

U. S. HIGHWAY 93 RECONSTRUCTION ON THE FLATHEAD INDIAN RESERVATION

Addressing Highway-related Habitat Fragmentation

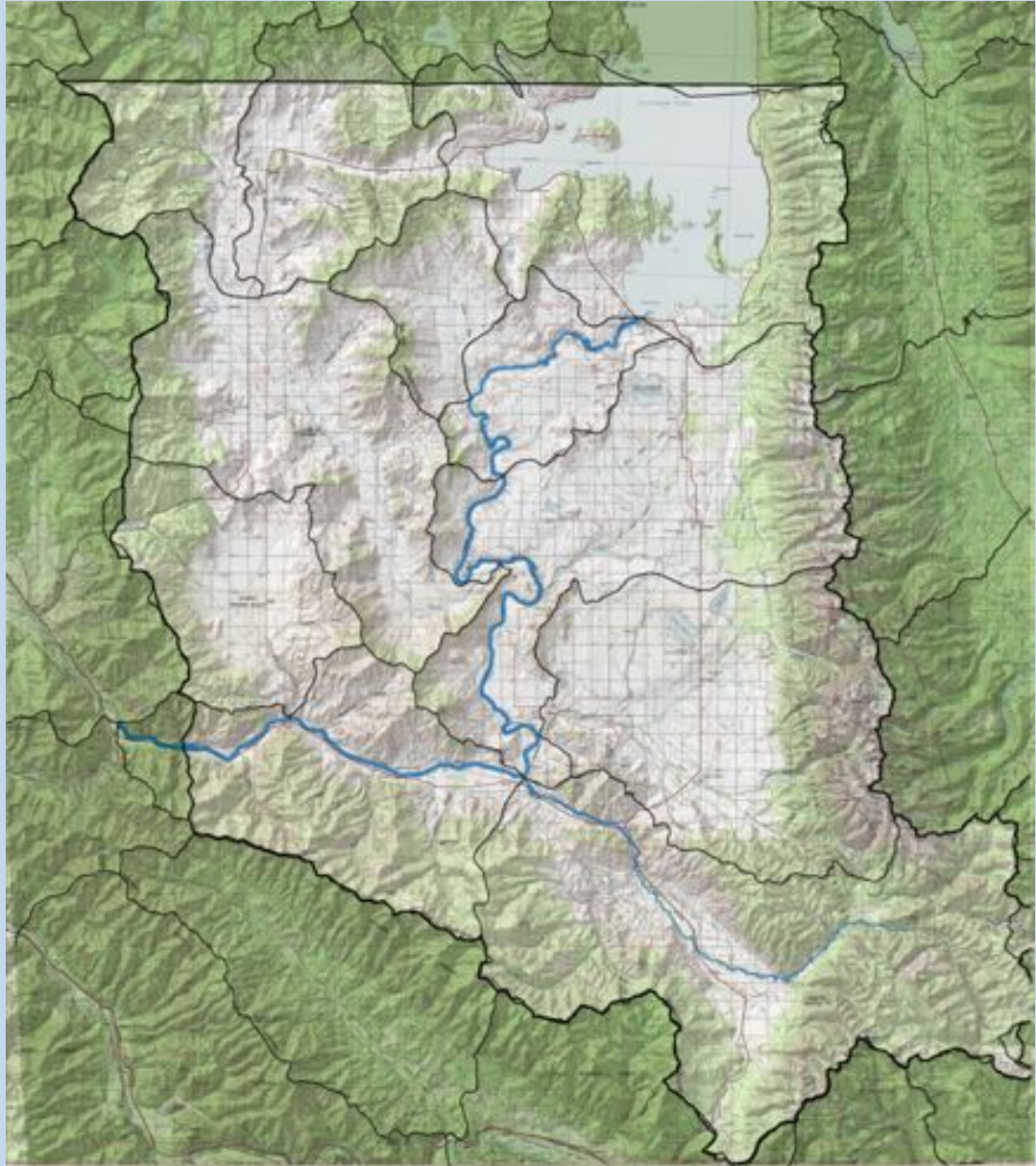
Dale Becker, Tribal Wildlife Program Manager

