2.0 Existing Conditions

This section documents the existing roadway conditions and environmental factors within the NFFR corridor study area. Although the corridor boundary is 300 feet wide and centered on HWY 486, the environmental footprint extends well beyond the corridor boundary and takes into consideration the total extent shown in the accompanying study area maps.

2.1 Roadway and Physical Characteristics

Existing Roadway Users and Traffic Volumes

Primary users are local land owners along the south end of the corridor, residential traffic to and from Polebridge, logging trucks, and recreational users accessing USFS owned lands and the Glacier National Park. The road is used for recreation during the non-winter months, and during the winter months, traffic is primarily residential. The limited winter recreation that occurs in the area includes snowmobiling, cross country skiing, snow-shoeing, dog sledding and wildlife viewing. Winter recreation does not increase traffic on the NFFR as much as the recreational users in the summer season.

The weighted Average Annual Daily Traffic (AADT) for the corridor study area in 2009 is 280. This traffic volume does not exceed the current capacity of the roadway, which is approximately 4,000 vehicles per day for a typical gravel secondary roadway. The corridor does not currently experience delays or congestion during peak travel periods. In 2009, the commercial vehicles portion of the AADT was only 17 vehicles.

Seasonality of traffic patterns was estimated using the seasonal adjustment factors for US-2, which has the nearest permanent counter to the NFFR. Ideally, the best correlation would be from nearby roads with the same classification and traffic characteristics; however, US-2 is the best information currently available for seasonal variations. Table 2.1 shows the estimated seasonal variation in daily traffic for the NFFR. The months of June through September are all higher than the average AADT.

Table 2.1 – Estimated Seasonal Variation in AADT for the NFFR

Month	Weighted AADT 2009	Percent Average Day of Yearly Average [1]	Monthly Weighted Average
January	280	57	159
February	280	64	178
March	280	63	176
April	280	73	203
May	280	100	281
June	280	137	385
July	280	194	542
August	280	167	468
September	280	136	381
October	280	83	232
November	280	69	192
December	280	58	163

[1] Obtained from "Yearly ATR Profile 2009" for MDT's permanent traffic recorder A-60. A-60 is, located on US 2 RP 19.6, approximately 1.5 miles north of Columbia Falls.

Right-of-Way (ROW) and Jurisdiction

The existing road is predominantly located on USFS property. A few sections of the roadway in the southern end of the corridor study area are also located on ROW easements obtained from private property. Beginning at approximately RP 13.5, the NFFR is solely located within a USFS easement, which varies from 100 to 160 feet wide. The easement extends beyond the cut or fill slope sections of the roadway as necessary. The paved section near Big Creek (approximately RP 19.9-20.4) has an easement width of 160 feet. Property ownership information is in the ROW plats for Flathead County.

The highway was originally constructed as a local settler and miner road. After World War II, it became predominantly a timber harvesting road until about 1961. The road was improved by the Forest Service in 1952-1954.

the NFFR from Columbia Falls to RP 12.3 (end of pavement) is maintained by state forces. From the end of pavement to Camas Road (study terminus), it is maintained by Flathead County. From Camas Road to the Canadian Border, it is a local county road and also maintained by Flathead County.

Physical Characteristics

the NFFR is functionally classified as a major collector and is part of the Montana Secondary System. A portion of the road (RP 9.5 to RP 12.4 and from RP 19.9 to 20.4) within the corridor study area is paved as two lanes. The remainder of the road has a gravel surface.

the NFFR follows the course of the North Fork of the Flathead River on the western bank. Canyon Creek, Hell Roaring Creek, Deep Creek, and Big Creek cross under the road to reach the North Fork of the Flathead River. A bridge is constructed over Big Creek, while the other streams cross under the road through culverts.

The average roadway width is 32.6 feet narrowing to as little as 24 feet, and constructed and as wide as 36 feet in other areas. Over time the gravel portion has gradually widened out beyond the 36 feet constructed width in some portions of the roadway. The terrain is heavily forested, and mountainous. There are some large cuts into rocky slopes or rock faces on the west where the road alignment comes close to the North Fork of the Flathead River, with guardrail-protected steep fill slopes on the east. These are mainly around RP 12-12.5, RP 14.5, RP 15-RP 17, RP 18-RP 18.6, RP 19.5, RP 20.3-RP 21, and RP 22-RP 22.5.

Over time, both the USFS and Flathead County have improved portions of the NFFR with bituminous surface treatments and asphalt pavement. In 1984, the majority of the gravel roadway was redesigned to meet a 40 to 50 mph design speed. The recorded width of the gravel section of road is 32.6 feet across, including graded shoulders, although over time the gravel portion has gradually widened out beyond a 36 foot width.

The posted speed limit along this section is 35 mph; 20 mph is advised when roadway dust is present. The gravel portions of the road can be dusty, and wash-boarding is a condition along many sections of the NFFR within the corridor study area. Pothole severity varies throughout the year, with very little potholing soon after the road is graded, to numerous potholes when the road has not been graded for a while. This is one issue raised by roadway users. Flathead County maintains the gravel section of road, typically grading twice a year plowing snow in the winter months, fixing guardrail, rockslides, and other maintenance that may be necessary. In 2007, the maintenance cost was $209,910. See Appendix C for more data.

In 1987, the paved portions of the road from RP 9.7 to RP 12.4, and RP 19.9 to 20.4 were reconditioned with a new asphalt layer. The widths of the road are 28 feet (12 foot travel ways and 2 foot shoulders) for the southern paved section, and 24 feet (10 to 11 foot travel ways and

1 to 2 foot shoulders) for the paved section at Big Creek Bridge. The posted speed limit for the southern paved section is 70 mph.

2.2 Design Standards

Table 2.3 lists the current design criteria for a rural collector road. For paved roadways, MDT's criteria apply, and for unpaved roadways, Flathead County's criteria apply. These criteria were used for a further, more detailed analysis of whether the road meets current design standards, and for analysis of any improvement options.

Roadway Geometrics

The existing physical and geometric characteristics of the NFFR were evaluated for the corridor study area to identify areas that do not meet MDT and Flathead County geometric, sight distance, and roadside/clear zone design standards. This analysis was necessary to identify areas with any safety concerns and substandard criteria which potentially lead to decreased driver safety and accidents.

To identify the roadway functional characteristics, available information was analyzed at a high-level or "10,000 foot level." This information included as-built construction drawings, MDT's photolog video of the corridor, right-of-way construction drawings, and MDT's Road Log. The findings of the analysis are summarized in Table 2.2 and then discussed in more detail below.

Table 2.2 – Summary of Geometric Analysis

Geometric Characteristic	Summary
Horizontal Alignment	Rock cuts that limit sight distance
	Redesigned to meet 40 to 50 mph design speed
Clear Zones	Exceptions allowed for rock faces in clear zone
	Vegetation may be encroaching
	Guardrail in place at visible steep slopes
	Waterfall on at least one slope part of the year
Vertical Alignment	Sight distance acceptable
Lane Width	Width meets minimum requirements

Horizontal Alignment

Based on the photo log and field visits on the roadway, many of the horizontal curves have rock cuts on the west side of the road, which limit sight distance. In an MDT memo dated May 28, 1980 with preliminary design information for the project completed in 1984 (FHP 61-1(5)), the roadway was discussed, including the complete redesign of the gravel portion of the roadway to meet a 40 to 50 mph design speed.

