Washington State Department of Transportation

410 Nile Valley Landslide

April 2010

Build Permanent Route

www.wsdot.wa.gov/projects/sr410/landslide

Project History

On Oct. 11, 2009, a massive landslide occurred west of Yakima in the Nile Valley. The landslide brought down tens of millions of cubic yards of rock and debris onto State Route 410, demolishing a half mile of state highway and completely blocking the Naches River channel.

In order to immediately restore temporary access to residents of the Nile Valley, WSDOT and the contractor, Selland Construction, built an emergency detour on Nile Loop Road and a temporary channel for the Naches River. The detour raised the roadway at two locations and culverts were added to allow the Naches River to flow under the roadway.

WSDOT consulted with hydrologists, and determined the emergency detour would not withstand flooding of the Naches River. Once complete, WSDOT began work on a detour to prevent Nile Valley residents, businesses and recreational areas from being cut-off due to flooding of the Naches River and the annual closure of Chinook Pass.

Emergency Response

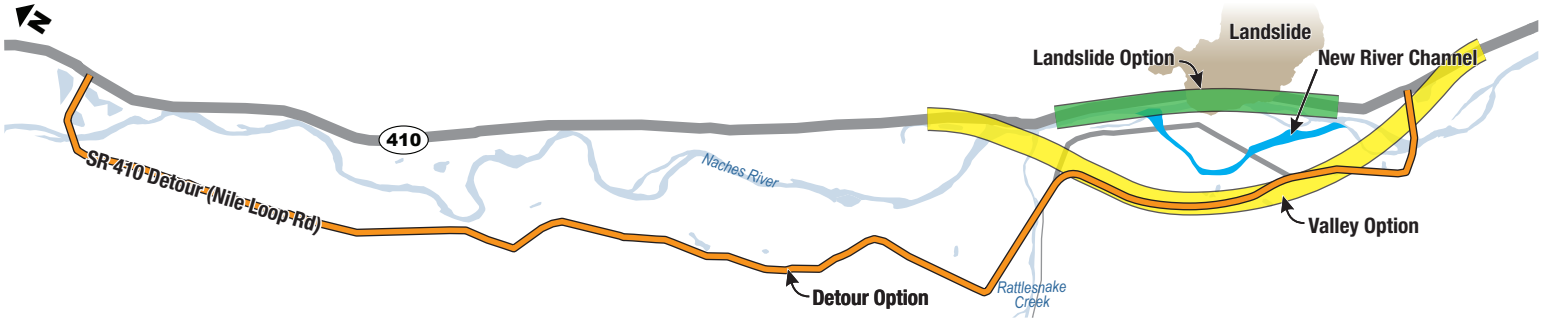
On Oct. 22, 2009, WSDOT, Yakima County and Selland Construction began working on a detour for SR 410. This work consisted of paving the northern end of Nile Loop Road and relocating the southern end to south of the valley, away from the Naches River. To protect the landslide from erosion, crews re-channeled the Naches River away from the slide through a diversion structure and into newly constructed channels. As promised, the new detour was paved and opened to traffic by Thanksgiving 2009.