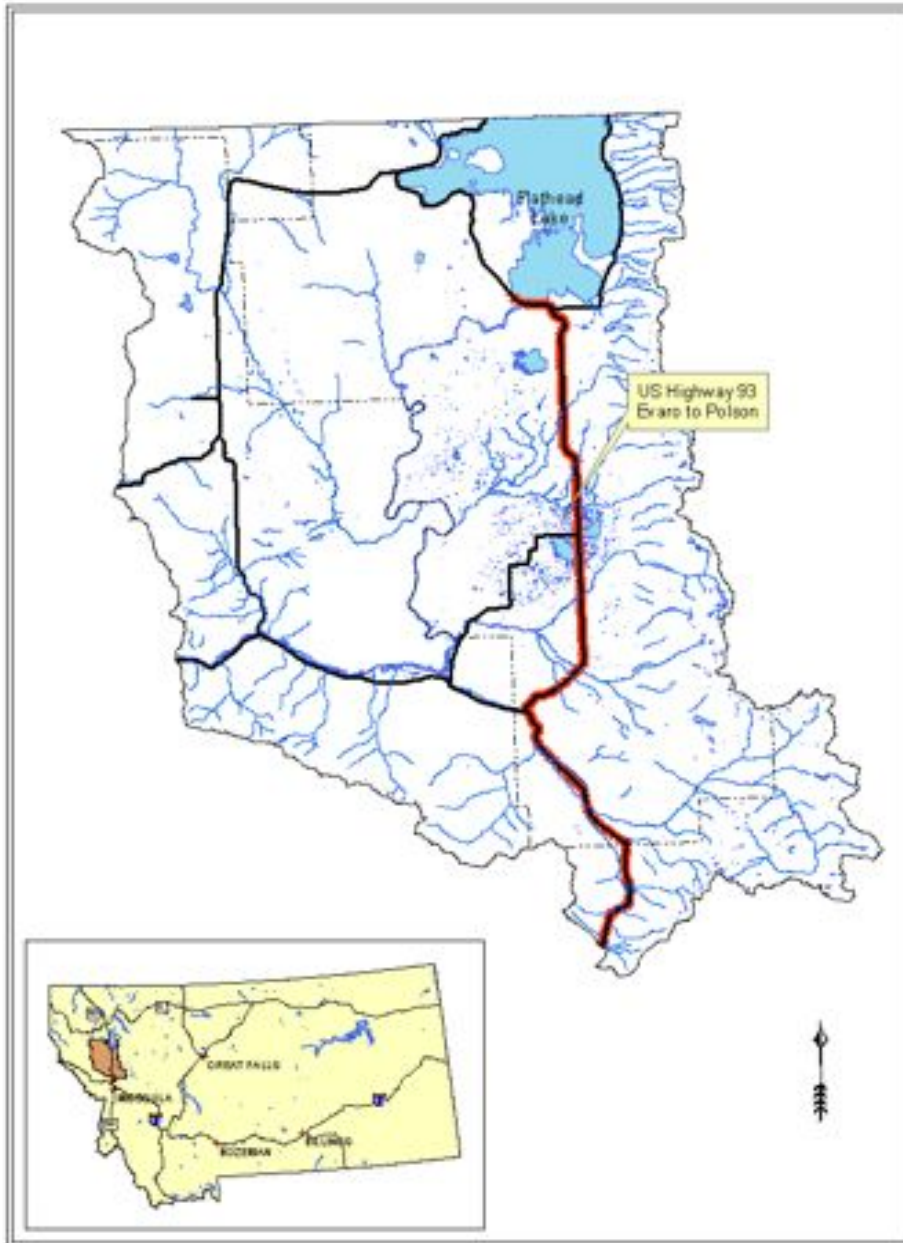
Confederated Salish and Kootenai Tribes

P. O. Box 278 Pablo, Montana 58855

daleb@cskt.org









163 Killed • 4,992 Injured on Hwy 93
MORE STATISTICS SINCE 1987

PLEASE BUCKLE UP!
TURN ON YOUR HEADLIGHTS • PASS WITH CAUTION

Your Health Is Our Concern...

 **ST. LUKE COMMUNITY
HEALTHCARE NETWORK**
Breckenridge, WI
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1991 - Montana Department of Transportation (MDOT) began planning for reconstruction of U. S. Highway 93 on the Flathead Indian Reservation.

Justification:

