Chapter 2 Existing Conditions of US 93

The purpose of this chapter is to portray the existing technical and environmental features along the existing US 93. The findings contained herein help inform the constraints and opportunities in developing alignment options.

US 93 is functionally classified as a rural principal arterial on the Non-Interstate National Highway System (NINHS) and is a major north/south highway providing a vital regional link between Idaho and Canada and between Missoula, Kalispell, and surrounding communities. Functional classification is a method by which roads and highways are classified according to the level of mobility and access they provide. A rural principal arterial network provides a high level of mobility at high speeds offering a link between interstates and other major highways. Highway functional classification is also used to establish guidelines for design and maintenance according to Federal and State guidelines. Roadway characteristics, projected conditions, and deficiencies are discussed below.

2.1 Existing Roadway Users and Traffic Volumes

Montana Highway 35 (MT 35) intersects US 93 near RP 59.0 at South Shore Road and is primarily used by local traffic, commercial trucks, and recreational vehicles. Secondary Route 354 (S 354) intersects US 93 east of the Flathead River Bridge and is primarily used by local traffic traveling within the downtown area, commuters who live off Kerr Dam Road, and commercial trucks, primarily those traveling back and forth to the dump. During the non-winter months, an increase in roadway users and traffic volumes is realized on US 93 and is primarily due to recreation and tourism in the area. MDT's Automatic Traffic Recorder (ATR) Station A-074 (the US 93 traffic recorder located closest to Polson, just south of MT 28) data suggests the months of July and August exhibit the highest peak traffic flows of 150.16% and 139.49 %, respectively, of average yearly traffic flow. The "weighted" average annual daily traffic for US 93 through the study area for 2009 was 9,884, which has decreased since a peak of 12,058 in 2004. In 2009, the percentage of truck traffic through the corridor reached 10.9 percent. Table 2.1 shows the most recent 10-year traffic volumes within the corridor study area.

Table 2.1 Average Annual Daily Traffic

No.	Length (miles)	Location	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
1	0.332	US 93, RP 58.5 (.5 mile S of MT 35)	9,080	9,510	9,280	9,910	10,210	10,780	10,780	10,760	10,230	9,740	9,600
2	0.953	US 93, RP 59.5 (.5 mile N of MT 35)	11,430	9,860	12,610	12,410	13,590	14,690	14,690	14,660	13,440	12,590	11,760
3	0.400	US 93, East of 8th Street East in Polson	12,670	14,400	11,850	11,870	12,920	13,760	13,760	13,730	13,030	10,940	11,290
4	2.766	US 93, between 5th East and 2nd East in Polson	10,580	13,950	11,150	11,500	12,240	12,900	12,900	12,870	12,550	10,440	10,600
5	0.226	US 93 (2nd Avenue), between Main & 1st Street East in Polson	10,150	10,970	10,570	10,890	11,570	12,190	12,190	12,170	11,120	8,790	8,140
6	1.266	US 93, either end of Flathead River Bridge in Polson	6,380	7,730	6,890	7,980	7,830	8,010	8,010	7,990	8,910	6,810	6,850
Weighted Average			9,862	11,638	10,397	10,809	11,424	12,058	12,058	12,586	11,766	9,943	9,884

Source: MDT Traffic and Data Collection Analysis

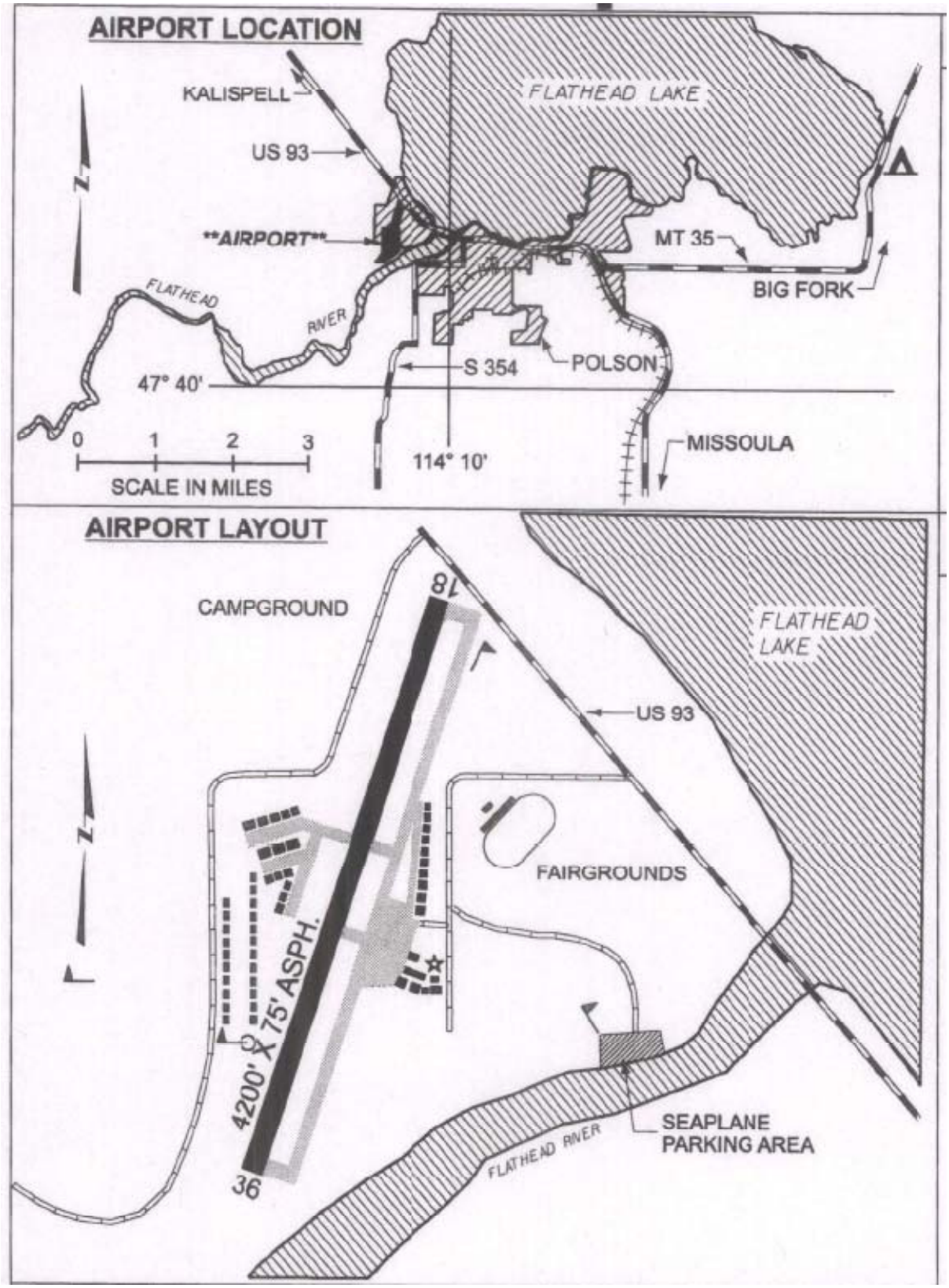
Figure 2-1 shows the locations of the MDT Traffic Count stations shown in the table above.