Table 2.3 – Roadway Design Criteria

DESIGN CRITERIA				
Design Element			Design Criteria - MDT [2]	Design Criteria - Flathead County [3]
Design Controls	Functional Classification		Rural Collector Road	Mountainous Collector Road
	Design Forecast Year		2030	2030
	Design Speed	Mountainous	45 mph	45 mph (pg. 420) [1]
	Level of Service		B	B
Roadway Elements	Design Year Traffic	Current AADT	280	280
		Projected AADT	340	340
		Projected DHV [4]	51	51
	Roadway Width	Travel Lane and Shoulder	24 ft	24 ft (pg. 425) [1]
		Bicycle Shoulder	4 ft [6]	4 ft [7][6], pg. 314 [1]
	Clear Zone[5]	Cut Slope	8-10 ft, none for rock slopes	8-10 ft [1]
		Fill Slope	10 ft (6:1V) 14 ft (4:1V)	10-12 ft (6:1V) [1] 12-14 ft (4:1V)
	Cross Slope	Travel Lane	2%	1.5% - 2% (pg. 421) [1]
		Shoulder	2%	1.5% - 2% (pg. 421) [1]
	Median Width		N/A	N/A
Earth Cut Section	Inslope		4:1 (6 ft)	4:1 (3:1 in cut) pg. 425 [1]
	Ditch	Width	10 ft (Figure 12-5) or 0 ft (Figure 11.7M)	N/A
		Slope	20:1	N/A
	Back Slope; Cut Depth at Slope Stake	0'-5'	5:1	N/A
		5' - 10'	3:1	N/A
		10' - 15'	2:1	N/A
		15' - 20'	1.5:1	N/A
		> 20'	1.5:1	N/A
Earth Fill Slopes	Fill Height at Slope Stake	0'-10'	4:1	N/A
		10' - 20'	3:1	N/A
		20' - 30'	3:1	N/A
		> 30'	2:1	N/A
Alignment Elements	DESIGN SPEED		45 mph	45 mph (pg. 420) [1]
	Stopping Sight Distance		360 ft	for uncontrolled intersections: 220 ft all others, 360 ft (pg. 112) [1]
	Passing Sight Distance		1625 ft	1625 ft (pg. 124) [1]
	Minimum Radius (e=8.0%)		590 ft	150 ft at centerline / 587 ft (pg. 169-170) [1]
	Superelevation Rate		emax = 8.0%	emax = 8.0% (pg. 424)
	Vertical Curvature (K-value)	Crest	61	61 (pg. 422) [1]
		Sag	79	79 (pg. 422) [1]
	Maximum Grade	Mountainous	10%	10% (pg. 423) (1)
	Minimum Vertical Clearance		16.5 ft	14 ft (pg. 427) [1]

(1) AASHTO Green Book - Refers to AASHTO's "A Policy on Geometric Design of Highway and Streets" 2004

(2) All Information listed here was taken from Figure 12-5 "Geometric Design Criteria for Rural Collector Roads" Montana Department of Transportation Road Design Manual Chapter 12 except where otherwise noted.

(3) Flathead County's "Minimum Standards for Design and Construction" 17 Nov 2009

(4) For planning-level analysis, used an average value of 15% of the AADT for Montana secondary roads, per MDT Road Design Department.

(5) AASHTO's "Roadside Design Guide" Table 3.1, and MDT's "Road Design Manual" Figure 14.2A

(6) AASHTO "Guide for the Development of Bicycle Facilities," 3rd Ed, 1999

(7) MDT Road Design Manual, Ch 18.2.4 states to use the "AASHTO Guide for Development of Bicycle Facilities" criteria (see note 6).

Clear and Roadside zones (cut, fill, trees, guardrail)

Guardrail appears to be in place at all locations with steep fill slopes, mainly where the road comes close to the North Fork of the Flathead River. Rock slopes are present in a number of locations, however, MDT standards allow for an exception to allow the clear zone requirement for rock slopes to end at the toe of the slope. There is one rock face in particular, Hell Roaring Creek, which had an impromptu waterfall running down it during the study team's site visit, as shown in Figure 2.1. From viewing the photolog, there also appear to be quite a number of trees which may encroach into the clear zone, due to the heavily forested nature of the corridor.

Vertical Alignment

Based on review of the photolog, and as observed in field visits conducted August 27, 2009 and April 21, 2010, there did not appear to be any vertical curves where sight distance was an issue.

Lane Width

The MDT Road Log shows that the road from RP 9.5 to RP 12.4 is 28 feet wide (12 foot lanes with 2 foot shoulders), consistent with the very beginning of the photolog. The gravel road from RP 12.4 to RP 19.9 and RP 20.4 to RP 22.5 is reported as 36 feet wide, which is also reflected in the typical section of the as-built drawings for the most recent construction, FHP 61-1(5). The as-built drawings used for analysis were paper copies used to record the construction of the gravel roadway in 1984.

This width and the as-built drawings suggest that there is 12 feet provided for travel ways, with two feet of shoulders at the same two percent cross-slope as the road, and two feet of shoulder on the graded fill slopes. The second section of paved road from RP 19.9 to RP 20.4 is reported to be 24 feet wide (12 foot lanes with no shoulders). The corridor appears to meet minimum width requirements of MDT, Flathead County, and the American Association of State Highway and Transportation Officials (AASHTO).

Design Standard Conclusion

Overall the roadway complies with most MDT and County design standards. There are no major improvement concerns that would result in shifting the alignment.

2.3 Geotechnical

A field visit was conducted by MDT and a limited drilling program was conducted for the gravel section of the roadway on April 21, 2010. Seven shallow borings were completed to evaluate the gravel surfacing and sub grade. The limited numbers of borings are justified given the geologic mapping of the area that indicates very consistent subsurface conditions. Based on those borings, it was recommended that only a minimal paving section would be required if desired. There is an 8 to 10 foot depth of fill in the existing roadbed, which would likely translate to minimal addition material if a pavement option were selected for this roadway section.

Also noted during this visit were several cut slopes along the alignment, most of which exhibit some degree of slope movement, mainly consisting of surface raveling but also some deeper movement. The existing road could likely be paved without cutting into existing slopes, but new cuts should be approached with caution because of destabilization of cut slopes. Also, two R-value tests were completed. Based on review of these preliminary findings, it was determined that a more in-depth geotechnical investigation would be required for evaluation of cuts and fills if a full reconstruction and pavement project were pursued.

Figure 2.1 - Rock Face, Two Views on West Side of Highway 486

2.4 Drainage

The corridor study area is located within the North Fork of the Flathead River drainage. The drainage has a number of creeks and tributaries. Big Creek is the largest stream in the drainage, with Deep Creek, Hell Roaring Creek, and Canyon Creek as tributaries to North Fork of the Flathead River. Runoff from the NFFR currently goes into the adjacent streams. No storm water runoff piping or treatment is currently in place for the NFFR.

