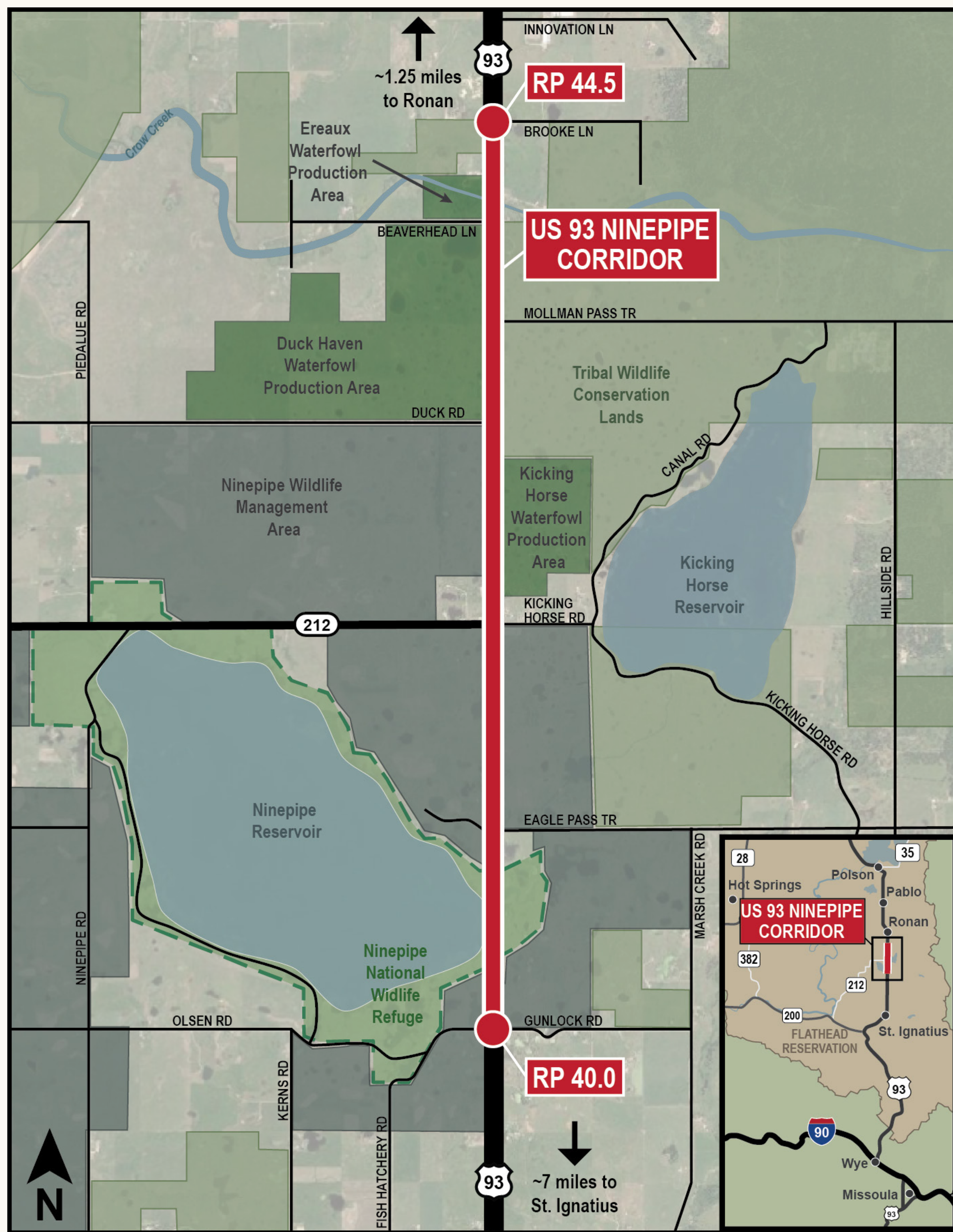


STUDY AREA & BACKGROUND



1996

MDT completed a *Final Environmental Impact Statement (FEIS) and Section 4(f) Evaluation* for the portion of US 93 between Evaro and Polson, MT. The Record of Decision (ROD) did not provide specific design details so FHWA, MDT, and the CSKT agreed to further explore possible alternate alignments and study the effects of highway improvements on wetlands and wildlife in the corridor.

2016

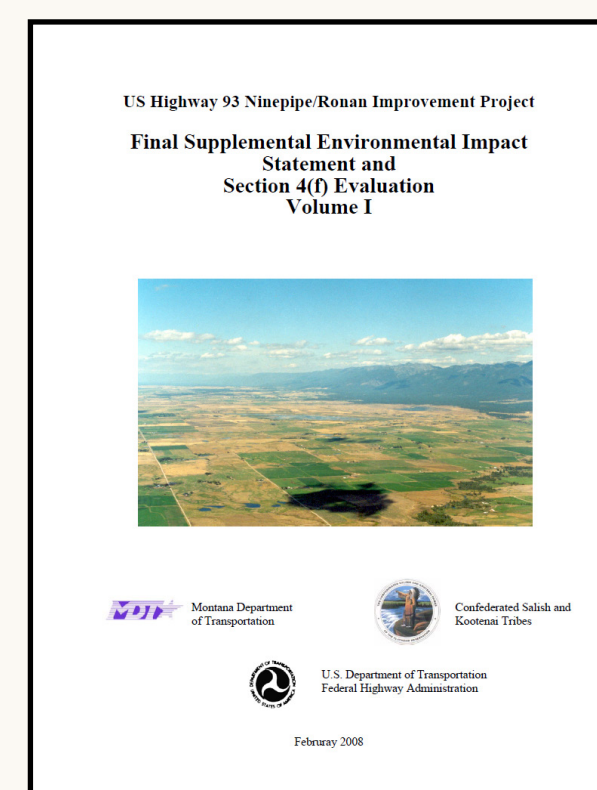
A re-evaluation of the SEIS was completed for the Ronan-Urban segment (RP 44.6 – 47.2) of the corridor to confirm proposed design changes and project segmentation/phasing. The Ninepipe segment was not addressed during the re-evaluation process.

