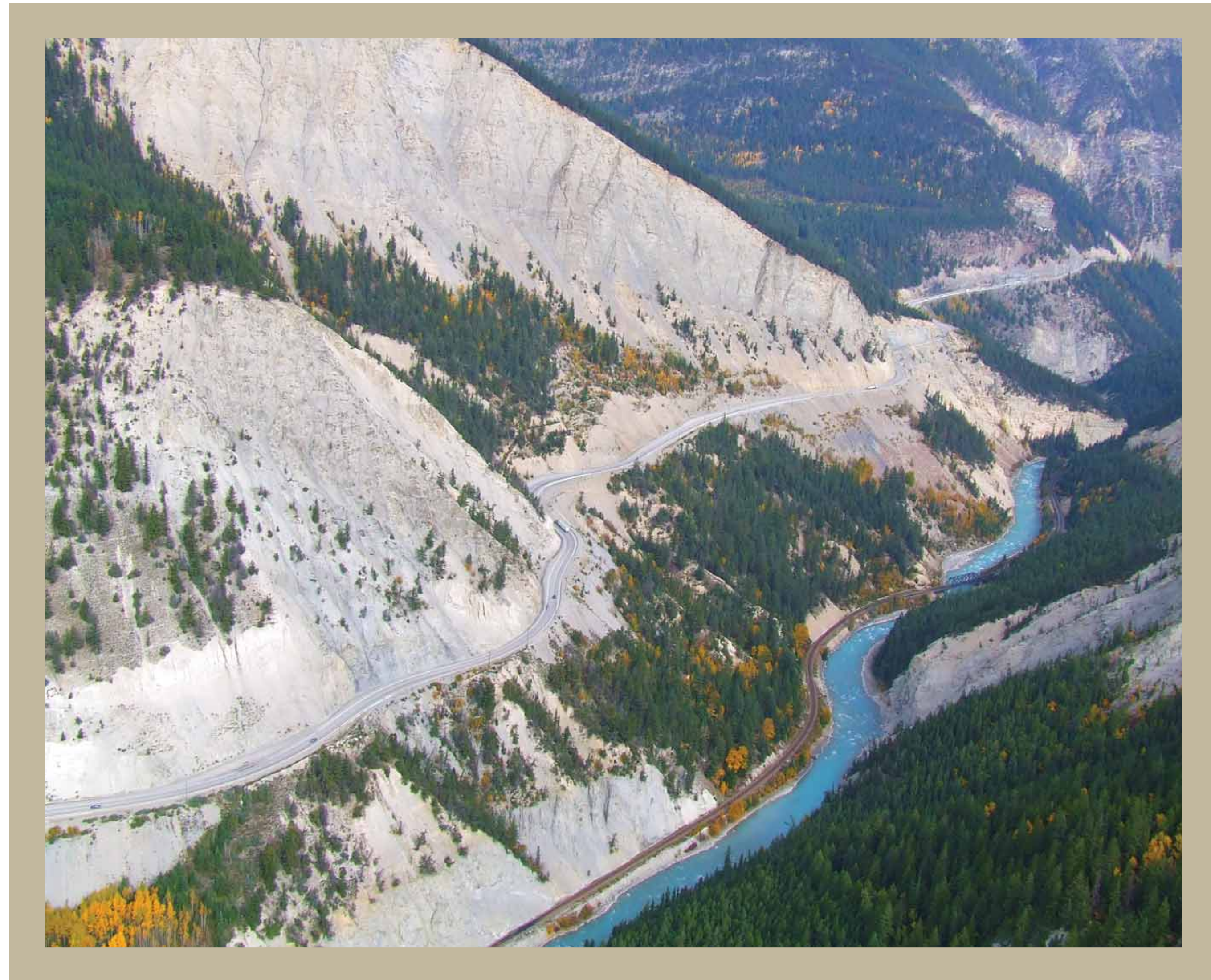


PHASE 3 DESIGN UPDATE – WEST PORTAL TO YOHO BRIDGE

April 15, 2008

Evaluating the Options

Extensive review of both tunnel and surface options is required to compare advantages and disadvantages, including those listed at right.



Some Issues and Considerations – Tunnel vs. Surface Option

Issue	Tunnel Option	Surface Option
Safety	More protection against outside conditions	More susceptible to outside conditions
	Confined spaces	Less confinement
	Drivers must adjust to differences in light conditions	Light conditions are consistent
Geotechnical risks	Less subject to avalanches, debris and rockfalls	Requires avalanche and rockfall mitigation
	Unstable rock increases tunnel lining and reinforcement requirements	Stability and terrain issues limit alignment options
Constructibility/Cost to Construct	Tunnel construction is costly	Numerous costly structures required; more slope stability risks
	Minimal traffic management required	Significant traffic impact
	More material disposal; waste area required	More opportunity to balance excavation with fill requirements
Cost to operate & maintain	Active monitoring required	Typical highway monitoring required
	Snow removal not required	Snow removal required; maintenance and repairs required for avalanche and rockfall protection structures
	Power required for ventilation and lighting	No extraordinary power or lighting requirements
Environmental impact	No barrier to wildlife	Wildlife protection and passage opportunities more challenging
Emergency response	More challenging; special features must be built in	Challenges are more typical
Accommodating cyclists	Greater separation of cyclists by preserving old highway for cycling use	Cyclists accommodated on wide shoulder