Figure 2-1 MDT Statewide Traffic Count Site Location Map

Right-of-Way and Jurisdictions

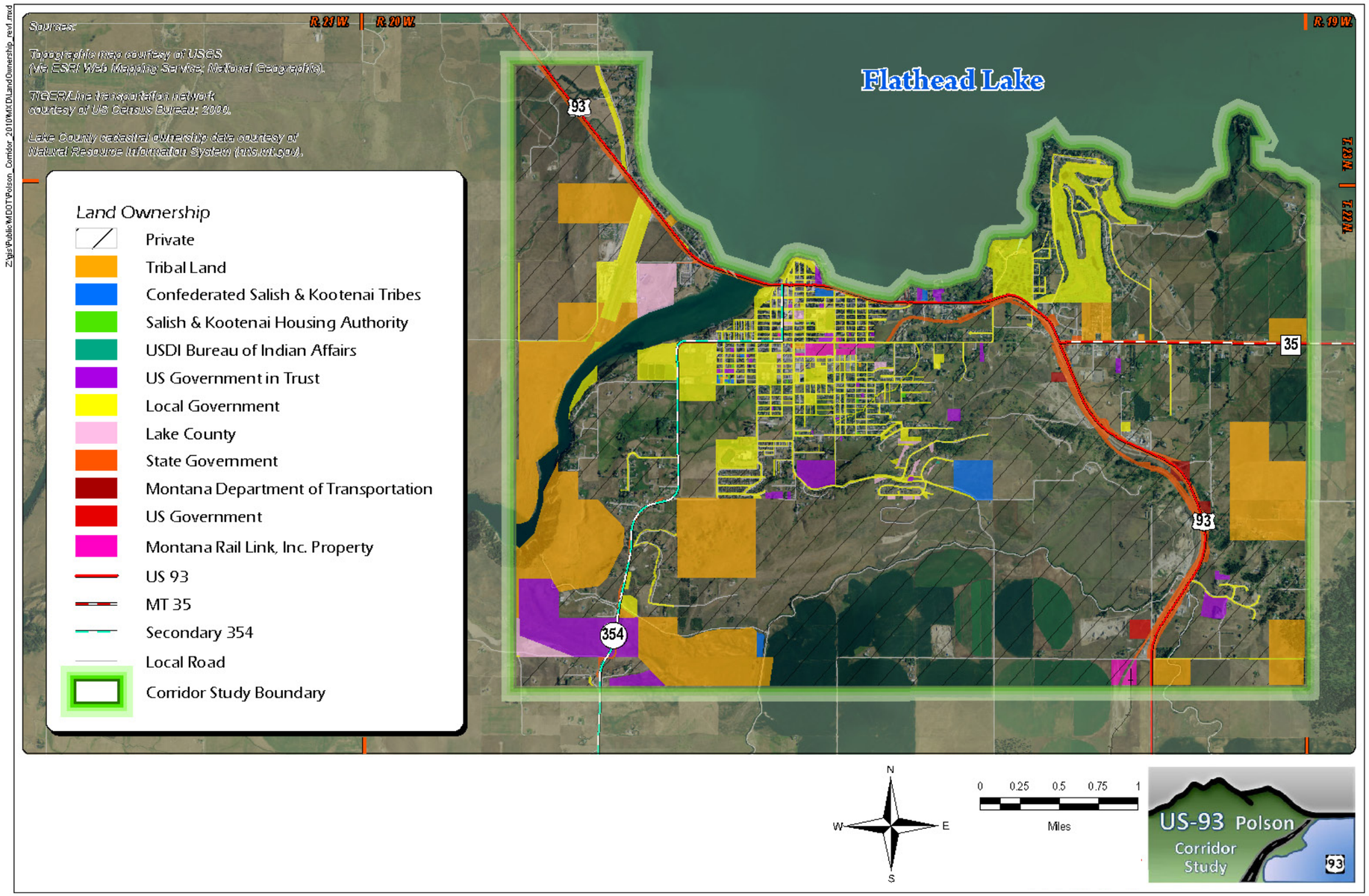
The existing US 93 corridor is located primarily along private property. The State of Montana maintains the right-of-way on each side of the highway. Three small sections of MDT land are within the study area boundary. Montana Rail Link (MRL) infrastructure and right-of-way is located within the corridor study area. MRL also has land ownership interspersed throughout the study area, primarily along 7th Avenue. The Polson Airport is located inside the study area boundary and west of the Flathead River and includes a seaplane landing area. The Federal Aviation Administration has jurisdiction of the Polson Airport. Figure 2-2 shows the location and layout of the Polson Airport. Appropriate coordination would need to occur if any improvement options were considered near the Polson Airport.

Figure 2-2 Location and Layout of Polson Airport



Proactive coordination with resource agencies is essential to ensure agency guidelines and requirements are considered as improvement options develop. Regulatory areas that will be considered and further addressed include, but are not limited to, wildlife habitat, threatened and endangered species, permitting, aquatic resources, air quality, cultural and historic resources, farmlands, and mapping considerations. Figure 2-3 shows the land ownership within the study area.

