

**Table 1**  
**Sterling Highway MP 45 to 60**  
**Facts Summary**

**Purpose and Need Criteria**

Sterling Highway MP 45 to 60 Alternatives		→	NO BUILD	KENAI RIVER WALL ALT.	KENAI RIVER ALT.	COOPER CREEK ALT.	RUSSIAN RIVER ALT.	“G” ALTS.	JUNEAU CREEK “F” ALTS.	JUNEAU CREEK ALTS.	
<b>PURPOSE AND NEED CRITERIA</b>	<b>Capacity &amp; Demand</b>	Percent of Alternative at LOS D or Worse (LOS is for summer or peak season) Source: Draft Traffic Analysis, HDR, 2003	100%	68%	68%	47%	41%	North Alt. 61% South Alt. 56%	Forest Alt. 29% Wild. Alt. 0%	Forest Alt. 40% Wild. Alt. 28%	
		Percent of Alternative at LOS E or Worse (LOS is for summer or peak season) Source: Draft Traffic Analysis, HDR, 2003	100%	14%	14%	0%	0%	0%	0%	0%	
	<b>Highway Characteristics</b>	Meets Current Design Standards for:	Lane Widths	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
			Shoulder Widths	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes
			Horizontal and Vertical Curvature	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes
			Maximum Grade	Yes	Yes	Yes	Yes	Yes	Yes	Forest Alt. No Wild. Alt. Yes	Forest Alt. No Wild. Alt. Yes
			Side Slopes/Recovery Area	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes
			Stopping Site Distance	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes
		Maximum Roadway Elevation	575 feet	575 feet	575 feet	700 feet	760 feet	830 feet	1,160 feet	1,180 feet	
		Other Aspects	Would not meet rural principal arterial standards.	Would meet rural principal arterial standards.	Would meet rural principal arterial standards.	Would meet rural principal arterial standards.	Would meet rural principal arterial standards.	Would meet rural principal arterial standards.	Would meet rural principal arterial standards.	Would meet rural principal arterial standards.	
	<b>System Linkage</b>	Upgrades to Current Standards	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
		Provides Consistency with National Highway System Designation	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	

**Physical Environment Criteria**

Sterling Highway MP 45 to 60 Alternatives		→	NO BUILD	KENAI RIVER WALL ALT.	KENAI RIVER ALT.	COOPER CREEK ALT.	RUSSIAN RIVER ALT.	“G” ALTS.	JUNEAU CREEK “F” ALTS.	JUNEAU CREEK ALTS.	
<b>PHYSICAL ENVIRONMENT CRITERIA</b>	<b>Natural Resource Impacts from Construction</b>	Kenai River	Proximity to River	<ul style="list-style-type: none"> <li>Adjacent to Kenai River</li> <li>2 existing crossings of Kenai River.</li> </ul>	<ul style="list-style-type: none"> <li>Adjacent to Kenai River.</li> <li>2 crossings of Kenai River.</li> </ul>	<ul style="list-style-type: none"> <li>Adjacent to Kenai River.</li> <li>6 crossings of Kenai River.</li> </ul>	<ul style="list-style-type: none"> <li>3.5 miles of alternative would be located away from Kenai River.</li> <li>Existing hwy (with 2 crossings of Kenai River) to become local access.</li> </ul>	<ul style="list-style-type: none"> <li>8 miles of alternative would be located away from Kenai River.</li> <li>Existing hwy (with 2 crossings of Kenai River) to become local access.</li> </ul>	<ul style="list-style-type: none"> <li>6 miles of alternative would be located away from Kenai River.</li> <li>Existing hwy (with 2 crossings of Kenai River) to become local access.</li> </ul>	<ul style="list-style-type: none"> <li>9 miles of alternative would be located away from Kenai River.</li> <li>Existing hwy (with 2 crossings of Kenai River) to become local access.</li> </ul>	<ul style="list-style-type: none"> <li>10 miles of alternative would be located away from Kenai River.</li> <li>Existing hwy (with 2 crossings of Kenai River) to become local access.</li> </ul>
			Number of <b>New</b> Crossings of Kenai River (that would require additional bridge piers)	0	0	4	0	1	1	0	0
			Amount of Alternative (in acres) and Length of Alternative (in miles) within Mapped, 100-Year Floodplain. Source: FEMA	N/A	30.0 acres (2.5 miles)	38.1 acres (3.2 miles)	29.2 acres (2.4 miles)	9.6 acres (0.8 mile)	24.9 acres (1.8 miles)	Forest Alt. 0.5 acre (0.03 mile) Wild. Alt 0	Forest Alt. 0.5 acre (0.03 mile) Wild. Alt. 0
	<b>Wetlands</b> (Only includes wetlands located within the footprint of each alternative) Source: Wetlands Evaluation Technical Memorandum, HDR, 2002.	Ponds	N/A	0.3 acre	0.3 acre	0.3 acre	0.7 acre	North Alt. 0.3 acre South Alt. 0.3 acre	Forest Alt. 0.3 acre Wild. Alt. 0.1 acre	Forest Alt. 0.3 acre Wild. Alt. 0.1 acre	
		Forested Wetlands	N/A	1.2 acres	2.0 acres	2.4 acres	5.1 acres	North Alt. 14.4 acres South Alt. 14.0 acres	Forest Alt. 17.4 acres Wild. Alt 16.9 acres	Forest Alt. 19.5 acres Wild. Alt. 19.0 acres	
		Scrub-Shrub Wetlands	N/A	1.1 acres	1.5 acres	1.9 acres	3.0 acres	North Alt. 8.2 acres South Alt 1.7 acres	Forest Alt. 10.9 acres Wild. Alt. 11.1 acres	Forest Alt. 15.5 acres Wild. Alt. 15.8 acres	
		Emergent Wetlands	N/A	0	0.1 acre	0	0	0	Forest & Wild. Alts. 4.1 acres	Forest & Wild. Alts. 1.6 acres	
		<b>Total Wetlands</b>	<b>N/A</b>	<b>2.6 acres</b>	<b>3.9 acres</b>	<b>4.6 acres</b>	<b>8.8 acres</b>	<b>North Alt. 22.9 acres</b> <b>South Alt. 16.0 acres</b>	<b>Forest Alt. 32.7 acres</b> <b>Wild. Alt. 32.2 acres</b>	<b>Forest Alt. 36.9 acres</b> <b>Wild. Alt. 36.5 acres</b>	
	Number of <b>New or Replaced</b> Crossings of Anadromous Fish Streams	Kenai River	0	2 replaced	2 replaced 4 new	2 replaced	1 replaced 1 new	1 new 1 replaced	0	0	
		Russian River	0	0	0	0	1 new	0	0	0	
		Juneau Creek	0	0	1 new	0	0	1 new	1 new	0	
		Bean Creek	0	0	0	0	0	1 new	0	0	
		Cooper Creek	0	1 replaced	0	1 new	1 new	0	0	0	