1. Public safety

2. Increasing traffic

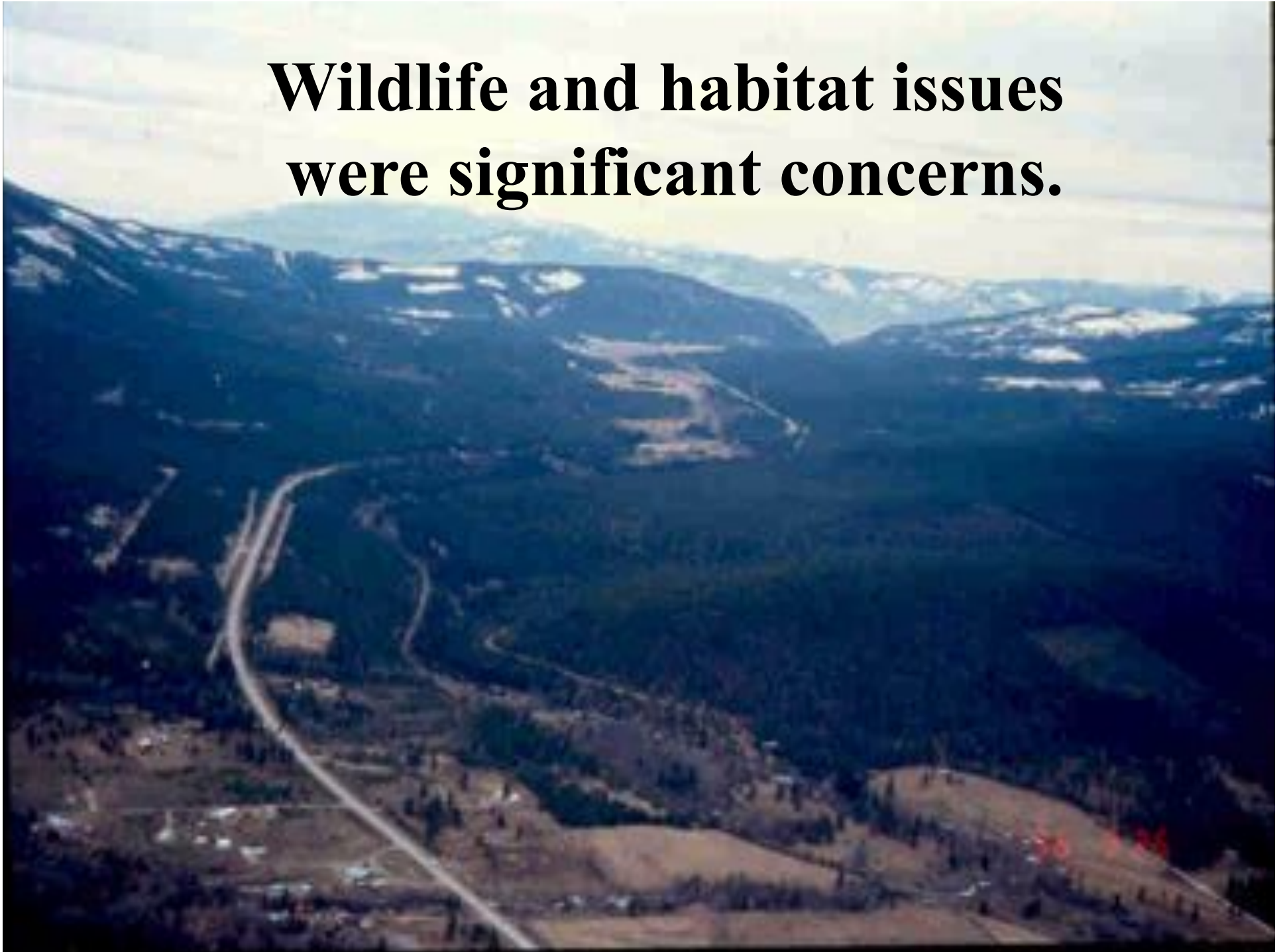
3. Increasing population



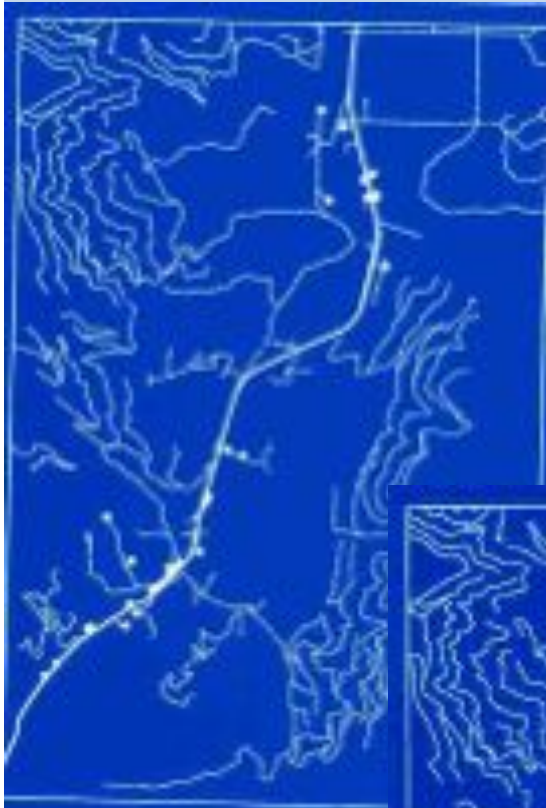
CSKT's primary concern related to further dilution of their culture.