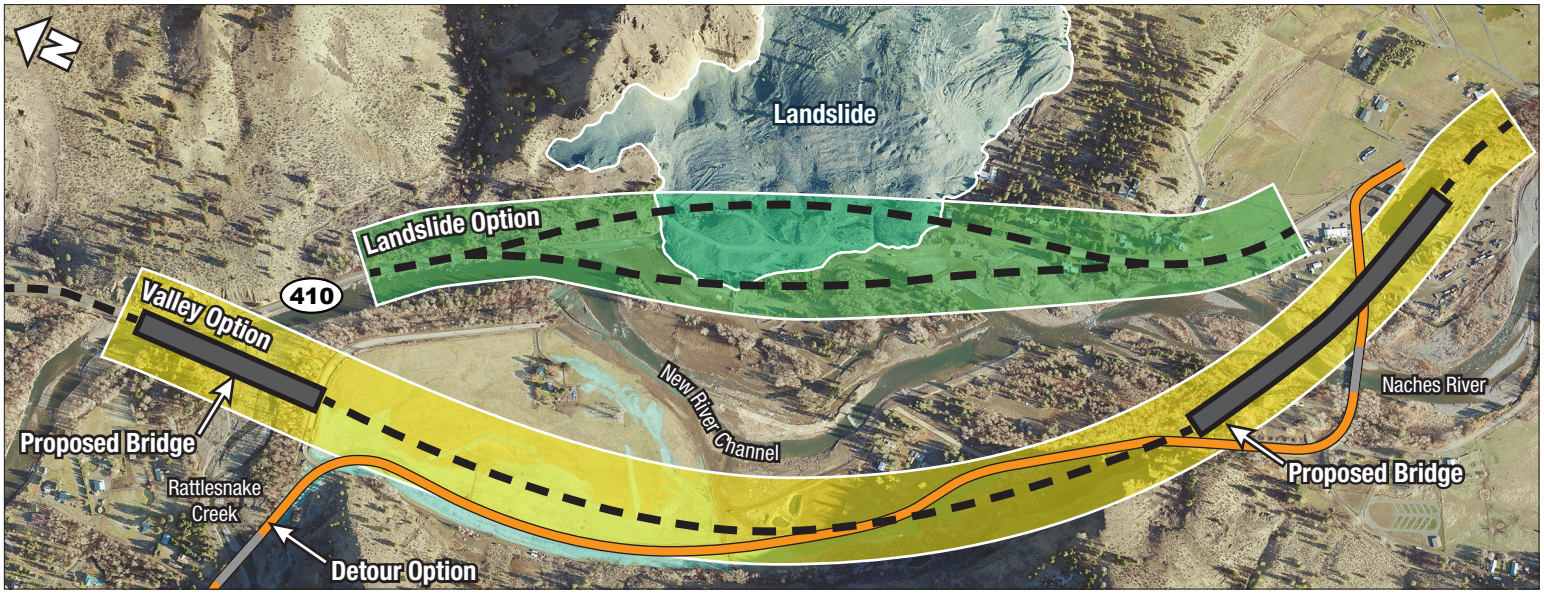
What's next

WSDOT Geotechnical crews have drilled over 20 locations on or near the landslide to gather rock and soil samples. Geotechnical findings will show the material makeup of the landslide mass and indicate the stability of the landslide.

To move forward, the topography of the Nile Valley has been surveyed to prepare maps. These maps will help WSDOT identify potential unstable areas and other topographic features to avoid. WSDOT must complete an environmental analysis of the area. This analysis will help WSDOT determine the positive or negative environmental impacts associated with a range of options to be considered. These impacts will be classified by their relationship to natural, social and/or economic resources. This, along with public meetings and input, will help WSDOT select the most feasible and cost-effective option to re-establish SR 410.

The landslide destroyed a half mile of SR 410 and blocked the Naches River channel.





Preliminary Proposed Alternatives

Detour Option

(Total Cost Estimate - $3 million to $50 million)

This option would follow the existing five mile detour. WSDOT will evaluate the roadway for possible safety improvements to bring the detour up to minimum state route standards.

The costs for this option varies widely due to a variety of construction approaches WSDOT could take. These approaches range from FHWA allowing WSDOT to keep the route largely as-is by using deviations, or bringing this road up to state standards. Bringing this road up to state standards may require multiple bridges, wider shoulders and purchase of additional right of way.

Challenges with this option include residential impacts, possible environmental issues and sub-standard roadway elements.

Landslide Option

(Total Cost Estimate $15 million to $25 million)

This option would allow WSDOT to re-route SR 410 around the edge of the landslide or over the top. This option minimizes most environmental and residential impacts.

Challenges with this option are the long-term stability of the slide and protection from future river channel migration.

Valley Option

(Total Cost Estimate $40 million to $50 million)

This option would allow WSDOT to utilize approximately one mile of the current five-mile SR 410 detour route, constructing two new bridges to re-establish SR 410 around the landslide. The valley option minimizes impacts to residents but relies on favorable ground and soil conditions for bridge foundations.

Challenges with this option center mainly on bridge foundation construction and overall project cost.

Note: WSDOT will be preparing an environmental analysis. The analysis will include additional studies and public input.

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