Design of Ronan-Urban and Ronan-North projects have begun. A construction date has not yet been determined for Ronan-Urban. Construction activities for Ronan-North are scheduled from 2022-2024.



2008

MDT, FHWA, and CSKT completed a *Supplemental Environmental Impact Statement (SEIS) and a Section 4(f) Evaluation* for the Ninepipe/Ronan section. The SEIS/ROD identified a preferred alternative for the Ninepipe corridor consisting of a two-lane roadway, widened shoulders, wildlife crossing structures, and a separated bicycle/pedestrian path.



2013

Design of US 93 - Post Creek Hill project began. A construction date has not yet been determined. MDT has encountered multiple challenges relating to constructability, impacts, and costs.

NINEPIPE CORRIDOR 93 FEASIBILITY STUDY

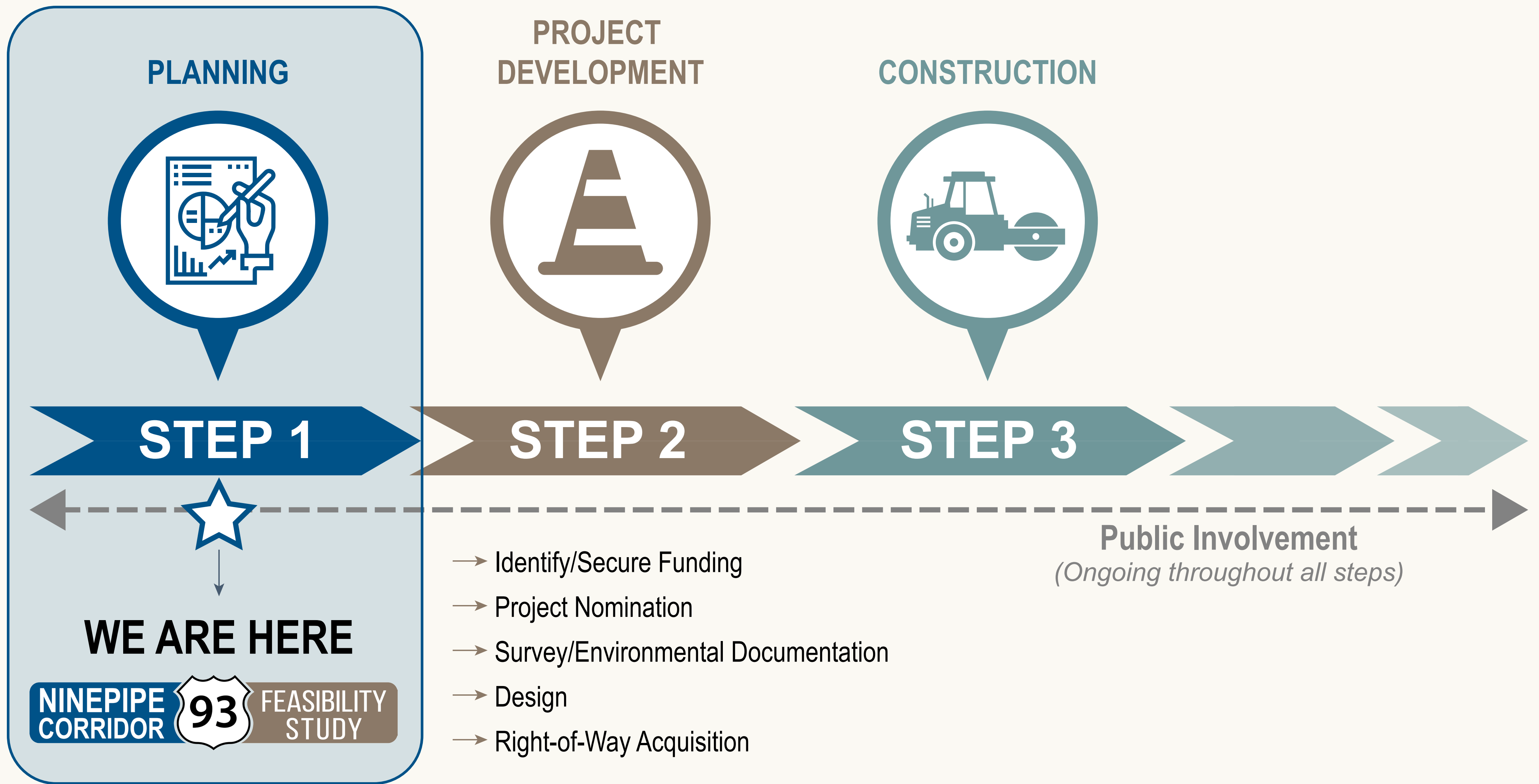
2021

MDT, FHWA, and CSKT initiated the US 93 Ninepipe Corridor Feasibility Study to determine if a future project would be viable in terms of impacts, costs, and constructability.

NINEPIPE CORRIDOR 93 FEASIBILITY STUDY

NEXT STEPS

To continue with the development of one or more projects in the corridor, the following steps would be needed. Additional environmental documentation would be required to satisfy National Environmental Policy Act regulations. A funding source has not yet been identified for improvements.