**Wildlife and habitat issues
were significant concerns.**



Subdivision/Habitat Fragmentation

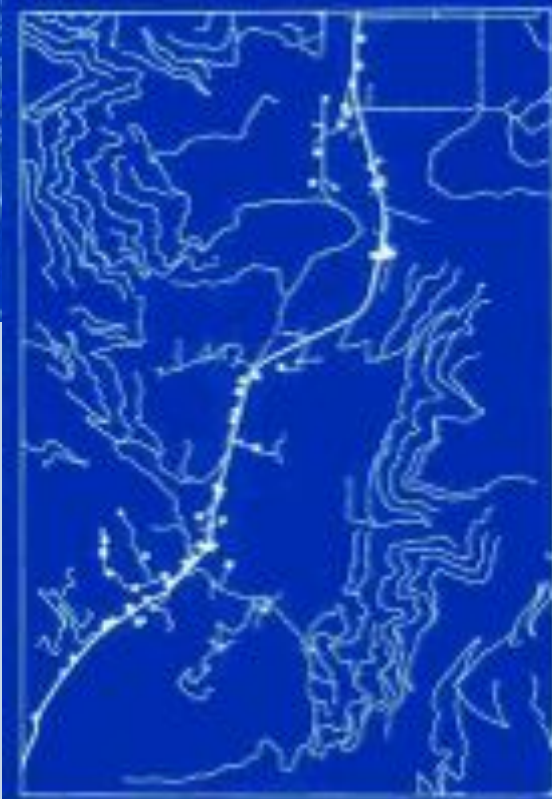


1960

1972



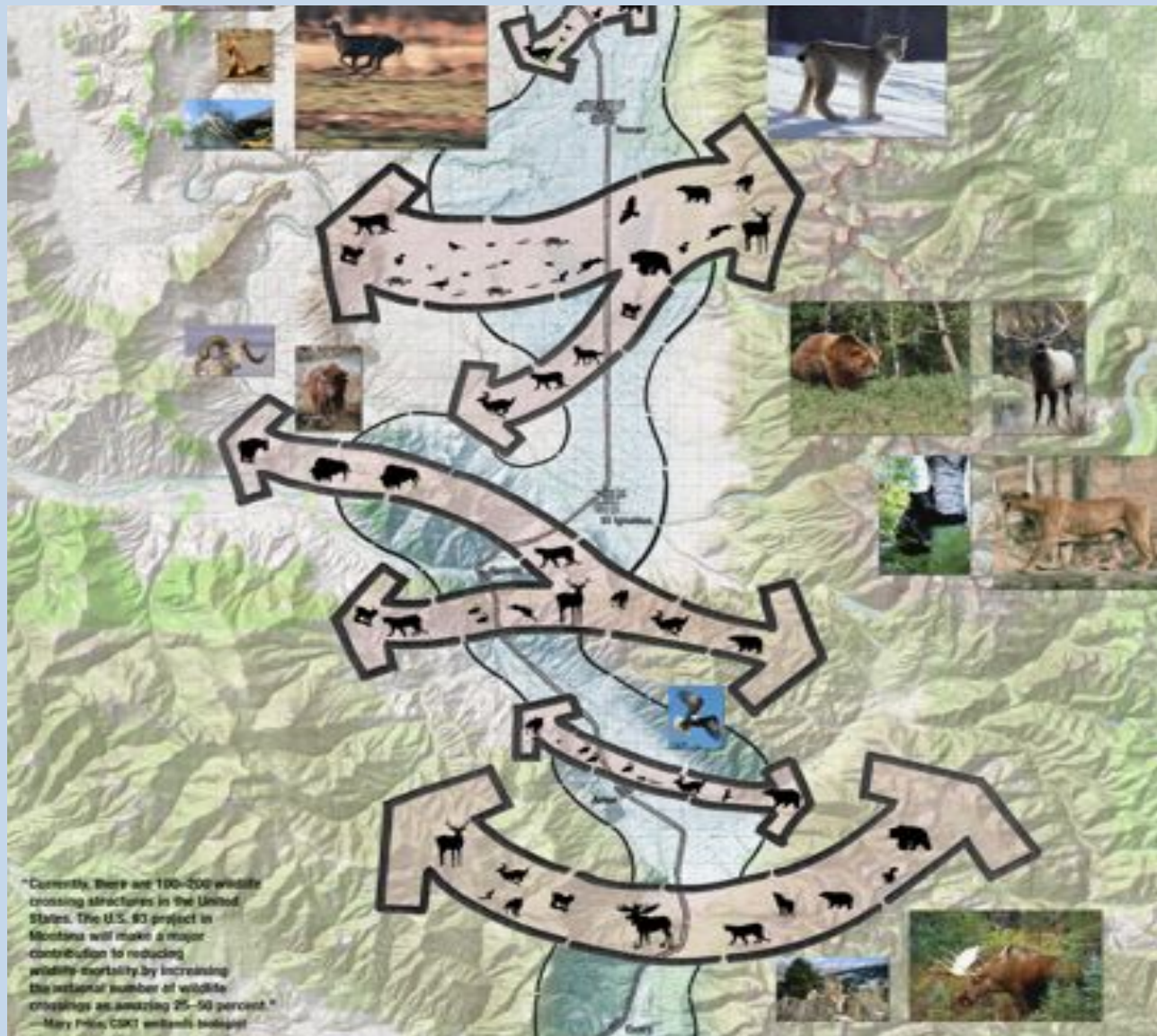
1992



1982



Wildlife Movement/Habitat Fragmentation



Wetland Habitat Impacts



Wildlife/Vehicle Collisions

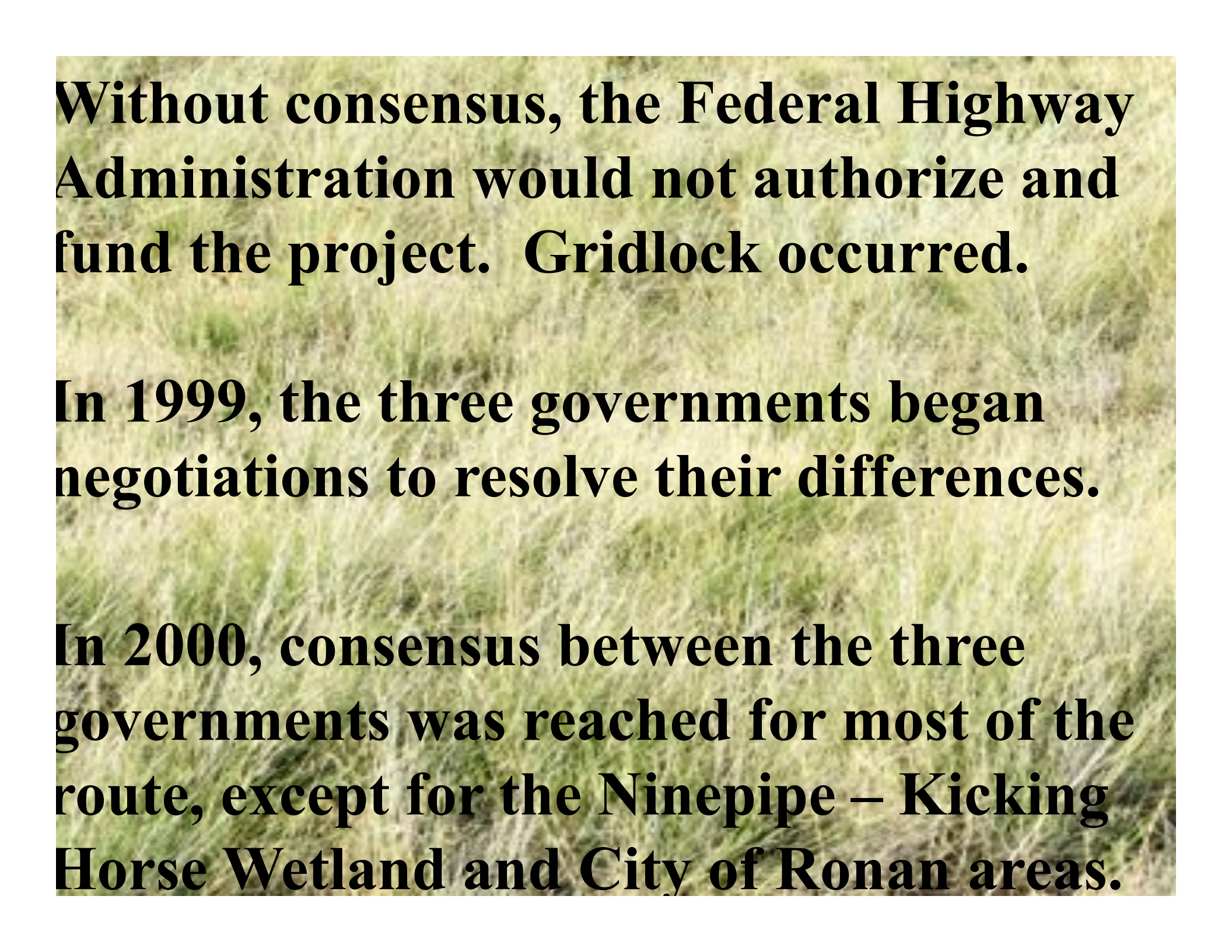


MDOT's Preferred Alternative Divided four-lane design



The Confederated Salish and Kootenai Tribes disagreed and recommended an improved two-lane highway with safety improvements through their reservation.



The background of the slide is a photograph of tall, dry grass, likely a prairie or steppe environment, with a soft, out-of-focus texture. The text is overlaid on this background in a bold, black, sans-serif font.

Without consensus, the Federal Highway Administration would not authorize and fund the project. Gridlock occurred.

In 1999, the three governments began negotiations to resolve their differences.

In 2000, consensus between the three governments was reached for most of the route, except for the Ninepipe – Kicking Horse Wetland and City of Ronan areas.