2.5 Hydraulic Structures

the NFFR follows the course of the North Fork of the Flathead River on the western bank. Canyon Creek, Hell Roaring Creek, Deep Creek, and Big Creek cross under the road to reach the North Fork of the Flathead River. A bridge is constructed over Big Creek, while the other creeks cross under the road through culverts. Based on the Environmental Scan, the Deep Creek culvert routinely becomes clogged with sediment because it is undersized. The current culvert is a barrier for fish passage.

As shown in Figure 2.1, there is a waterfall down a rock face near Hell Roaring Creek during part of the year. A hydrologic analysis of the streams was not performed. A full stream hydrologic analysis would be recommended if a roadway improvement project is considered.

2.6 Crash Analysis

MDT crash data was analyzed. The crash data indicated that the statewide rural crash rate for years 2004 to 2008 for secondary roads is 1.53. The rural crash rate from 2004 to 2009 for the corridor study area is 3.59. Although this rate is high, the actual number of total crashes is low. On average, there were three crashes a year, with five crashes in 2003 and six crashes in 2008. There were a total of 37 crashes over a ten-year period from 1999-2009. During this period, there was one fatality in 2009. This data reflects only formally reported accidents, and not minor accidents where the vehicle(s) involved suffered minor to no damage and were not reported.

There did not seem to be a distinct overall trend for the type of crash. Most of these crashes were single vehicle crashes which resulted in a collision with a roadside object, guardrail, or overturn, but rarely with another vehicle. The majority of crashes occurred in the daytime. There were few crash clusters – at RP 11.3 to11.4 (5 crashes), RP 14.0 to14.2 (3 crashes), and RP 16.6 to16.7 (3 crashes), which indicates that these locations may have roadway concerns or conditions, which could have contributed to the crashes. However, the small data set is not conclusive and other factors should be taken into consideration. RP 11.3 is on the southern paved portion of the road, along a straight section. The Glacier Rim Access is in this general vicinity; however none of the accidents were at the junction. One was due to alcohol, one was due to “too fast for conditions” on a clear dry day and three were due to snowy/icy conditions; two of which were going too fast for these conditions.

Other factors which may have an effect could be speed of the vehicles or clear zones. From a preliminary review of the corridor photolog, the side of the road does not appear to consistently meet clear zone requirements. In locations there are steep fills to one side of the road, which may not allow for much vehicle recovery; in others, there are trees which may be encroaching on the clear zone.

Fifty three percent of the comments in the crash log were “Too Fast for Conditions.” The reason for auto crashes is not defined in detail, so an exact cause cannot be determined. These causes are typically a result of drivers not slowing for roadway conditions that may include dust, potholes, washboard, ice, rain, or snow.

The southern paved portion of the corridor study area is signed at 70 mph, which may contribute to the crash rate. This crash rate could be a result of the change in roadway surface from paved to gravel. Drivers may be reluctant to slow down or uncomfortable slowing down from 70 to 35 mph in a short distance as the paved roadway transitions to gravel. Whatever the reason, the speed limit has remained low, signed at 35 mph, or 20 mph advised when dust is present.

The conclusion made by the study team is that the design speed of the roadway is higher than the posted speed limit, and, without a lot of traffic congestion and except in severe dust conditions, the majority of drivers tend to exceed the posted speed limit. This is likely considering a majority of the road was redesigned in 1984 to meet a 40 to 50 mph design speed.

Although dusty roadway conditions decrease visibility considerably, as illustrated in Figure 2.2., dust was never cited as a contributing factor in the accident logs.

There were four reported wildlife-related collisions in the last ten years along this section of roadway. This reflects only formally reported collisions by the Montana Highway Patrol. MDT's Maintenance division has picked up 14 carcasses of deer/elk on HWY 486 over the noted time period, but these were all south of the corridor study area.

2.7 Demographics

According to the U.S. Census in 1990 Flathead County had a population of 59,218 residents (U.S. Census, 1990). The Montana Census and Economic Center states that in 2009, the population of Flathead County had grown to an estimated 89,624 residents (MT Census, 2009). NPA Data Services, Inc. projects the 2030 the population of Flathead County will grow to 127,250 residents (NPA, 2030). In 1990, Flathead County had a total of 22,834 households. By 2009 approximately 38,406 households were located in Flathead County. Flathead County had 28,495 jobs in 1990 and in 2009 the number of jobs had risen to 39,773. The average income per household in 1990 was $24,145 and in 2007 this figure rose to $45,122.

2.8 Development

According to the Flathead County North Fork Neighborhood Plan, there are three land use types in the North Fork neighborhood: residential, agricultural, and commercial. Although three land use types are identified in the North Fork Neighborhood plan, these uses are minimal along the study corridor, most of the land is owned by the USFS.

A majority of the residential land owners in the area use their properties for recreational purposes, frequenting the area primarily in the summer months. Less than 20 percent of the landowners live in this area year round.

The largest concentration of small tracts of privately held land is north of the corridor study area. The bottom of the North Fork valley holds a large portion of lands that have been subdivided over the past several years. There are no active subdivisions in the platting processes or recent approvals of subdivisions (Hagemeier, 2010). The remote, undeveloped nature of the North Fork area limits the opportunities for future growth, no utilities, long distances from law enforcement, health care and schools.

Figure 2.2 - Dust Rising Behind a Traveling Vehicle on the North Fork Flathead Road

While the zoning district in the area (1 unit per 20 acres) north of Camas Road will limit the potential build-out of the North Fork valley, it has fewer restrictions on the use of the property. It is anticipated that uses such as rental cabins, bed and breakfasts, and residential businesses will become more common in the North Fork in the future. The North Fork also may experience pressure for the development of resorts and other commercial attractions that are incompatible with its remote, undeveloped character, as described in the North Fork Neighborhood Plan. The majority of the land between Blankenship Road and Camas Road is public; however, there is a small amount of private land. Restrictions on the spacing of septic and water facility locations has limited development.

2.9 Management Emphasis on Adjacent Public Lands

The USFS is responsible for the public lands and administration of the lands in the corridor study area. Recreational facilities and forest management are subject to USFS regulations. The Forest Management Plan determines allowable uses on USFS land and guides the USFS's future decisions with respect to allowable uses, habitat conservation, recreation, and economic use of the forest resources.

Due to legal challenges to the 2005 and 2008 Planning Rules, development of the Forest Plan revision effort for the Flathead National Forest has been temporarily suspended. Future work on revision of the Forest Plan will be contingent on the results of the development of the new Planning Rule, outcome of litigation, availability of funding and staff. The USFS has some general management direction for the North Fork Flathead sub-basin and the two geographic areas directly adjacent to the corridor study area. The Flathead Forest Plan (December 1985) and Record of Decision (January 1986) identify various management areas within and adjacent to the corridor study area.

Most of the NFFR corridor study area is within a Wild and Scenic River Management Area as the section of the river adjacent to the roadway is classified as a recreational river segment. Within the corridor study area, other management areas abutting the western boundary of the wild and scenic river corridor place emphasis on timber management. They also provide suitable winter range habitat for white-tailed deer, mule deer, and elk winter.

