, design, and development will occur through collaboration and adaptive management at the watershed scale. The input, leadership, and expertise of Tribes, other federal and state agencies, non-governmental organizations, and the public will be instrumental to success.



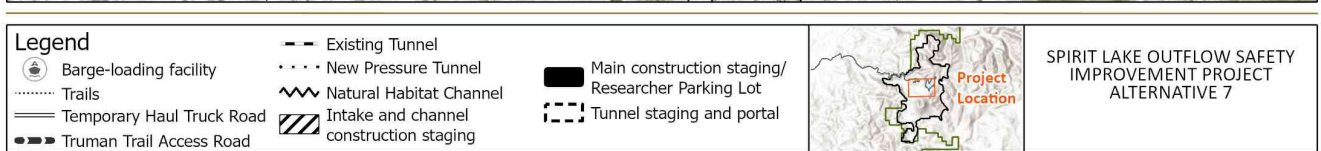
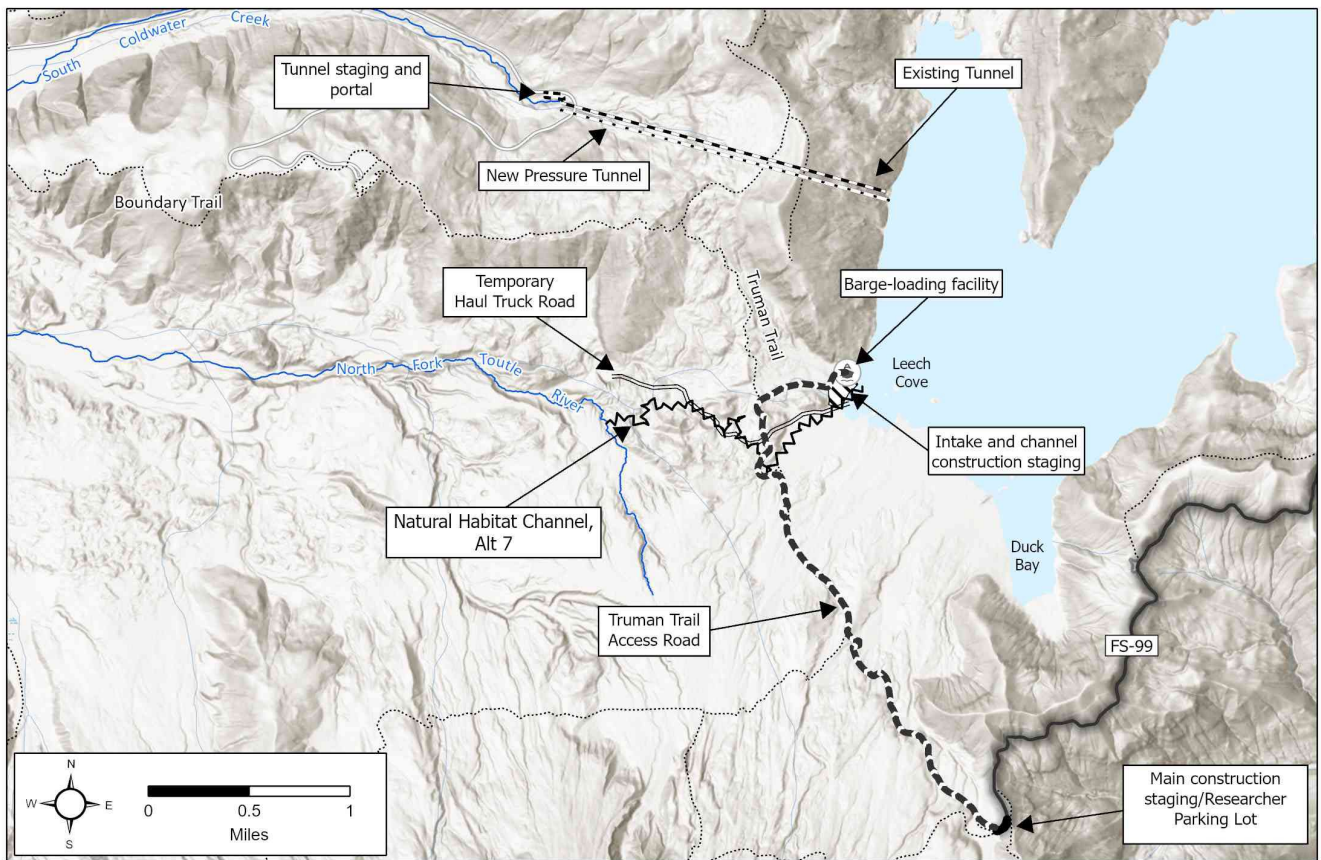
For more information, scan the QR code for the Project Website or visit
<https://www.fs.usda.gov/r06/giffordpinchot/natural-resources/spirit-lake-outflow-safety-improvement-project>





Spirit Lake Outflow Safety Improvement Project

Gifford Pinchot National Forest



Alternative 7 components

