

Final

# Programmatic Environmental Impact Statement For Northern Border Activities

## Section 5: East of the Rockies Region



July 2012

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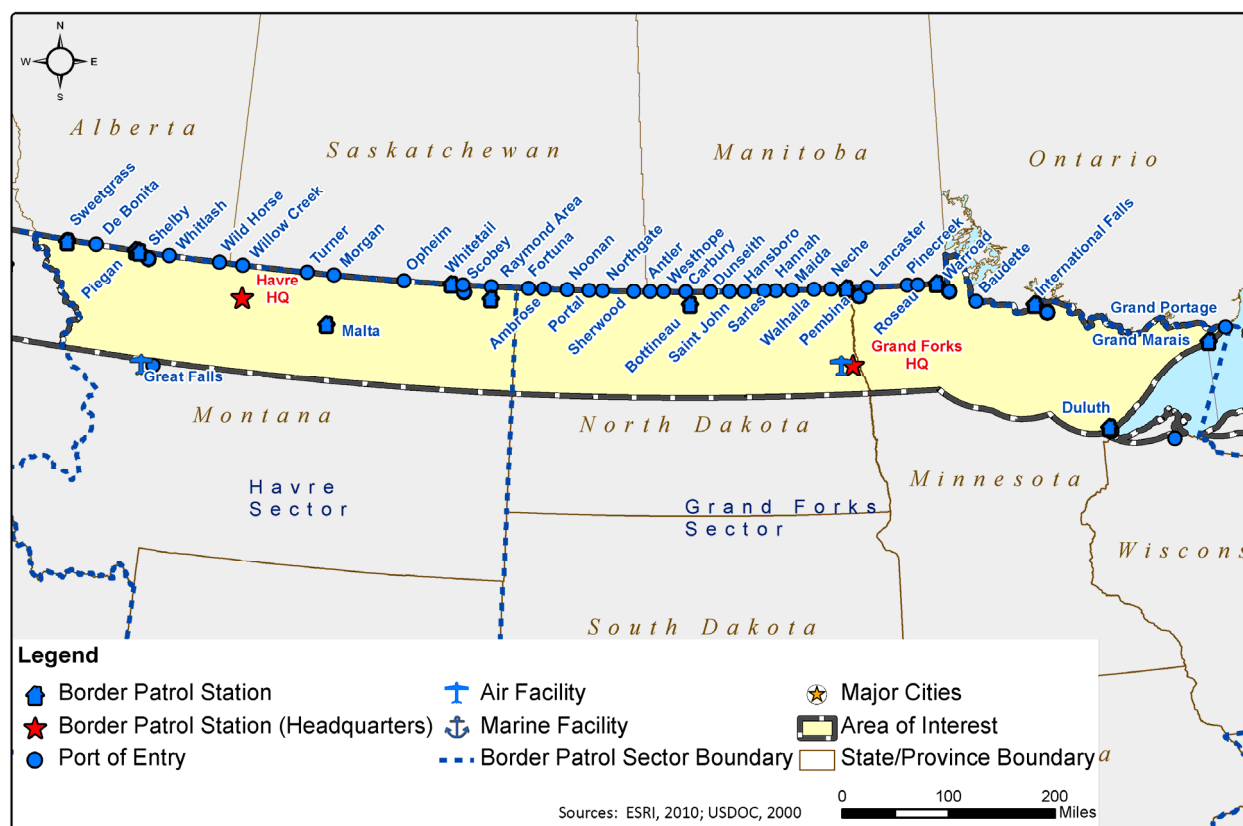
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## 5 EAST OF THE ROCKIES REGION

### 5.1 INTRODUCTION

This chapter analyzes potential environmental effects in the East of the Rockies (EOR) Region arising from U.S. Customs and Border Protection (CBP) actions related to its homeland security mission. The EOR Region includes the areas of Minnesota, North Dakota, and Montana east of the Continental Divide that fall within about 100 miles of the northern border. Figure 5.1-1 displays the territory and CBP facilities of the region.

**Figure 5.1-1. The EOR Region and CBP Facilities**



The northern border environment in the EOR Region has a wide variety of habitats and terrain types that include heavily forested lands, semi-arid plains, rolling hills, and deep river valleys and associated watersheds, including the Milk River, Marais River, Missouri River, Souris River, Red River, Lake of the Woods, Rainy River, Rainy Lake, and Lake Superior. The region is dominated by open scrub-shrub, grass, and open prairie lands that account for approximately 67 percent of all land cover types in this region. Forested land, found mostly in Minnesota and the Montana Rockies, accounts for another 20 percent of the land cover area.

#### U.S. Border Patrol in the EOR Region

There are two U.S. Border Patrol (USBP) sectors within the EOR Region: the Havre and Grand Forks sectors. The Havre sector has 456 miles of international border, starting along the Montana-North Dakota border to the east and ending at the Continental Divide to the west. The sector consists of seven Border Patrol stations (BPS) in Montana (Plentywood, Scobey, Havre,

Malta, St. Mary, Shelby, and Sweetgrass) and two substations, also in Montana (Billings and Twin Falls). Billings and Twin Falls are deep interior stations, while the other stations are within a 45-minute drive of the northern border.

The Grand Forks sector has 861 miles of international border starting at Lake Superior on the east and ending at the Montana-North Dakota border on the west. The sector consists of eight BPSs (Grand Forks, North Dakota; Bottineau, North Dakota; Duluth, Minnesota; Grand Marais, Minnesota; International Falls, Minnesota; Pembina, North Dakota; Portal, North Dakota; and Warroad, Minnesota).

The large swaths of remote terrain pose a challenge for surveillance. CBP uses diverse patrols, including on- and off-road-vehicle, snowmobile, pedestrian, and aerial patrols. Because this region is remote, CBP makes use of partnerships with Government agencies (Federal law enforcement and land management agencies, state departments of natural resources, and Canadian authorities) and private entities (communities, landowners, and inter-boundary groups) for both law enforcement and intelligence missions.

The national forest areas and wilderness areas, listed in Table 5.1-1, pose specific access challenges. Both CBP and the U.S. Forest Service (USFS) are working to fully implement a memorandum of understanding (MOU) signed in 2006 between the Department of Homeland Security (DHS), the Department of Agriculture (USDA), and the Department of the Interior (DOI). The MOU sets out a framework for cooperation and provides for DHS access to USFS lands to implement its security mission.

Border Patrol sectors within the region deploy a combination of static permanent surveillance, ground radar, and acoustic sensors, with repeaters for extended line-of-sight coverage. Forward operating bases (FOBs) are deployed in parts of this region.

### **Office of Air and Marine in the EOR Region**

The Montana Great Falls Air Branch of the CBP Office of Air and Marine (OAM) deploys aircraft from the Great Falls Airport in Montana. Several dozen pilots conduct airplane and helicopter patrols of land and air space areas. The North Dakota Grand Forks Air Branch of OAM operates from Grand Forks Air Force Base in Grand Forks, North Dakota. In addition to standard surveillance aircraft, the North Dakota Grand Forks Air Branch also operates the only unmanned aerial systems (UAS) on the northern border. The allowable service range of UAS in this region was recently extended to the northern border between Land of Lakes, Minnesota and Spokane, Washington.

### **Office of Field Operations in the EOR Region**

CBP Office of Field Operations (OFO) port-of-entry personnel are the face at the border for most visitors entering the United States. Each OFO region includes one or more large ports of entry (POEs) that may oversee smaller ports of varying sizes. CBP enforces the import and export laws and regulations of the U.S. Federal Government and implements immigration policy and programs. Agriculture is also inspected at POEs to protect the United States from carriers of animal and plant pests and diseases that could cause serious damage to U.S. crops, livestock, pets, and environment.

Montana POEs under the management of OFO include the large service port at Great Falls. A service port is an OFO location that has a full range of cargo processing functions, including inspections, entry, collections, and verification. There are also larger area ports with responsibilities for more than one port at Sweetwater and Raymond. Other EOR ports in the state include Butte Airport, Del Bonita, Kalispell Airport, Morgan, Opheim, Scobey, Turner, Whitetail, Whitlash, Wild Horse, and Willow Creek.

North Dakota POEs under the management of OFO include the large service port at Pembina. Other EOR ports in the state include Ambrose, Antler, Carbury, Dunseith, Fortuna, Grand Forks, Hannah, Hansboro, Fargo, Maida, Minot International Airport, Neche, Noonan, Northgate, Portal, Sarles, Sherwood, Saint John, Walhalla, Westhope, and Williston Sloulin Field International Airport.

Minnesota POEs under the management of OFO include the large service port at Minneapolis. Other EOR ports in the state include Baudette, Duluth, Grand Portage, International Falls, Lancaster, Pinecreek, Rochester, Roseau, and Warroad.

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## 5.2 AIR QUALITY

The EOR Region study area contains many air quality control regions (AQCR) and Class I areas that could experience impacts due to the proposed action and alternatives in this Programmatic Environmental Impact Statement (PEIS). Class I areas are Federal lands, designated by Congress as of August 7, 1977, that have air quality restrictions under Section 162(a) of the Clean Air Act (CAA) that are more stringent than the standards that apply elsewhere. However, the mere presence of a sensitive area, such as a nonattainment, maintenance, or Class I areas, does not guarantee that that area would be impacted by CBP activities. Chapter 3, Section 3.2 provides more detailed information on national standards and requirements used to describe and determine effects to air quality resources.

### 5.2.1 AFFECTED ENVIRONMENT

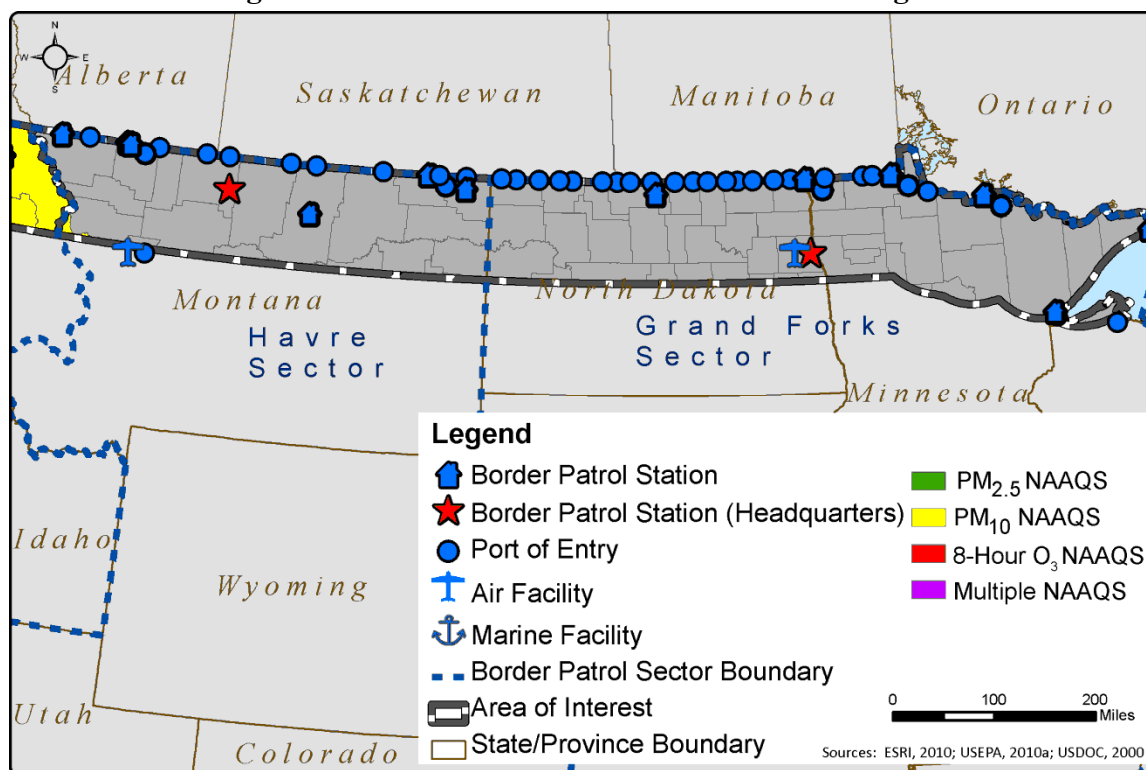
#### 5.2.1.1 National Ambient Air Quality Standards and Attainment Status

Nonattainment areas within 100 miles of the border are shown in Figure 5.2-1. The narrow valleys and regional climate often cause temperature inversions that trap pollutants in cold air along valley floors. Inversions become even more problematic in urban areas where vehicle exhaust, smoke from wood stoves, and industrial processes are more concentrated (MDEQ, 2010; IDEQ, 2010). Major cities usually have high traffic volumes and large industrialized areas that can contribute to elevated O<sub>3</sub> and PM<sub>2.5</sub> (particulate matter that is 2.5 micrometers in diameter and smaller). There is a small section of land in Montana in nonattainment for PM<sub>10</sub> (particulate matter that is 10 micrometers in diameter and smaller). The entire EOR Region has some of the best air quality in the United States, with much of this region being remote.

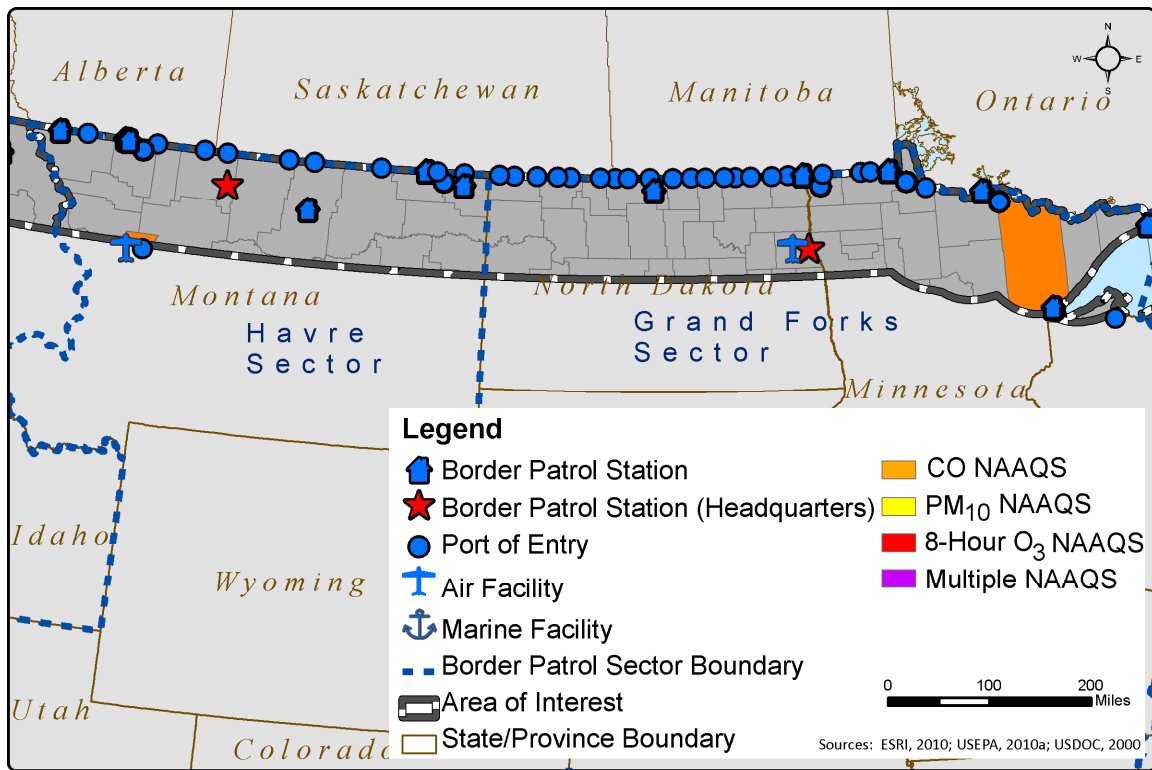
Federal regulations designate AQCRs that were once classified as nonattainment but that have lowered levels of pollutants through the use of regional controls as maintenance areas.

Consistent with the nonattainment areas, Figure 5.2-2 shows one maintenance area in the EOR Region in Saint Louis County, Minnesota for carbon monoxide (CO). A complete list of nonattainment and maintenance areas organized by state and county is located in Appendix J.