Figure 2-3 Land Ownership



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2.2 Physical Characteristics

At the south end of the corridor (RP 58.5), US 93 is a four-lane divided highway which transitions to a four-lane undivided highway with interspersed turning lanes. Just north of the junction of US 93 and MT 35, the four-lane segment of US 93 transitions to a two-lane roadway with interspersed turning lanes. The posted speed limit along the US 93 corridor varies from 25 miles per hour (mph) to 70 mph. Figure 2-4 shows the posted speed limits through the US 93 corridor.

Figure 2-4 Posted Speed Limits

US 93 enters the corridor study area at the southeastern section at RP 56.5 and traverses northward on primarily level terrain comprised of farm and agricultural lands. Continuing northward, US 93 curves slightly eastward crossing the Pablo Feeder Canal and around a bluff near RP 57.2, a location which many community members refer to as Polson Hill. US 93 continues to travel northwest to the southern bank of Flathead Lake, where it continues westward through the City of Polson. Once across the Flathead River, US 93 curves to the northwest exiting the corridor study area boundary at RP 63.0.

Work was recently completed on US 93 from Minesinger Trail to MT 35. The following reconstruction activities were completed:

- Construction of a 4-lane roadway to include two additional lanes
- Construction of an overlook of Flathead Lake from the top of Polson Hill
- Installation of one wildlife crossing structure
- Installation of two bike and pedestrian paths
    - *US 93/MT 35 junction east to Turtle Lake Road*
    - *Top of Polson Hill to ½ mile north of Caffrey Road*
- Installations of sidewalks along Haack Road and Anchor Way Frontage Road
- Installation of traffic signal at the junction of US 93 and MT 35
- Inclusion of two southbound, left-turn lanes and one northbound, right-turn lane
- Inclusion of turn bays at Walmart intersection, Frontage Road, and Ford/Caffrey Road intersection

2.3 Design Standards

Table 2.2 lists the design standards for rural and urban principal arterials according to MDT design criteria. The design speed for this corridor ranges from 45 mph to 70 mph. Although the segment of US 93 through the City of Polson is not classified as an urban principal arterial, MDT urban design standards will apply if improvement options are further developed from the study.

Table 2.2 Design Standards for US 93

Design Element			Design Criteria			
Design Controls	Functional Classification		Rural Principal Arterial		Urban Principal Arterial	
					2-Lane, Curbed	2-Lane, Uncurbed
	Design Forecast year		2030		2030	
	*Design Speed	Level	70 mph		40 - 45 mph	40 - 50 mph
		Rolling	60 mph			
	Level of Service		B		Desirable: B Minimum: C	
Roadway Elements	*Travel Lane Width		12'		12'	
	*Shoulder Width	Outside	Varies		Varies	
		Inside			N/A	
	Cross Slope	*Travel Lane	2%		2% Typical	2%
		Shoulder	2%		2% Typical	2%
	Median Width		Varies		N/A	
	TWLTL Width		N/A		16'	
Earth Cut Sections	Ditch	Inslope	6:1 (Width: 10')		N/A	Desirable: 6:1 Minimum: 4:1
		Width	10' Minimum		N/A	10' Minimum
		Slope	20:1 towards back slope		N/A	20:1 towards back slope
	Back Slope; Cut Depth at Slope Stake	0' - 5'	5:1		5:1	
		5' - 10'	4:1		Level/Rolling: 4:1	Mountainous: 3:1
		10' - 15'	3:1		Level/Rolling: 3:1	Mountainous: 2:1
		15' - 20'	2:1		Level/Rolling: 2:1	Mountainous: 1.5:1
		> 20'	1.5:1		1.5:1	
Earth Fill Slopes	Fill Height at Slope Stake	0' - 10'	6:1		6:1	6:1
		10' - 20'	4:1		4:1	4:1
		20' - 30'	3:1		3:1	3:1
		> 30'	2:1		2:1	2:1
Alignment Elements	DESIGN SPEED		60 mph	70 mph	40 mph	45 mph
	*Stopping Sight Distance		570'	730'	305'	360'
	Passing Sight Distance		2135'	2480'	N/A	N/A
	*Minimum Radius		1200'	1810'	533'	711'
	*Superelevation Rate		e_{max} = 8.0%		e_{max} = 4.0%	
	*Vertical Curvature (K-value)	Crest	151	247	44	61
		Sag	136	181	64	79
	*Maximum Grade	Level	3%		6%	6%
		Rolling	4%		7%	7%
	Minimum Vertical Clearance		17.0'		17.0'	

Source: MDT Road Design Manual Chapter 12, Figure 12-3 "Geometric Design Criteria for Rural and Urban Principal Arterials"

*Controlling design criteria (see Section 8.8 of the MDT Road Design Manual)

2.4 Roadway Geometrics

The MDT Road Design Manual specifies general design principles and controls which determine the overall operational characteristics of the roadway and enhance the aesthetic appearance of the highway. The physical and geometric design elements of the US 93 facility were evaluated to identify areas that do not meet current MDT design standards as shown in Table 2.2. The analysis was necessary to identify areas with substandard geometric design that may contribute to safety concerns.

Available information used to conduct this analysis includes as-built construction drawings and the 2011 Montana Road Log. Table 2.3 summarizes the findings of the roadway geometrics of US 93 through the study area and is further discussed in the sections that follow.

Table 2.3 Summary of US 93 Roadway Geometrics

Design Characteristic	Summary
Horizontal Alignment	Meets current design standards for design speeds of 45 mph and 60 mph
Vertical Alignment	Grades of 5.5% to 5.9% exceed 4% maximum
	Sag k-values of 128.81 and 130.15 are less 136 minimum
Roadside Clear Zone	Improvement options should be designed to current design standards
Surface Width	Surface widths of 28' and 38' are less than 40' suggested width*

** A formal capacity analysis may indicate a four-lane or wider facility is needed to provide LOS B in the design year, indicating a potential surface width of 68' or more.*

2.4.1 Horizontal Alignment

The horizontal alignment of US 93 has a major influence on traffic operation and safety and is comprised of elements that include curvature, superelevation, and sight distance. These parameters are directly related to the design speed. The horizontal alignment along US 93 meets current MDT design standards for design speeds ranging from 45 mph to 70 mph. Figure 2-5 shows the range of design speeds through the existing US 93 corridor.