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PHYSICAL ENVIRONMENT CRITERIA	Natural Resource Impacts from Construction	Total Number of New or Replaced Crossings of Anadromous Fish Streams	0	3	7	3	4	4	1	0
	Vegetation Impacts (Includes vegetation located within the footprint of each alternative) (Includes wetlands) Source: Alaska Land Cover Mapping Project, USGS, 1999	Acres of Needle-Leaved Forest Directly Impacted by Alternative	N/A	65 acres	60 acres	90 acres	130 acres	North Alt. 60 acres South Alt. 55 acres	Forest Alt. 90 acres Wild Alt. 85 acres	Forest Alt. 95 acres Wild. Alt. 85 acres
		Acres of Broad-Leaved Forest Directly Impacted by Alternative	N/A	40 acres	40 acres	45 acres	40 acres	North & South Alts. 105 acres	Forest Alt. 105 acres Wild. Alt. 120 acres	Forest Alt. 115 acres Wild. Alt. 130 acres
		Acres of Scrub-Shrub Vegetation Directly Impacted by Alternative	N/A	50 acres	50 acres	50 acres	55 acres	North Alt. 50 acres South Alt. 45 acres	Forest & Wild Alts. 55 acres	Forest & Wild. Alts. 55 acres
		Acres of Herbaceous Vegetation Directly Impacted by Alternative	N/A	30 acres	30 acres	25 acres	20 acres	North & South Alts. 20 acres	Forest & Wild Alts. 15 acres	Forest Alt. 15 acres Wild. Alt. 10 acres
		Total Acres of Vegetation within Footprint	N/A	185 acres	180 acres	210 acres	245 acres	North Alt. 235 acres  South Alt 225 acres	Forest Alt. 265 acres  Wild. Alt. 270 acres	Forest & Wild. Alts. 280 acres
	Moose Habitat Source: Alaska Habitat Management Guides, ADF&G, 2001	Acres of General Moose Habitat Impacted	N/A	50 acres	50 acres	50 acres	60 acres	50 acres	50 acres	50 acres
		Acres of Rutting Habitat Directly Impacted	N/A	100 acres	80 acres	60 acres	140 acres	100 acres	100 acres	130 acres
		Acres of Rutting and Winter Habitat Directly Impacted	N/A	50 acres	60 acres	110 acres	50 acres	90 acres	90 acres	110 acres
		Total Moose Habitat Directly Impacted	N/A	200 acres	190 acres	220 acres	250 acres	240 acres	240 acres	290 acres
	Dall Sheep Habitat (None of the alternatives directly impact mapped Dall sheep habitat.) Source: Alaska Habitat Management Guides, ADF&G, 2000	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	Potential Lynx Habitat Directly Impacted by Alternative (includes all forested lands and scrub-shrub). (Forests and shrub thickets decrease exposure of lynx to predators and increase stalking cover needed for lynx to catch prey.) Sources: Alaska Land Cover Mapping Project, USGS, 1999 and HDR, 2003	N/A	155 acres	150 acres	185 acres	225 acres	North Alt. 215 acres  South Alt. 205 acres	Forest Alt. 250 acres  Wild. Alt. 255 acres	Forest Alt. 265 acres  Wild. Alt. 270 acres	
	Wolf Habitat Impacts (Wolves avoid areas of human activity so all build alternatives would likely impact wolf travel corridors.)	N/A	Potential impacts to travel corridors.	Potential impacts to travel corridors.	Potential impacts to travel corridors.	Potential impacts to travel corridors.	Potential impacts to travel corridors.	Potential impacts to travel corridors.	Potential impacts to travel corridors.	Potential impacts to travel corridors.
	Eagle Nests within 330 feet of Alternative Source: USFWS, 2000 (Updated survey data will be available Spring 2003)	2	2	2	1	1	1	1	1	1