VISIT www.mdt.mt.gov/pubinvolve/US93Ninepipe/

QUESTIONS?



Scott Randall, PE, PTOE
Consultant Project Manager
Robert Peccia and Associates
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Email: srandall@rpa-hln.com



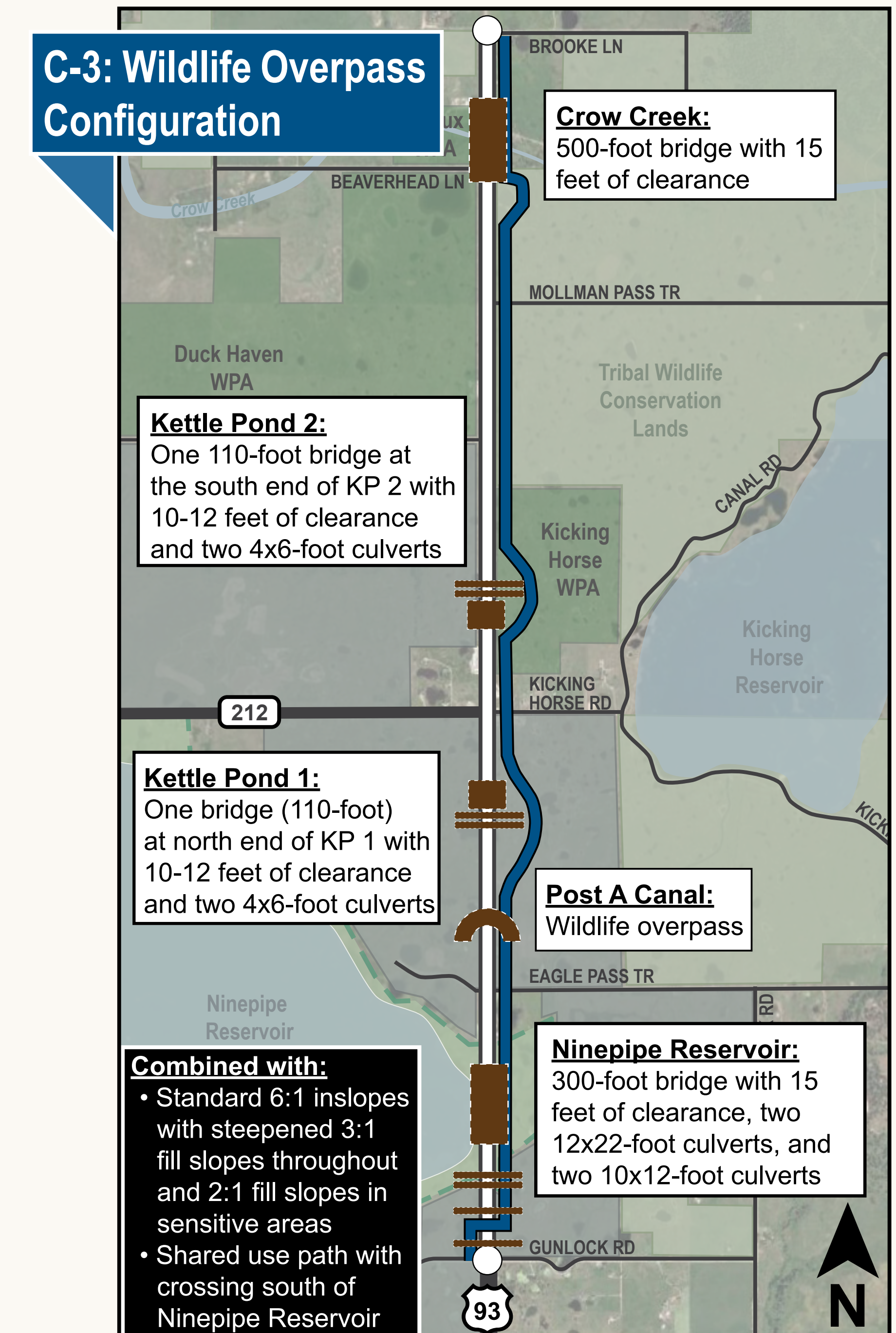