Figure 2-5 Design Speeds along US 93

2.4.2 Vertical Alignment

Vertical alignment is a measure of elevation change of a roadway. The length and steepness of grades directly affects the operational characteristics of the roadway. The MDT Road Design Manual lists recommendations for maximum grades on rural and urban principal arterials according to the type of terrain in the area. Table 2.4 shows the maximum grade recommendations according to terrain.

Table 2.4 Maximum Grade

Terrain	Maximum Grade
Level - Rural	3%
Rolling - Rural	4%
Level - Urban	6%
Rolling - Urban	7%

The grade and terrain throughout the corridor study area varies from level to rolling and from rural to urban. In addition to reviewing compliance with recommended grades, vertical alignments must also meet recommended k-values (i.e., the horizontal distance needed to produce a 1% change in gradient). The vertical alignment of US 93 does not meet current design standards at five locations. These include:

1. From RP 57.2 to 57.8, the northbound grade goes from 5.9% to 5.7%, respectively. The nearly 6% grade exceeds the maximum allowable grade of 4% for a 60 mph rural design speed in rolling terrain. **A design exception was approved for this grade in April 2004.**

2. From RP 57.2 to 57.7, the southbound grade is 5.5% which exceeds the maximum grade of 4% recommended for a 60 mph rural design speed in rolling terrain. **A design exception was approved for this grade in April 2004.**

3. At RP 57.7, the vertical sag curve k-value of 130.15 does not meet the minimum k-value of 136. **A design exception was approved for this grade in December 2010.**

4. At RP 62.5, the grade of 4.8% exceeds the maximum grade of 4% recommended for a 60 mph rural design speed in rolling terrain. This section of roadway along US 93 was constructed to design standards in 1955. However, these design standards have changed since 1955; therefore, the vertical alignment does not meet current design criteria.

5. At RP 62.5, the vertical sag curve k-value of 128.81 does not meet the minimum k-value of 136.

2.4.3 Roadside Safety (Clear Zone)

The roadside clear zone, starting at the edge of the traveled way, is the total roadside border area available for safe use by errant vehicles. The area may consist of a shoulder, a recoverable slope, a non-recoverable slope, and/or a recovery area. The desired width varies depending on traffic volumes, speeds, and roadside geometry. Clear zones are evaluated individually and based on the roadside cross section. In an urban section, the clear zone is not reduced due to the presence of curb and gutter. The urban section through Polson has substantial development such as landscaping features, signs, mailboxes, signals, utilities, and luminaries, and it may be impractical to protect or remove the obstacles within the clear zone. Current MDT standards establish clear zone guidelines in rural and urban sections.

As improvement options develop, roadside clear zones should be designed, to the extent practicable, to meet current MDT urban and rural design standards.

2.5 Roadway Surface Width

The 2011 Montana Road Log prepared by MDT contains the most current highway statistics. According to MDT National Highway System (NHS) Route Segment Plan Map, the suggested surface width of US 93 is 40 feet or greater. However, the Route Segment Plan no longer defines a standard roadway width. The MDT Road Width Committee would determine the appropriate width during future project development. Table 2.5 shows the existing roadway surface width and surface thickness through the corridor study area. Due to the presence of turning lanes, which are not included in the Road Log, the total surface width may be greater than the sum of lane widths and shoulder widths.

Table 2.5 Existing Roadway Surface Width

Location Reference Post (RP)	Width (feet)			Thickness (inches		Travel Lanes
	Surface	Lane	Shoulder	Surface	Base	
RP 56.500 - 57.394	71	12	8	8.9	12.0	4
RP 57.394 - 57.897	71	12	8	10.7	12.0	4
RP 57.897 - 58.014	71	12	8	8.9	12.0	4
RP 58.014 - 58.479	71	12	8	5.9	6.9	4
RP 58.479 - 58.539	71	12	8	8.9	12.0	4
RP 58.539 - 58.947	71	12	8	10.7	12.0	4
RP 58.947 - 59.222	55	12	3	9.1	16.7	4
RP 59.222 - 59.559	39	12	7	4.8	24.0	2
RP 59.559 - 60.126	40	12	8	4.8	24.0	2
RP 60.126 - 60.736	39	12	7	4.8	24.0	2
RP 60.736 - 60.851	59	12	8	5.8	24.0	2
RP 60.851 - 61.116	38	12	7	5.8	24.0	2
RP 61.116 - 63.000	28	12	2	6.0	26.0	2

Source: 2011 Montana Road Log (pages 45-46)

Dark gray shading indicates sections of roadway that do not meet current suggested surface width criteria.

The Route Segment Plan does not extend into urban areas, due to certain constraints. Therefore, the section from RP 60.851 to 63.000 does not meet the current suggested surface width of 40 feet or greater. Along with the range of surface widths, the US 93 corridor has varying traffic flows, which can be seen in Figure 2-4.

2.6 Geotechnical

A detailed geotechnical investigation report was not developed for this corridor study. The US 93 Minesinger Trail – MT 35 project covered RP 55.5 to approximately 58.7. As-built drawings showed that the study area has no substantial geotechnical issues.

The Polson-East project covered RP 58.10 to RP 59.27. The geotechnical report for the Polson-East project noted subgrade materials generally consisting of glacial moraine sand and gravel with intermittent zones of low-plasticity fine-grained material. Frost susceptibility is a major concern during intermittent periods of moisture infiltration and freezing temperatures; particularly in cut areas with concentrated runoff.

Neither the drilling logs for the US 93 Minesinger Trail-MT 35 project nor the drilling logs for the Polson-East project indicate that bedrock was encountered. The study area is located in a moderate seismic risk area. Seismicity will need to be considered for any bridge foundation design. Polson is located within the Intermountain Seismic Belt, which appears to be predominately classified as a zone 3 on the Uniform Building Code seismic risk scale of 0 (low risk) to 4 (high risk). Seismic zones reflect the variation in seismic risk across the country and are used to permit different requirements for methods of

analysis, minimum support lengths, column design details, and foundation and abutment design procedures.

2.7 Drainage

The corridor study area is located within the Lower Clark Fork and Flathead Lake watersheds. Flathead Lake is the major body of water, with the Flathead River providing water as a tributary to the Clark Fork River. The drainage has several unnamed streams that contribute to the Lower Flathead and Flathead Lake. Storm water drainage is in place for the City of Polson. Several irrigation ditches and canals exist within the corridor, and consideration will be given to drainage during the project development process if an improvement option is forwarded.