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PHYSICAL ENVIRONMENT CRITERIA	Natural Resource Impacts from Construction	Eagle Nests within 660 feet of Alternative Source: USFWS, 2000 (Updated survey data will be available Spring 2003)		5	5	7	3	1	3	1	1
	Brown Bear Habitat (Impacts to brown bears from this project likely include interference with access to anadromous fish streams, habitat fragmentation, and disruption of travel corridors.)	Percent of Alternative within 2,000 meters of Anadromous Fish Streams. Source: IBBST, 2001.		N/A	100%	100%	100%	100%	North & South Alts. 100%	Forest and Wild. Alts. 100%	Forest and Wild. Alts. 100%
		Approximate Length of Alternative (in miles) that Deviates from Existing Highway (length of new road).		N/A	0	2 miles	3.5 miles	8 miles	6 miles	9 miles	10 miles
	Potential Brown Bear Travel Corridors Impacted by Alternative. Source: Schwartz 1997 and 1999		<ul style="list-style-type: none"> <li>▪ Kenai River corridor</li> </ul>	<ul style="list-style-type: none"> <li>▪ Kenai River corridor</li> </ul>	<ul style="list-style-type: none"> <li>▪ Kenai River corridor</li> </ul>	<ul style="list-style-type: none"> <li>▪ Kenai River corridor</li> <li>▪ Bench from Cooper Creek to Russian River</li> </ul>	<ul style="list-style-type: none"> <li>▪ Kenai River corridor</li> <li>▪ Bench from Cooper Creek to Russian River</li> </ul>	<ul style="list-style-type: none"> <li>▪ Kenai River corridor</li> <li>▪ Juneau Creek corridor</li> </ul>	<ul style="list-style-type: none"> <li>▪ Kenai River corridor</li> <li>▪ Juneau Creek corridor</li> </ul>	<ul style="list-style-type: none"> <li>▪ Kenai River corridor</li> <li>▪ Juneau Creek corridor</li> </ul>	
			Storm Water Impacts Best Management Practices would be employed during construction to minimize adverse impacts to storm water quality.		N/A	<ul style="list-style-type: none"> <li>▪ Temporary reductions in storm water quality due to construction.</li> <li>▪ Proximity of construction to the Kenai River may limit the ability to treat storm water.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Temporary reductions in storm water quality due to construction.</li> <li>▪ Proximity of construction to the Kenai River may limit the ability to treat storm water.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Temporary reductions in storm water quality due to construction.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Temporary reductions in storm water quality due to construction.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Temporary reductions in storm water quality due to construction.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Temporary reductions in storm water quality due to construction.</li> </ul>

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PHYSICAL ENVIRONMENT CRITERIA	Aesthetics		No impact	Substantial visual impacts from walls to users of: <ul style="list-style-type: none"> <li>North side of Kenai River</li> <li>South side of Kenai River</li> <li>Kenai River</li> <li>Local trails</li> </ul>	Four new bridges of the Kenai River would have visual impacts to users of: <ul style="list-style-type: none"> <li>North side of Kenai River</li> <li>South side of Kenai River</li> <li>Kenai River</li> <li>Local trails</li> </ul>	New bridge over Cooper Creek and new alignment would have visual impacts to users of: <ul style="list-style-type: none"> <li>North side of Kenai River</li> <li>South side of Kenai River</li> <li>Kenai River</li> <li>Cooper Creek</li> <li>Local trails</li> </ul>	New bridges over Cooper Creek, Russian River, and Kenai River and new alignment would have visual impacts to users of: <ul style="list-style-type: none"> <li>North side of Kenai River</li> <li>South side of Kenai River</li> <li>Kenai River</li> <li>Cooper Creek</li> <li>Russian River</li> <li>Local trails</li> </ul>	New bridges over Juneau Creek and the Kenai River and new alignment would have visual impacts to users of: <ul style="list-style-type: none"> <li>North side of the Kenai River</li> <li>South side of Kenai River</li> <li>Kenai River</li> <li>Local trails</li> </ul> <p>The North Alt hides a portion of the alternative from view, as it is located behind a ridge.</p>	New bridge over Juneau Creek and new alignment would have visual impacts to users of: <ul style="list-style-type: none"> <li>North side of the Kenai River</li> <li>South side of Kenai</li> <li>Local trails</li> </ul>	New bridge of Juneau Creek and new alignment would have visual impacts to users of: <ul style="list-style-type: none"> <li>North side of the Kenai River</li> <li>South side of Kenai</li> <li>Local trails</li> </ul>
	Noise		No impact	<ul style="list-style-type: none"> <li>Kenai River users and users north of river could perceive noise reflected off walls.</li> </ul>	<ul style="list-style-type: none"> <li>Increased noise at new bridge locations on Kenai River.</li> </ul>	<ul style="list-style-type: none"> <li>Increased noise to adjacent property owners on the south side of the Kenai River.</li> </ul>	<ul style="list-style-type: none"> <li>Increased noise to adjacent property owners on south side of Kenai River.</li> <li>Increased noise to users of the Russian River and its facilities.</li> </ul>	<ul style="list-style-type: none"> <li>Increased noise to adjacent property owners on north side of Kenai River.</li> <li>Noise impacts from North alternative would be reduced as this alt is located behind a ridge.</li> </ul>	<ul style="list-style-type: none"> <li>Decreased noise in Cooper Landing</li> </ul>	<ul style="list-style-type: none"> <li>Decreased noise in Cooper Landing</li> </ul>
	Natural Resource Impacts from Operation	Storm Water Impacts (Existing highway operates below current storm water treatment standards. For build alternatives, the new sections would be constructed to current standards. New impervious surfaces increase runoff.)	No change	<ul style="list-style-type: none"> <li>Highway would be upgraded in terms of storm water treatment but its proximity to the Kenai River may limit storm water improvements.</li> </ul>	<ul style="list-style-type: none"> <li>Highway would be upgraded in terms of storm water treatment but its proximity to the Kenai River may limit storm water improvements.</li> <li>Approx. 2 miles of new impervious surface.</li> </ul>	<ul style="list-style-type: none"> <li>Approx. 3.5 miles of new impervious surface.</li> </ul>	<ul style="list-style-type: none"> <li>Approx. 8 miles of new impervious surface.</li> </ul>	<ul style="list-style-type: none"> <li>Approx. 6 miles of new impervious surface.</li> </ul>	<ul style="list-style-type: none"> <li>Approx. 9 miles of new impervious surface.</li> </ul>	<ul style="list-style-type: none"> <li>Approx. 10 miles of new impervious surface.</li> </ul>

