

PROPOSED PROJECT SITES

Site C1 Bank Stabilization

- **EXISTING CONDITIONS:** Parallel to outside bank of a river bend; includes approximately 3,900 lineal feet of 2-4' diameter riprap revetment along the apex of the river bend
- **PROBLEM:** 200' section of the 750'-long downstream segment appears less stable than the rest of the site; toe erosion and undermining of stream bank occurring in 3 areas
- **SOLUTION ALTERNATIVES:** 1) Continue maintenance of 860' of stream bank and 200' of downstream revetment segment; 2) relocate the road 100-200' away from river channel edge; 3) stabilize road embankment; 4) minor active river channel shift (engineered log-jam groins or riprap streambarbs); or 5) major active river channel shift



Site C2 Bank Stabilization

- **EXISTING CONDITIONS:** Parallel to outside bank of a river bend; includes approximately 3,900 lineal feet of poorly-placed 2-4' diameter riprap revetment along the apex of the river bend (1,150' included with Site C1)
- **PROBLEM:** Large portion of the downstream segment is experiencing impinging flood flow; toe erosion and undermining of the stream bank; high risk of catastrophic road bank failure
- **SOLUTION ALTERNATIVES:** (1) Continue maintenance (place emergency riprap as needed); (2) relocate 1,200' of the road 100-200' away from river channel (potential landslide risk); (3) stabilize road embankment along approximately 350' of road; (4) minor active river channel shift (engineered log-jam groins or riprap streambarbs); or (5) major active river channel shift

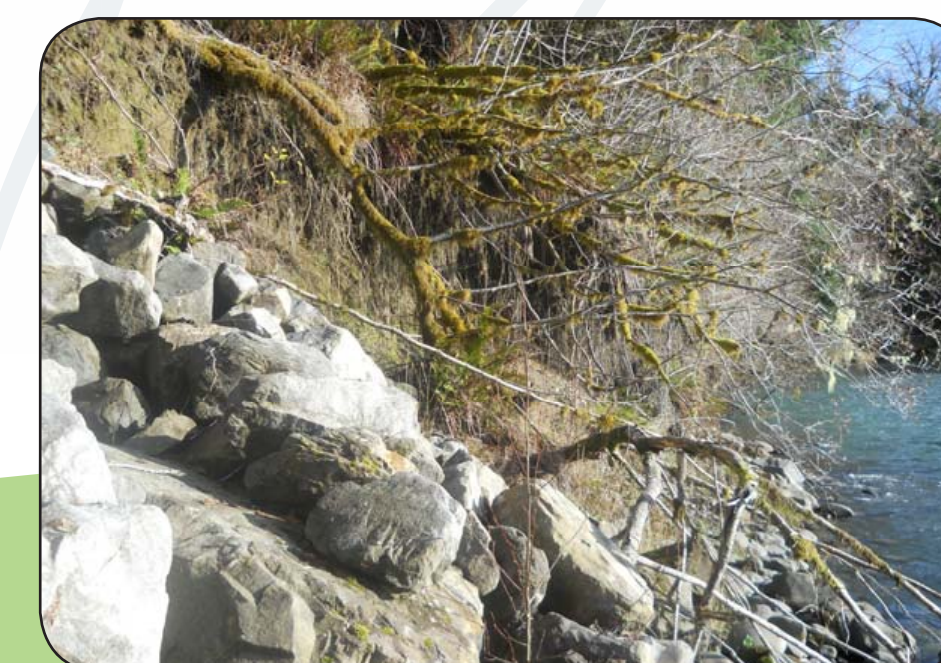


Site C3 Tower Creek Bridge

- **EXISTING CONDITIONS:** Single-span 70'-long 30'-wide bridge in good condition with 18' clearance from stream bed to bottom of girders
- **PROBLEM:** Scour at abutments with exposed piles and erosion at wingwalls; total scour of 10'; unknown pile depth; overly steep rip rap
- **SOLUTION ALTERNATIVES:** (1) Continue maintenance (emergency replacement of riprap); (2) construct new 160' concrete wall under existing bridge (50 years of service life); (3) new 130' long single-span bridge with waterway to accommodate expected stream degradation

Site C4 Bank Stabilization

- **EXISTING CONDITIONS:** Parallel to outside bank of a river bend; includes approximately 1,300 lineal feet of 2-4' diameter riprap revetment along the apex of the river bend segment
- **PROBLEM:** Rip rap at the maximum point of stream bank curvature and likely experiences high shear stress when floods occur; continued riprap loss could result in revetment dismantling and road damage; low risk of a catastrophic road embankment failure; toe erosion and undermining of the stream bank
- **SOLUTION ALTERNATIVES:** (1) Continue maintenance (emergency replacement of riprap); (2) relocate 2,000' of the road 100-150' away from river channel (would require new bridge location); (3) stabilize road embankment along approximately 800' of road; (4) minor active river channel shift (engineered log-jam groins or riprap streambarbs); or (5) major active river channel shift



Site C5 Canyon Creek Culvert

- **EXISTING CONDITIONS:** 8.5' diameter corrugated metal pipe under 25-30' of fill, in fair condition
- **PROBLEM:** Damage at crown and invert of pipe; some separation at the joints; undercutting of the culvert outlet; culvert protrudes 5' beyond road embankment fill and 3' above the water surface of a large scour hole
- **SOLUTION ALTERNATIVES:** (1) Continued maintenance; (2) rock weirs at existing culvert outlet; (3) new open-bottom arch culvert; or (4) new 180-foot bridge