2.8 Hydraulic Structures

A full hydraulic analysis would be required if an alignment is developed. Based on a lack of historical flooding occurrences, it is presumed irrigation ditches, culverts, and bridges are hydraulically adequately sized.

2.9 Structural Crossings

Four structural crossings are located along the corridor. They include the Flathead River Bridge, the Pablo Feeder Canal structures, and two Wildlife Underpass structures. The Pablo Feeder Canal structure and two Wildlife Underpass structures were assessed in 2009, and the Flathead River Bridge was assessed in 2010. The assessments determined the Sufficiency Rating for each structure.

The Sufficiency Rating formula is a method of evaluating highway bridge data to obtain a numeric value indicating the sufficiency of the bridge to remain in service. The result of this method is the percentage in which 100 is an entirely sufficient bridge and 0 is an entirely deficient bridge. In order to receive funding through the Highway Bridge Replacement and Rehabilitation Program, structures must be *Structurally Deficient* or *Functionally Obsolete* **and** have a Sufficiency Rating of 80 percent or below. Structures with a Sufficiency Rating of 0 to 49.9 percent are eligible for replacement, and structures at 50 to 80 percent are eligible for rehabilitation unless otherwise approved by the FHWA.

All four structures are not structurally deficient and not functionally obsolete at the present time. Table 2.6 shows the sufficiency ratings of the four structural crossings.

Table 2.6 Bridge Sufficiency Rating

Structurally Deficiency Sufficiency Rating Criteria		Flathead River	Pablo Feeder Canal	Wildlife Underpass	Wildlife Underpass
Deck Rating	≤4	7	-	-	-
Superstructure Rating	≤4	7	-	-	-
Substructure Rating	≤4	7	-	-	-
Structure Rating	≤2	7	8	7	7
Waterway Adequacy	≤2	8	9	-	-
Functionally Obsolete Sufficiency Rating Criteria					
Structure Rating	≠3	7	8	7	7
Deck Geometry	≤3	4	9	5	5
Under Clearance	≤3	-	-	-	-
Waterway Adequacy	≠3	8	9	-	-
Approach Roadway Alignment	≤3	8	8	8	8
Design Loading		5 MS 18 (HS 20)	5 MS 18 (HS 20)	5 MS 18 (HS 20)	5 MS 18 (HS 20)
Sufficiency Rating		66.9	84.9	83.2	83.2
Structure Status		Not Deficient	Not Deficient	Not Deficient	Not Deficient

2.9.1 Flathead River Bridge

The Flathead River Bridge is a two lane structure located at RP 61.2. Constructed in 1966 on a horizontal tangent, the bridge is 1,562 feet long and 30 feet wide with 25 spans and a concrete cast-in-place deck. The Flathead River Bridge is categorized as ***not structurally deficient*** and ***not functionally obsolete***. In 2009, the Flathead River Bridge underwent a bridge deck rehabilitation project.

2.9.2 Pablo Feeder Canal

The Pablo Feeder Canal structure is a concrete box culvert located at RP 57.1. Constructed in 2006 on a horizontal tangent, the culvert spans the four-lane divided roadway of US 93 in addition to the two-lane frontage roads on both the east and west sides of US 93 for a total of 8 lanes of traffic. This culvert is 140 feet long and is 22 feet wide situated at a 33-degree skew. To address the moderate potential of strong ground motion in Seismic 3 areas, the appropriate National Earthquake Hazards Reduction Program seismic design parameters were included for a soil profile Type II. The Pablo Feeder Canal structure is categorized as ***not structurally deficient*** and ***not functionally obsolete***.

2.9.3 Wildlife Underpass structures

The Wildlife Underpass structures (Structure Nos. P00005057+07611 and P00005057+07612) are both two lane structures located at RP 57.8. Constructed in 2006 on a horizontal curve, the steel culvert is 25 feet long and 36 feet wide. The Wildlife Underpass structures are ***not structurally deficient*** and are ***not functionally obsolete***.

2.10 Crash Analysis

Safety issues are a concern along US 93 through the study area. In 2010, the MDT Traffic and Safety Bureau conducted a crash analysis along US 93 from RP 55.0 to RP 65.0 through the Polson area. The segments of US 93 between MT 35 and Irvine Flats Road exhibit more urban characteristics while the segments south of MT 35 and north of Irvine Flats Road are more rural; therefore the study area was divided into three segments. The analysis compared the study area with the average crash rates on NINHS routes statewide. The results are shown in Table 2.7.

Table 2.7 US 93 Crash Statistics (RP 55.0 – 65.0)
(from July 1, 2007 – June 30, 2010)

Statewide Average	Study Area			NINHS Rural Routes[1]	NINHS Urban Routes[2]
	South of MT 35*	MT 35 to Irvine Flats Road	North of Irvine Flats Road		
All Vehicles Crash Rate	1.58	2.33	1.32	1.07	5.06
All Vehicles Severity Index	1.95	1.57	1.86	2.14	1.67
All Vehicles Severity Rate	3.08	3.66	2.46	2.29	8.48
Commercial Vehicles Crash Rate	2.63	4.44	1.05	0.90	
Commercial Vehicles Severity Index	1.88	1.22	1.00	2.34	
Commercial Vehicles Severity Rate	4.94	5.42	1.05	2.11	
Commercial Vehicle Crashes	8	18	4		
All Vehicle Crashes	73	256	79		

** Segment reconstructed, completed in 2006. Data from 3-year time period July 1, 2007 – June 30, 2010.*
Dark gray shading denotes segments of "urban" character of US 93.
1. NINHS Route averages outside the city limits from 2005 through 2009.
2. NINHS Route averages within city limits from 2004 through 2008.
Source: MDT Traffic and Safety Bureau, 2010.

The crash rate within the US 93 corridor is higher than the average comparable rural routes throughout the state of Montana. The "urban" section from MT 35 to Irvine Flats Road is higher than the NINHS rural routes, but less than the NINHS urban routes. Currently, the section from MT 35 to Irvine Flats Road is not functionally classified as an urban section.