**Figure 5.2-1. Nonattainment Areas in the EOR Region**



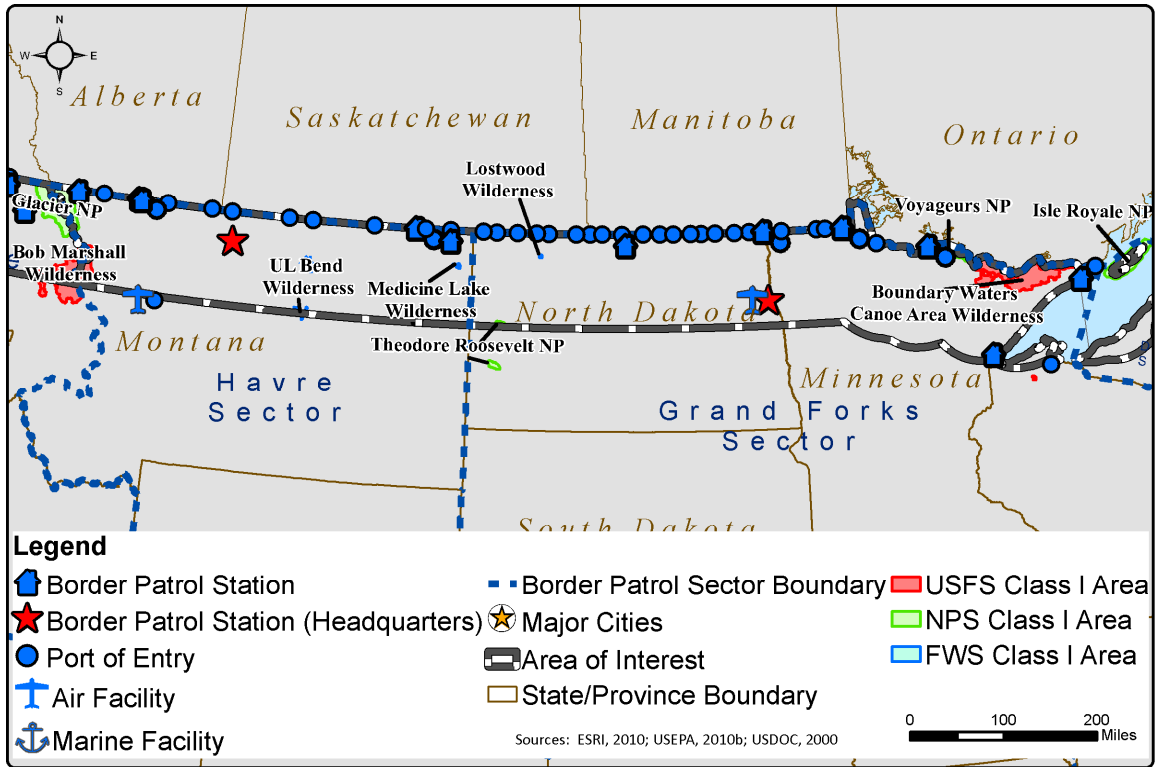
NAAQS: National Ambient Air Quality Standards

**Figure 5.2-2. Maintenance Areas in the EOR Region**

#### 5.2.1.2 Class I Areas

The CAA protects areas where air quality exceeds national standards established by the U.S. Environmental Protection Agency (USEPA) by measures to prevent significant deterioration of air quality (PSD). The more stringent restrictions in effect in Class I areas are largely meant to maintain unimpaired visibility in areas such as “national parks, national wilderness areas, national monuments, national seashores, and other areas of special natural, recreational, scenic, or historic value.” In general, “clean air areas” are protected through ceilings on the additional amounts of certain air pollutants over a baseline level. The PSD increment amounts vary based on the area’s classification. Class I areas and major CBP facilities in the EOR Region are shown on the map in Figure 5.2-3.

### 5.2-3. Class I Areas in the EOR Region



USFS: United States Forest Service

NPS: National Park Service

FWS: U.S. Fish and Wildlife Service



## 5.3 BIOLOGICAL RESOURCES

### 5.3.1 INTRODUCTION

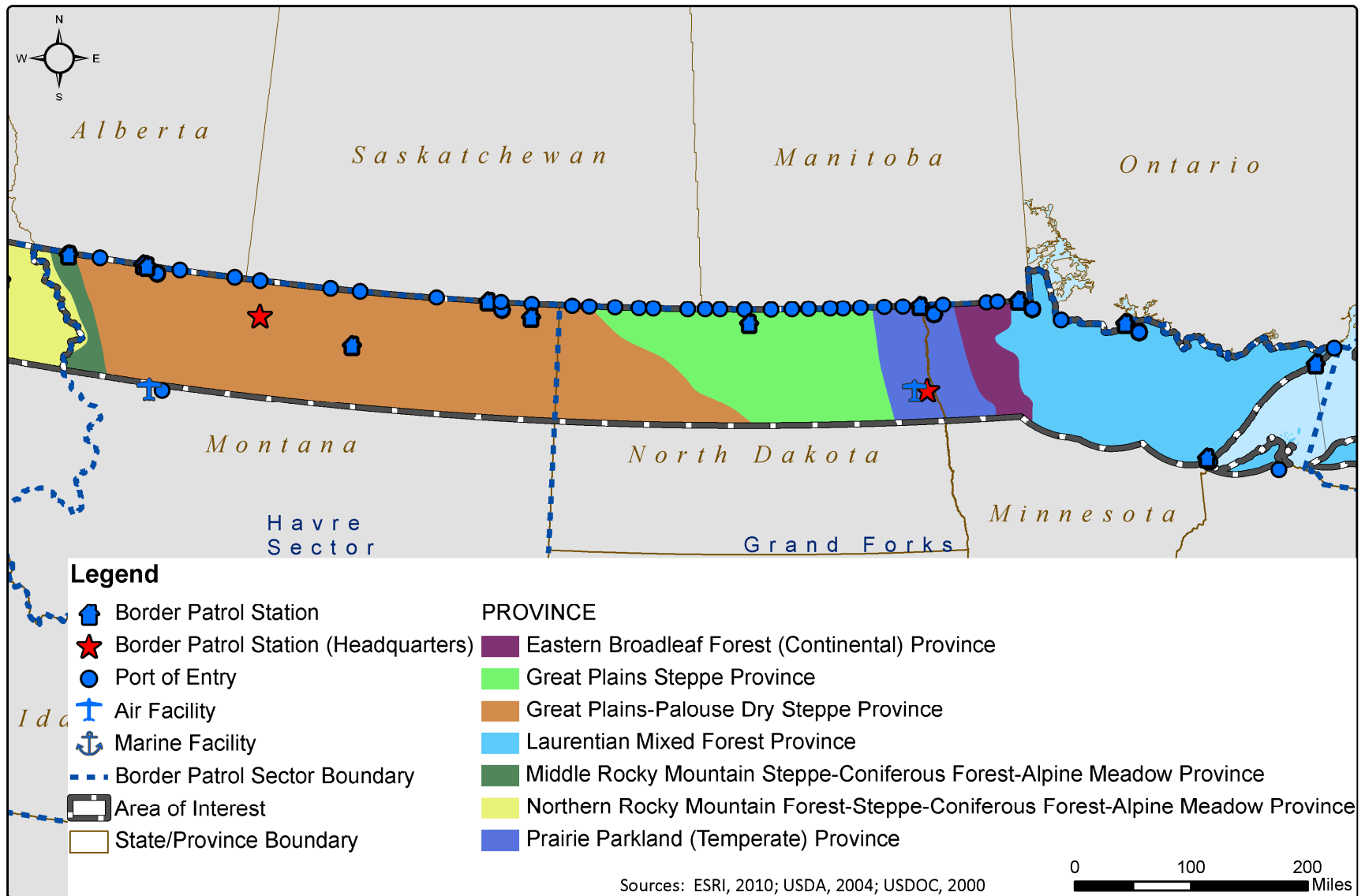
The EOR Region falls within portions of the following states: Montana, North Dakota, and Minnesota. Biologically, the EOR Region can be divided into six major ecoregions:

- Middle Rocky Mountain Steppe–Coniferous Forest–Alpine Meadow;
- Great Plains–Palouse Dry Steppe;
- Great Plains Steppe;
- Prairie Parkland;
- Eastern Broadleaf Forest (continental); and,
- Laurentian Mixed Forest.

Generally, these ecoregions continue north of the U.S.-Canada border (Figure 5.3-1). For a complete description of the above ecoregions, refer to Appendix L.

Map resources for the ecoregion map in this section were developed from the U.S. Census Bureau (USCB), U.S. Geological Survey (USGS), and Environmental Systems Research Institute (ESRI) databases. Each ecoregion has a unique set of biological, climatic, and topographical characteristics along with unique challenges and opportunities for CBP.

Figure 5.3-1. Ecoregions of the EOR Region



### 5.3.2 AFFECTED ENVIRONMENT

#### 5.3.2.1 Blocks of Regionally Significant Habitat

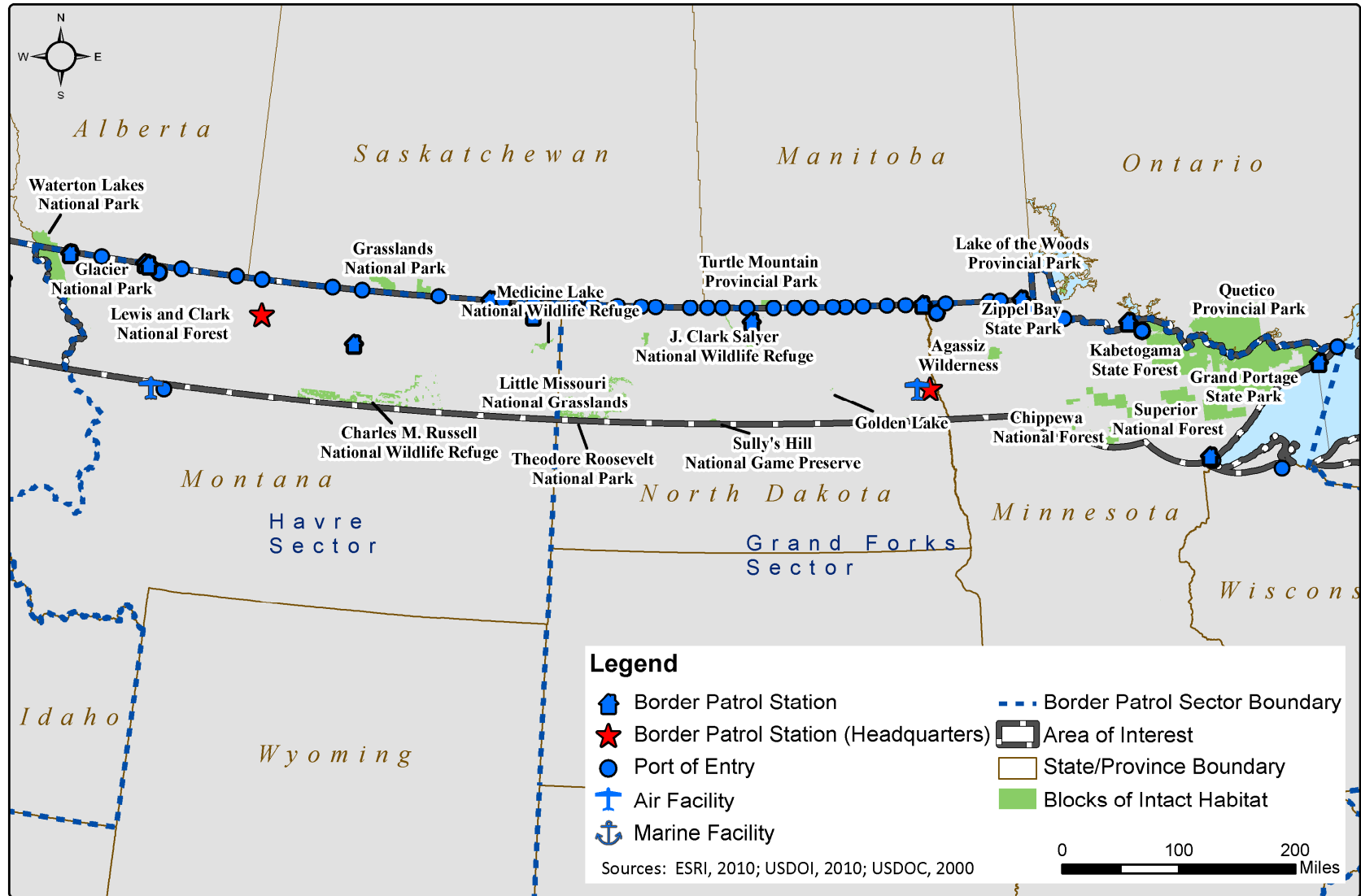
The blocks of regionally significant habitat listed below and shown in Figure 5.3-2 are relatively undeveloped and intact habitat protected as wilderness, state parks, and state and national forests. “Intact habitat” refers to areas of largely unfragmented habitat with few alterations or disturbances, such as improved roads or other development. Most areas listed are protected by law (wilderness areas, national parks), while others may occupy private lands and often cross state and country boundaries.

Selected regionally significant blocks that represent this region include:

- Agassiz Beach Ridges (Minnesota);
- Agassiz Wilderness (Minnesota);
- Akamina-Kishinena Provincial Park (British Columbia, Canada);
- Audubon National Wildlife Refuge (North Dakota);
- Bluestem Prairie Scientific and Natural Area (Minnesota);
- Boundary Waters Canoe Area Wilderness (Minnesota);
- Bowdoin National Wildlife Refuge (Montana);
- Charles M. Russell National Wildlife Refuge (Montana);
- Chase Lake Wilderness (North Dakota);
- Chippewa National Forest (Minnesota);
- Comertown Pothole Prairie Preserve (Montana);
- Forest River Biology Area (North Dakota);
- Garden Island State Recreation Area (Minnesota);
- Glacier National Park (Montana, USA)/Waterton Lakes National Park and Akamina-Kishinena Provincial Park (Alberta and British Columbia, Canada);
- Golden Lake SWMA (North Dakota);
- Grand Portage National Monument (Minnesota) ;
- Grand Portage State Park (Minnesota);
- Grasslands National Park of Canada (Alberta, Canada);
- Gunlogson Arboretum Nature Preserve (North Dakota);
- H.R. Morgan State Nature Preserve (North Dakota);
- J. Clark Salyer National Wildlife Refuge (North Dakota);
- Kabetogama State Forest (Minnesota, USA)/ Sandpoint Island Provincial Park and Quetico Provincial Park (Ontario, Canada);
- Kennedy Coulee (Alberta, Canada);

- La Verendrye Provincial Park (Ontario, Canada);
- Lake of the Woods Provincial Park (Ontario, Canada);
- Lewis and Clark National Forest lands (portions) (Montana);
- Little Missouri National Grassland (North Dakota);
- Lostwood National Wildlife Refuge (North Dakota);
- Lostwood Wilderness (North Dakota);
- Lower Yellowstone River (Montana);
- Malmberg Prairie (Minnesota);
- Medicine Lake National Wildlife Refuge (Montana);
- Medicine Lake Wilderness (Montana);
- Milk River Natural Area (Alberta, Canada);
- Mirror Pool Wildlife Management Area (WMA) (North Dakota);
- Missouri Coteau (North Dakota);
- North Dakota State Forest Lands and Willow Lake National Wildlife Refuge (North Dakota, USA)/Turtle Mountain Provincial Park (Manitoba, Canada);
- Northern Montana prairies (Montana);
- Outpost Wetlands Natural Area and Police Outpost Provincial Park (Alberta, Canada);
- Pembina Gorge (North Dakota);
- Pembina Trail Preserve (Minnesota);
- Pigeon River Provincial Park (Ontario, Canada);
- Pine Butte Swamp Preserve (Montana);
- Sable Islands Provincial Nature Reserve (Ontario, Canada);
- Sully's Hill National Game Preserve (North Dakota);
- Superior National Forest (Minnesota);
- Theodore Roosevelt National Park (within the Little Missouri National Grassland) (North Dakota);
- Theodore Roosevelt Wilderness (North Dakota);
- Turtle Mountain Wetland areas on the Blackfeet Indian Homeland/Reservation (Montana);
- UL Bend Wilderness (Montana);
- Voyageurs National Park (Minnesota); and,
- Zippel Bay State Park (Minnesota).