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PHYSICAL ENVIRONMENT CRITERIA	Natural Resource Impacts from Operation	Wildlife/Vehicle Collisions	<ul style="list-style-type: none"> <li>No changes. Wildlife/vehicle collisions would continue on existing hwy. Situation has recently been improved by additional vegetation clearing.</li> </ul>	<ul style="list-style-type: none"> <li>Increased visibility would reduce occurrence of wildlife/vehicle collisions.</li> </ul>	<ul style="list-style-type: none"> <li>Increased visibility would reduce occurrence of wildlife/vehicle collisions.</li> </ul>	<ul style="list-style-type: none"> <li>New sections of alignment would increase the opportunity for wildlife/vehicle collisions.</li> <li>No changes on existing section.</li> </ul>	<ul style="list-style-type: none"> <li>New sections of alignment would increase the opportunity for wildlife/vehicle collisions.</li> <li>No changes on existing section.</li> </ul>	<ul style="list-style-type: none"> <li>New sections of alignment would increase the opportunity for wildlife/vehicle collisions.</li> <li>No changes on existing section.</li> </ul>	<ul style="list-style-type: none"> <li>New sections of alignment would increase the opportunity for wildlife/vehicle collisions.</li> <li>No changes on existing section.</li> </ul>	<ul style="list-style-type: none"> <li>New sections of alignment would increase the opportunity for wildlife/vehicle collisions.</li> <li>No changes on existing section.</li> </ul>

**Social Environment Criteria**

Sterling Highway MP 45 to 60 Alternatives		→	NO BUILD	KENAI RIVER WALL ALT.	KENAI RIVER ALT.	COOPER CREEK ALT.	RUSSIAN RIVER ALT.	“G” ALTS.	JUNEAU CREEK “F” ALTS.	JUNEAU CREEK ALTS.
<b>SOCIAL ENVIRONMENT CRITERIA</b>	<b>Cultural and Historical Properties</b>	Historical Structures Potentially Adversely Impacted (Appendix A)	N/A	▪ Riddiford Schoolhouse	▪ Riddiford Schoolhouse	0	0	0	0	0
		<b>Total Known Historical Properties Adversely Impacted</b>	N/A	<b>1</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
		Archaeological Districts and Interpretive Sites Potentially Adversely Impacted *Determination yet to be made	N/A	▪ Beginnings ▪ Footprints	▪ Beginnings ▪ Footprints	▪ Beginnings ▪ Footprints	▪ Squilantnu Arch Dist*	▪ Beginnings ▪ Footprints	0	0
		<b>Total Known Archaeological Properties Adversely Impacted</b>	N/A	<b>19</b>	<b>20</b>	<b>16</b>	<b>Unknown but potentially high</b>	<b>17</b>	<b>Forest Alt 6 Wild. Alt 7</b>	<b>Forest Alt. 5 Wild Alt. 6</b>
	<b>Trails Impacted</b>		No impact	No impact	No impact	▪ Stetson Creek Trail ▪ Shakleford Creek Trail	▪ Russian Lakes Trail ▪ Russian River Angler Trail ▪ Shakleford Creek Trail	▪ Bean Creek Trail ▪ Art Anderson Gulch Trail	▪ Bean Creek Trail ▪ Resurrection Pass Trail ▪ Juneau Bench Trails ▪ Art Anderson Gulch Trail	▪ Resurrection Pass Trail ▪ Juneau Bench Trails ▪ Art Anderson Gulch Trail
	<b>Recreational Properties</b>	Amount (in acres) of Alternative Located in KRSMA. Source: DNR (Appendix B)	N/A	4.5 acres	6 acres	4.2 acres	5 acres	North & South Alts. 5.5 acres	Forest & Wild. Alts. 3.5 acres	Forest and Wild. Alts. 3.5 acres
		Amount (in acres) of Alternative Located in Proposed Additions to KRSMA	N/A	18 acres	25.6 acres	21.1 acres	11.9 acres	North Alt. 30 acres South Alt. 31 acres	Forest & Wild. Alts. 11.7 acres	Forest & Wild. Alts. 11.7 acres
		Boat Launches Impacted	No impact	▪ Cooper Landing	▪ Cooper Landing	No impact	No impact	No impact	Forest Alt. ▪ Sportsman’s Landing	Forest Alt. ▪ Sportsman’s Landing