2.11 Railroad

MRL track, which ends just within the southern boundary of the corridor study area, is a factor in developing improvement options. Guidelines have been established defining construction requirements and development standards near railroad facilities. In addition to a short segment of track infrastructure, MRL also has land ownership interspersed throughout the study area, primarily along 7th Avenue. Any alignments developed along the railroad corridor would need to comply with specified railroad requirements.

2.12 Utilities

Several utilities exist throughout the corridor study area, primarily along the US 93 corridor. Utilities include power (overhead and underground), telephone, water, sewer, gas, and fiber optics. As potential alignments were developed, a cursory review of potential impacts to utilities was made. Utility adjustments and/or relocations may delay projects if they are not identified in the project development process.

2.13 Access Points

There are 115 access points along the existing US 93 (58 north/east and 73 south/west) from RP 56.5 (Caffrey/Ford Road) to RP 63.0. Access control is implemented along existing US 93 from the study area boundary north to MT 35. Table 2.8 contains a listing of approaches by approximate half-mile increments. It should be noted that between RP 56.5 and 63.0, the average density is 20 accesses per mile.

Table 2.8 Access Points along US 93

Reference Post (RP)	North/East of US 93		South/West of US 93		Total	
	No. Accesses	Density (access/mi)	No. Accesses	Density (access/mi)	No. Accesses	Density (access/mi)
56.5 to 57.0	2	4	2	4	4	8
57.0 to 57.5	1	2	0	0	1	2
57.5 to 58.0	0	0	1	2	1	2
58.0 to 58.5	1	2	1	2	2	4
58.5 to 59.0	1	2	1	2	2	4
59.0 to 59.5	8	16	4	8	12	24
59.5 to 60.0	16	32	11	22	27	54
60.0 to 60.5	8	16	20	40	28	56
60.5 to 61.0	13	26	23	46	36	72
61.0 to 61.5	2	4	3	6	5	10
61.5 to 62.0	3	6	4	8	7	14
62.0 to 62.5	2	4	1	2	3	6
62.5 to 63.0	1	2	2	4	3	6

2.14 Environmental Settings

An Environmental Scan Report was prepared for this corridor study (Appendix B) to identify known resources, potential impacts, and regulatory requirements that may result if alignments are forwarded from this study. In compliance with NEPA/MEPA regulations, all state and federal actions require a level of analysis to determine whether improvement options can be developed to avoid, minimize, or mitigate potential impacts to social, economic and environmental resources. The following environmental elements have been identified as potentially being impacted (see Appendix B – Environmental Scan Report for more detail) and are summarized below.

2.14.1 Physical Environment

Air Quality

Under the Federal Clean Air Act (Title 42 United States Code, Chapter 85), specific allowable ambient concentrations for criteria pollutants have been established in order to protect human health and welfare. These allowed pollutant concentration levels are known as the National Ambient Air Quality Standards (NAAQS). Certain areas of special natural, scenic, recreational, or historic value are provided special protection under the Clean Air Act from considerable deterioration. These areas have been designated as Class I Airsheds. The Flathead Indian Reservation has been designated as a Class I Airshed. As such, special protections apply within the study area.

In addition, certain geographical regions that violate the NAAQS are designated as 'non-attainment areas'. Non-attainment areas receive special attention and mitigation efforts in order to improve the ambient air quality to the established standards. The study area is located within a designated non-attainment area for particulate matter with an aerodynamic diameter of 10 microns or less (PM_{10}). The U.S. Environmental Protection Agency (EPA), in cooperation with CSKT, has regulatory authority in the study area. Because the study area is located in a nonattainment area, transportation conformity will be required. Transportation conformity ensures that any proposed project will comply with the approved plan to bring an area into compliance with the NAAQS. A regional emissions analysis will be necessary if the proposed project is considered "regionally significant" as defined in 40 CFR 93.101 since there is no metropolitan planning organization for the City of Polson. The project may also require a hot-spot analysis for PM_{10}, or any other pollutants that may be of concern at the time of project development.

Any alignments forwarded from the corridor study into project development will need to be evaluated to determine if the project is regionally significant. In addition, the effects of greenhouse gas emissions and climate change may need to be considered.

Soil Resources and Prime Farmland

The Farmland Protection Policy Act of 1981 was established to minimize the impact federal actions have on any unnecessary and irreversible conversion of farmland to nonagricultural uses and the compatibility with policies to protect farmland. Due to the presence of prime farmland and farmland of statewide and local importance, there is potential for farmlands to be impacted as alignment options develop. The U.S. Department of Agriculture Natural Resources Conservation Service has established form AD-1006, Farmland Conversion Impact Rating which evaluates the potential impact on agricultural land if converted to non-farm use. If a project is forwarded from this study the assessment form would be required in the environmental review process.

Water Resources

Surface Water

Polson is situated along the southern shore of Flathead Lake, the largest natural, freshwater lake in the western United States. CSKT administers Tribal Ordinances 64 A and 87A which deal with Flathead Lake shoreline structures and dredge and fill activities on all other waterbodies within the Reservation. In

addition, the U.S. Army Corps of Engineers (USACE) administers Section 404 of the Clean Water Act, which regulates the discharge of dredge and fill materials into jurisdictional waterways.

Under Section 106 of the federal Clean Water Act (Title 33 United States Code, Chapter 26), the CSKT has been granted 'treatment as a state' by the EPA. The CSKT has authority to set water quality standards for waterbodies within the Reservation. The CSKT also has authority to implement the Section 401 program of the federal Clean Water Act. Section 401 certification from CSKT would be required for any permit issued by the USACE for the discharge of dredged or fill material.

According to the Montana Department of Environmental Quality (DEQ), Flathead Lake is an impaired waterbody which partially supports its aquatic life beneficial uses. The probable causes of impairment include mercury, total nitrogen, total phosphorus, polychlorinated biphenyls, and sedimentation/siltation. A Total Maximum Daily Load (TMDL) is required to address the factors causing these impairments. When TMDLs are prepared and implementation plans are in place, any construction practices will need to be evaluated for compliance with the requirements set forth in these plans.

If an alignment is forwarded into project development, impacts to surface water resources should be avoided to the greatest extent practicable. All unavoidable impacts will need to be mitigated as required by the CSKT and USACE. Potential mitigation sites should be investigated and constructed prior to project impacts.