Figure 5.3-2. Blocks of Regionally Significant Habitat in the EOR Region



### 5.3.2.2 Sensitive Habitats

Within a 100-mile zone adjacent to the U.S.–Canada border in this region are several ecological communities representing sensitive habitats. The sensitive habitats described here occur in many of the larger habitat areas listed in Section 5.3.2.1, and are home to many of the threatened and endangered species in the next section. For example, Eastern Great Plains Tallgrass Aspen Parkland occurs in many grassland areas in this broad geographic region, home to protected species and common plants such as little bluestem (*Schizachyrium scoparium*). Some descriptive habitat names used below, such as cedar/tamarack swamps, span many regional boundaries and are more general in meaning. Others, such as calcareous fens (a wetland plant community), define much more specific ecological associations.

Many of these habitats are very fine in scale and form a patchwork of biologically sensitive and diverse areas. The list of sensitive habitats is based on those enumerated and described by the World Wildlife Fund (WWF, 2001), ecological system descriptions within the NatureServe.org database, and each state’s respective natural resources agency (NatureServe, 2010).

- Alpine dwarf-shrubland—dwarf-shrubs or dwarf willows forming a heath-type ground cover;
- Alpine meadows—open meadows at and above the timberline;
- Bogs—wetland type that accumulates acidic peat (deposits of dead plant material);
- Calcareous fens—rarest wetland community in Minnesota and Wisconsin, with input of alkaline mineral-rich groundwater;
- Cedar/tamarack swamps—forested wetland characterized by one or both of these tree species;
- Eastern Great Plains Tallgrass Aspen Parkland—mosaic or combination of tallgrass prairie, brush prairie, aspen-oak mixed woodlands, and wet prairie (see photo above);
- Eastern Great Plains wet meadow, prairie, and marsh—distinguished from upland prairie systems by exhibiting seasonal inundation (wetlands with near-surface groundwater), in conjunction with silty, dense clay, often hydric soils;
- Flowages—series of connected lakes;
- Freshwater estuaries—ecological community where lake and river waters mix;
- Great Lakes beaches and shorelines—Great Lakes beach community at interface of land and water, adjacent to margins of Lake Superior, often with sparsely vegetated dunes;
- Great Plains ponderosa pine woodland and savanna—ponderosa pine woodlands surrounded by grasslands;
- Great Plains sand prairie—often considered part of the tallgrass or mixed-grass regions in the Great Plains, with a mixture of elements from the Western Great Plains shortgrass prairie, Central mixed-grass prairie, and northwestern Great Plains mixed-grass prairie, and soils derived from sandstone weathering;
- Hardwood swamps—deciduous forested wetland;

- Inland lake shorelines—beaches of inland lakes characterized by water-level fluctuation that prevents development of stable shoreline plant communities, instead supporting more-specialized biota adapted to sandy or gravelly shorelines;
- Middle Rocky Mountain montane Douglas-fir forest and woodland—mixed deciduous/coniferous montane forest.
- Northwestern Great Plains mixed-grass prairie—grassland of medium-height grasses, on fine-textured and well-drained soils;
- Prairie Potholes—water-holding depressions of glacial origin, primary wetland habitat;

**Prairie pothole**



Source: (NDL, No Date).

- Rocky Mountain riparian woodland and shrubland—within the flood zone of rivers, on islands, sand and gravel bars, and adjacent streambanks;
- Rocky Mountain subalpine-fen—a mountain wetland fed by mineral-rich surface water or groundwater and below alpine areas in elevation;
- Sedge meadow—wetland dominated by sedges growing on saturated soils typically composed of peat or muck.
- Shorelines-dunes-cliffs/talus—rock outcrops that contain sparsely vegetated native plant communities;
- Tallgrass prairie—extensive area of flat or rolling, predominantly treeless grassland, native to central North America;
- The Red River Valley shoreline—area of fertile soils subject to flooding;
- Vernal pool—temporary pools, usually devoid of fish, that allow development of natal amphibian and insect species; and,
- Wooded areas—commonly found on moist hillsides.

### 5.3.2.3 Threatened and Endangered Species

The Endangered Species Act (ESA) of 1973 protects federally listed threatened and endangered species. The purpose of the ESA is to protect and recover imperiled species and the ecosystems upon which they depend.

Appendix M lists the threatened or endangered species by county in the EOR Region. Species are listed as threatened or endangered at either the Federal and/or state level. Two animal species have designated critical habitat in the region: the piping plover (*Charadrius melodus*) is listed as federally endangered in Wisconsin, Ohio, and Pennsylvania and threatened in Michigan and New York; and the Canada lynx (*Lynx canadensis*) is listed as federally threatened.

Some states differ in how they list and protect threatened and endangered species. The following list gives the specific agencies and listing differences (if applicable) in the EOR Region.

- Minnesota has an endangered species act that covers animals and plants (NANFA, 2011). The Minnesota Department of Natural Resources designates rare species as threatened, endangered, or special concern.
- Montana has an endangered species act that covers animals, but not plants (NANFA, 2011). Montana Fish, Wildlife, and Parks lists some species as species of concern, in place of either a threatened or endangered listing. The status represents a separate category, described as, “Potentially at risk because of limited and/or declining numbers, range and/or habitat, even though it may be abundant in some areas” (MT FWP, 2010).
- North Dakota does not have an endangered species act (NANFA, 2011); however, the North Dakota Game and Fish Department has identified 100 non-game species as species of conservation priority under North Dakota's Comprehensive Wildlife Conservation Strategy (CWCS). The CWCS includes information relating to the distribution, abundance, habitat requirements, threats, management goals, and monitoring techniques for each of these species. North Dakota uses a different system to rank species in greatest need of conservation, from Level I (greatest need) to Level III (moderate need). Within these ranks, the state also designates the abundance of the species as rare, uncommon, fairly common, common, or abundant.

Following are examples of some of the threatened and endangered species in the EOR Region:

The whooping crane (*Grus americana*) is one of the world's rarest birds. It annually migrates through the EOR Region, traveling from the species' breeding grounds in Canada's Northwest Territories to the Gulf Coast of Texas, returning northward in spring. Whooping cranes inhabit marshes and prairie potholes in the summer. In winter, they inhabit coastal marshes and prairies. This species has had its critical habitat designated by U.S. Fish and Wildlife Service (USFWS), but this habitat sits outside of the 100-mile project area.



### Whooping Cranes



Source: (NDL, No Date).

The black-footed ferret (*Mustela nigripes*) is a member of the weasel family and is closely associated with the extensive grassland habitat in this region, particularly in North Dakota. Historically, black-footed ferrets occupied plains habitat ranging from Texas to southern Saskatchewan. Now black-footed ferrets are limited to seven captive populations and a few wild populations. The black-footed ferret is one of the most endangered mammals in the United States (USDOI, 2008b).

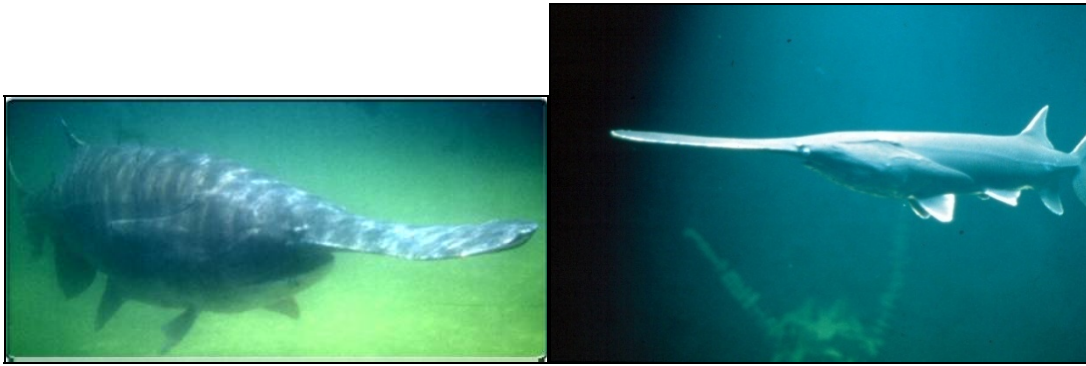
### Black-footed ferret



Source: (NDL, No Date).

The paddlefish is a fish species at risk in the Missouri River of Montana and North Dakota. The cause of decline for this species is loss of habitat due to channelization and impoundment. Any construction activities that result in channelizing or impounding portions of rivers where paddlefish live may amplify the decline.

### Paddlefish



Source: (USDOI, No Date; IDNR, No Date).

#### 5.3.2.4 Wildlife Typically Found in the Region

Many bird, mammal, reptile, and amphibian species remain in the ecoregions covering the year-round.

Common wildlife species include the mule deer (*Odocoileus hemionus*), black bear (*Ursus americanus*), long-eared myotis (*Myotis evotis*), and yellow-bellied marmot (*Marmota flaviventris*).

### Mule deer



Source: (NDL, No Date).

The prairie pothole wetlands and grasslands in this province are home to a variety of wildlife species, including both game (legally hunted) species, and non-game (legally protected, but not endangered or threatened and not hunted) species. Species, such as the northern pintail (*Anas acuta*), green-winged teal (*A. crecca*), American wigeon (*A. americana*), and canvasback (*Aythya valisineria*), while not threatened or endangered may be declining due to wetland destruction or degradation in some areas.

### Northern Pintail



Source: (NDL, No Date).

A variety of native reptiles, amphibians, birds, aquatic insects, mussels, and crustaceans also thrive in and around wetlands in this region. The Canadian toad (*Bufo hemiophrys*), snapping turtle (*Chelydra serpentina*), smooth green snake (*Opheodrys vernalis*), northern redbelly snake (*Storeria occipitomaculata*), silver-spotted skipper (*Hesperia comma*), great blue heron (*Ardea herodias*), northern prairie skink (*Eumeces septentrionalis*), pearl dace (*Margariscus margarita*), three-ridge mussel (*Amblema neislerii*), and giant floater mussel (*Pyganodon grandis*) are some of the more common aquatic species in this area, especially near the Red River (Bailey, 1995; EOE, 2009; Montana Field Guide, 2010; NDGFD, 2011; MNDNR, 2011).

#### 5.3.2.5 Vegetative Habitat Typically Found in the Region

Vegetation in the EOR Region ranges from prairie to mixed forest to a relatively narrow zone of alpine habitats.

Vegetative cover in the Laurentian Ecoregion Province is dominated by forested habitats. Mixed forest stands are made up of several species of conifers, particularly white pine (*Pinus strobus*), along with a mix of deciduous trees. Typical cover consists of mixed pine with aspen-birch, white pine, red pine (*Pinus resinosa*), jack pine (*P. banksiana*), black spruce (*Picea mariana*), eastern hemlock (*Tsuga canadensis*), balsam fir (*Abies balsamea*), and white cedar (*Thuja occidentalis*), among others (Bailey, 1995).

Vegetative cover within the Eastern Broadleaf Forest Province is also dominated by forested habitats. Typical vegetative cover consists mainly of oak-hickory forests with increasing prevalence of maple-beech forests and elm (*Ulmus* spp.) in wetter areas. This province typically has a well-developed understory made up of flowering dogwood (*Cornus florida*), sassafras (*Sassafras albidum*), and hophornbeam (*Ostrya virginiana*) along with other shrubs, evergreens, and wildflower species. Existing wetland types include cattail marshes, wooded wetlands/swamps, and wet meadows (EOE, 2009).

Vegetative cover within the Prairie Parkland (Temperate) Province is dominated by tallgrass prairie and some riparian deciduous forest habitats. Typical vegetative cover consists of a variety of grasses—big bluestem (*Andropogon gerardii*), little bluestem (*Schizachyrium*



*scoparium*), switchgrass (*Panicum virgatum*), and Indian grass (*Sorghastrum nutans*). Extensive areas of prairie-pothole wetlands and oak-hickory forests still remain. Upland forest (white oak-shagbark hickory) occurs on more-dissected land, grading into bottomland forests and wet bottomland prairies along rivers.

Vegetative cover within the Great Plains Steppe Province is dominated by nearly level and rolling plains habitats. Most of this land consists of young glacial drifts and dissected till plains. Typical vegetative cover consists of various tall and short grasses, including little bluestem and blue grama (*Bouteloua gracilis*). Other species include buffalograss (*Bouteloua dactyloides*), needle-and-thread grass (*Hesperostipa comata*), galleta (*Pleuraphis jamesii*), sunflower (*Helianthus annuus*), and goldenrods (*Solidago* spp.). Wetlands in this province include pothole lakes and streams (Stewart and Kantrudi, 1972).

Agriculture has replaced much of the native vegetation (primarily grasses) in the Great Plains Palouse Dry Steppe Province. Idaho fescue (*Festuca idahoensis*) and bluebunch wheatgrass (*Pseudoroegneria spicata*) are the more prominent species in the arid western portion of this area. Many areas are too dry to support forest vegetation; however, ponderosa pine (*Pinus ponderosa*), juniper (*Juniperus communis*), and some aspen (*Populus* spp.) inhabit areas of North Dakota. Common shrubs growing in draws and along streams include the Western snowberry (*Symphoricarpos occidentalis*), prairie rose (*Rosa arkansana*), buffaloberry (*Shepherdia* spp.), chokecherry (*Prunus virginiana*), and sagebrush (*Artemisia* spp.).

#### **Palouse prairie mixed with agriculture**



Source: (USDOI, 2003).

The Middle of the Rocky Mountain Steppe ecoregion is a small sliver of land starting at the continental divide in Glacier National Park and extending east. Altitudinal zones are prominent features of this ecoregion province. Below the subalpine zone, Douglas-fir (*Pseudotsuga menziesii*) is the dominant coniferous tree species. Lodgepole pines (*Pinus contorta*) occur

primarily in the eastern part of the province. A semi-desert vegetation of sagebrush or grass-covered steppe covers the lower-elevation slopes of the mountains and plains (Bailey, 1995). In addition to the extensive conifer forests, the ecoregion contains several other plant communities: alpine meadows, grasslands, wooded riparian stands, and higher-elevation treeline/alpine communities (Bailey, 1995; EOE, 2009; Montana Field Guide, 2010; NDGFD, 2011; MNDNR, 2011).

Invasive, non-native, plant species—many of which are also designated as noxious weeds incurring legal regulations—pose a serious threat to the natural areas in this region. Invasive species expected to develop substantial issues or already producing problems in this region include: spotted knapweed (*Centaurea maculosa*), leafy spurge (*Euphorbia esula*), Canada thistle (*Cirsium arvense*), yellow toadflax (*Linaria vulgaris*), Russian knapweed (*Acroptilon repens*), and field bindweed (*Convolvulus arvensis*), to name only a few (CIPM, 2010).

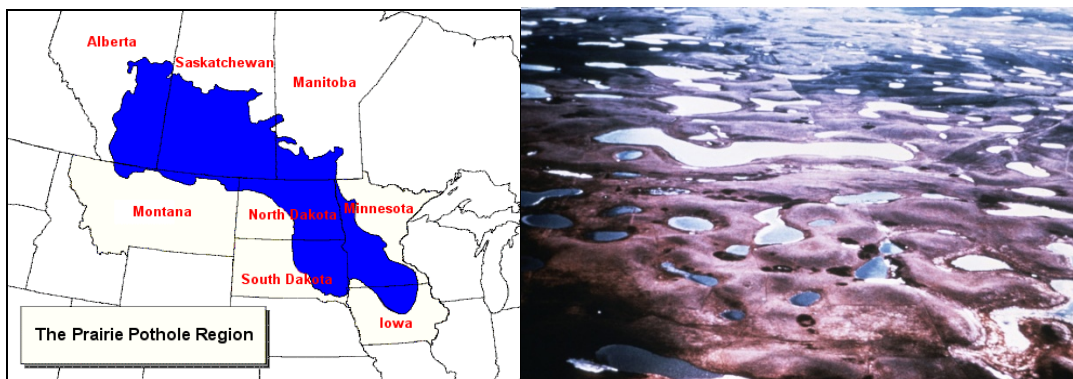
#### 5.3.2.6 Wetlands and Waterways

Wetland types in the EOR Region include:

- Palustrine forested/scrub shrub wetlands (swamps and bogs);
- Palustrine emergent wetlands (marshes, fens, wet meadows, sedge meadows, wet prairies);
- Lacustrine wetlands (lakes);
- Palustrine open water (ponds);
- Riverine habitat (rivers and streams);
- Prairie potholes; and,
- Kettle wetlands.