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SOCIAL ENVIRONMENT CRITERIA	Recreational Properties	Other Recreation Areas Impacted	No impact	<ul style="list-style-type: none"> <li>KPB Recreation land</li> <li>USFS Kenai River Recreation Area</li> </ul>	<ul style="list-style-type: none"> <li>KPB Recreation land</li> <li>USFS Kenai River Recreation Area</li> </ul>	<ul style="list-style-type: none"> <li>KPB Recreation land</li> <li>USFS Kenai River Recreation Area</li> <li>State Unit 394B</li> </ul>	<ul style="list-style-type: none"> <li>KPB Recreation land</li> <li>State Unit 394B</li> <li>USFS Lower Russian Lake Recreation Area</li> </ul>	<ul style="list-style-type: none"> <li>KPB Recreation land</li> <li>State Unit 394B</li> <li>USFS Kenai River Recreation Area</li> </ul>	No impact	<ul style="list-style-type: none"> <li>USFS Juneau Falls Recreation Area</li> </ul>	
		Campgrounds Impacted	No impact	<ul style="list-style-type: none"> <li>Cooper Creek Campground</li> </ul>	<ul style="list-style-type: none"> <li>Cooper Creek Campground</li> </ul>	<ul style="list-style-type: none"> <li>Cooper Creek Campground</li> </ul>	<ul style="list-style-type: none"> <li>Cooper Creek Campground</li> <li>Russian River Campground</li> </ul>	No impact	No impact	No impact	
		Impacts to Kenai National Wildlife Refuge (KNWR) Preliminary engineering indicates that improvements to the existing highway from MP 55 to MP 58 would be contained within the existing Sterling Highway ROW and would not impact the KNWR. Numbers presented here only reflect direct impacts (amount of KNWR land built upon by each alternative). (Appendix C) Source: USFWS	No impact	No impact	No impact	No impact	No impact	<ul style="list-style-type: none"> <li>Impacts to approx. 2 miles (25 acres) of KNWR</li> </ul>	No impact	Forest Alt. <ul style="list-style-type: none"> <li>Impacts to at least 0.3 mile (2 acres) of KNWR. Additional impacts are likely.</li> </ul> Wild. Alt. <ul style="list-style-type: none"> <li>Impacts to approx. 0.7 mile (16 acres) of KNWR</li> </ul>	Forest Alt. <ul style="list-style-type: none"> <li>Impacts to at least 0.3 mile (2 acres) of KNWR. Additional impacts likely.</li> </ul> Wild. Alt. <ul style="list-style-type: none"> <li>Impacts to approx. 0.7 mile (16 acres) of KNWR</li> </ul>
		Potential Impacts to Recreation During Construction	N/A	Potential impacts during bridge construction to: <ul style="list-style-type: none"> <li>All recreation users</li> </ul>	Potential impacts during bridge construction to: <ul style="list-style-type: none"> <li>All recreation users</li> </ul>	Potential impacts during bridge construction to: <ul style="list-style-type: none"> <li>Kenai River users</li> <li>Cooper Creek users</li> </ul>	Potential impacts during bridge construction to: <ul style="list-style-type: none"> <li>Kenai River users</li> <li>Cooper Creek users</li> <li>Russian River users</li> </ul>	Potential impacts during construction to: <ul style="list-style-type: none"> <li>Kenai River users</li> <li>Bean Creek trail users</li> </ul>	Potential impacts during construction to: <ul style="list-style-type: none"> <li>Resurrection Pass Trail users</li> <li>Bean Creek Trail users</li> <li>Forest Alt would also impact users of Sportsman’s.</li> </ul>	Potential impacts during construction to: <ul style="list-style-type: none"> <li>Resurrection Pass Trail users</li> <li>Forest Alt would also have impact users of Sportsman’s.</li> </ul>	
	Private Property	Residential Parcels Impacted by Alternative	N/A	30	30	29	29	2	2	2	
		Commercial Parcels Impacted by Alternative	N/A	7	8	1	1	0	0	0	
		Vacant Parcels Impacted by Alternative	N/A	9	9	9	9	2	2	2	
		<b>Total Private Parcels Impacted</b> Source: KPB, 2002 (Appendix D)	N/A	<b>46</b>	<b>47</b>	<b>39</b>	<b>39</b>	<b>4</b>	<b>4</b>	<b>4</b>	



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SOCIAL ENVIRONMENT CRITERIA	Private Property	Relocations Source: HDR aerial photography and digital ortho-photo interpretation (Appendix D)	Residences Potentially Relocated	N/A	3	4	3	3	0	0	0
			Businesses Potentially Relocated	N/A	4	3	3	3	0	0	0
			<b>Total Known Potential Relocations</b>	N/A	<b>7</b>	<b>7</b>	<b>6</b>	<b>6</b>	<b>0</b>	<b>0</b>	<b>0</b>
	Local, Regional, State, and Federal Plans	Kenai River Comprehensive Management Plan (Appendix B)	Amount (in acres) of Alternative Located in KRSMA &/or Proposed Additions to KRSMA. Source: DNR, 2001	N/A	22.5 acres	31.6 acres	25.3 acres	16.9 acres	North Alt. 35.5 acres South Alt. 36.5 acres	Forest & Wild. Alts. 15.2 acres	Forest and Wild. Alts. 15.2 acres
		Cooper Landing Land Use Plan		N/A	No impact	No impact	No impact	No impact	North Alt. Minor impacts to planned subdivisions South Alt. Substantial impacts to one of two planned subdivisions	Forest & Wild Alts. Minor impacts to planned subdivisions	Forest & Wild Alts. Minor impacts to planned subdivisions
		Federal Plans (Appendix C)	Chugach National Forest Plan Source: USFS, 2002	No impact	Impacts to <ul style="list-style-type: none"> <li>▪ Major Transportation/ and Utility Systems land</li> <li>▪ Fish and Wildlife and Recreation land</li> </ul>	Impacts to <ul style="list-style-type: none"> <li>▪ Major Transportation / and Utility Systems land</li> <li>▪ Fish and Wildlife and Recreation land</li> </ul>	Impacts to <ul style="list-style-type: none"> <li>▪ Major Transportation/ and Utility Systems land</li> <li>▪ Fish and Wildlife and Recreation land</li> </ul>	Impacts to <ul style="list-style-type: none"> <li>▪ Fish and Wildlife and Recreation land</li> <li>▪ Recreation River land</li> <li>▪ Major Transportation / Utility Systems land</li> <li>▪ Inventoried Roadless Area</li> </ul>	Impacts to <ul style="list-style-type: none"> <li>▪ Major Transportation/ Utility Systems land</li> <li>▪ Fish and Wildlife and Recreation land</li> <li>▪ Fish and Wildlife Conservation land</li> <li>▪ Inventoried Roadless Area</li> </ul>	Impacts to <ul style="list-style-type: none"> <li>▪ Fish and Wildlife Conservation land</li> <li>▪ Fish and Wildlife and Recreation land</li> <li>▪ Backcountry land</li> <li>▪ Inventoried Roadless Area</li> </ul>	Impacts to <ul style="list-style-type: none"> <li>▪ Fish and Wildlife Conservation land</li> <li>▪ Fish and Wildlife and Recreation land</li> <li>▪ Backcountry land</li> <li>▪ Inventoried Roadless Area</li> </ul>