The USFS implements national policy and direction for multiple-use management of public lands and strives to strike a balance among resources to achieve the goals set forth in the Flathead Forest Plan. Within and adjacent to the corridor study area, the Flathead Forest Plan direction emphasizes maintaining wild and scenic river characteristics, sustaining winter range habitat conditions, and providing sufficient habitat to promote the recovery of threatened Grizzly bear and bull trout species.

Many individuals support improving the road within the corridor while others prefer to maintain the existing gravel roadway. The USFS is neutral on this issue. Glacier National Park (GNP) is opposed to paving the road since its management direction is to preserve and protect the primitive values inherent in the North Fork portion of the Park. GNP believes that paving would lead to an increase in traffic and development, loss of wildlife habitat and connectivity, and a degradation of the primitive values of the North Fork portion of the Park. The Park's designation as a World Heritage Site and Biosphere Reserve also intensifies the Park's desire to preserve this area.

Reviews were also conducted to determine the presence of Section 4(f) and Section 6(f) properties along the corridor. Section 4(f) refers to the original section within the Department of Transportation Act of 1966 (49 U.S.C. 303), which set the requirement for consideration of park and recreational lands, wildlife and waterfowl refuges, and historic sites in transportation project development. Prior to approving a project that "uses" a Section 4(f) resource, FHWA must find that there is no prudent or feasible alternative that completely avoids 4(f) resources and that the

action includes all possible planning to minimize harm to the property resulting from "use." "Use" can occur when land is permanently incorporated into a transportation facility or when there is a temporary occupancy of the land that is adverse to a 4(f) resource. Constructive "use" can also occur when a project's proximity impacts are so severe that the protected activities, features, or attributes that qualify a resource for protection under 4(f) are "substantially impacted".

If a project is forwarded from this corridor study and depending on the funding of the project a Section 4(f) Evaluation would be completed. Also depending on if a project is forwarded from this study and the nature of the project, coordination with the Flathead National Forest would need to be conducted regarding the Big Creek Campground near Milepost 20.5 as a Section 4(f) resource. Glacier National Park is a Section 4(f) resource property. The North Fork of the Flathead River is designated as Wild and Scenic and as such, Section 4(f) may also apply. These two resources may need to be reviewed for constructive use if a project is forwarded using United States Department of Transportation (USDOT) funding.

Section 6(f) of the Land and Water Conservation Funds Act applies to all projects that impact recreational lands purchased or improved with Land and Water Conservation funding. 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. At this time, there are no Section 6(f) resources identified in the study corridor.

There is a Memorandum of Understanding (MOU) between British Columbia and Montana concerning mining and mineral extraction activities. Any improvement option(s) forwarded would need to be evaluated as it relates to the MOU. The status of the MOU and negotiations pertaining to protection of the North Fork on both the Canadian and U.S. sides is continually evolving as a dynamic process despite differences of opinion as to how best to permanently protect this trans-boundary region.

2.10 Recreation

Existing Recreational Facilities

The NFFR in the Flathead National Forest provides access to recreational opportunities mainly pertaining to the usage of rivers and lakes. The North Fork of the Flathead River is within the National Wild and Scenic Rivers System and is used for floating excursions. While no permits are required for private recreational floating, commercial outfitters, offering float trips, are required to obtain permits. This corridor provides the public with driving opportunities to view and access the non-wilderness portions of the national forest. Some of the best huckleberry picking in Montana is in the Flathead National Forest. This area provides hunting and fishing opportunities throughout the corridor. Over 3,000 visitors entered Glacier National Park in 2009 during July and August, with an average monthly entrance of 1,500 visitors through Polebridge located north of the corridor study area. Approximately an average of 3,000 visitors per month enter at the Camas Road entrance.

The NFFR provides access to many camping opportunities in designated campsites and at undeveloped campsites from Columbia Falls to Polebridge and north. The Big Creek campground near milepost 20.5 provides camp sites and access to the river for fishing and floating. The Big Creek Outdoor Education Center of The Glacier Institute is located in the study corridor and is visible from the NFFR near Big Creek. Since 1988, the Big Creek Center has been home to a Youth Science Adventure Camp, Discovery School and several adult field courses. The center operates under a special use permit with the Flathead National Forest.

Winter recreation opportunities also exist in the corridor study area, including cross country skiing, snowmobiling and sightseeing. The number of visitors to the area in winter months is much less than during the summer months, based on traffic information for the roadway.

Planned Recreational Facilities

Planned recreational facilities were not identified in the USFS plan.

2.11 Utilities

No public utilities provide service in the North Fork area. Thus electrical power, water supply, sewerage and garbage removal and other utilities are the responsibility of the individual landowner, at their expense. There is landline telephone service at both Polebridge and the nearby ranger station in Glacier National Park. Some North Fork landowners utilize satellite, radio or cellular telephone service to some degree of success. Others use radios for local communications to neighbors, while a few have installed satellite internet service and have access to email. At time of the adoption of the North Fork Neighborhood Plan, mail delivery was twice a week (Craver, 2010), unless weather conditions make the North Fork Flathead Road impassible (North Fork Neighborhood Plan, Resolution 2143 A; Adopted June 12, 2008).

2.12 Historical, Cultural and Archaeological Resources

A file search of the project corridor was conducted in April 2010. Numerous previous cultural resource inventories were identified and were done mostly for USFS timber sales. Two previously recorded cultural resources adjacent to the road were identified by Montana State Historic Preservation Office. The two sites are 24FH434, a historic ranger station, and 24FH952, a historic trail. Any future reconstruction of the North Fork Flathead Road would require a cultural resource inventory of the corridor.

2.13 Vegetation

Much of the North Fork valley was burned during the late 1800's and early 1900's. The evidence of wildfire was reduced by organized fire suppression since about 1920. Much of the area burned in the period between 1988 and 2003. The corridor study area bisects the 2001 Moose Fire and the 2003 Robert Fire. Many types of vegetation communities exist along the NFFR. These are described in detail in the Environmental Scan, Appendix B.

2.14 Wildlife

Of the 108 mammal species known to occur in the state of Montana, 63 are known to occur in Flathead County and three are suspected to occur (Foresman, 2001). Mule deer, white-tailed deer, elk, moose, black bear, mountain lion, American beaver, porcupine, striped skunk, long-tailed weasel, coyote, red fox, deer mouse, bushy-tailed wood rat, red squirrel, and meadow vole are common mammals occupying habitats in the general area and occur occasionally within the study corridor. White-tailed deer, mule deer, moose, red squirrels and chipmunks were all observed during field reconnaissance, in addition to black bear and elk scat.

The following species occur in the corridor study area: Grizzly bear, black bear, wolf, coyote, red fox, mountain lion, Canada lynx, bobcat, marten, fisher, wolverine, badger, river otter, mink, and various weasels (Weaver, 2001).

The study corridor area is also within important spring, summer, and fall habitat with some winter range areas for white-tailed deer, mule deer, moose and elk. The Flathead National Forest Plan classified the majority of the area within the study corridor as important winter range for these animals.

The corridor study area is also within the distributional range of two reptiles and five amphibian species (Maxell et.al, 2003). No reptiles or amphibians were observed during the field review.