This region has high concentrations of temporary and seasonal emergent pothole and kettle wetlands that create favorable conditions for duck nesting and migration (Bryce et al., 1996; Woods et al., 2002). The wetlands are generally smaller and scattered in isolated depressions, known as prairie potholes, and swamps tend to be scrub-shrub swamps rather than forested.

**Prairie pothole region map—Left; Aerial photo of prairie pothole region—Right**



Source: (USDOJ, 2011b; NDL, No Date).

High-density, dendritic (a branching pattern) drainages are common in the northwestern glaciated plains. These drainages typically occur in areas of exposed marine shales where first-order streams feed into long, structurally controlled, second and third-order streams with low gradients.

Major rivers include the Rainy, Red, Roseau, Red Lake, Crow Wing, Minnesota, and North Fork Crow in Minnesota; the Red, Pembina, Tongue, Park, and Forest rivers in North Dakota; and the Foothill Grassland River Breaks, Milk, St. Mary, and Marias rivers in Montana. Numerous smaller rivers, streams, and tributaries (perennial and intermittent) also flow throughout the region.

The entire Missouri River, including the section in eastern Montana, is under examination by the Army Corps of Engineers (Omaha District) to improve the natural functioning of the river through the ACOE's Missouri River Recovery Program.

#### **5.3.2.7 Aquatic Resources in the Region**

Aquatic resources are highly regarded within the EOR Region because these aquatic resources support an abundance of ducks, game, and fish. Abundant lakes, rivers, ponds, and wetlands—the remnants of glacial recession—are dominant features on the landscape. One of the Great Lakes, Lake Superior, borders this region on the east side of Minnesota (Bailey, 1995; EOE, 2009).

These aquatic resources support a diverse fishery. Notable fish species include lake sturgeon (*Acipenser fulvescens*), channel catfish (*Ictalurus punctatus*), walleye (*Sander vitreus*), northern pike (*Esox lucius*), muskellunge (*E. masquinongy*), smallmouth bass (*Micropterus dolomieu*), brook trout (*Salvelinus fontinalis*), lake trout (*S. namaycush*), yellow perch (*Perca flavescens*), white sucker (*Catostomus commersonii*), and the common shiner (*Luxilus cornutus*). Various native reptiles, amphibians, waterbirds, aquatic insects, mussels, and crustaceans also thrive in these waters (USDOC, 2010a).

Several very large lakes are located within the Minnesota portion of the project area (Mullet, Mille Lacs, Leech, Gogebic, Mud, Kabetogama, Rainy, and Vermilion lakes, Red Lakes, and Lake of the Woods). Numerous smaller lakes and ponds also fall within this area.

Accidental introductions of invasive species have serious impacts on aquatic resources, damaging fisheries and native habitats. Invasive aquatic animal species of concern, also called aquatic nuisance species, include the rusty crayfish (*Orconectes rusticus*), sea lamprey (*Petromyzon marinus*), zebra mussels (*Dreissena polymorpha*), quagga mussels (*D. rostriformis bugensis*), and the silver carp (*Hypophthalmichthys molitrix*), among many others (USDA, 2003).

## **5.4 GEOLOGY AND SOILS**

### **5.4.1 INTRODUCTION**

The geology and soils in the EOR Region in the northern border study area vary widely throughout the region. Geology can be described as the study of the earth's history through rock formations. These rocks often serve as the parent rock for soils present at and below the surface. The topography of a given area on earth can be described as its surface, shape, or features.

This section addresses the geologic conditions in the EOR Region and describes the potential impacts of CBP program alternatives on geologic resources. The study area contains slightly different topographic features ranging from the relatively flat plains from Montana through North Dakota, followed by the lake region of Minnesota. Geologic formations ranging from glacial deposits to the Canadian Shield are present within the EOR Region and have been shaped over thousands of years by glacial, water, and wind mechanisms.

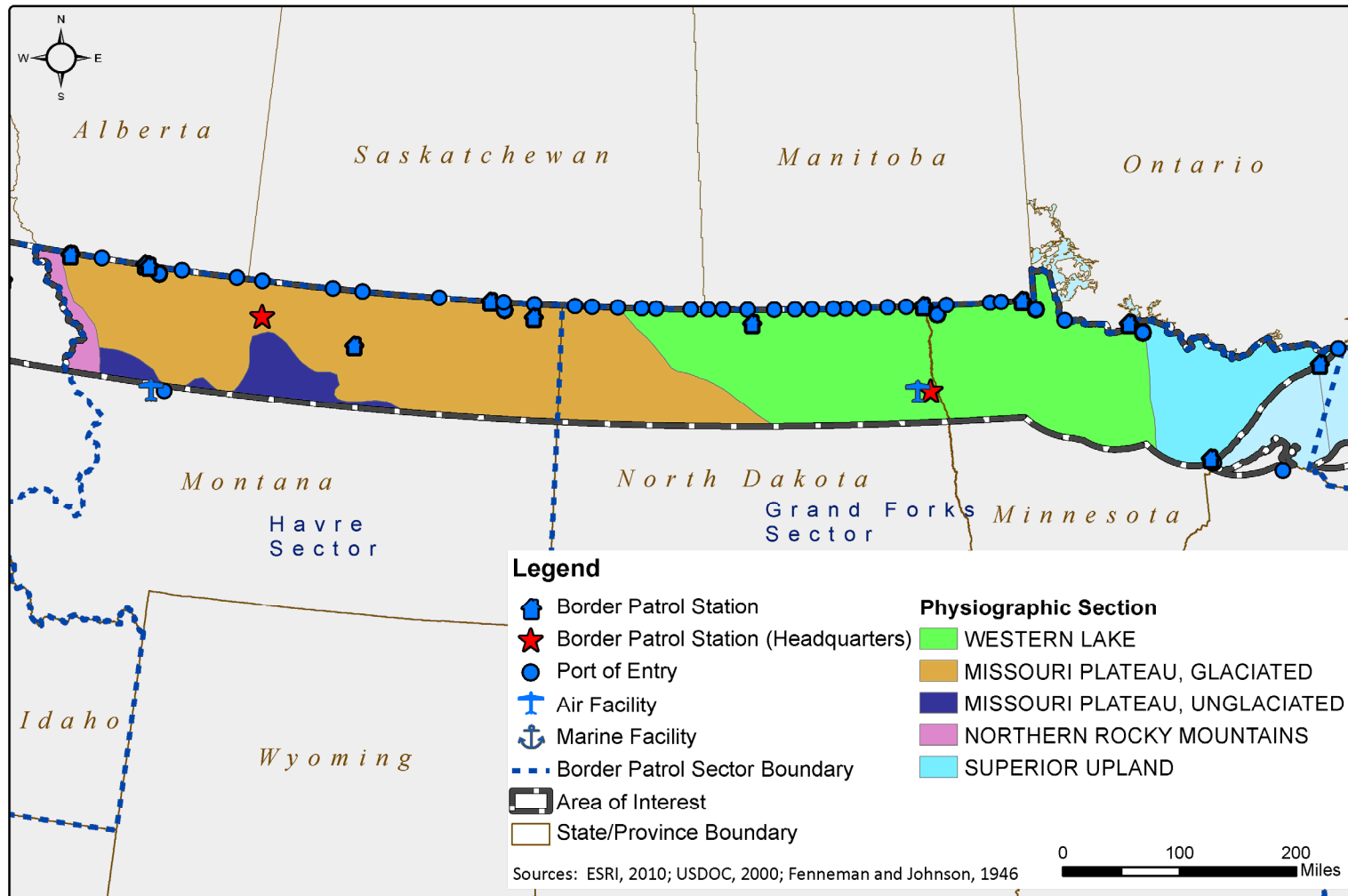
### **5.4.2 AFFECTED ENVIRONMENT**

#### **5.4.2.1 Physiographic Provinces**

Four physiographic divisions span the EOR Region. These divisions are subdivided into provinces as well as some Sections (Figure 5.4-1, Table 5.4-1).

The Northern Rocky Mountains are the westernmost physiographic division along the northern border and is a part of the larger Rocky Mountain system (the Rockies). To the east, the Missouri Plateau borders the northern Rockies. The Missouri Plateau is a part of the Interior Plains division and is divided into two sections: glaciated and unglaciated. The Western Lake section of the Central Lowland province borders the Missouri Plateaus. Finally, the Superior Upland is the last province in the EOR Region. Table 5.4-1 provides details on the geology of these areas. Appendix N features a geologic time scale showing the ages of the geologic time periods with which rock formations are dated.

Figure 5.4-1. Physiographic Provinces, Divisions, and Sections of the EOR Region





**Table 5.4-1. Physiographic Provinces in the EOR Region**

<b>Division</b>	<b>Province</b>	<b>Section</b>	<b>Terrain Texture including Topography</b>	<b>Geologic Structure and History</b>	<b>Generalized Rock Types</b>
Rocky Mountain System	Northern Rockies	N/A	Steep, glaciated mountains and peaked alpine ridges. Elevations range from 3,000 to 10,000 ft (920 to 3,100 m).	The northern Rockies formed during the Laramide Orogeny, about 70 to 40 million years ago. Likely cause of Rocky Mountains development is an unusual oceanic subduction under the North American Plate. Most plates subduct at a high angle; the subduction that formed the Rockies occurred at a lower angle (USDOI, 2000).	Rock types include Precambrian sedimentary deposits (partially metamorphisized), upper Tertiary sedimentary deposits, and glacial deposits (USDOI, No Date).
Interior Plains	Great Plains Province	Missouri Plateau, Glaciated	Elevation ranges from 2,500 to 5,000 ft (763 to 1,525 m). Level to gently rolling continental glacial till plains with steep slopes bordering some of the larger rivers (USDOI, 1994). Includes kettle holes and moraines. Rocks deposited during glaciation also occur, mostly 1 to 2 feet (0.3 to 0.6 m) in diameter; some nearly 5 feet (1.5 m).	Extreme advance of continental ice sheets influenced topography. As the sheets thinned, gradually gave way to scattered boulders that indicate the edge of the glaciated Missouri Plateau from the unglaciated Missouri Plateau (Fenneman, 1928).	Beneath glacial till are soft Cretaceous marine shales and Lower Tertiary non-marine sedimentary rocks (USDOI, 1994).
Interior Plains	Great Plains Province	Missouri Plateau, Unglaciated	Topography due to degradation, with extensive fluvial terraces. Monadnocks or exhumed mountains show degradation. Recent erosion has created badlands (Fenneman, 1928).	Unglaciated plains, from which the original sedimentary surface has been entirely stripped (Fenneman, 1928).	Beneath glacial till are soft Cretaceous marine shale and Lower Tertiary non-marine sedimentary rocks (USDOI, 1994).

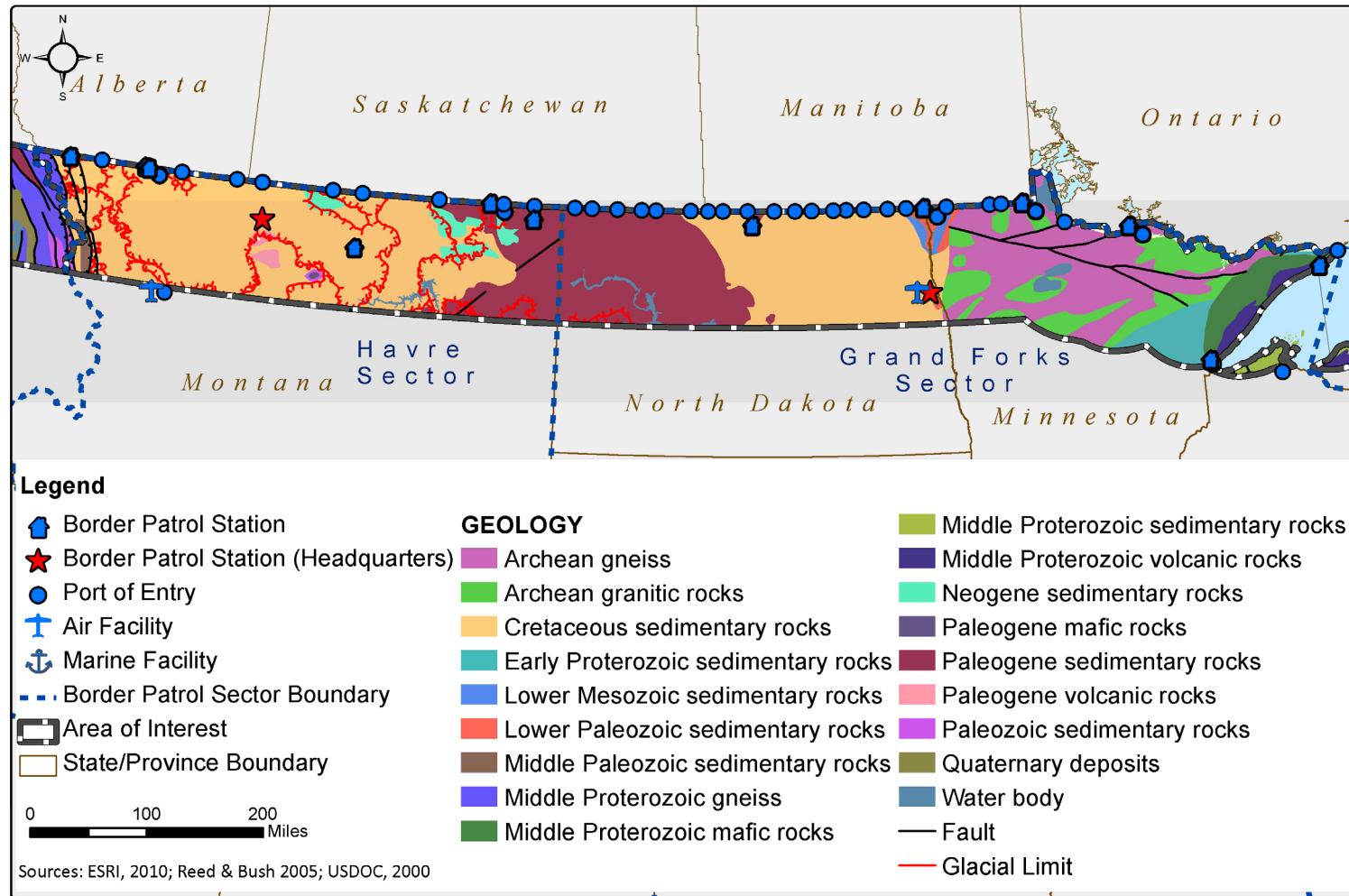
## PROGRAMMATIC ENVIRONMENTAL IMPACT STATEMENT

Division	Province	Section	Terrain Texture including Topography	Geologic Structure and History	Generalized Rock Types
Interior Plains	Central Lowland	Western Lake	In the north, rolling hills, minimally eroded, and poorly drained land (Fenneman, 1928).	Northern portion has a vast lacustrine plain, evidence of glacial Lake Agassiz. Includes flat and broad valley of the Red River of the North (Fenneman, 1928).	Glacial till on Cretaceous marine shale.
Laurentian Upland	Superior Upland	N/A	Elevation ranges from 600 to 2,280 ft (183 to 695 m). Most prominent of the uplands are elevated linear features trending southwest-northeast along the Lake Superior shore and parallel ranges of Meabi and Vermillion in the north (USDOI, 1994).	Known as the Canadian Shield, the Superior Upland is the largest American surface exposure of the ancient (2.6 to 1.6 billion years old) core of the North American continent (USDOI, 2000).	Mostly Precambrian metamorphic rocks and overlying Paleozoic rocks (Cambrian) covered by thin veneer of glacial deposits from melting glaciers at the end of the Pleistocene (USDOI, 2004b).

#### 5.4.2.2 **Geologic Conditions**

The geologic conditions within the EOR Region are extremely complex, resulting from tectonic and related activities (e.g., faulting, volcanic activities, and seismic sea waves) and glacial activities along with erosive actions of wind and water. The EOR Region contains consolidated geologic formations consisting of sedimentary, igneous, and metamorphic rocks. The EOR Region also contains unconsolidated geologic formations consisting of alluvium; terrace deposits; glacial deposits; and other mixtures of sands, silts, and clays with various mixtures of rocks. The geologic formations are shown on Figure 5.4-2.