MDT



FHWA

Memorandum of Agreement

US 93

Evans to Polson

Problem Resolution Process

Context Sensitive Approach

Multi-tiered process for project design

Value engineering to economize

Technical Design Committee: Engineers

Design Engineers

Consultants

Ecologists

Landscape Architects

Policy Oversight Group: MDOT Administrators

FHWA Administrators

Tribal Council

SPIRIT OF PLACE PHOTOMONTAGE

SPIRIT OF PLACE

Mountains

Plains

Hills



Forest

Valley

Sky



What defines this place...



places and paths

formed by water
glaciers

wind

plants

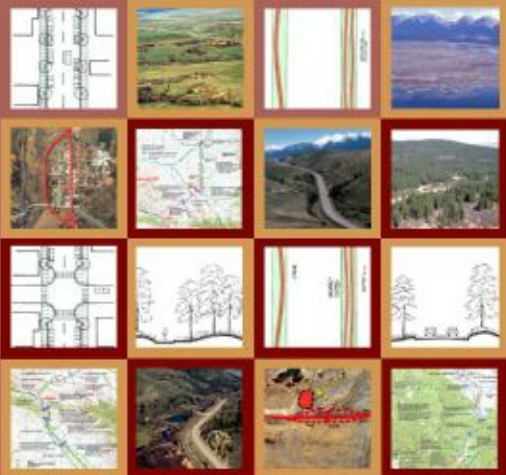
animals

insects,...

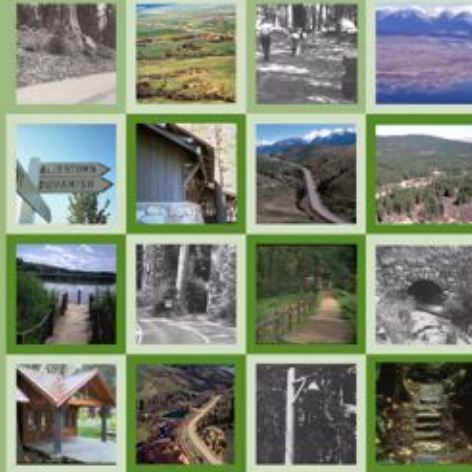




Landscape Architect Design & Alignment Concepts



Design Guidelines & Recommendations



Design Components Workbook



US 93 DESIGN DISCUSSIONS
 Project Location: Fair to Pitkin, Montana
 Montana Department of Transportation
 Federal Highway Administration
 The Confederated Salish & Kootenai Tribes of the Flathead Nation
 Home Consultants, Inc. / Kootenai Engineers, Inc.



Wildlife Crossings



FISH & WILDLIFE CROSSINGS—Crossing Structures #1 CONCRETE CULVERTS

Concrete Box Culvert

Location: Various locations in the United States, including the Pacific Northwest, the Midwest, and the Southeast.
Why built: To provide a permanent, durable crossing for water and wildlife.
Structure: A rectangular concrete structure with a flat top and vertical sides.



Concrete Box Culvert Red Earth Underpass

Location: Various locations in the United States, including the Pacific Northwest, the Midwest, and the Southeast.
Why built: To provide a permanent, durable crossing for water and wildlife.
Structure: A rectangular concrete structure with a flat top and vertical sides, built into a red earth embankment.



Bear Underpass

Location: Various locations in the United States, including the Pacific Northwest, the Midwest, and the Southeast.
Why built: To provide a permanent, durable crossing for water and wildlife.
Structure: A rectangular concrete structure with a flat top and vertical sides, built into a red earth embankment.



Considerations for integrating wildlife crossings with large roads:
• Provide a permanent, durable crossing for water and wildlife.
• Provide a permanent, durable crossing for water and wildlife.
• Provide a permanent, durable crossing for water and wildlife.



Prefabricated Concrete Arch Culverts

Location: Various locations in the United States, including the Pacific Northwest, the Midwest, and the Southeast.
Why built: To provide a permanent, durable crossing for water and wildlife.
Structure: A prefabricated concrete arch structure.

FISH & WILDLIFE CROSSINGS—Crossing Structures #3 CULVERTS



Wall with Lip and Culvert

Location: Various locations in the United States, including the Pacific Northwest, the Midwest, and the Southeast.
Why built: To provide a permanent, durable crossing for water and wildlife.
Structure: A wall with a lip and a culvert.



Medium Culvert

Location: Various locations in the United States, including the Pacific Northwest, the Midwest, and the Southeast.
Why built: To provide a permanent, durable crossing for water and wildlife.
Structure: A rectangular concrete structure with a flat top and vertical sides.



Large Elliptical Metal Culvert - Cattle

Location: Various locations in the United States, including the Pacific Northwest, the Midwest, and the Southeast.
Why built: To provide a permanent, durable crossing for water and wildlife.
Structure: A large elliptical metal structure.

Large Round Metal Culvert Morrison Cowlee

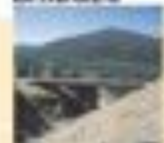
Location: Various locations in the United States, including the Pacific Northwest, the Midwest, and the Southeast.
Why built: To provide a permanent, durable crossing for water and wildlife.
Structure: A large round metal structure.



Large Elliptical Metal Culvert - Cattle

Location: Various locations in the United States, including the Pacific Northwest, the Midwest, and the Southeast.
Why built: To provide a permanent, durable crossing for water and wildlife.
Structure: A large elliptical metal structure.

FISH & WILDLIFE CROSSINGS—Crossing Structures #2 BRIDGES



Open Span Bridge - US HWY 2

Location: Various locations in the United States, including the Pacific Northwest, the Midwest, and the Southeast.
Why built: To provide a permanent, durable crossing for water and wildlife.
Structure: An open span bridge.



Open Span Bridges - Trans-Canada Highway

Location: Various locations in the United States, including the Pacific Northwest, the Midwest, and the Southeast.
Why built: To provide a permanent, durable crossing for water and wildlife.
Structure: An open span bridge.



FISH & WILDLIFE CROSSINGS—Crossing Structures #4 OVERPASSES



Wildlife Overpass

Location: Various locations in the United States, including the Pacific Northwest, the Midwest, and the Southeast.
Why built: To provide a permanent, durable crossing for water and wildlife.
Structure: A wildlife overpass.