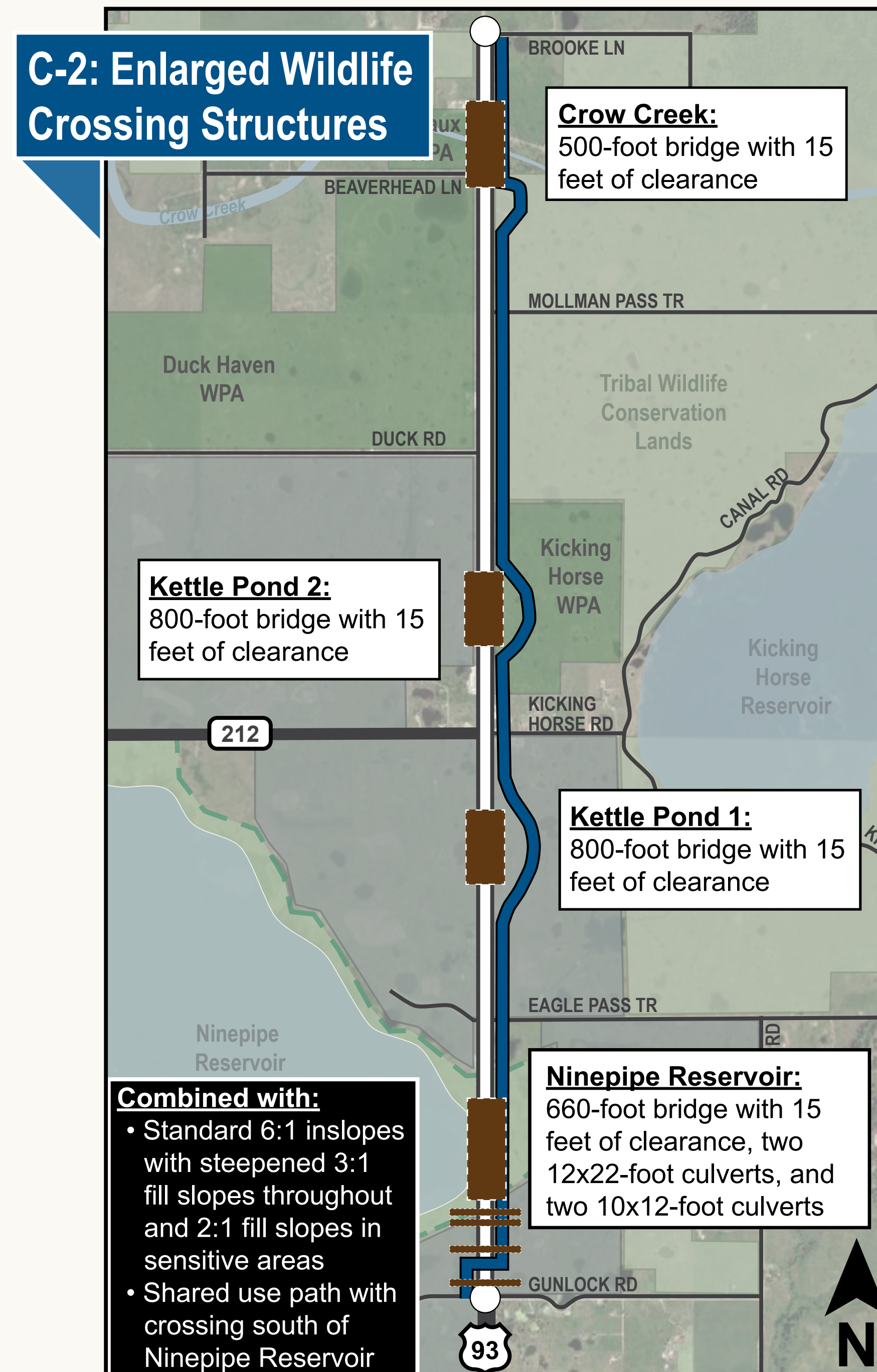
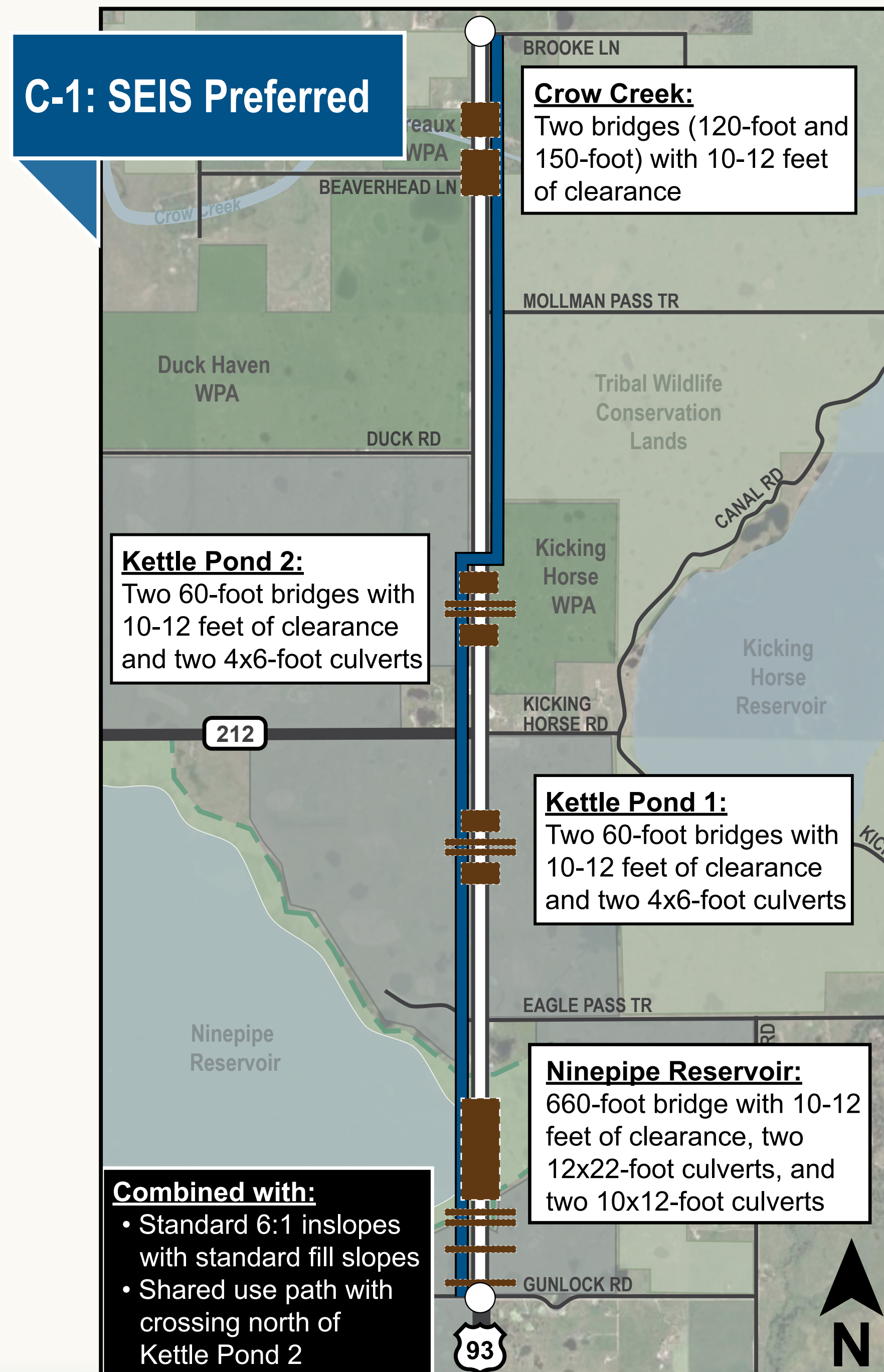
Vicki Crnich
MDT Project Manager
Montana Department of Transportation
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NINEPIPE CORRIDOR 93 FEASIBILITY STUDY