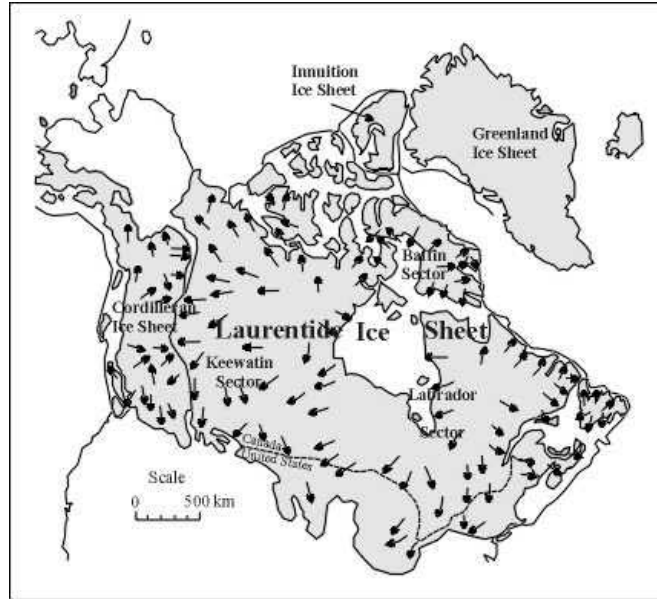
Figure 5.4-2. Geologic Conditions of the EOR Region



### Regional Glaciation

During the last ice age, two ice sheets extended over the Canadian border into the United States. The Laurentide sheet covered much of the EOR Region (Figure 5.4-3). In addition to ice sheets, mountain glaciers also expanded in high elevations.

**Figure 5.4-3. Extent of the Laurentide Ice Sheet**

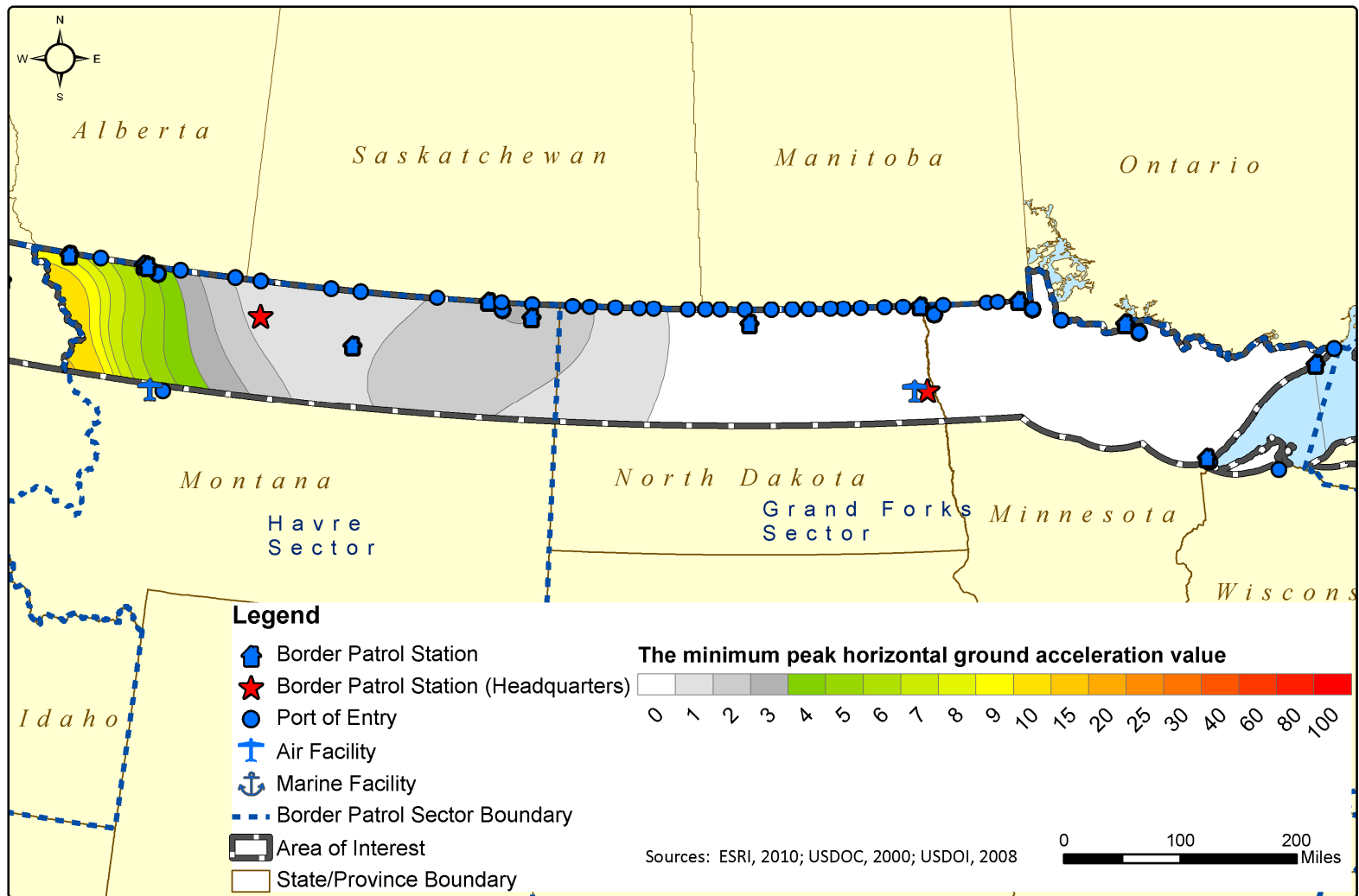


The effects of glacial advances remain apparent in the northern United States. Polished and striated outcroppings, rounded hills, moraines, valley fills of glacial till and outwash, and other typical glacial features are evidence of Pleistocene glaciation. All along the northern border, till deposits, erratics, and moraines are common (Nelson, 2003). Till, a sedimentary deposit derived from glacial erosion, was deposited throughout the northern United States as the ice sheets receded.

### Seismicity and Tectonics

Seismic activity in the EOR Region is rare but can occur in the far reaches of Montana within the study area (Figure 5.4-4). This location is adjacent to the Intermountain Seismic Belt described in Appendix N, Geology and Soils. The USGS describes this value as the fastest speed of horizontal particle movement at ground level due to an earthquake.

Figure 5.4-4. Seismicity in the EOR Region



### **Landslides**

Much of the EOR Region is susceptible to landslides due to slopes and shale bedrock (Figure 5.4-5). While most of the region has a low incidence of slides, it also has large areas that are moderately to highly susceptible. In the EOR Region, most landslides occur because of rainfall events, snowmelt, and human activities (State of Montana, 2004).

### **Karst Topography**

Often the existence of karst topography is related to aquifers. In the EOR Region, karst landscapes are not found anywhere except in small locations in Montana (Figure 5.4-6). These areas of karst are long formations, over 1,000 ft, in various types of carbonate rock. Appendix N provides explanations on karst terrain.

Figure 5.4-5. Landslide Incidence in the EOR Region

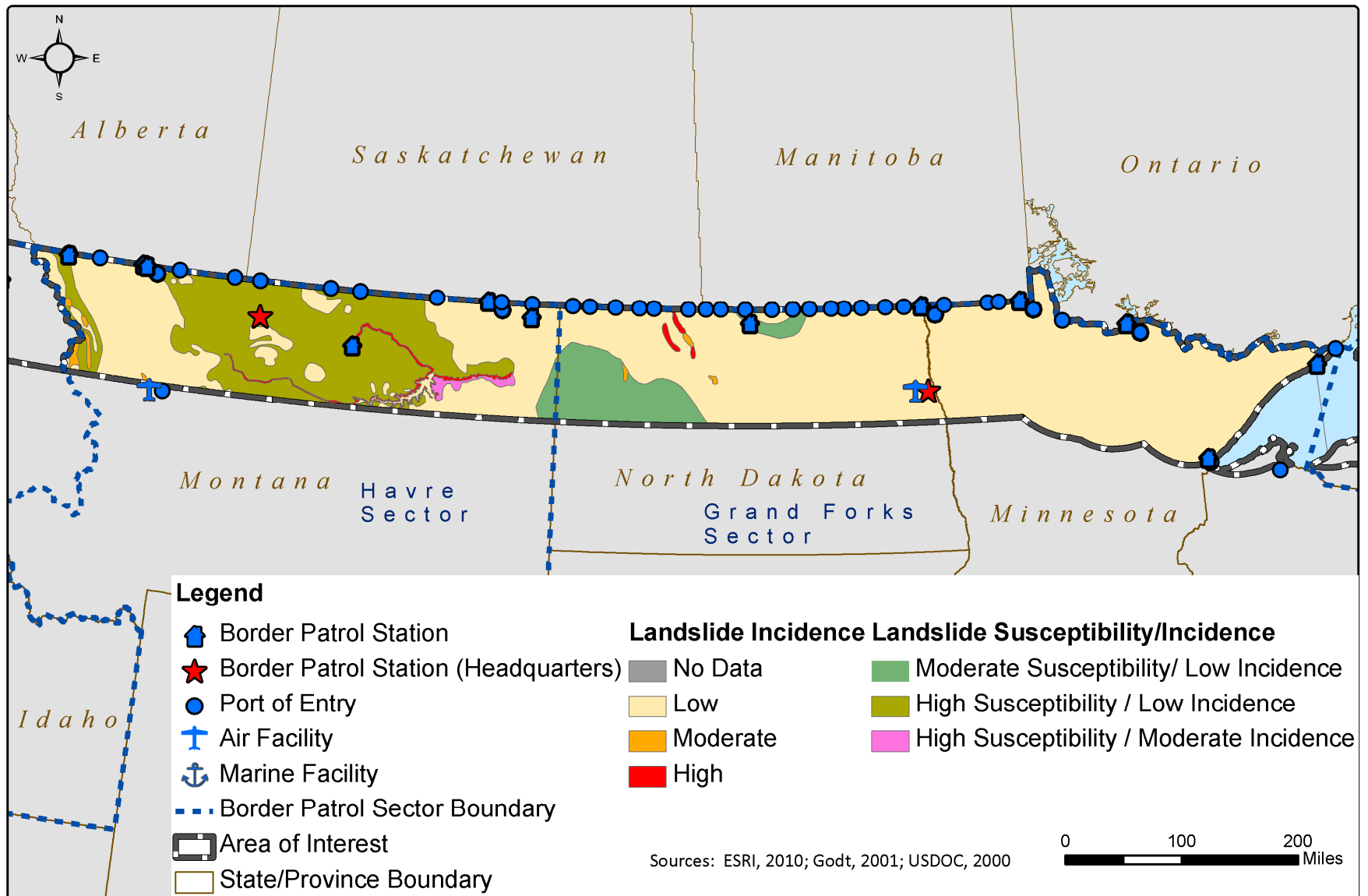
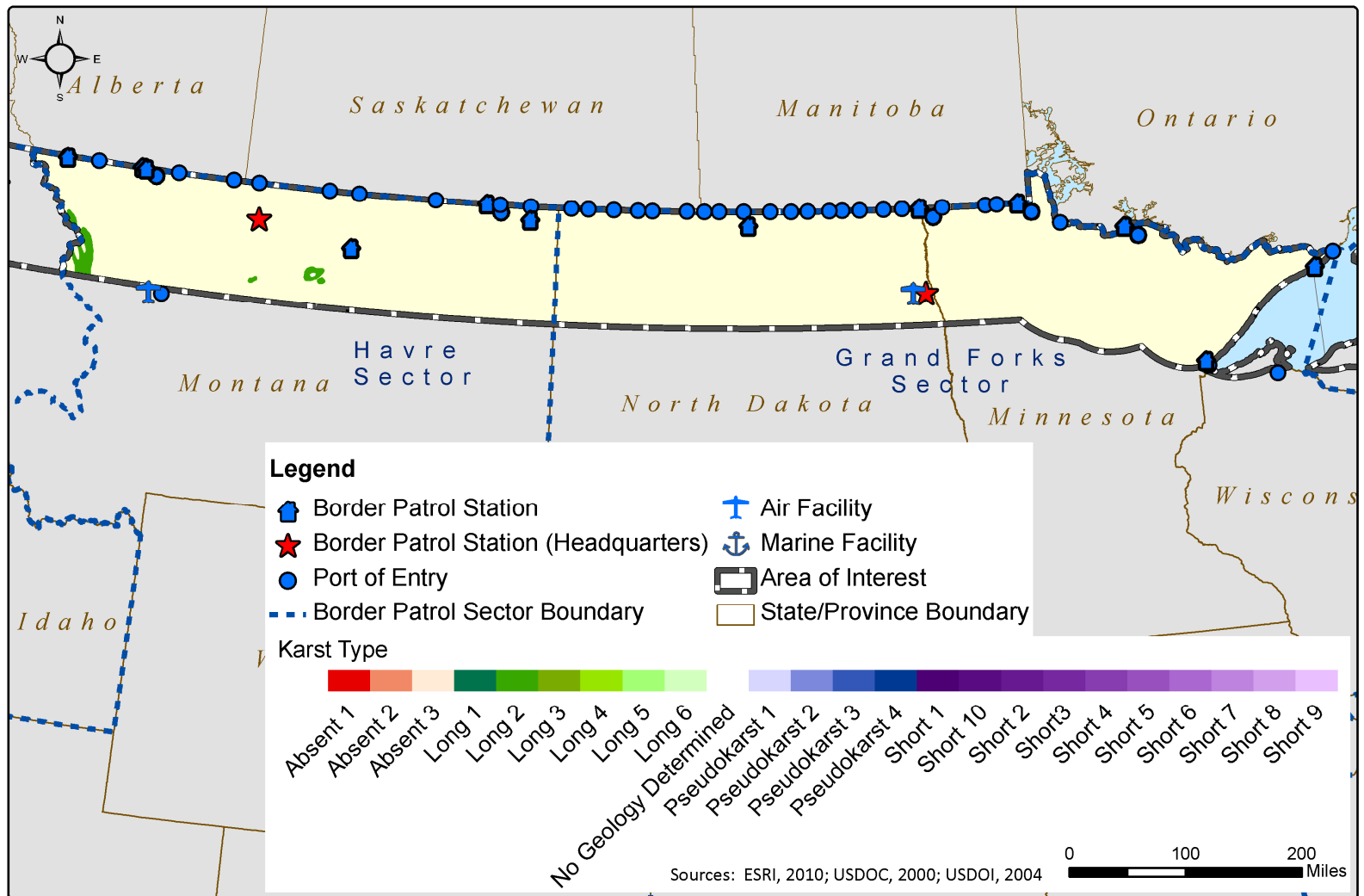




Figure 5.4-6. Karst Topography in the EOR Region



#### 5.4.2.3 Soils

In the EOR Region, six major soil groups, or “orders” occur (Figure 5.4-7). In the EOR Region, soils contain a wide range of particle sizes. One of the most dominant soil types—mollisols—occurs in all three EOR Region states. These soils are common in grasslands and are quite agriculturally productive. In the United States, mollisols form the most common soil order. The thick upper horizon (or layer) is a result of the decayed organic materials (University of Idaho, No Date). Mollisol soil texture can vary to a great degree from sandy to fine loams (Table 5.4-1). This soil order is prone to erosion, especially by water in cultivated areas (University of Wisconsin, 1999).

Also prevalent throughout the region are entisols, alfisols, and to a lesser degree, vertisols. Entisols are soils that do not fit into any of the other 12 soil orders. These are young soils and have only an A horizon. Entisols are the most extensive soils in the world, and can be very diverse based on the parent material from which they develop (University of Idaho, No Date). This soil order is often the transition layer between soils and non-soil parent rock. Alfisols are often found in forested areas, but can also be found in prairies and grasslands. Most often located in temperate climates, they can develop in sub-tropical and tropical areas as well (University of Idaho, No Date). The primary component of this soil order is clay as a result of mineral weathering (University of Wisconsin, 1999). Vertisols are not well suited for development due to their potential to swell when wet, and shrink when dry. Because of these traits, distinct horizons are not usually present in this soil order (University of Idaho, No Date).

Wind erosion is an issue in the rest of the region because many of the soils are sandy. In western North Dakota, soil erosion has occurred during past periods of drought, so vegetative cover is crucial for maintaining soil integrity.

#### 5.4.2.4 Prime and Unique Farmland

In the EOR Region, Prime and Unique Farmland is most concentrated in Minnesota, ranging from 30 to 40 percent of state land (Figure 5.4-8). In North Dakota, the percent is lower at 20 to 30 percent. Montana has the lowest percentage of Prime and Unique Farmland with only 0 to 2 percent of state land designated. In areas where Prime and Unique Farmland occurs in high concentration, Form AD-1006 will be necessary to assess impacts.