US 93 FISH AND WILDLIFE CROSSINGS

18. Ravalli Curves #2 Wildlife Crossing Arlee - Ravalli Segment

This area has great significance for fish and wildlife crossing. The Jocko River is bull trout bearing. Two tributaries in this area, Copper Creek and Spring Creek have been altered by highway fills and embankments. Restoring these water channels will greatly improve fish and wildlife habitat. Raising the road in concert with providing undercrossings, would improve motorist safety and allow wildlife to move through the canyon. Anticipated use by black bears, grizzly bears, mountain lions, bobcats, coyotes, elk, deer, etc.

Design Recommendations

Recommended crossing type: Corrugated metal pipe or concrete box culvert

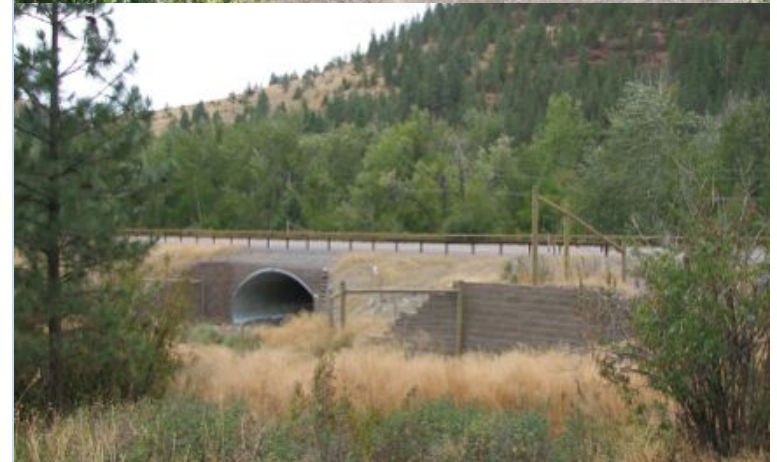
Approximate dimensions: 12' x 22'

Notes:

Continue 8' page wire fencing along both sides of road. Begin 8' page wire fencing south of Schall Flats #4 crossing; continue to a point south of Ravalli. Provide cattle guards for connecting roads and drive-ways. Fencing on west side of road to be placed below sight line.

Criteria for locations of crossings:

1. Winter tracking - NA.
2. Summer Game Trails - NA.
3. Road Kill Data - Tribal data from 1,895-1998 combined with MOT data from 12/97-1/00 indicates an extremely high concentration of kills in this area (31 kills).
4. Habitat - The road bisects two areas of good mountain habitat, and runs adjacent to excellent riparian habitat (the Jocko River) fed by two tributaries (Spring Creek and Copper Creek). These tributaries increase the fish and wildlife habitat value.
5. Engineering Practicality - The physical constraints of this canyon pose a challenge.



US 93 DESIGN DISCUSSIONS

Project Contacts: Dan@PacWest.com
 Montana Department of Transportation
 Federal Highway Administration
 The Confederated Salish & Kootenai Tribes of the Flathead Nation
 Project Location: Selway Corridor, in - Clearing Project