Sterling Highway MP 45 to 60 Alternatives		→		NO BUILD	KENAI RIVER WALL ALT.	KENAI RIVER ALT.	COOPER CREEK ALT.	RUSSIAN RIVER ALT.	“G” ALTS.	JUNEAU CREEK “F” ALTS.	JUNEAU CREEK ALTS.
	<b>Local, Regional, State, and Federal Plans</b>	(Appendix C) Federal Plans	Kenai National Wildlife Refuge (KNWR) Plan. KNWR land within the project area is designated as “Intensive Management” or “Wilderness”. The numbers presented in this table reflect only direct impacts (amount of KNWR land built upon by each alternative) Source: USFWS	No impact	No impact	No impact	No impact	▪ Impacts to approx. 2 miles (23 acres) of “Intensive Management” land	No impact	Forest Alt ▪ Impacts to at least 0.3 mile (2 acres) of “Intensive Management” land. Additional impacts to “Wilderness” lands are likely. Wild. Alt. ▪ Impacts to approx. 0.7 mile (16 acres) of “Wilderness”	Forest Alt. ▪ Impacts to at least 0.3 mile (2 acres) of “Intensive Management” land. Additional impacts to “Wilderness” lands are likely. Wild. Alt. ▪ Impacts to approx. 0.7 mile (16 acres) of “Wilderness”
<b>SOCIAL ENVIRONMENT CRITERIA</b>	<b>Economics</b> (Based on finding of an Origin-Destination analysis conducted in 2001, approximately 7% of all traffic through the study area stops for services within Cooper Landing.)			<ul style="list-style-type: none"> <li>▪ Traffic patterns would not change.</li> <li>▪ Increasing congestion could discourage stopping.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Traffic patterns would not change.</li> <li>▪ Limited or changed access to local businesses and residences.</li> <li>▪ Increasing traffic could discourage stopping.</li> <li>▪ Potential impacts to 46 private properties.</li> <li>▪ 7 homes or businesses potentially relocated</li> </ul>	<ul style="list-style-type: none"> <li>▪ Traffic patterns would not change.</li> <li>▪ Limited or changed access to local businesses and residences.</li> <li>▪ Increasing traffic could discourage stopping.</li> <li>▪ Potential impacts to 47 private properties.</li> <li>▪ 7 homes or businesses potentially relocated</li> </ul>	Businesses would be affected by: <ul style="list-style-type: none"> <li>▪ Traffic diverted around a portion of Cooper Landing.</li> <li>▪ Improved traffic conditions and improved access to local businesses may encourage traffic to stop in town.</li> <li>▪ Potential impacts to 39 private properties.</li> <li>▪ 6 homes or businesses potentially relocated</li> </ul>	Businesses would be affected by: <ul style="list-style-type: none"> <li>▪ Traffic diverted around a portion of Cooper Landing.</li> <li>▪ Access to local businesses would be improved.</li> <li>▪ Potential impacts to 39 private properties.</li> <li>▪ 6 homes or businesses potentially relocated</li> </ul>	Businesses would be affected by: <ul style="list-style-type: none"> <li>▪ Traffic diverted around a portion of Cooper Landing.</li> <li>▪ Access to local businesses would be improved.</li> <li>▪ Potential impacts to 4 private properties (no relocations).</li> </ul>	Businesses would be affected by: <ul style="list-style-type: none"> <li>▪ Traffic diverted around Cooper Landing.</li> <li>▪ Access to local businesses would be improved.</li> <li>▪ Potential impacts to 4 private properties (no relocations).</li> </ul>	Businesses would be affected by: <ul style="list-style-type: none"> <li>▪ Traffic diverted around Cooper Landing.</li> <li>▪ Access to local businesses would be improved.</li> <li>▪ Potential impacts to 4 private properties (no relocations).</li> </ul>
	<b>Subsistence</b>			No impact	Not available	Not available	Not available	Not available	Not available	Not available	Not available