Figure 5.4-7. Soil Orders in the EOR Region

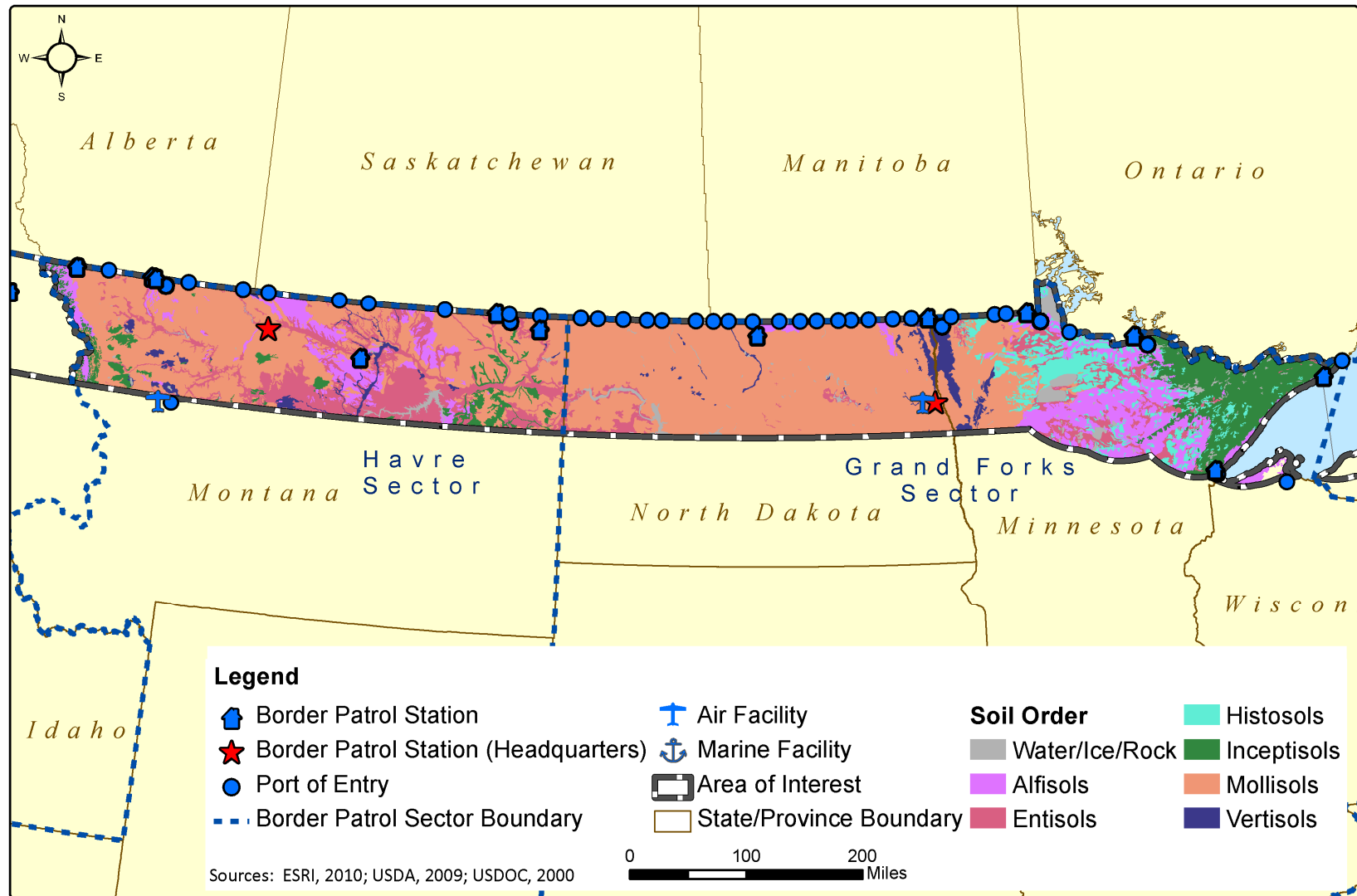
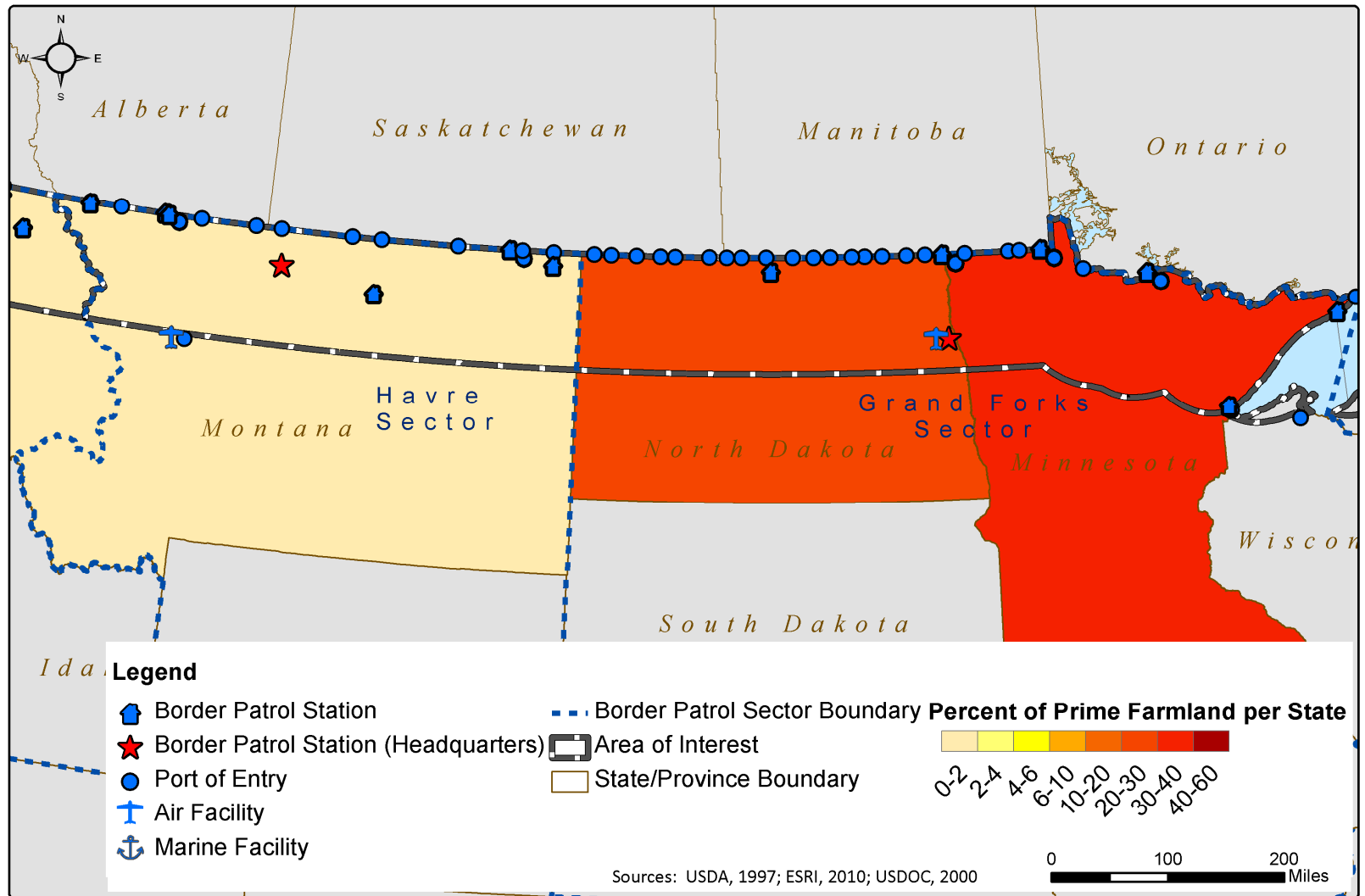


Figure 5.4-8. Prime Farmland in the EOR Region



## 5.5 WATER RESOURCES

### 5.5.1 INTRODUCTION

Water resources are distributed widely throughout the 100-mile PEIS study corridor in the states of Minnesota, North Dakota, and Montana east of the Continental Divide. For the purposes of this study, this resource area consists of hydrologic and groundwater resources (aquifers, subterranean watercourses, and recharge areas), surface water and waters of the United States (lakes, ponds, rivers, streams, and channels), and floodplains. Water resources include several beneficial elements, such as water supply quantity and quality, habitat for aquatic organisms, recreation, and flood storage capacity, which are subject to effects from proposed activities.

### 5.5.2 AFFECTED ENVIRONMENT

#### 5.5.2.1 Groundwater

Groundwater resources are sources of water that result from precipitation infiltrating the ground surface. Groundwater is contained in either confined reservoirs or unconfined aquifers. Where the water table or piezometric surface reaches the ground surface, groundwater will reappear as either streams, surface bodies of water, or wetlands. This exchange between surface water and groundwater is an important feature of the hydrologic cycle.

Groundwater has a variety of beneficial uses. In the EOR Region, as in the rest of the country, groundwater is a primary source for a wide variety of water uses including irrigation, domestic water supply, fish propagation, commercial water supply, industrial uses, and livestock. Table 5.5-1 shows the categories of groundwater use for states within the EOR Region.

**Table 5.5-1. Water Use in the EOR Region in 2005**

State	Irrigation Use (%)	Public Water Supply (%)	Industrial Use (%)	Rural Domestic, Livestock (%)
Montana	96.5	1.3	1.6	0.6
North Dakota	11.3	5	80.6	2.8
Minnesota	6.0	13.3	74.6	6.2

Source: (Kenny et al., 2009).

Groundwater occurs in porous geologic formation layers called aquifers, which may be large and regional, such as the Ogallala Aquifer that underlies many states in the Great Plains. Aquifers may also be very small and localized.

Five major aquifers of the Northern Great Plains Aquifer System have a coverage area of approximately 300,000 square miles underneath nearly all of North Dakota and half of Montana. These five aquifers include the lower Tertiary, upper Cretaceous, lower Cretaceous, upper Paleozoic, and lower Paleozoic aquifers. Most of the system lies in the structural troughs identified as the Williston Basin (North Dakota) and Powder River Basin (Montana).

Recharge into the aquifer system results mostly from rainfall and snow melt. Nearly all of the recharge occurs through areas of outcrop along aquifers exposed by erosion. Streams also play a

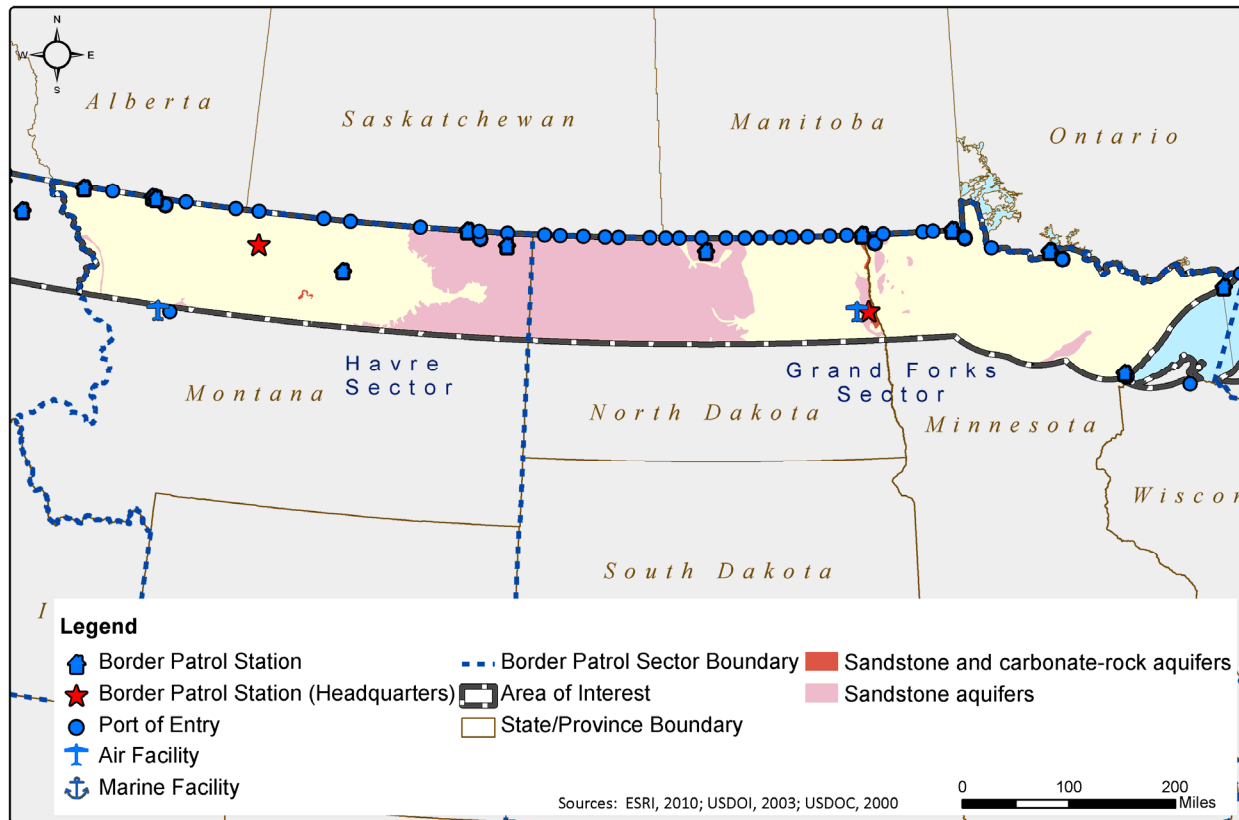
key role in the aquifer recharge. Water from streams percolates through stream beds into the aquifers near outcrops. Some recharge occurs as a result of over-irrigation. This minor form of recharge occurs in only a few places.

The lower Tertiary and upper Cretaceous aquifers in the system both have local flow systems. Highly mineralized and saline water moving in the aquifer takes short flow paths into lakes, streams, and springs. Other parts of the aquifer system have long, regional flow paths from areas at high altitudes following the dip of the aquifers. A large majority of this water flows through the Williston and Powder River basins along long flow paths that are usually very deep, due to the great depth of the aquifers (Vogelsberg, 2007).

The occurrence of groundwater in Minnesota is related primarily to local geologic conditions that determine the type and properties of aquifers. Within the 100-mile corridor of the EOR Region, the aquifers occur in two general geologic settings. The first is bedrock made of hard and very old igneous and metamorphic rocks. Groundwater in these rocks occurs mostly in fractures that may not yield usable quantities of water. The other setting is unconsolidated sediments deposited by glaciers, streams, and lakes (MDNR, 2011).

The unconsolidated glacial sediments in the northwest are typically clayey and may contain limited-extent surficial and buried sand aquifers. The fractured bedrock here is usually buried deep beneath the glacial sediments and is only locally used as an aquifer (MDNR, 2011).

The unconsolidated sediments in the northeast are thin or absent and are therefore not used or are relatively unimportant, except in major river valleys where sediment thickness is greater. These sediments are underlain by hard fractured bedrock that typically has limited groundwater yield (MDNR, 2011).