Between 1962 and 2008, the Montana Natural Heritage Program compiled observations of 220 different bird species within the corridor study area (MNHP, 2010). Of the 220 potential species of birds that could occur, 29 are species of concern and eight are potential species of concern.

Between 1998 and 2006, 41 different species were documented with direct evidence of breeding in the corridor study area. These include woodpeckers, swallows, chickadees, owls, raptors such as the bald eagle and northern goshawk; multiple species of waterfowl including the species of concern the common loon, a flycatcher, nuthatch, hummingbird, thrush, tanager, warbler and the white-tailed ptarmigan (MNHP, 2010). Birds observed during the field review were the American Robin, American Crow, and the Cliff Swallow.

Wildlife Habitat Linkage Zones

Wildlife corridors serve as important routes connecting fragmented habitats within an ecosystem. These corridors serve a critical role in the maintenance of viable wildlife populations by promoting species viability. Future development on private land concentrated north of the study section of the NFFR has the potential to sever wildlife corridors. Increased construction on the valley floor has resulted in the likely unintended effect of habitat fragmentation and loss of wilderness and has potential effects on Grizzly bear and wolf (USFS Flathead National Forest Draft Management Plan). However, most of the corridor study area land is federally managed and there is very low potential for development.

2.15 Sensitive Species

Montana Natural Heritage Program Sensitive Species - Heritage Program Rankings

The international network of Natural Heritage Programs employs a standardized ranking system to denote **global** (range-wide) and **state** status (NatureServe, 2006). Species are assigned numeric ranks ranging from 1 (highest risk, greatest concern) to 5 (demonstrably secure, least concern), reflecting the relative degree of risk to the species' viability, based upon available information. Global ranks are assigned by scientists at NatureServe (the international affiliate organization for the heritage network) in consultation with biologists in the natural heritage programs and other taxonomic experts.

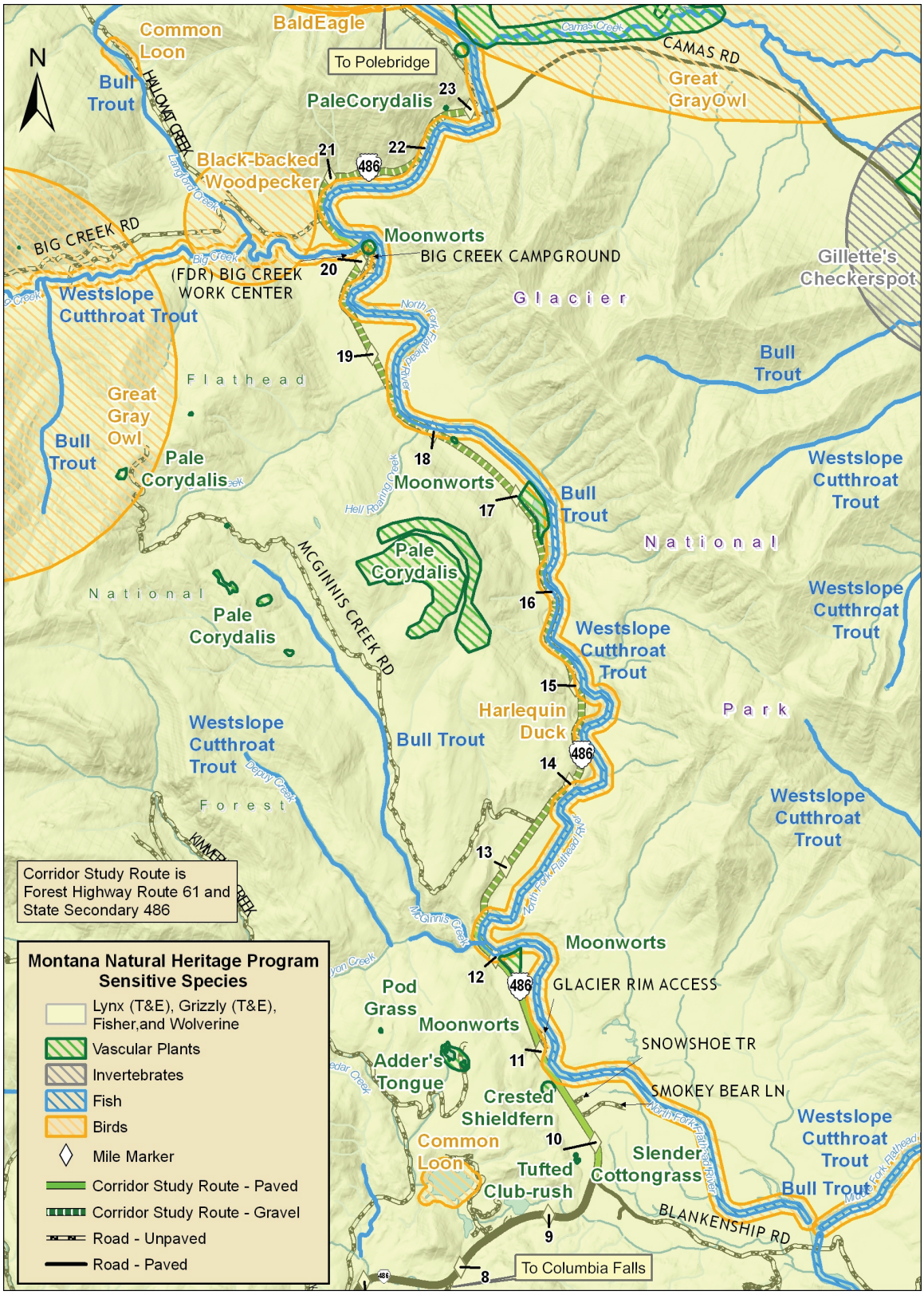
A number of factors are considered in assigning state ranks: population size, area of occupancy in Montana, short and long-term population trends, threats, intrinsic vulnerability, and specificity to environment. Detailed information about the Heritage Program Rankings and sensitive species in the corridor study area is included in Appendix B – Environmental Scan.

Table 2.4 lists the species that have been identified by MNHP and are described in detail within Appendix B – Environmental Scan. The location and distribution of species within the corridor study area are illustrated in Figure 2.3.

Table 2.4 –Montana Natural Heritage Program Sensitive Species

Common Name	*Scientific Name*
Gray Wolf	*Canis lupus*
Fisher	*Martes pannanti*
Wolverine	*Gulo gulo*
Northern Bog Lemming	*Synaptomys borealis*
Harlequin Duck	*Histrionicus histrionicus*
Blackbacked Woodpecker	*Picoides arcticus*
Bald Eagle	*Haliaeetus leucocephalus*
Common Loon	*Gavia immer*
Northern Goshawk	*Accipiter gentilis*
Westslope Cutthroat Trout	*Oncorhynchus clarkia lewisi*
Moonwort	*Botrichium sp.*
Pale Corydalis	*Corydalis sempervirens*
Arctic sweet coltsfoot	*Petasites frigidus var. frigidus*
Meadow Larkspur	*Delphinium burkei*
Tufted Club rush	*Trichophorum cespitosum*
Crested Shieldfern	*Dryopteris cristata*
Pod Grass	*Scheuchzeria palustris*

Figure 2.3 - MNHP Sensitive Species Occurrence in Study Corridor and Surrounding Area



Gray Wolves

Gray Wolves were first delisted from the USFWS Threatened and Endangered Species list on March 28, 2008. Subsequent litigation resulted in the wolves being re-listed on July 18, 2008. Wolves were delisted for a second time on May 4, 2009. On August 6, 2010, Judge Molloy ruled to restore federal protection under the endangered species act to the Rocky Mountain Grey Wolf.