**Transportation Criteria**

Sterling Highway MP 45 to 60 Alternatives		→	NO BUILD	KENAI RIVER WALL ALT.	KENAI RIVER ALT.	COOPER CREEK ALT.	RUSSIAN RIVER ALT.	“G” ALTS.	JUNEAU CREEK “F” ALTS.	JUNEAU CREEK ALTS.
<b>TRANSPORTATION CRITERIA</b>	<b>Vehicular Traffic Impacts during Construction and Operation</b>	<p>Construction (Seasonal restrictions on construction may apply to all build alternatives. In addition, it is likely construction would occur during off-peak seasons.)</p>	N/A	<ul style="list-style-type: none"> <li>Intermittent lane closures may be necessary.</li> <li>Complete closure of the highway may be necessary during wall construction.</li> </ul>	<ul style="list-style-type: none"> <li>Intermittent lane closures may be necessary.</li> <li>New bridge construction can occur with minor obstructions to traffic flow.</li> </ul>	<ul style="list-style-type: none"> <li>Intermittent lane closures may be necessary on portions of the alignment along the existing highway.</li> <li>Construction of new alignment can occur with minor obstructions to traffic flow.</li> </ul>	<ul style="list-style-type: none"> <li>Intermittent lane closures may be necessary on portions of the alignment along the existing highway.</li> <li>Construction of new alignment can occur with minor obstructions to traffic flow.</li> </ul>	<ul style="list-style-type: none"> <li>Intermittent lane closures may be necessary on portions of the alignment along the existing highway.</li> <li>Construction of new alignment can occur with minor obstructions to traffic flow.</li> </ul>	<ul style="list-style-type: none"> <li>Intermittent lane closures may be necessary on portions of the alignment along the existing highway.</li> <li>Construction of new alignment can occur with minor obstructions to traffic flow.</li> </ul>	<ul style="list-style-type: none"> <li>Intermittent lane closures may be necessary on portions of the alignment along the existing highway.</li> <li>Construction of new alignment can occur with minor obstructions to traffic flow.</li> </ul>
		<p>Operation Traffic operation of is summarized here by the percentage of each alternative that would operate at designated levels of service (LOS). The analysis was performed under 2025 volume traffic conditions. For all realignment alternatives, the existing highway would be used for local access and would experience LOS C. Source: Draft Traffic Analysis, HDR, 2003 (Appendix E)</p>	<ul style="list-style-type: none"> <li>100% LOS E</li> </ul>	<ul style="list-style-type: none"> <li>32 % LOS B</li> <li>54% LOS D</li> <li>14 % LOS E</li> </ul>	<ul style="list-style-type: none"> <li>32 % LOS B</li> <li>54% LOS D</li> <li>14 % LOS E</li> </ul>	<ul style="list-style-type: none"> <li>31% LOS B</li> <li>22% LOS C</li> <li>47% LOS D</li> </ul>	<ul style="list-style-type: none"> <li>31% LOS B</li> <li>28% LOS C</li> <li>41% LOS D</li> </ul>	<p>North Alt.</p> <ul style="list-style-type: none"> <li>31% LOS B</li> <li>8% LOS C</li> <li>61% LOS D</li> </ul> <p>South Alt.</p> <ul style="list-style-type: none"> <li>31% LOS B</li> <li>13% LOS C</li> <li>56% LOS D</li> </ul>	<p>Forest Alt.</p> <ul style="list-style-type: none"> <li>31% LOS B</li> <li>40% LOS C</li> <li>29% LOS D</li> </ul> <p>Wilderness Alt.</p> <ul style="list-style-type: none"> <li>32% LOS B</li> <li>68% LOS C</li> </ul>	<p>Forest Alt.</p> <ul style="list-style-type: none"> <li>30% LOS B</li> <li>30% LOS C</li> <li>40% LOS D</li> </ul> <p>Wilderness Alt.</p> <ul style="list-style-type: none"> <li>30% LOS B</li> <li>42% LOS C</li> <li>28% LOS D</li> </ul>
	<b>Freight Movement</b>	<ul style="list-style-type: none"> <li>No improvement to existing freight movements.</li> <li>As traffic volumes increase, adverse impacts to freight movement would occur.</li> </ul>	<ul style="list-style-type: none"> <li>Upgrades to highway (including passing lanes and straightening of curves) would improve freight movement through the area.</li> <li>As traffic volumes increase over time, freight movements would be adversely impacted.</li> </ul>	<ul style="list-style-type: none"> <li>Upgrades to highway (including passing lanes and straightening of curves) would improve freight movement through the area.</li> <li>As traffic volumes increase over time, freight movements would be adversely impacted.</li> </ul>	<ul style="list-style-type: none"> <li>Freight movements would be improved in area of new alignment.</li> </ul>	<ul style="list-style-type: none"> <li>Freight movements would be improved in area of new alignment.</li> </ul>	<ul style="list-style-type: none"> <li>Freight movements would be improved in area of new alignment.</li> </ul>	<ul style="list-style-type: none"> <li>Freight movements would be improved in area of new alignment.</li> </ul>	<ul style="list-style-type: none"> <li>Freight movements would be improved in area of new alignment.</li> </ul>	<ul style="list-style-type: none"> <li>Freight movements would be improved in area of new alignment.</li> </ul>