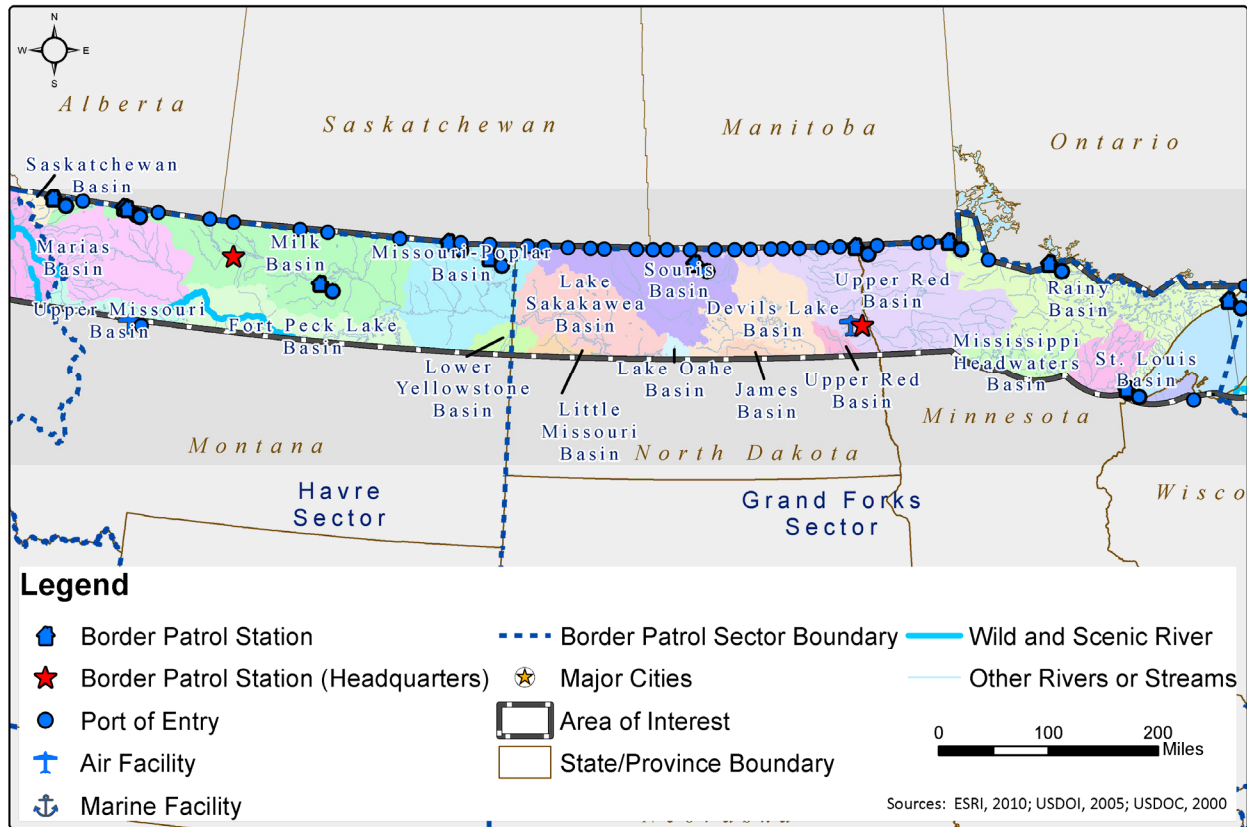
**Figure 5.5-1. EOR Groundwater Aquifers**

#### 5.5.2.2 Surface Waters and Waters of the United States

Surface water is water found in lakes, rivers, ponds, wetlands, and oceans. It is the most abundant and visible form of water resource, with the greatest variety of uses. In addition to irrigation, domestic water supply, fish propagation, commercial water supply, industrial uses, and livestock, surface water supports recreation, fish and wildlife habitat, hydropower, and transportation. Section 5.3.2.7 provides a discussion of the regional affected environment for aquatic resources. Surface water is often identified by the basin or watershed in which it is found. A watershed is simply the topographic area defined by the drainage of a single body of water.

There is one designated Wild and Scenic River within the 100-mile corridor of the EOR Region: the Upper Missouri River in Montana. Figure 5.5-2 shows this Wild and Scenic River as well as the other river basins found within the 100-mile corridor for the EOR Region.

**Figure 5.5-2. River Basins in the EOR Region**



The upper Missouri River Basin occupies 56 percent of the state of Montana and all of the area within Montana's 100-mile corridor for the EOR Region. Water discharged from the state of Montana through this basin averages 7.3 million acre-feet per year. The basin includes the Jefferson, Madison, Gallatin, Dearborn, Smith, Sun, Teton, Marias, Judith, and Musselshell river basins, which enter the river above the Fort Peck Reservoir, and the Milk River, which enters below the reservoir. The river receives about 450,000 acre-feet of water from the Canadian portion of the basin (MRBC, 1981).

There are several reservoirs in the basin. The largest is the Fort Peck Reservoir, which has a storage capacity of 19 million acre-feet. The combined storage capacities of the Canyon Ferry and Elwell (Tiber) Reservoirs are 3.3 million acre-feet. There are 38 reservoirs in the basin with storage capacities exceeding 5,000 acre-feet. In addition, there are several thousand small reservoirs and stock ponds used for irrigation, flood prevention, and stock watering (MRBC, 1981).

The Souris River originates in the Province of Saskatchewan, crosses into the EOR 100-mile corridor in North Dakota, and then crosses into Manitoba before joining the Assiniboine River and ultimately the Red River. Its total length is approximately 435 miles. The river valley is flat and shallow, and its semi-arid prairie is cultivated. Major reservoirs are found in both the U.S. and Canadian portions of the basin, including Boundary, Rafferty, and Alameda Reservoirs in Saskatchewan, and Lake Darling in North Dakota. The basin also includes a number of wildlife refuges and small impoundments along the U.S. portion of the river (IJC, 2011).



The Red River of the North Basin stretches from northeastern South Dakota and west-central Minnesota northward through eastern North Dakota and northwestern Minnesota into southern Manitoba. It ends where the Red River empties into the southern end of Lake Winnipeg (MPCA, 2010). It is an international and multi-jurisdictional area, approximately 45,000 square miles in size and includes the Devil's Lake Basin (3,180 square miles) in North Dakota. The Assiniboine River joins the Red River in downtown Winnipeg. Nearly 40,000 square miles of the basin is in the United States; the remaining 5,000 square miles are in Canada (RRB, 2000).

**Figure 5.5-3. Rainy River Basin in Minnesota**



The Rainy River Basin has a total area of 27,114 square miles, of which 11,244 square miles (41 percent) are in Minnesota and 15,870 square miles (59 percent) are in Ontario. The Rainy River Basin is home to many forest and water resources. Voyageurs National Park and the Boundary Waters Canoe Area Wilderness (BWCA) are located within the Rainy River Basin, as are several of the state's walleye fisheries and many trout streams. The majority of the land within the Basin is forested. Prominent uses of natural resources in the Basin are forestry, mining, and various forms of recreation (MPCA, 2001).

#### **5.5.2.3 Floodplains**

Floodplain management seeks to preserve the flood storage capacity for the river corridor, and this may be achieved in several ways. Local communities often have floodplain management or zoning ordinances that restrict development within the floodplain. The Federal Emergency Management Agency (FEMA) manages the National Flood Insurance Program (NFIP). FEMA also provides floodplain management assistance, including mapping of 100-year floodplain limits, to over 20,000 communities. The information provided by FEMA's flood management program is useful to CBP planners who seek to avoid effects from flooding conditions. This is most relevant for CBP border facilities, such as POEs, that are planned at locations where rivers define the northern border. Pigeon River and Rainy River, both in Minnesota, are rivers of this type in the EOR Region.

#### **5.5.2.4 Transboundary Water Agreements**

##### **Boundary Waters Treaty**

This treaty provides the basis for resolving disputes involving diverting or obstructing projects impacting water quantity and water across the boundary between Canada and the United States.

It establishes an International Joint Commission with authority to approve projects on either side of the border that would alter transboundary water levels. The treaty was initiated between the United States and Great Britain to in 1909 to settle issues of distribution of waters of the St. Mary and Milk Rivers for irrigation purposes between Canada and the United States.

### **Agreement for Water Supply and Flood Control in the Souris River Basin**

In 1989, Canada and the United States entered into an agreement for water supply and flood control in the Souris River Basin. The agreement involved the construction, operation, and maintenance of reservoir projects in Canada that would provide water supply benefits in Canada and flood control benefits in the United States consistent with the International Boundary Waters Treaty Act.

## 5.6 NOISE

### 5.6.1 INTRODUCTION

The study area contains many soundscapes and noise-sensitive receptors that could experience impacts due to the alternatives that CBP is considering. However, the mere presence of a noise-sensitive area, such as a national park, residence, or school, does not guarantee that it would be significantly impacted by CBP's activities or that the overall impacts would be major under the National Environmental Policy Act (NEPA). As with other topics in this PEIS, the programmatic approach to describing noise is driven by the planning objective of the document and the potential for actual impacts.

### 5.6.2 AFFECTED ENVIRONMENT

Sound is a physical phenomenon consisting of vibrations that travel through a medium like air and are sensed by the human ear. Noise is defined as any sound that is undesirable because it interferes with communication, is intense enough to damage hearing, or is otherwise intrusive. Human response to noise varies depending on the type and characteristics of the noise, the distance between the noise source and the receptor, the receptor's sensitivity, and the time of day. Noise is often generated by activities essential to a community's quality of life, such as construction or vehicular traffic.

Sound varies by both intensity and frequency. Sound pressure level, in decibels (dB), is used to quantify sound intensity. The dB is a logarithmic unit that expresses the ratio of a sound pressure level to a standard reference level. Because the human ear responds differently to different frequencies, "A-weighting" was developed to approximate the frequency response of the human ear. The A-weighting curve has been widely adopted for environmental noise measurement and is standard in many sound level meters. The dBA levels of common sounds of daily life are provided in Table 5.6-1.

**Table 5.6-1. Common Sound Levels**

Outdoor	Sound level (dBA)	Indoor
Snowmobile	100	Subway train
Tractor	90	Garbage disposal
Downtown (large city)	80	Ringling telephone
Freeway traffic	70	TV audio
Normal conversation	60	Sewing machine
Rainfall	50	Refrigerator
Quiet residential area	40	Library

Notes: dBA = A-weighted decibel. Sound level provided is as generally perceived by an operator or a close observer of the equipment or situation listed.

Source: Harris, 1998.

The dBA noise metric describes steady noise levels, although very few noises are, in fact, constant. Therefore, the measurement day-night sound level (DNL) has been developed. DNL is defined as the average sound energy in a 24-hour period with a 10-dB penalty added to the nighttime levels (10 p.m. to 7 a.m.). DNL is a useful descriptor for noise because: (1) it averages ongoing yet intermittent noise, and (2) it measures total sound energy over a 24-hour period. In addition, Equivalent Sound Level ( $L_{eq}$ ) is often used to describe the overall noise environment.  $L_{eq}$  is the average sound level in dB.

#### **5.6.2.1 Regulatory Review**

The Noise Control Act of 1972 (PL 92-574) directs Federal agencies to comply with applicable Federal, state, interstate, and local noise control regulations. In 1974, the USEPA provided information suggesting continuous and long-term noise levels in excess of DNL 65 dBA are normally unacceptable for noise-sensitive land uses such as residences, schools, churches, and hospitals.

State and local governments have the opportunity to regulate noise in their jurisdictions. These regulations are typically guidelines for activities that generate noise and the hours that such activities may be performed. Noise is typically regulated at the local level. A municipal noise ordinance might address the hours that heavy equipment can be operated, the distance heavy equipment can be operated in proximity of noise-sensitive receptors (i.e., schools, hospitals, churches, and residences), and the duration of operation of a single noise source considered to be annoying to the public, such as a diesel-powered generator. Some set specific not-to-exceed noise levels, and others are simple nuisance noise ordinances.

A number of sources of noise may be addressed for rural areas, such as parades, vendors, social engagements with music, and animal noises. Construction noise is typically exempt from noise ordinances in rural areas. In addition, noise regulations in an urban setting take into account the constant noise sources of urban living, such as large heating, ventilation, and air conditioning (HVAC) units, public transportation (trains and buses), emergency vehicles, and heavy traffic. Because urban noise levels are already relatively high, adding a source for an extended period can be highly annoying to some people, hours of construction and operation of heavy equipment are often limited. A typical ordinance in a major city will restrict construction related noise sources between the hours of 10:00 p.m. and 7:00 a.m.

#### **5.6.2.2 CBP Noise Sources**

The CBP operates 24 hours a day and 7 days a week. The level of operation can be determined by the measures required to secure the border or necessary for normal facility activities. Table 5.6-2 lists CBP's operations and describes of the noise levels of these activities.

**Table 5.6-2. CBP Noise Sources**

Operation	Description
Use of mobile surveillance systems (MSS) and surveillance towers	Very little noise is generated by the motor. In remote areas, standby generators may be used to supplement electric power.
Firing ranges and armories	CBP conducts small-arms training at many of its POEs and BPS. Small-arms weapon fire is clearly audible in areas surrounding these ranges during training activities. Usually these activities are limited to daytime hours.
Maritime patrols	Boating noise is typically audible during marine patrols near the shoreline. This noise is widespread and at most locations only sporadic. The watercraft used are generally selected for their noise-suppression features because of the nature of their mission.
Patrols by foot, horse, off-road vehicle (ORV), and snowmobile	Foot and horse patrols are typically quiet. Noise from ORVs and snowmobiles is audible for a mile or more in remote, quiet areas. This noise is widespread and at most locations only sporadic. Areas near POEs and BPSs may have more concentrated noise associated with these activities.
Added and expanded POEs and checkpoints	This action may require construction, which would end at the completion of the project.
Operation of expanded BPS	Additional personnel would be required for addition or expansion of newly constructed facilities. The possibility of canine facilities, firing ranges, and patrol vehicles may be required for operations at some new/expanded facilities.
Aircraft operations	Air operations at CBP are diverse: Helicopters, fixed-wing aircraft, and unmanned aerial systems (UAS) may be used regularly at some locations, although not all aircraft are used simultaneously. Along with regular operations, training exercises are also a source of aircraft noise at some facilities.
Construction activities	CBP conducts both large and small construction projects. Each has some level of heavy equipment and truck transport noise.
Maintenance activities	Maintenance operations at CBP are as diverse as the facilities themselves. The noise associated with these actions can involve training to maintain each category listed above. These noise sources may be one major repair using heavy equipment, monthly routine maintenance, or daily maintenance in the case of dogs, horses, and vehicles.

Source: USDHS, 2010.

### 5.6.2.3 Non-CBP Noise Sources

The sources of noise along the border in the EOR Region vary greatly, although most of the region is rural or remote. Sounds dominating the rural areas are aircraft overflights, bird and animal vocalizations, and very light traffic. Farming is a major activity in some of the rural areas identified within the project area. Farming is seasonal in this region and may create major sources of noise during planting, and even more during harvest in August through October, when several large combines may operate concurrently. A complete list of counties with their population and current background noise levels can be

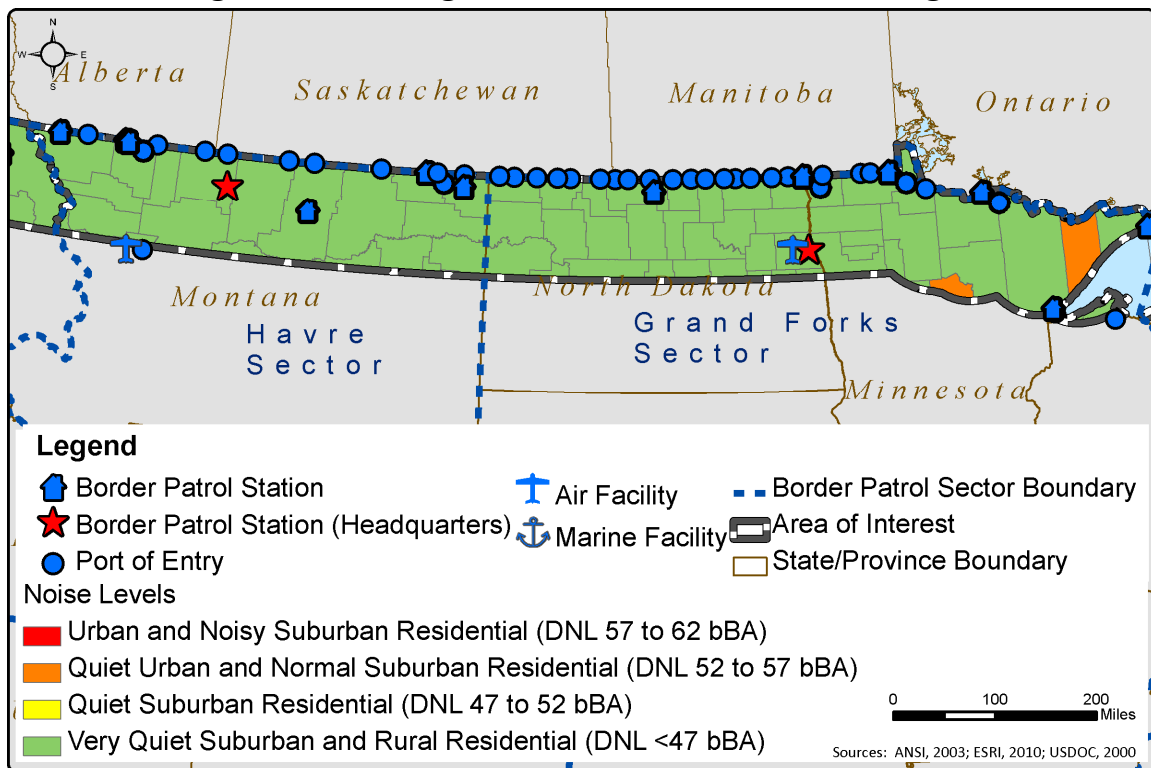
found in Appendix O. Notably, these levels are estimated average background levels based on population. Actual site-specific levels may vary base on location.