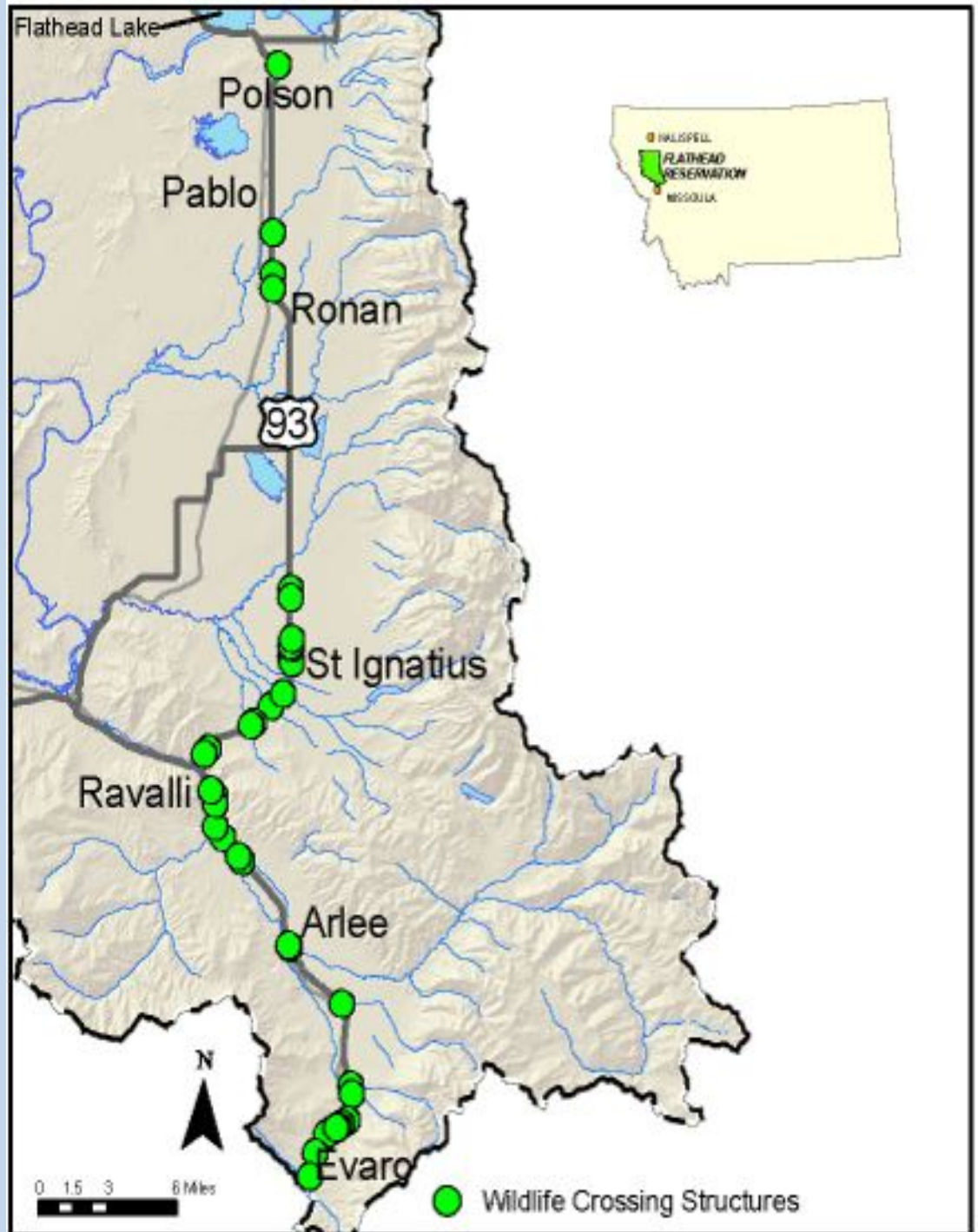


Wildlife Crossing Structures



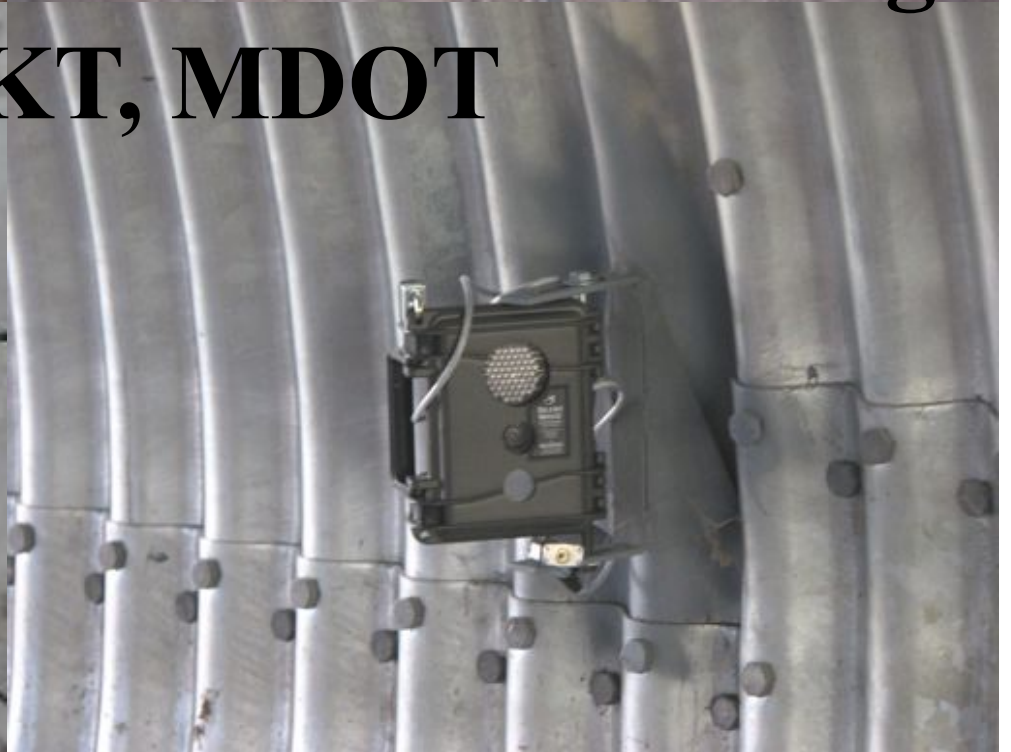
Crossing Structure Locations

Most crossing structures per mile for longest distance in U.S.





Pre- and Post-construction Monitoring WTI, CSKT, MDOT



2008-01-29 8:31:56 PM M 3/6

16 34°F

2007-12-29 8:49:31 AM M 2/3

6 29°F



RAVALLI HILL 2
2008-09-06 06:29:25 M 1/4

WWW.RECONVX.COM
52°F

JOCKO SIDE CHANNEL

WWW.RECONVX.COM



POST CREEK 3

WWW.RECONVX.COM

Image courtesy of DIRT & MOH 2008





Wildlife Jumpout Use



In 2010, 28 structures were monitored using wildlife cameras.

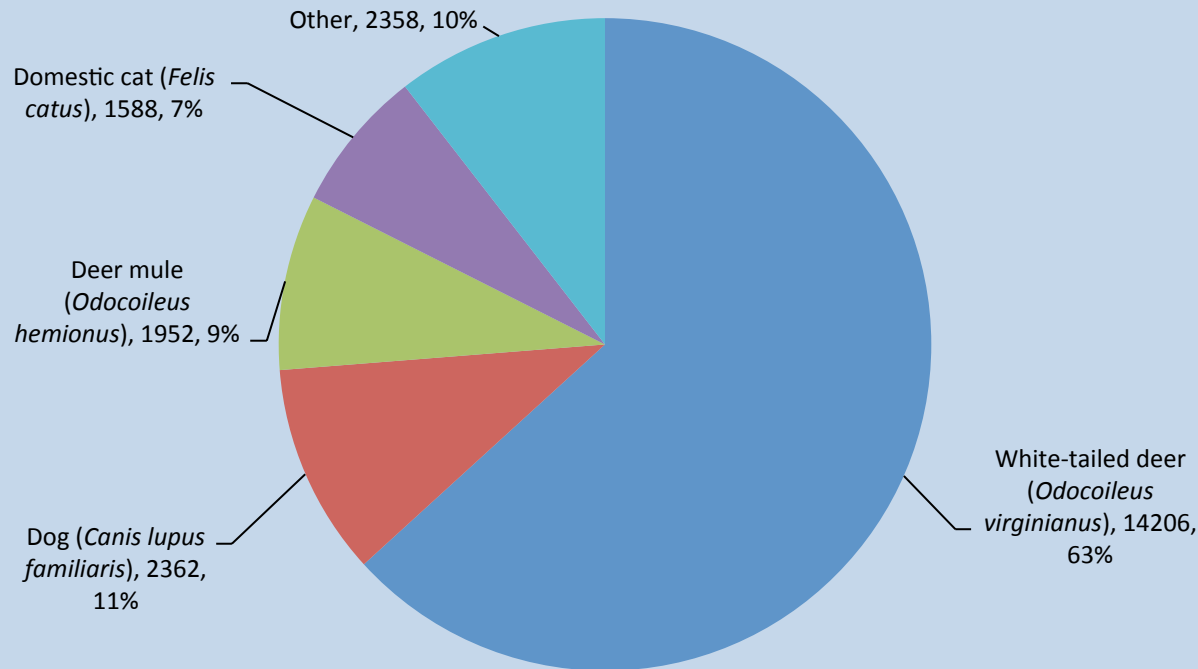
Species	Number
white-tailed deer	6,712
mule deer	1,174
deer (unk. species)	561
domestic dog	1,130
domestic cat	785
other	1,660
TOTAL	12,022

This is a minimum, as not all structures were monitored for the entire year.