CORRIDOR OPTIONS

Three corridor-wide options were evaluated to comprehensively address the combination of roadway typical section, shared use path alignment, and wildlife crossings. Planning-level alignments and roadway profiles were developed for each of the proposed configurations to assist with preparation of preliminary cost estimates and identification and quantification of benefits and impacts. A **screening process** was then used to determine which corridor options would be feasible to implement and to **understand the trade-offs** between resource impacts, overall benefits, and project costs. A total of 20 subcategories were defined under the **six screening criteria**, with a total of 5 possible points per subcategory and a total possible score of 100.



SCREENING CRITERION 1: TRANSPORTATION



The SEIS determined reconstruction of the corridor is needed to **improve safety**, provide **multimodal accommodations**, and to ensure that the corridor can **operate efficiently** under current and projected traffic conditions. This screening category assessed vehicular traffic operations and safety as well as non-motorist accommodations, connectivity, and safety.

C-1: SEIS Preferred

C-2: Enlarged Crossings

C-3: Wildlife Overpass

	C-1: SEIS Preferred	C-2: Enlarged Crossings	C-3: Wildlife Overpass
	<p>Crow Creek: 120-foot and 150-foot bridges with 10-12 feet of clearance</p> <p>Kettle Pond 2: (2) 60-foot bridges with 10-12 feet of clearance and (2) 4x6-foot culverts</p> <p>Kettle Pond 1: (2) 60-foot bridges with 10-12 feet of clearance and (2) 4x6-foot culverts</p> <p>Ninepipe Reservoir: 660-foot bridge with 10-12 feet of clearance, (2) 12x22-foot culverts, and (2) 10x12-foot culverts</p>	<p>Crow Creek: 500-foot bridge with 15 feet of clearance</p> <p>Kettle Pond 2: 800-foot bridge with 15 feet of clearance</p> <p>Kettle Pond 1: 800-foot bridge with 15 feet of clearance</p> <p>Ninepipe Reservoir: 660-foot bridge with 15 feet of clearance, (2) 12x22-foot culverts, and (2) 10x12-foot culverts</p>	<p>Crow Creek: 500-foot bridge with 15 feet of clearance</p> <p>Kettle Pond 2: 110-foot bridge with 10-12 feet of clearance, (2) 4x6-foot culverts</p> <p>Kettle Pond 1: 110-foot bridge with 10-12 feet of clearance, (2) 4x6-foot culverts</p> <p>Post A Canal: Wildlife Overpass</p> <p>Ninepipe Reservoir: 300-foot bridge with 15 feet of clearance, (2) 12x22-foot culverts, and (2) 10x12-foot culverts</p>
TRANSPORTATION	<ul style="list-style-type: none"> Traffic operations are marginally improved with the incorporation of turn bays at intersections. The shared use path alignment improves non-motorist mobility, connectivity, and safety. Increased roadways shoulder widths with rumble strips and flattened slopes help address historic crash trends. Lower use of wildlife crossing structures expected so less potential for reduction in wildlife-vehicle collisions. 	<ul style="list-style-type: none"> Similar benefits to C-1, but the shared use path alignment may provide better connections to public lands. Greater separation of the path from the road (around the kettle ponds) improves non-motorist safety and comfort. Steeper side slopes in sensitive environmental areas require guardrail, which presents a roadside hazard. Wildlife crossing opportunities are improved, providing greater potential for reduction in wildlife-vehicle collisions. 	<ul style="list-style-type: none"> Same shared use path benefits as C-2 and same considerations for steeper side slopes. However, more frequent and desirable wildlife crossing options are provided, which have the potential to further reduce wildlife-vehicle collisions compared to C-2.
SUBTOTAL <i>(out of 10)</i>	6	7	8



SCREENING CRITERION 2: ECOLOGICAL ENVIRONMENT



US 93 crosses several **wetlands**, **streams**, **irrigation** systems, other surface waters, and their associated **floodplains** throughout the Ninepipe segment. The most prominent water resources include Ninepipe Reservoir, Kettle Pond 1, Kettle Pond 2, and Crow Creek. Screening Criterion 2 considered the ability of each option to support hydraulic conveyance and connectivity and to **minimize impacts** to wetlands, water bodies, and floodplains.