There are three documented wolf packs in the North Fork Valley outside of Glacier National Park, two of which utilize the NFFR corridor study area within their home range. In the rugged topography of the Rocky Mountains, such as within the corridor study area, wolves select valley bottoms and lower slopes where they incorporate key wintering sites of ungulates (deer, elk, and moose) in their travels (Weaver 1994, Singleton 1995, Boyd-Heger 1997). Wolves use the valley bottom intensively from Sage Creek (B.C) down to Camas Creek, particularly areas east of the river (Weaver, 2001). Impacts to wolves must be evaluated for any roadway improvement projects to move forward.

Further information regarding sensitive or threatened/endangered species can be found in the Environmental Scan in Appendix B.

2.16 Threatened and Endangered Species

Threatened and endangered species include those listed or proposed for listing by the USFWS as threatened or endangered. Under Section 7 of the Endangered Species Act (ESA), as amended, activities conducted, sponsored or funded by federal agencies must be reviewed for their effects (direct, indirect and cumulative) on species federally listed or proposed for listing as threatened or endangered. The following listed, proposed and candidate species were considered with respect to this corridor (USFWS, 2010):

Table 2.5 – Threatened and Endangered Species

Common Name	*Scientific Name*	ESA Status
Bull Trout	*Salvelinus confluentus*	**LT/CH/PCH**
Canada Lynx	*Lynx canadensis*	**LT/CH**
Grizzly Bear	*Ursus arctos horribilis*	**LT**
Spalding's Catchfly (a.k.a Spalding's Campion)	*Silene spaldingii*	**LT**

LT = Listed Threatened CH = Critical Habitat PCH = Proposed Critical Habitat

Spalding's Catchfly

Spalding's Catchfly exists in only a few locations in the northwest corner of the state. Extant occurrences are known in the following areas: Tobacco Plains area, Lost Trail National Wildlife Refuge, the Niarada area and on Wild Horse Island. The majority of occurrences have less than 100 individuals, though the largest population range-wide occurs in the state and is estimated to contain several thousand plants. One historical occurrence exists from the Columbia Falls area.

No known occurrences of Spalding's Catchfly have been reported to occur in the corridor study area. If Spalding Catchfly is found to be impacted by any future proposed project, USFWS consultation would be required.

Bull Trout

The North Fork of the Flathead River is mainly comprised of the migratory life form of bull trout. Bull trout live in the Flathead River and Flathead Lake as adults then migrate upstream to spawn in tributaries of the North Fork. Young bull trout may rear from one to several years in these tributaries of the North Fork before migrating downstream to the North Fork, the main tributary of the Flathead River and Flathead Lake, where they will spend the majority of their adult life. The North Fork of the Flathead River is considered Nodal habitat serving as a critical migratory link for bull trout migrating upstream to spawn in tributaries such as Big Creek. Big Creek is considered Core habitat (drainages containing the strongest remaining populations of bull trout in the restoration area) in the Flathead drainage.

The presence of bull trout in the North Fork of the Flathead River and its tributaries does not preclude Flathead County or MDT from upgrading the existing roadway facilities; however, timing or other restrictions may apply to in-stream work to avoid or minimize sediment related impacts to spawning fish or their eggs. If a project were to evolve from the corridor study, extensive coordination with fish biologists from the USFWS and MFWP would be necessary under Section 7 of the ESA to go through the Jeopardy analysis, whether any "take" of bull trout is anticipated, whether there are impacts to proposed critical habitat and what conservation and coordination measures can be taken to minimize the amount of potential "take".

Canada Lynx

The corridor study analysis area for lynx is within the Lower Big and Canyon Lynx Analysis Units (LAU).

The status and trend of lynx in the Flathead National Forest is not known. Track surveys along the NFFR in the winters of 2000-01 and 2001-02 documented lynx to the north of Polebridge, but none south of Polebridge (Edmonds et al., 2002).

The NFFR itself is within designated lynx critical habitat. Discussions with Flathead National Forest wildlife biologist (R. Kuennen, 2010) indicate that on Flathead National Forest lands, designated critical habitat extends all the way down to the banks of the North Fork of the Flathead River. On the Glacier National Park side, it begins at 4,000 feet in elevation and extends above into the high alpine forests of the park. Impacts to lynx would need to be evaluated for any improvement option proposal advanced into a project for the corridor study area.

Grizzly Bear

The NFFR corridor study area lies within the boundaries of the Northern Continental Divide Ecosystem Recovery Zone. Grizzly bears in the North Fork area have been studied for over 30 years. A proposed road paving project along HWY486 back in the late 1970's and early 1980's was found by the USFWS to have the potential to Jeopardize the continued existence of the listed threatened Grizzly bear in 1980 and 1982 (USFWS, 1980, 1982). Grizzly bears are known to occur throughout the North Fork valley with higher densities further north closer to the Canada - U.S. border. GPS telemetry of individual Grizzly bears indicates that Grizzly bears do occur within the corridor study area in particular at the southern end and the northern end near Great Northern Flats and the confluence of Big Creek and the North Fork of the Flathead River (Servheen and Williams, 2010).

Any proposed roadway improvement options resulting from the NFFR Corridor Study or future project development would need to be reviewed for potential impacts to Grizzly bears and their habitat. It is likely that any proposed roadway project beyond maintenance of existing conditions would likely result in formal consultation under Section 7 with the USFWS. This consultation is required if federal funds or a federal action is involved. This consultation is required especially if an improvement option would increase traffic speeds, lead to increased development, or increase traffic volumes.

2.17 Water Quality, Wetlands, Water Resources and Fisheries

As part of the existing conditions review of this corridor study, wetlands were observed and noted in the field; however, no formal wetland delineation was conducted for this study. Formal wetland delineation would be necessary for any proposed highway-related actions as required by Section 404 of the Clean Water Act and Executive Order 11990, Protection of Wetlands.

The North Fork area has abundant wetland and riparian habitat due to previous glaciations, high precipitation and the development of floodplain landforms along the North Fork of the Flathead River. Thus, riverine and depressional wetlands are the most widespread wetland types (Cooper et.al, 2001).

The riverine fluvial processes are intact and support the development of early and late seral cottonwood stands. Mature cottonwood gallery forests have an intact native shrub understory. The National Wetlands Inventory (NWI) has been completed for Flathead County. However, the NWI is not inclusive of all wetlands that are in the corridor study area. The corridor study area inventory is illustrated in Figure 2.4, NWI Wetlands.

Wetland plant communities and their conservation ranks for North Fork of the Flathead wetlands arranged by Cowardin system, class, and subclass were taken from Cooper et.al, 2000. A full list of vegetation communities can be found in the Environmental Scan (Appendix B).