From Huijser et al. 2012.

OTHER Species	Number
coyote	356
black bear	297
raccoon	281
bobcat	142
birds	125
red fox	95
skunk	86
mountain lion	29
rabbit	26
badger	20
beaver	14
river otter	6
grizzly bear	3
weasel	2
marmot	2
porcupine	1
moose	1

All Structures Monitored



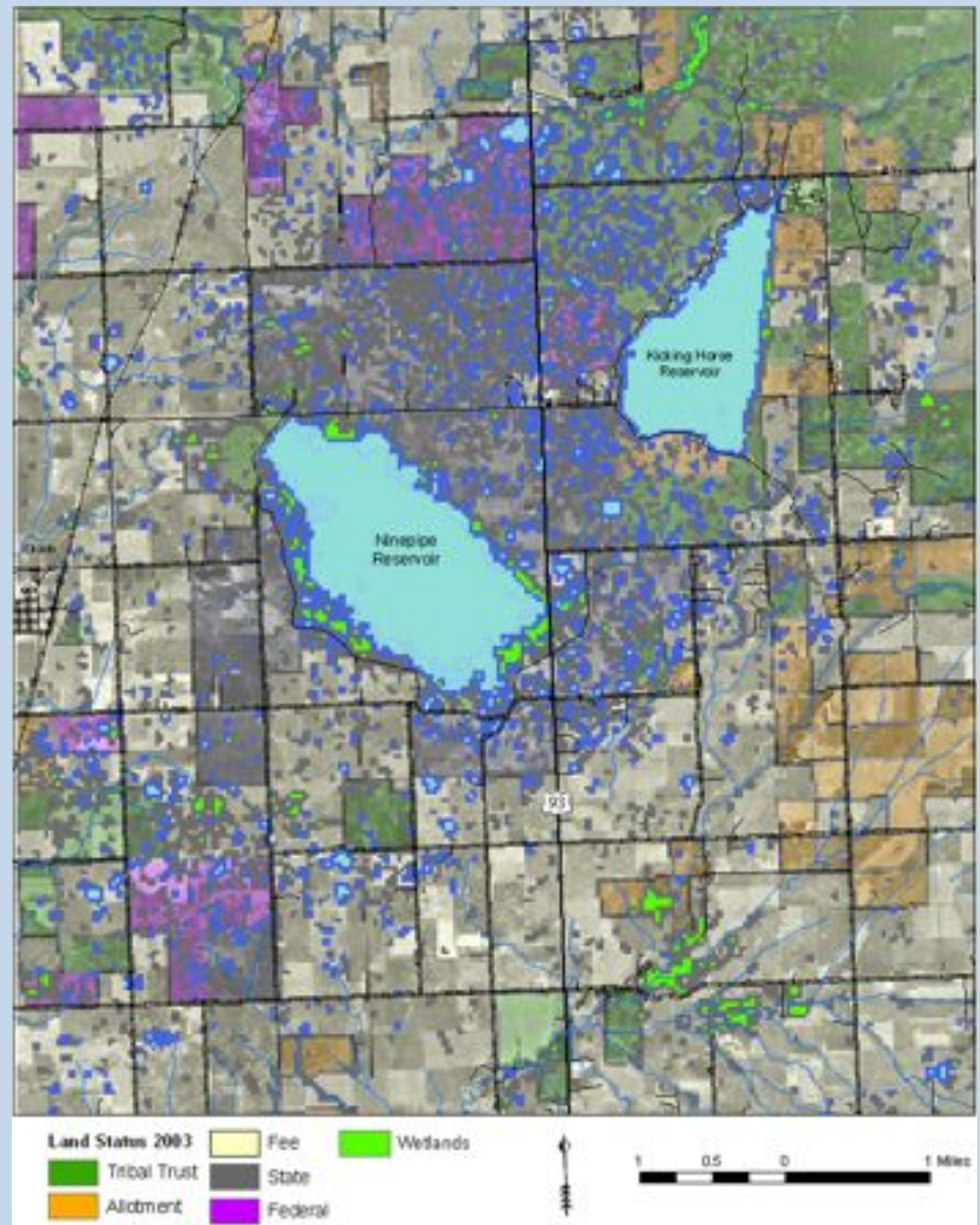
Wildlife use of all the 29 wildlife crossing structures monitored in 2011 (December 31, 2010 – January 1, 2011). Preliminary data (N=22,466). From Huijser et al. 2012.

An aerial photograph showing a large, irregularly shaped wetland area in the center. The wetland is characterized by a mix of brown, tan, and dark green patches, indicating different vegetation and water levels. A prominent waterway or stream runs vertically through the left side of the wetland. Surrounding the wetland are various agricultural fields, some of which are green and others are brown. There are also some buildings and structures scattered throughout the landscape, particularly on the left side. The overall scene is a rural, agricultural landscape with a significant natural area.

Wetland Mitigation

CSKT acquired a 81 ha. tract, restored the wetland and riparian habitat and sold habitat mitigation credits to MDOT.

Ninepipe-Kicking Horse SEIS is completed, but construction is not Planned until after 2015.



C u r r e n t w o r k

Expanded post-construction monitoring project has begun to determine:

- 1) to what extent wildlife are using the structures;**
- 2) if there is increased safety; and**
- 3) cost effectiveness.**

Partners



A People of Vision



DIVISION OF FISH, WILDLIFE,
RECREATION & CONSERVATION