C-1: SEIS Preferred

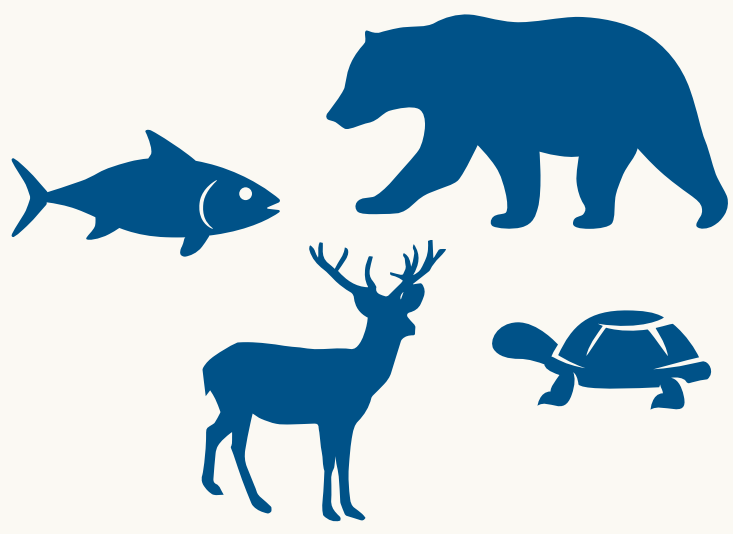
C-2: Enlarged Crossings

C-3: Wildlife Overpass

	C-1: SEIS Preferred	C-2: Enlarged Crossings	C-3: Wildlife Overpass
	<p>Crow Creek: 120-foot and 150-foot bridges with 10-12 feet of clearance</p> <p>Kettle Pond 2: (2) 60-foot bridges with 10-12 feet of clearance and (2) 4x6-foot culverts</p> <p>Kettle Pond 1: (2) 60-foot bridges with 10-12 feet of clearance and (2) 4x6-foot culverts</p> <p>Ninepipe Reservoir: 660-foot bridge with 10-12 feet of clearance, (2) 12x22-foot culverts, and (2) 10x12-foot culverts</p>	<p>Crow Creek: 500-foot bridge with 15 feet of clearance</p> <p>Kettle Pond 2: 800-foot bridge with 15 feet of clearance</p> <p>Kettle Pond 1: 800-foot bridge with 15 feet of clearance</p> <p>Ninepipe Reservoir: 660-foot bridge with 15 feet of clearance, (2) 12x22-foot culverts, and (2) 10x12-foot culverts</p>	<p>Crow Creek: 500-foot bridge with 15 feet of clearance</p> <p>Kettle Pond 2: 110-foot bridge with 10-12 feet of clearance, (2) 4x6-foot culverts</p> <p>Kettle Pond 1: 110-foot bridge with 10-12 feet of clearance, (2) 4x6-foot culverts</p> <p>Post A Canal: Wildlife Overpass</p> <p>Ninepipe Reservoir: 300-foot bridge with 15 feet of clearance, (2) 12x22-foot culverts, and (2) 10x12-foot culverts</p>
ECOLOGICAL ENVIRONMENT	<ul style="list-style-type: none"> All structures improve connectivity and conveyance capacity but kettle pond structures may be too small for adequate hydraulic performance. Greatest wetland impacts and least potential for wetland reconnection at crossing locations. 100% span of Ninepipe Reservoir and 42% span of Crow Creek floodplains. Less risk of adverse stream or water quality impacts with proposed structures. 	<ul style="list-style-type: none"> Larger, multi-span bridges have a higher probability of in-stream piers. Kettle pond connectivity full restored. Fewest wetland impacts overall but higher probability of short-term impacts during construction due to larger structures. 100% span of Ninepipe Reservoir and 78% span of Crow Creek floodplains. Higher risk of adverse stream or water quality impacts. 	<ul style="list-style-type: none"> Structures designed to meet minimum hydraulic requirements. More wetland impacts than C-2, but less than C-1. Smaller structures at kettle ponds do not restore full connectivity but there is opportunity to reconnect wetlands at Ninepipe Reservoir and Crow Creek. Fewer bridge spans required, reduces probability of in-stream piers. 100% span of Ninepipe Reservoir and 78% span of Crow Creek floodplains. Lower risk of adverse stream or water quality impacts.
SUBTOTAL (out of 15)	7	12	10



SCREENING CRITERION 3: FISH AND WILDLIFE



The US 93 Ninepipe corridor provides **habitat** for numerous wildlife species including a variety of fish, turtles, birds, deer, various small to large mammals, and grizzly bears which are federally listed as Threatened. Screening Criterion 3 considered the ability of each option to accommodate **safe passage** of aquatic and terrestrial species, **reduce wildlife mortality**, provide habitat connectivity, and support **federally listed species**.

C-1: SEIS Preferred

C-2: Enlarged Crossings

C-3: Wildlife Overpass

<p>FISH AND WILDLIFE</p> <ul style="list-style-type: none"> • Improvement to passability at hydraulic crossings. • Potential risk of fish mortality due to in-stream construction. • Wider footprint across waterbodies from shared use path. • Crossings may not be sized appropriately (low clearance, small openings in some locations) for use by larger mammals, especially grizzly bears. Some reduction in wildlife mortality anticipated. • Permanent habitat impacts due to increased roadway width and shared use path. 	<ul style="list-style-type: none"> • Longer structures best restore the hydrologic regime, but at the expense of potential in-stream construction and extensive placement of fill to raise road grade for taller structures. • Shared use path around kettle ponds avoids aquatic habitat. Larger structures provide greater ability to restore habitat connectivity. • Reduction in wildlife mortality anticipated. Larger crossings provide most attractive grizzly bear crossings and ability to connect habitat. 	<ul style="list-style-type: none"> • Similar hydrologic connectivity to C-2 but potentially less disruption to species in kettle ponds due to smaller structures. • Most crossing opportunities, overpass is most attractive to large mammals and grizzly bears. Crossings strategically sized to serve the needs of wildlife anticipated to use each crossing. • Greatest potential for habitat connectivity and reduced wildlife mortality. Smaller kettle pond structures provide less aquatic habitat connectivity but assumed to be adequate for anticipated use. 	
<p>SUBTOTAL <i>(out of 20)</i></p>	<p>9</p>	<p>14</p>	<p>18</p>