Streams and Fisheries

Big Creek

Big Creek is a major tributary to the North Fork of the Flathead River. Big Creek is a key spawning stream for bull trout and westslope cutthroat trout because of the clean water and its physical characteristics (Sirucek et.al, 2003). Big Creek is listed as Core habitat under the currently Proposed Critical Habitat for Bull trout by the USFWS. Big Creek is presently partially supporting the beneficial uses of aquatic life support and cold-water fishery as defined by the Montana Department of Environmental Quality (DEQ). The DEQ Clean Water Act Information Center (http://cwaic.mt.gov/) shows that Big Creek is listed as water quality impaired (i.e., listed as water quality impaired under Section 303(d) of the Clean Water Act). It provides only partial support for aquatic life and cold water fishery uses due to sediment/siltation and alteration in stream-side or littoral vegetative covers from forest roads (road construction and use) and from stream bank modifications/destabilization

North Fork of the Flathead River

The North Fork of the Flathead River parallels the corridor study and comes close to the roadway in some areas. It flows through a broad alluvial valley with braided and anastomosed channels and expansive floodplains. The North Fork of the Flathead River corridor offers nearly intact ecological connectivity. Biota are able to migrate longitudinally from headwaters to the confluence with the Middle Fork and on to Flathead Lake. The expansive floodplains of the river link the channel to the uplands and foster movements between Glacier National Park and the Whitefish Range.

The North Fork of the Flathead River divides the Flathead National Forest from Glacier National Park. The upper 41 miles above the Camas Creek Bridge are classified as Scenic under the 1976 Wild and Scenic Rivers Act. The lower 17 mile section to Blankenship Bridge and the confluence of the Middle Fork is classified as Recreational.

The North Fork of the Flathead River is a migratory route to spawning tributaries from Flathead Lake for bull trout and Westslope cutthroat trout. The North Fork of the Flathead River is currently listed as nodal habitat in the USFWS Proposed Critical Habitat for Bull trout. Other fish species present in the North Fork of the Flathead River include: Arctic Grayling, Lake Trout, Largescale Sucker, Longnose Sucker, Mottled Sculpin, Mountain Whitefish, Rainbow trout, Slimy Sculpin, and Westslope X Rainbow hybrids (MFWP, MFISH, 2010).

Canyon Creek/McGinnis Creek

Canyon Creek is a perennial tributary to the North Fork of the Flathead River. While this is a small watershed it is directly connected to the North Fork of the Flathead River. Approximately 600 to 800 feet upstream of the North Fork Flathead Road crossing of Canyon Creek via culvert, McGinnis Creek joins Canyon Creek. McGinnis Creek is a perennial stream. Both Canyon and McGinnis have common bull trout occurrence within the first mile of stream reach. In the upper reaches of these streams, genetically pure strains of westslope cutthroat trout persist (MFISH, 2010).

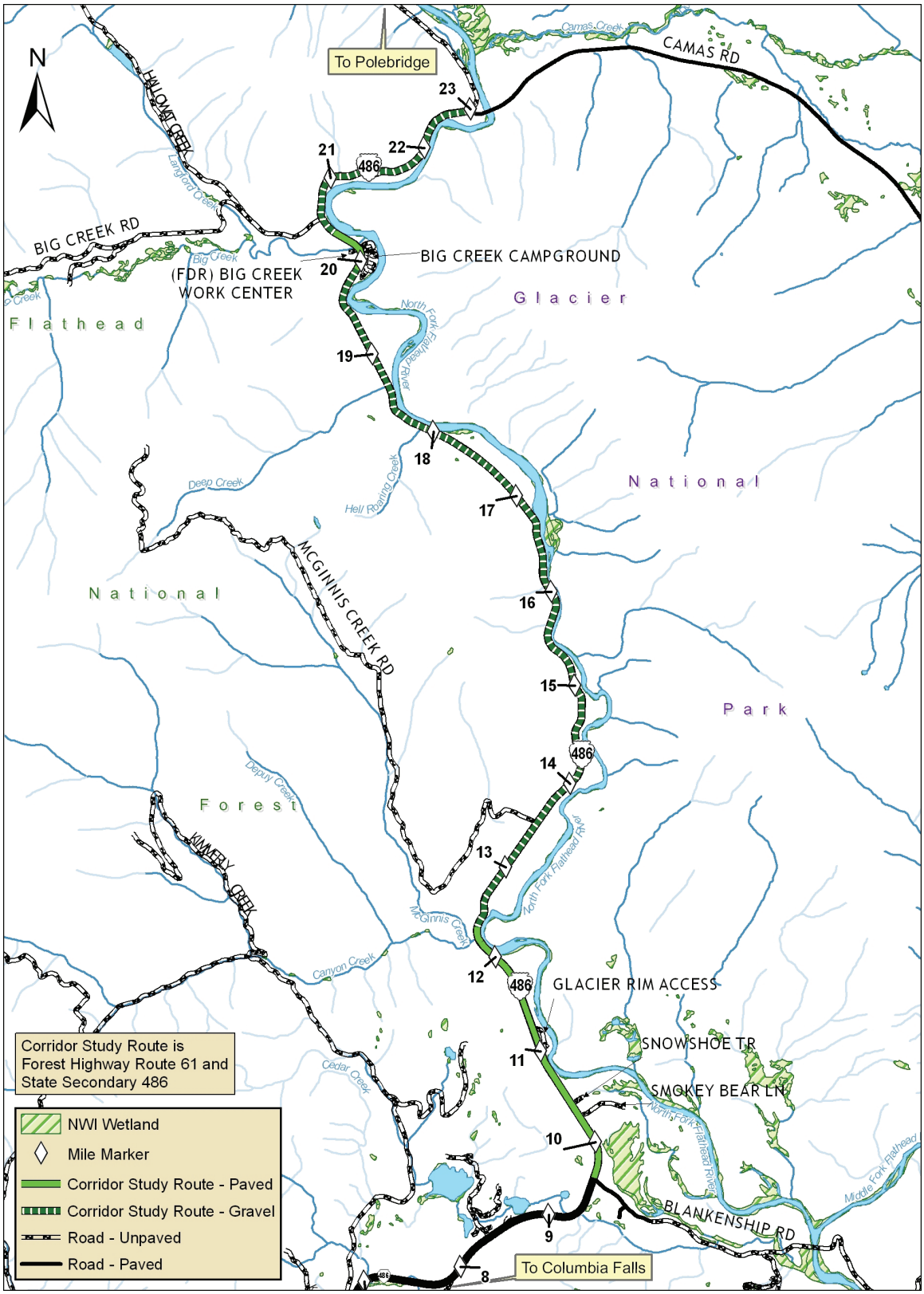
Hell Roaring Creek

Hell Roaring Creek is an intermittent stream that feeds directly into the North Fork of the Flathead River. It is a very small tributary; little to no fisheries information is available for this stream (MFISH, 2010).