The Polson Airport's runway extends to the Flathead River and includes a seaplane parking area. If an alignment is forwarded into project development, alignment of any river crossing will need to account for these facilities.

Irrigation

The Flathead Irrigation District is located within the study area. The Flathead pumping system supplies water to the Pablo Reservoir and to the western portion of the Polson area. The pumps are operated only when there is a need to supplement gravity supplies. In certain instances, irrigation ditches may be considered jurisdictional waterways; therefore, specific regulatory requirements may apply to work within these structures.

Wetlands

Formal wetland delineations will need to be conducted according to standard USACE defined procedures if an improvement options is forwarded during the project development process. Jurisdictional determinations of wetlands will also be conducted during the project development process. Wetland impacts should be avoided to the greatest extent practicable. All unavoidable wetland impacts will need to be mitigated as required by the USACE and other applicable regulations. Potential mitigation sites should be investigated and constructed prior to project impacts. The USACE generally requires that compensatory mitigation occur in the same watershed as the impacts. The Lower Clark Fork and Flathead watersheds are located within the study area. Coordination with USACE will be necessary to determine the appropriate location of any mitigation site.

Floodplains (EO 11988) and Floodways

Executive Order (EO) 11988, Floodplain Management, requires federal agencies to avoid direct or indirect support of floodplain development whenever a practicable alternative exists. EO 11988 and FHWA regulations (23 CFR 650 Part A) requires an evaluation of project alternatives to determine the extent of any encroachment into the base floodplain. Coordination with Lake County should be conducted during the project development process to determine if floodplain permits are required.

Hazardous Substances

The Montana Natural Resource Information System (NRIS) database was searched for documented leak sites within the study area. There were 21 identified leaking tank sites in Polson. Abandoned mine sites were also identified in the study area. Additional unknown contaminated sites may be identified during the project development process and/or during construction.

If an alignment is forwarded into project development, further evaluation may be needed at specific sites to determine if contamination will be encountered during construction. This may include reviewing DEQ files and conducting subsurface investigation activities to determine the extent of soil and groundwater contamination. If it appears that contaminated soils or groundwater could be encountered during construction, handling/disposing of the contaminated material will need to be conducted in accordance with State, Federal, Tribal, and local laws and rules.

2.14.2 Biological Resources

Biological resources in the study area were identified using maps, aerial photographs, Montana Natural Heritage Program (MNHP) data, and the endangered, threatened, proposed, and candidate species list for Montana counties. This limited survey is not intended to be a complete and accurate biological survey of the study area. Rather, a complete biological survey of the study area will be conducted in accordance with accepted practices if an improvement option is forwarded during the project development process. CSKT biologists should be contacted for local expertise of the project area.

Fish and Wildlife

The Pablo National Wildlife Refuge is located south of the study area. Within the borders and adjacent to this wildlife refuge, nesting Bald Eagles, trumpeter swans, and common Loons, as well as numerous small mammals and species of waterfowl have been documented.

Riparian and river, stream, or creek habitats should be avoided to the greatest extent practicable, including but not limited to, Flathead River and Flathead Lake. Fish and wildlife species use waterway corridors during all life stages. Encroachment into the wetted width of any waterway and the associated riparian habitat should be limited to the absolute minimum necessary for the construction of the proposed project. Soils, vegetation, and flooding data can be utilized in determining the extent of riparian habitat.

Threatened and Endangered Species

The Federal list of threatened and endangered species is maintained by the U.S. Fish and Wildlife Service (USFWS). Species on this list receive special protections under the Endangered Species Act (Title 16

United States Code, Chapter 35). Lake County has been documented to possess the threatened Grizzly Bear, the threatened Canada Lynx, and the threatened Bull Trout as well as critical habitats for these species. Transient movements of Grizzly Bears may occur within the study area. The study area is unlikely to possess any suitable habitat or see any transient use by Canada Lynx, however. The Flathead River along the western border of the study area contains a viable recreational fishery and critical habitats for the threatened Bull Trout. Effective May 5, 2011, the gray wolf was de-listed from the threatened and endangered species list.

Further evaluation of potential impacts to all threatened, endangered, proposed, or candidate species will need to be conducted during the project development process if an alignment is forwarded. Updated critical habitat maps should be consulted during the project development process.

Species of Concern

A search of the MNHP species of special concern database revealed eight animal species of concern in the study area. The Townsend's big-eared bat, gray wolf, common loon, bald eagle, bobolink, long-billed curlew, grasshopper sparrow, and bull trout were listed as potential species of concern.

The results of a data search by the MNHP reflect the current status of their data collection efforts. These results are not intended as a final statement on sensitive species within a given area, or as a substitute for on-site surveys. On-site surveys would need to be completed during the project development process.

Wildlife and Traffic Concerns

During the project development process, CSKT wildlife biologists will need to be consulted to determine what measures, if any, are needed to address wildlife crossings along the proposed improvement option. Some wildlife crossings have already been installed along US 93 within the study area.

Vegetation

Threatened and Endangered Species

The threatened, endangered, proposed, and candidate plant species list for Montana counties was consulted. This list generally identifies the counties where one would reasonably expect the species to occur, not necessarily every county where the species is listed.

According to the USFWS, two plant species are listed as threatened in Lake County: the Spalding's Campion and the Water Howellia. An evaluation of potential impacts to all threatened, endangered, proposed, or candidate species would need to be conducted during the project development process.

Species of Concern

A search of the MNHP species of special concern database revealed three plant species of concern in the study area. The sweet flag, lake-bank sedge, and scribner's panic grass were listed as potential plant species of concern in the study area.

The results of a data search by the MNHP reflect the current status of their data collection efforts. These results are not intended as a final statement on sensitive species within a given area, or as a

substitute for on-site surveys. On-site surveys would need to be completed during the project development process.

Noxious Weeds

The following noxious weeds have been identified as present in Lake County: Leafy Spurge, Spotted Knapweed, Russian Knapweed, Dalmatian Toadflax, and Sulphur Cinqueful. Spotted Knapweed is known to be present within the study area. The study area will need to be surveyed for noxious weeds during the project development process.

To reduce the spread and establishment of noxious weeds and to re-establish permanent vegetation, disturbed areas will need to be seeded with desirable plant species. County Weed Control Supervisors should be contacted prior to any construction activities regarding specific measures for weed control.