Sterling Highway MP 45 to 60 Alternatives		→	NO BUILD	KENAI RIVER WALL ALT.	KENAI RIVER ALT.	COOPER CREEK ALT.	RUSSIAN RIVER ALT.	“G” ALTS.	JUNEAU CREEK “F” ALTS.	JUNEAU CREEK ALTS.
TRANSPORTATION CRITERIA	Transportation System Impacts		No change	<ul style="list-style-type: none"> <li>▪ Same alignment through Cooper Landing.</li> <li>▪ LOS D or E for 68% of alternative.</li> <li>▪ Through and local traffic would not be separated.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Same alignment through Cooper Landing.</li> <li>▪ LOS D or E for 68% of alternative.</li> <li>▪ Through and local traffic would not be separated.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Partial realignment around Cooper Landing.</li> <li>▪ Traffic flow would improve significantly in the new sections of highway.</li> <li>▪ Separated through and local traffic.</li> <li>▪ Existing hwy would provide local access.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Realignment around Cooper Landing.</li> <li>▪ Traffic flow would improve significantly in the new sections of highway.</li> <li>▪ Separated through and local traffic.</li> <li>▪ Existing hwy would provide local access.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Partial realignment around Cooper Landing.</li> <li>▪ Traffic flow would improve significantly in the new sections of highway.</li> <li>▪ Separated through and local traffic.</li> <li>▪ Existing hwy would provide local access.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Realignment around Cooper Landing.</li> <li>▪ Traffic flow would improve significantly in new sections of highway.</li> <li>▪ Separated through and local traffic.</li> <li>▪ Existing hwy would provide local access.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Realignment around Cooper Landing.</li> <li>▪ Traffic flow would improve significantly in the new sections of highway.</li> <li>▪ Separated through and local traffic.</li> <li>▪ Existing hwy would provide local access.</li> </ul>

**Cost and Other Factors**

Sterling Highway MP 45 to 60 Alternatives		→	NO BUILD	KENAI RIVER WALL ALT.	KENAI RIVER ALT.	COOPER CREEK ALT.	RUSSIAN RIVER ALT.	“G” ALTS.	JUNEAU CREEK “F” ALTS.	JUNEAU CREEK ALTS.
<b>COST FACTORS</b>	<sup>a</sup> Reflects district-wide maintenance of \$2,350 per lane per mile. <sup>b</sup> Reflects 10% of construction costs over 50-year design life. <sup>c</sup> Reflects 25% of construction costs over 50-year design life.	Roadway Costs	N/A	\$33 million	\$32 million	\$33 million	\$39 million	\$36 million	\$38 million	\$40 million
		Bridge and Structure Costs	N/A	\$63 million	\$26 million	\$43 million	\$61 million	\$47 million	\$21 million	\$1 million
		Contingencies (25%)	N/A	\$24 million	\$15 million	\$19 million	\$25 million	\$21 million	\$15 million	\$10 million
		<b>Total New Construction Costs</b>	<b>N/A</b>	<b>\$120 million</b>	<b>\$73 million</b>	<b>\$95 million</b>	<b>\$124 million</b>	<b>\$104 million</b>	<b>\$74 million</b>	<b>\$51 million</b>
	Annual Maintenance Cost	Retaining Wall Annual Maintenance Costs	N/A	\$97,570 <sup>b</sup>	N/A	N/A	N/A	N/A	N/A	N/A
		MSE Wall Annual Maint. Costs	N/A	\$5,340 <sup>c</sup>	\$5,340 <sup>c</sup>	\$5,340 <sup>c</sup>	N/A	\$5,340 <sup>c</sup>	\$2,700 <sup>c</sup>	\$2,700 <sup>c</sup>
		Annual Bridge Maintenance	N/A	\$18,480 <sup>b</sup>	\$52,520 <sup>b</sup>	\$85,940 <sup>b</sup>	\$121,420 <sup>b</sup>	\$93,940 <sup>b</sup>	\$42,040 <sup>b</sup>	\$1,500 <sup>b</sup>
		Annual System Maintenance	\$63,000 <sup>a</sup>	\$83,700 <sup>a</sup>	\$87,700 <sup>a</sup>	\$94,200 <sup>a</sup>	\$112,300 <sup>a</sup>	\$100,800 <sup>a</sup>	\$109,300 <sup>a</sup>	\$116,300 <sup>a</sup>
		Total Maintenance Costs	\$63,000	\$205,090	\$145,560	\$185,480	\$234,000	\$200,080	\$154,040	\$120,500
<b>Life Cycle Costs (see Appendix F)</b>		<b>\$837,000</b>	<b>\$104 million</b>	<b>\$67 million</b>	<b>\$85 million</b>	<b>\$109 million</b>	<b>\$92 million</b>	<b>\$70 million</b>	<b>\$52 million</b>	
<b>OTHER FACTORS</b>	<b>Engineering Feasibility</b>		N/A	<b>Wall Stability and Construction</b> This alt. requires three major walls along a 1.1-mile section. The following items present feasibility problems with this alternative. <ul style="list-style-type: none"> <li>▪ No precedent for walls of this type and magnitude.</li> <li>▪ Seismic risk of catastrophic wall failure.</li> <li>▪ Construction and safety risks.</li> <li>▪ Wall stability risks to the Kenai River.</li> <li>▪ Costs</li> </ul>	N/A	<b>High Cut and Deep Fills near Cooper Creek</b> This alt. requires high fills and deep cuts in the bluff near Cooper Creek. Although a formal geotechnical survey of the area has not been conducted, preliminary geotechnical studies indicate the following potential problems: <ul style="list-style-type: none"> <li>▪ Highly erodible soils which can result in siltation and earth flows.</li> <li>▪ Potential for encountering significant groundwater.</li> <li>▪ Potential for siltation to reach Cooper Creek and the Kenai River.</li> </ul>	Preliminary concerns about the engineering feasibility of the cuts above the Russian River have been raised. Detailed information is not available at this time.	N/A	Concerns over the feasibility of the bridge over Juneau Creek Canyon have been raised in the past. With advancements in engineering and bridge design, this bridge is now considered feasible.	N/A