Deep Creek

Deep Creek is a perennial tributary to the North Fork of the Flathead River. The culvert at the NFFR crossing is undersized, and has a stand pipe installed which restricts bedload conveyance as well as fish passage (Deleray, 2010). Flathead County periodically must get an SPA-124 authorization to excavate bedload from the channel upstream of the culvert. The culvert also is acting as a fish barrier preventing non-native rainbow trout in the North Fork of the Flathead River from migrating upstream and mixing with the genetically pure strains of westslope cutthroat trout in the headwaters of Deep Creek. If the NFFR should undergo improvements in this area, consideration should be taken to size a culvert to accommodate passage of bed load, but to maintain a fish passage barrier (Deleray, 2010).

Figure 2.4 - NWI Wetlands



Floodplains

Executive Order (EO) 11988, Floodplain Management, requires federal agencies to avoid direct or indirect impact of floodplain development whenever a practicable alternative exists. FHWA Policy and Procedures for Location and Hydraulic Design of Highway Encroachments on Floodplains (23 CFR 650 Part A) and EO 11988 requires an evaluation of project alternatives to determine the extent of any encroachment into the base floodplain. The base floodplain is the regulatory standard used by federal agencies and most states to administer flood plain management programs. A base floodplain, also known as a 100-year floodplain, is defined as lowland and relatively flat areas adjoining inland and coastal waters, including flood-prone areas of offshore islands, with a one percent or greater chance of flooding in a given year. As described in FHWA's floodplain regulation (23 CFR 650 Part A), floodplains provide natural and beneficial values serving as areas for fish, wildlife, plants, open space, natural flood moderation, water quality maintenance, and groundwater recharge.

The 2007 Flathead County Flood Insurance Rate Maps depict an approximate delineated base floodplain for the North Fork of the Flathead River and Canyon Creek. A detailed hydraulic analysis was not done to determine flood elevations. A formal floodplain permit may be required if any work is done in areas shown within the floodplain boundary. Flathead County Floodplain regulations require that the base floodplain elevation is not increased by more than 0.5 feet in a delineated floodplain.

Wild and Scenic Rivers

The National Wild and Scenic Rivers System was created by Congress in 1968 (Public Law 90-542; 16 U.S.C. 1271 et seq.) to preserve certain rivers with outstanding natural, cultural, and recreational values in a free-flowing condition for the enjoyment of present and future generations.

Each river is administered by either a federal or state agency. Designated segments need not include the entire river and may include tributaries. For federally administered rivers, the designated boundaries generally average one-quarter mile on either bank in the lower 48 states and one-half mile on rivers outside national parks in Alaska in order to protect river-related values.

Rivers are classified as wild, scenic, or recreational, and are defined below.

- Wild river areas —Rivers or sections of rivers that are free of impoundments and generally inaccessible except by trail, with watersheds or shorelines essentially primitive and waters unpolluted. These represent vestiges of primitive America.
- Scenic river areas — Rivers or sections of rivers that are free of impoundments, with shorelines or watersheds still largely primitive and shorelines largely undeveloped, but accessible in places by roads.
- Recreational river areas — Rivers or sections of rivers that are readily accessible by road or railroad, that may have some development along their shorelines, and that may have undergone some impoundment or diversion in the past.

The North Fork of the Flathead River originates 50 miles across the border in British Columbia, Canada. The river divides the Flathead National Forest on the west from Glacier National Park on the east. The upper 41 miles of the river above the Camas Creek Bridge (north of the corridor study area) are classified as Scenic under the Act; the Flathead National Forest manages this Wild and Scenic River. The lower 17 mile river section from the Camas Creek Bridge to the Blankenship Bridge and the confluence of the Middle Fork is classified as Recreational. The section of the river adjacent to the corridor study area from the Camas Creek

Bridge milepost 22.7 to approximately milepost 10.7, where the North Fork of the Flathead River turns east away from the road, is classified as Recreational.

2.18 Air Quality

The NFFR, within the corridor study area, is a predominantly gravel roadway that was last improved in 1987. This section of the NFFR is considered by many to be a rough, wash-boarded road the majority of the year and dusty during the warm summer months. Flathead County Road Department is responsible for maintaining this road. Maintenance activities include grading the roadway and applying dust suppressants (as necessary).

In 2007, the Montana Department of Environmental Quality issued an Administrative Order on Consent (AOC) to Flathead County for emissions of airborne particulate matter from unpaved roads in the county. To resolve the AOC, Flathead County agreed to a Supplement Environmental Project (SEP) for dust abatement activities on unpaved roads in the county. The SEP included the following:

- Implementing a dust abatement program on gravel county roads;
- Installing speed limit signs indicating a mandatory speed limit of 35 mph and a recommended speed limit 20 mph for all unpaved roads; and
- Hiring a half-time sheriff deputy to enforce speed limits on gravel county roads.

Since Flathead County maintains the majority of the NFFR, the corridor study area is included in this SEP. Activities under the SEP are considered maintenance and are requirements of the county.

Non-attainment Areas

EPA designates communities that do not meet National Ambient Air Quality Standards **(**NAAQS**)** as "non-attainment areas." States are then required to develop a plan to control source emissions and ensure future attainment of NAAQS. The corridor study area is not located in a non-attainment area for PM-2.5, PM-10, or carbon monoxide (CO). The nearest designated PM-10 non-attainment area is located in the City of Columbia Falls, approximately eight miles south of the southern end of the corridor study. There are no nearby PM 2.5 or CO non-attainment areas.

Class I Airsheds

Glacier National Park is a mandatory Class I Airshed and is located adjacent to the corridor study area, on the east side of the North Fork of the Flathead River. Class I Airsheds are considered the most pristine airsheds in the country. Therefore, state and federal air regulators are required "to preserve, protect, and enhance the air quality" in these areas. Designation as a Class I area permits only small incremental increases in new air pollutants. Of particular concern in these areas is visibility (or haze).

Road dust is primarily comprised of larger particles (PM10 and larger) that travel relatively short distances before setting back to the ground or adhering to vegetation. Therefore, road dust is not likely to be a significant contributor to regional haze in general. The dust from the NFFR, while noticeable along the road itself, is likely not the right size, or travelling in sufficient quantity or for a sufficient distance to have any meaningful impact on park visibility related to the Class 1 Airshed inside the park boundary.

A requirement of the Prevention of Significant Deterioration (PSD) provisions of the Clean Air Act (CAA) require that new major stationary sources, or major modifications of existing stationary sources, must first receive a PSD permit before implementing construction. A

stationary source is one that is well defined, such as the stack(s) of a coal-fired power plant. Maintenance or reconstruction activities on the NFFR would not be a major stationary source; therefore, these activities would not be subject to the PSD permitting process.

2.19 Potential Hazardous Sites

The Montana Natural Resource Information System (NRIS) database was searched for underground storage tank (UST) sites, leaking underground storage tank (LUST) sites, abandoned mine sites, remediation response sites, landfills, National Priority List (NPL) sites, and toxic release inventory sites in the vicinity of the NFFR along the corridor study area. There were no UST sites, LUST sites, abandoned mine sites, remediation response sites, landfills, NPL sites, or toxic release inventory sites identified in the vicinity of the corridor study area. Because there were no sites identified in the corridor study area with potential environmental concerns, it appears unlikely that soil or groundwater contamination would be encountered during any improvement projects on the NFFR.