2.14.3 Social and Cultural Resources

Demographic Information

To provide a context in which to evaluate social impacts, characteristics of the existing population are presented below in Tables 2.9 and 2.10.

Table 2.9 US Census Bureau Demographic Information

Area	Population (2008)	Population % Change (4/1/00 thru 7/1/08)	Median Household Income (2008)	Persons Below Poverty (2008)	Persons per Square Mile (2000)
Lake County	28,690	8.2%	$38,505	21.3%	17.7
State of Montana	967,440	7.2%	$43,948	14.1%	6.2

As shown in Table 2.9, Lake County has experienced a higher growth rate than the State of Montana as a whole. Lake County also has a greater percentage of persons living below the poverty line. As shown in Table 2.10 below, the median household income for the City of Polson was estimated to be $21,870 in the year 2000, well below the average for the state of Montana at that time.

Table 2.10 City of Polson US Census Bureau 2000 Data

Total Population	4,041
White (%)	78.2
African American (%)	0.1
American Indian/Alaska Native (%)	16.1
Asian (%)	0.5
Native Hawaiian/Pacific Islander (%)	0.1
Hispanic/Latino (%)	2.3
2 or more races (%)	4.5
Median Household Income	$21,870
Persons Below Poverty	19.8

Environmental Justice

Title VI of the US Civil Rights Act of 1964, as amended (Title 42 United States Code, Chapter 21) and EO 12898 require that no minority, or, by extension, low-income person shall be disproportionately adversely impacted by any project receiving federal funds. For transportation projects, this means that no particular minority or low-income person may be disproportionately isolated, displaced, or otherwise subjected to adverse effects. Environmental justice would need to be addressed if an alignment is forwarded during the project development process.

Archaeological Resources

The Montana State Historic Preservation Office (SHPO) was contacted to determine the presence of any known cultural and/or historic sites within the study area. The file search yielded one previously recorded cultural resource site. This site is listed as a prehistoric lithic scatter. Although only one cultural site was identified in the file search, there are undoubtedly many more archeological sites located along the Flathead River and in undeveloped areas outside of Polson. MDT has designated areas as 'sensitive' where there is a high likelihood that intact archaeological sites are present (Note: Not all of the areas designated as 'sensitive' have the potential for intact archaeological sites. The 'sensitive' designation includes other resources, as well.). If an alignment is forwarded into project development, on the ground fieldwork and coordination with CSKT and Tribal Historic Preservation Office (THPO) will be necessary to determine where additional cultural resources are located.

Historic Resources

The file search conducted by SHPO also revealed 62 previously recorded historic properties within the study area. Most of these historic properties are residences located within the City of Polson. The list of previously recorded cultural and historic sites is contained in the Environmental Scan Report (Appendix B).

If alignments are forwarded from this study and are federally-funded, a cultural resource survey of the Area of Potential Effect for this project as specified in Section 106 of the National Historic Preservation Act (Title 16 United States Code, Chapter 1; 36 CFR 800) will need to be completed. Coordination with the THPO would be required. Section 106 requires Federal agencies to "take into account the effects of their undertakings on historic properties."

Protected Resources

Reviews were also conducted to determine the presence of known Section 6(f) and Section 4(f) properties within the study area.

6(f) Resources

Section 6(f) of the Land and Water Conservation Funds (LWCF) Act (Title 16 United States Code, Chapter 1) applies to all projects that impact recreational lands purchased and/or improved with LWCF. The Secretary of the Interior must approve any conversion of property acquired or developed with assistance under this Act to other than public, outdoor recreation use. Eight 6(f) properties have been identified within the study area and are as follows:

- Polson Boettcher City Park
- Polson Waterfront Facility
- Polson Boettcher Park Sewer Improvement
- Polson Golf Course – Renovation
- Polson Tennis Courts Dev.
- Polson Sports Complex
- O'Malley Ballpark Improvements
- City of Polson Salish Point Project

4(f) Resources

Section 4(f) of the 1966 Department of Transportation Act (49 USC 303) applies if Federal transportation funds are used on a project and provides for the protection of publicly owned parks, recreation lands, historic sites, wildlife or waterfowl refuges, and any historic site of national, state, or local significance. If Section 4(f) properties are impacted, a Section 4(f) evaluation will be completed to demonstrate compliance. Under the requirements of Section 4(f), FHWA is required to consider avoidance alternatives to impacting Section 4(f) resources. If a feasible and prudent avoidance alternative to impacting a Section 4(f) resource exists, FHWA is obligated to select that alternative. If no feasible and prudent avoidance alternatives exist, FHWA is obligated to consider the alternative that results in the least harm to Section 4(f) resources. There are 23 potential parks and recreational areas within the City of Polson that are likely 4(f) resources. In addition to the 22 potential parks and recreations areas identified in the Environmental Scan Report, the Travis Dolphin Dog Park was identified by members of the public as a potential 4(f) site. These 4(f) resources include any historic or archaeological sites on or eligible for inclusion in the National Register as well as significant publicly-owned parks, recreational areas, and wildlife or waterfowl refuges.

Noise

If an alignment is forwarded into project development, an extensive noise study would be required to determine where noise-sensitive land uses are located, what existing noise levels those areas are experiencing, and to estimate what future noise levels will be as a result of the project. Previous noise studies have been conducted in the study area for the 1996 FEIS. If the project is expected to change traffic volumes on other routes, then off-project routes should also be studied for noise impacts. In areas of residential development, noise impacts (existing or predicted) may need to be mitigated. The most common mitigation is noise barriers in the form of walls and berms. Right-of-way acquisition to create a buffer zone is also a viable form of noise abatement.

Visual Resources

Visual resources refer to the landscape character, visual sensitivity, scenic integrity, and landscape visibility of a geographically defined view shed. The Polson view shed is part of a broad valley with surrounding mountains. Flathead Lake's Polson Bay is immediately north of the city. The hilly terrain surrounding the area provides a variety of opportunities for viewing Flathead Lake. The Flathead River flows southwest from Polson Bay, along the western side of the City of Polson. The Mission Mountains border the eastern portion of the city. The landscape also includes several man-made canals, croplands, existing vegetation, rural areas with ranches and scattered home sites, and the developed urban environment of Polson itself.