SCREENING CRITERION 4: HUMAN ENVIRONMENT



The US 93 Ninepipe segment traverses a primarily rural area dominated by low-density **residential**, **cultural**, and **agricultural** uses, although many **public lands** (Ninepipe National Wildlife Refuge, multiple Wildlife Management Areas, Waterfowl Production Areas) and some highway/tourist-oriented **commercial** properties are also located in the corridor. Screening Criterion 4 considered the ability of each option to **minimize impacts** to cultural and recreational resources, visual characteristics of the corridor, and **adjacent properties**.

C-1: SEIS Preferred

C-2: Enlarged Crossings

C-3: Wildlife Overpass

<p style="writing-mode: vertical-rl; transform: rotate(180deg);">HUMAN ENVIRONMENT</p>	<ul style="list-style-type: none"> • Potential impacts to the Ninepipe Cultural Property and potential impacts to public lands, moderately offset by enhancements to wildlife and wetland connectivity, which are culturally valued. • Temporary visual impacts during construction and permanent impacts to view shed due to roadway grade raise and wildlife fencing. • One directly impacted building and various access impacts. • Approximately 31.6 acres of right-of-way would need to be acquired. 	<ul style="list-style-type: none"> • Potential impacts to the Ninepipe Cultural Property and potential impacts to public lands and historic stagecoach route, substantially offset by enhancements to wildlife and wetland connectivity, which are culturally valued. • Similar temporary and permanent view shed impacts to C-1, except greatest raise in roadway grade required of all options. • One indirectly impacted building and various access impacts. • Approximately 34.7 acres of right-of-way would need to be acquired. 	<ul style="list-style-type: none"> • Similar impacts to Ninepipe Cultural Property, historic stagecoach route, and public lands as C-2, substantially offset by culturally valued wildlife and wetland connectivity improvements. • Temporary visual impacts during construction and permanent impacts to view shed due to roadway grade raise, wildlife fencing, and overpass structure. • One indirectly impacted building and various access impacts. • Approximately 35.7 acres of right-of-way would need to be acquired.
<p>SUBTOTAL <i>(out of 15)</i></p>	<p>7</p>	<p>8</p>	<p>8</p>



SCREENING CRITERION 5: CONSTRUCTABILITY



Improvements to US 93 within the Ninepipe segment will need to consider **geotechnical** and general **construction feasibility**, **impacts to the traveling public** during construction, as well as **regulatory construction requirements**. Screening Criterion 5 considered multiple geotechnical factors along with the construction feasibility, impacts, and requirements associated with each option.

C-1: SEIS Preferred

C-2: Enlarged Crossings

C-3: Wildlife Overpass

	<p>Crow Creek: 120-foot and 150-foot bridges with 10-12 feet of clearance</p> <p>Kettle Pond 2: (2) 60-foot bridges with 10-12 feet of clearance and (2) 4x6-foot culverts</p> <p>Kettle Pond 1: (2) 60-foot bridges with 10-12 feet of clearance and (2) 4x6-foot culverts</p> <p>Ninepipe Reservoir: 660-foot bridge with 10-12 feet of clearance, (2) 12x22-foot culverts, and (2) 10x12-foot culverts</p>	<p>Crow Creek: 500-foot bridge with 15 feet of clearance</p> <p>Kettle Pond 2: 800-foot bridge with 15 feet of clearance</p> <p>Kettle Pond 1: 800-foot bridge with 15 feet of clearance</p> <p>Ninepipe Reservoir: 660-foot bridge with 15 feet of clearance, (2) 12x22-foot culverts, and (2) 10x12-foot culverts</p>	<p>Crow Creek: 500-foot bridge with 15 feet of clearance</p> <p>Kettle Pond 2: 110-foot bridge with 10-12 feet of clearance, (2) 4x6-foot culverts</p> <p>Kettle Pond 1: 110-foot bridge with 10-12 feet of clearance, (2) 4x6-foot culverts</p> <p>Post A Canal: Wildlife Overpass</p> <p>Ninepipe Reservoir: 300-foot bridge with 15 feet of clearance, (2) 12x22-foot culverts, and (2) 10x12-foot culverts</p>
<p>CONSTRUCTABILITY</p>	<ul style="list-style-type: none"> Moderate geotechnical and constructability challenges at the Ninepipe Reservoir and Crow Creek. Travel could likely be maintained on routes adjacent to US 93 during construction. Some travel delays are expected due to reduced speeds in work zones. Permitting, additional environmental documentation, and wetland mitigation would be required for construction. 	<ul style="list-style-type: none"> Most geotechnical and constructability challenges due to long structures and steepened fill slopes. Greatest impacts during construction due to long structures. Adjacent detours may be required around kettle ponds and travel delays are expected due to reduced travel speeds in work zones. Permitting and environmental documentation would be required, but wetland mitigation needs would be less compared to C-1. 	<ul style="list-style-type: none"> Moderate geotechnical and constructability challenges due to steep slopes and structures at Ninepipe Reservoir, kettle ponds, and Crow Creek. Moderate construction impacts, with travel likely maintained on routes adjacent to US 93. Detours may be required around kettle ponds and travel delays are expected due to reduced travel speeds in work zones. Permitting and environmental documentation would be required, but wetland mitigation needs would be less compared to C-1.
<p>SUBTOTAL (out of 20)</p>	<p>12</p>	<p>9</p>	<p>12</p>



SCREENING CRITERION 6: COST



Cost is an important component of the feasibility evaluation for improvements within the Ninepipe segment. Funding may come from a variety of sources including federal, state, or local sources. Screening Criterion 6 considered the **cost of improvements**, **maintenance** needs and costs, **benefit-cost ratio**, general **cost effectiveness**, and relative **fundability** of each option.

C-1: SEIS Preferred

C-2: Enlarged Crossings

C-3: Wildlife Overpass

	<p>Crow Creek: 120-foot and 150-foot bridges with 10-12 feet of clearance</p> <p>Kettle Pond 2: (2) 60-foot bridges with 10-12 feet of clearance and (2) 4x6-foot culverts</p> <p>Kettle Pond 1: (2) 60-foot bridges with 10-12 feet of clearance and (2) 4x6-foot culverts</p> <p>Ninepipe Reservoir: 660-foot bridge with 10-12 feet of clearance, (2) 12x22-foot culverts, and (2) 10x12-foot culverts</p>	<p>Crow Creek: 500-foot bridge with 15 feet of clearance</p> <p>Kettle Pond 2: 800-foot bridge with 15 feet of clearance</p> <p>Kettle Pond 1: 800-foot bridge with 15 feet of clearance</p> <p>Ninepipe Reservoir: 660-foot bridge with 15 feet of clearance, (2) 12x22-foot culverts, and (2) 10x12-foot culverts</p>	<p>Crow Creek: 500-foot bridge with 15 feet of clearance</p> <p>Kettle Pond 2: 110-foot bridge with 10-12 feet of clearance, (2) 4x6-foot culverts</p> <p>Kettle Pond 1: 110-foot bridge with 10-12 feet of clearance, (2) 4x6-foot culverts</p> <p>Post A Canal: Wildlife Overpass</p> <p>Ninepipe Reservoir: 300-foot bridge with 15 feet of clearance, (2) 12x22-foot culverts, and (2) 10x12-foot culverts</p>
COST	<p>Estimated Cost (2022\$): \$90.2M</p> <ul style="list-style-type: none"> • Lower capital cost compared to C-2, but slightly higher than C-3. • Maintenance would be needed for the new shared use path and wildlife crossing structures. • Although similar in cost to C-3, this option provides fewer benefits and more impacts. • Somewhat favorable for funding, but low potential for funding partnerships. 	<p>Estimated Cost (2022\$): \$138.0M</p> <ul style="list-style-type: none"> • Highest capital cost (1.5 times the cost of C-3) with moderate impacts and moderate environmental benefits. • Slightly more maintenance required for the shared use path and wildlife crossing structures due to increased length. • Low likelihood of funding due to the estimated cost outweighing anticipated benefits. 	<p>Estimated Cost (2022\$): \$86.2M</p> <ul style="list-style-type: none"> • Lowest capital cost with greatest wildlife accommodation benefits, moderate environmental benefits, and moderate environmental impacts. • Benefit to cost ratio is favorable for funding and there is a potential opportunity to partner with Montana Fish, Wildlife & Parks (MFWP) for the wildlife overpass. • Maintenance required for the shared use path and structures (smaller, comparatively). The overpass requires minimal maintenance and the responsibility could be shared with MFWP.
SUBTOTAL (out of 20)	11	7	14



SCREENING RESULTS SUMMARY

Option C-3 received the highest overall score (70 out of 100 points) and also scored the highest or tied for the highest score in all screening categories except ecological environment. Options C-1 and C-2 scored similarly (52 and 57 points out of 100, respectively) with C-2 scoring slightly higher due to superior operational, ecological, and fish and wildlife elements.

Based on this evaluation, Option C-3 was identified as the preferred option to advance for future project development.

Screening Criteria		Sub-Criteria		Total Possible Points	C-1: SEIS	C-2 Enlarged Crossings	C-3: Wildlife Overpass
1	Transportation	1a.	Operations	5	3	4	4
		1b.	Safety	5	3	3	4
Transportation Subtotal				10	6	7	8
2	Ecological Environment	2a.	Hydraulic Performance	5	2	4	3
		2b.	Wetlands	5	2	4	3
		2c.	Surface Water Resources	5	3	4	4
Ecological Environment Subtotal				15	7	12	10
3	Fish and Wildlife	3a.	Aquatic Accommodations	5	3	3	4
		3b.	Terrestrial Accommodations	5	2	4	5
		3c.	Habitat	5	2	3	4
		3d.	Threatened and Endangered Species	5	2	4	5
Fish and Wildlife Subtotal				20	9	14	18
4	Human Environment	4a.	Cultural and Recreational Resources	5	3	4	4
		4b.	Visual Quality	5	3	2	2
		4c.	Adjacent Properties	5	1	2	2
Human Environment Subtotal				15	7	8	8
5	Constructability	5a.	Geotechnical Considerations	5	4	2	3
		5b.	Construction Feasibility	5	3	2	3
		5c.	Construction Impacts	5	3	2	3
		5d.	Construction Requirements	5	2	3	3
Constructability Subtotal				20	12	9	12
6	Cost	6a.	Cost of Improvements	5	3	1	3
		6b.	Maintenance Needs/Cost	5	3	2	3
		6c.	Cost-Effectiveness	5	2	2	4
		6d.	Fundability	5	3	2	4
Cost Subtotal				20	11	7	14
Total Score				100	52	57	70