#### 5.6.2.4 Background Noise Levels

Estimated background noise levels for areas within 100 miles of the border are shown in Figure 5.6-1 and described in Table 5.6-3. The majority of areas within 100 miles of the border would be classified as remote or rural residential and are isolated, far from significant sources of sound.

Townships and small cities are scattered throughout the 100-mile buffer area; however, more remote land areas cover most of the project area. These smaller cities can be described as rural-residential and quiet-commercial.

**Figure 5.6-1. Background Noise Levels in the EOR Region**



**Table 5.6-3. Description of Background Noise Levels**

Intensity Level	Example Land Use Category	Average Residential Intensity (people per acre)	Leq (dBA)		
			DNL	Daytime	Nighttime
Low	Quiet suburban residential	2	49	48	42
Medium-low		4	52	53	47
Existing		4.5	52	53	47
Medium	Quiet urban residential	9	55	56	50
Medium-high	Quiet commercial, industrial, and normal urban residential	16	58	58	52
High		20	59	60	54

Source: ANSI, 2003.

#### 5.6.2.5 National Parks

The National Park Service (NPS) recognizes the natural soundscape of each national park unit as an inherent resource, and manages this resource in order to “restore degraded soundscapes to the natural conditions wherever possible, and protect natural soundscapes from degradation due to noise” (USDOJ, 2000). Non-impairment of natural soundscapes is mandated by the Organic Act of 1916 and is part of the NPS management goals and objectives. Each region of the project area has locations of special interest such as national parks. The national parks within 100 miles of the border in the East of the Rockies Region are listed in Table 5.6-4.

**Table 5.6-4. National Parks in the EOR Region**

State	National Park	Acres
Minnesota	Voyageurs National Park	218,054
Montana	Glacier National Park	1,012,599
North Dakota	Theodore Roosevelt National Park	69,657

Source: USEPA, 2010.

## **5.7 CLIMATE CHANGE AND SUSTAINABILITY**

### **5.7.1 INTRODUCTION**

According to the 2009 U.S. Global Change Research Program (USGCRP) report, “Global Climate Change Impacts in the United States,” documented impacts to the Nation from climate change include increased average temperatures, more frequent heat waves, high-intensity precipitation events, sea-level rise, more prolonged droughts, and more acidic ocean waters, among others. Global and national temperature changes are not distributed evenly. Greater increases occur at high, northern latitudes (CEQ, 2010). In 2010, DHS identified global climate change as a long-term trend and global challenge that threatens America’s national-security interests (USDHS, 2010).

Sustainability and smart growth are approaches to human activity that aim to meet the needs of the present without compromising the ability of future generations to meet their own needs. For CBP, the concepts of sustainability and smart growth include the ability to adjust to changing geopolitical realities while preserving the environment and working to improve the quality of life for American residents and visitors.

To reduce environmental impacts and address the challenge of limited resources, DHS prepared a “Strategic Sustainability Performance Plan” to promote sustainable planning, design, development, and operations. The guidelines aim to decrease energy use, minimize reliance on traditional fossil fuels, protect and conserve water, and reduce the environmental impact of materials use and disposal. CBP’s overarching goal is to size, plan, and carry out proposed development in a manner that is sustainable and that works to preserve and protect limited resources.

### **5.7.2 AFFECTED ENVIRONMENT**

#### **5.7.2.1 Climate Regions of the Northern Border—Overview**

The climate along the northern border is characterized by mild summers and very cold to extremely cold winters. January is the coldest month. July is the warmest month throughout the entire project area, and its temperature can fluctuate 20-30 degrees Fahrenheit between day and evening (Idcide, 2010). Precipitation is evenly distributed throughout the year. The average annual precipitation across the entire Canadian border is approximately 31 inches. There are two recognized climatic zones within the EOR Region: Midlatitude Steppe Climate and Highland (Alpine) Climate. A discussion of these zones is provided in the following subsection.

#### **5.7.2.2 Climate in the EOR Region**

##### **Midlatitude Steppe Climate**

The Midlatitude Steppe Climate is found within temperate regions of the midlatitudes in the interior regions of continents and where air masses are forced to lift up over higher elevations. In the United States, these climates are found in the Great Plains and western states in the rain shadow of major interior mountain ranges at great distances from sources of moisture.



Temperatures in these regions vary with latitude, elevation, and position within the continent. Thus, the northern Great Plains experiences some of the lowest temperatures in this region. Average temperatures increase at the southern limits of this climate region.

The region is classified as semi-arid. Peak precipitation occurs during the summer months (Ritter, 2006).

### **Highland (Alpine) Climate**

The highland climate is found in mountainous regions of the western United States that are above timberline. It is one of the coldest climates in the United States due to high altitude. It is similar to tundra and Arctic climate zones in that it is cold and dry throughout the year. Growing seasons are short—about 180 days—and night temperatures are almost always below freezing. Thinner atmospheres can allow often dangerous exposure to ultraviolet radiation.

#### **5.7.2.3 Climate Change in the United States—Northern Great Plains Regional Assessment**

In the Northern and Central Great Plains, average temperatures have risen 2 degrees Fahrenheit (1 degree Celsius) in the past century, with increases of up to 5.5 degrees Fahrenheit (3 degrees Celsius) in parts of Montana, North Dakota, and South Dakota. During the same period, annual precipitation has decreased 10 percent in eastern Montana, North Dakota, eastern Wyoming, and Colorado.

Climate models project continued regional increases in temperature, with the largest increases in the western part of the Great Plains. More warming is expected in winter and spring than in summer and fall. The models project precipitation increases in the Northern Great Plains Region and decreases in the lee areas of the Rocky Mountains. However, overall, rising air temperatures will increase evaporation rates, leading to a net soil-moisture decline for large parts of the region (USGCRP, 2010).

## **5.8 LAND USE**

### **5.8.1 INTRODUCTION**

This section characterizes land uses in the EOR Region and describes some land use on the Canadian side of the border that could be affected by some CBP activities. For example, construction projects that introduce noise and light pollution along the border could affect the suitability of land to support its current or planned use on both sides of the border. Other actions, however, such as direct removal of land from existing uses for CBP-related infrastructure construction, would not affect the Canadian side. USGS and Natural Resources Canada (NRC) define land cover and land use classifications.

### **5.8.2 AFFECTED ENVIRONMENT**

This section describes land use and cover for the EOR Region. The summary tables characterize land use and cover according to the USGS Multi-Resolution Land Characteristics Consortium (MRLC) National Land Cover Database (NLCD) and USGS's Gap Analysis Program (USDOI, 2001; USDOI, 2010). The summary tables for Canada summarize land use and cover according to NRC's Advanced Very High Resolution Radiometer (AVHRR) land cover data and NRC's protected areas data on regions of ten square kilometers or larger compiled by the Canadian Council on Ecological Areas (CCEA) (NRC, 2009; NRC, 2007).

#### **5.8.2.1 Land Cover and Related Land Uses in the EOR Region**

The EOR Region covers about 68 million acres, approximately 34.7 percent of the land area of the states in the region (Minnesota, Montana, and North Dakota). The most prevalent land cover type within the study area is agricultural land (39.0 percent total with 35.3 percent in cultivated crops and 3.7 percent in pasture/hay), which makes up the majority of the study area in North Dakota (62.3 percent). Herbaceous land cover (26.1 percent) is the next most prevalent land cover type and covers almost half of the study area in Montana (Table 5.8-1). Forest and water/wetlands together constitute about another quarter of the land cover of the EOR Region (14.8 percent forested and 13.0 percent water/wetlands), but make up three-quarters of the land cover of the study area in Minnesota (43.1 percent forested and 30 percent water/wetlands). Snow/ice/barren land cover (4.5 percent); and developed areas (2.7 percent) are the least prevalent.

The study area includes a high percentage of agricultural lands, specifically cultivated crops, and herbaceous land relative to the entire country, though their relative presence is proportional to the land cover in the states as a whole. The amount of developed land in the study area is low compared to the country, but similar to that of the region's states. The study area has a relatively low percentage of snow/ice/barren and water/wetlands land cover relative to the entire country.

**Table 5.8-1. Land Cover for the EOR Region**

Border State and Study Area East of the Rockies Region		Total Land Area (thousands of acres)	Developed (%)	Cultivated Crops (%)	Pasture/Hay (%)	Herbaceous (%)	Forested (%)	Water/Wetlands (%)	Snow/Ice/Barren Land** (%)
Minnesota	Study area EOR Region	19,636	2.4	16.8	3.9	1.1	43.1	30.0	2.7
	Statewide	55,687	5.1	38.1	7.8	2.7	26.7	18.2	1.4
Montana (EOR Region)	Study area EOR Region	27,911	1.7	33.9	0.7	48.0	4.2	3.0	8.5
	Statewide	95,383	1.3	14.2	1.8	42.1	22.2	2.4	16.0
North Dakota	Study area EOR Region	20,538	4.3	54.7	7.6	20.3	2.1	10.2	0.9
	Statewide	45,227	4.0	46.6	8.4	29.7	1.7	8.3	1.3
EOR Region	Study area EOR Region	68,085	2.7	35.3	3.7	26.1	14.8	13.0	4.5
	Selected states	196,298	3.0	28.4	5.0	28.1	18.8	8.2	8.5
<b>Total United States***</b>		<b>2,053,000</b>	<b>5.0</b>	<b>21.9</b>		<b>14.1</b>	<b>31.2</b>	<b>27.7</b>	

\* The EOR Region includes all areas 100 miles south of the U.S.-Canada border in Minnesota, North Dakota, and the portion of Montana east of the Rocky Mountains.

\*\* “Barren Land” includes the NLCD land classification “Shrub/Scrub.”

\*\* Data for the United States as a whole are shown as calculated in USEPA, 2008. This report sums land cover categories for cultivated crops and pasture/hay to account for total agricultural cover, and sums snow/ice, barren, and wetlands land cover. This table aggregates the USEPA, 2008 calculation of water and shrub/scrub land cover with their category of snow/ice/barren/wetlands, though water alone covers 1.6 percent of the land area in the United States, while snow/ice/barren/wetlands cover 5.7 and shrub/scrub covers 20.4 percent.

Source: (USDOJ, 2001.).

Figures 5.8.1 and 5.8.2 show maps of land cover and use in the EOR region.

Recreation also occurs on other land not specifically designated for the activity and land other than that profiled in Section 5.17 (Recreation), which focuses specifically on major Federal recreation sites. For example, wildlife viewing or hiking may be permitted on some conservation or natural areas in the study area. In addition, hunting and snowmobiling may occur on public or private forested land areas. Absent information on the specific distribution of recreational activities across the landscape, this analysis relies on the above categories of land as low-end estimates of the area in which recreation is likely taking place.

Recreational land use in the EOR Region accounts for 848,000 acres or 1.2 percent of the total land area, which is lower than the share of recreational land use for the country as a whole (10.1 percent) (Table 5.8-2). NPS manages the most land in the region used, in part, for recreational purposes, just over half of the total recreational acres. The majority of these NPS-managed lands are in Montana. Much of the NPS land in the EOR Region is in national parks (Voyageurs National Park in Minnesota, Theodore Roosevelt National Park in North Dakota, and Glacier National Park in Montana). Section 5.17 discusses the potential impacts of CBP activities on lands designated and otherwise used for recreational purposes. Appendix I provides the profiles of major Federal U.S. and Canadian protected and set-aside areas often used for recreational purposes in the study area.

Conservation areas in the EOR Region account for about 6.4 million acres or 9.4 percent of total land area (Table 5.8-3), slightly less than the share of conservation land in the country as a whole (14.6 percent), but similar to the amount of conservation land in the region's states (8.8 percent). The largest conservation areas that overlap the EOR Region are the Boundary Waters Canoe Area in Minnesota (managed by the USFS) and areas of state trust land in Montana held by the State Land Board.

**Table 5.8-2. Recreational Land Use in the EOR Region**

<b>Border State and Study Area East of the Rockies Region</b>		<b>Recreational Land Use** (thousands of acres)</b>	<b>Share of Recreational Land Use (%)</b>
Minnesota	Study area EOR Region	205	1.0
	Statewide	2,486	4.5
Montana (EOR Region)	Study area EOR Region	514	1.8
	Statewide	14,344	15.0
North Dakota	Study area EOR Region	129	0.6
	Statewide	187	0.4
EOR Region	Study area EOR Region	848	1.2
	Selected states	17,018	8.7
<b>Total United States</b>		<b>208,088</b>	<b>10.1</b>

\* The EOR Region includes all areas 100 miles south of the U.S.-Canada border in Minnesota, North Dakota, and the portion of Montana east of the Rocky Mountains.

\* Recreation lands are all lands clearly identified by USGS title of land type as intended for recreation (e.g., parks, scenic areas, or recreation areas).

Source: (USDOJ, 2010).

**Table 5.8-3. Conservation Land Use in the EOR Region**

<b>Border State and Study Area East of the Rockies Region</b>		<b>Conservation Land Use (thousands of acres)</b>	<b>Share of Conservation Land Use (%)</b>
Minnesota	Study area EOR Region	2,148	10.9
	Statewide	2,927	5.3
Montana (EOR Region)	Study area EOR Region	3,749	13.4
	Statewide	11,800	12.4
North Dakota	Study area EOR Region	470	2.3
	Statewide	2,493	5.5
EOR Region	Study area EOR Region	6,367	9.4
	Selected states	17,220	8.8
<b>Total United States</b>		<b>300,149</b>	<b>14.6</b>

\* The EOR Region includes all areas 100 miles south of the U.S.-Canada border in Minnesota, North Dakota, and the portion of Montana east of the Rocky Mountains.

\* Conservation lands are all lands clearly identified by USGS title of land type as intended for conservation (e.g., reserves, preserves, conservation land, natural areas).

Source: (USDOJ, 2010).

#### **5.8.2.2 Land Cover and Related Land Uses in the Areas North of the EOR Region**

This section considers resources north of the border from the EOR Region extending 2 miles into Canada and covering about 1.1 million acres (Table 5.8-4). Over 80 percent of this area is agricultural (38.1 percent cultivated crops and 43.7 percent pasture/hay). Agricultural land is substantially more prevalent in this area than in the related provinces (less than 30 percent agricultural). The next most common land cover type is forested (15.9 percent), which is substantially less widespread than in each of the selected provinces and less prevalent compared to the country as a whole. Developed areas make up an inconsequential portion of the study area. Whereas very little snow/ice/barren land cover occurs in Canada just north of the border from the EOR Region, 38.2 percent of land in all of Canada is classified as snow/ice/barren, due to the prevalence of tundra in the country's northern reaches. Water/wetlands are also less prevalent in the study area compared to the provinces and to the country as a whole.

**Table 5.8-4. Land Cover in Canada North of the EOR Region**

Border Province and Study Area EOR Region		Total Land Area (thousands of acres)	Developed (%)	Cultivated Crops (%)	Pasture/ Hay (%)	Forested (%)	Water/ Wetlands (%)	Snow/Ice/ Barren (%)
Alberta	Study area EOR Region	215	0.0	52.7	33.2	9.4	0.0	4.7
	Province	158,076	0.1	11.6	19.6	64.1	2.4	2.2
Manitoba	Study area EOR Region	369	0.0	1.5	55.9	38.6	4.0	0.0
	Province	141,884	0.1	1.2	10.3	54.2	11.6	22.7
Saskatchewan	Study area EOR Region	479	0.0	59.8	38.9	1.3	0.0	0.0
	Province	156,191	0.0	9.4	33.0	47.2	4.9	5.5
Selected provinces	Study area EOR Region	1,063	0.0	38.1	43.7	15.9	1.4	1.0
	Total for selected provinces	456,150	0.1	7.6	21.3	55.2	6.1	9.7
<b>Total Canada</b>		<b>2,071,476</b>	<b>0.1</b>	<b>1.7</b>	<b>6.0</b>	<b>46.7</b>	<b>7.3</b>	<b>38.2</b>

\* The areas north of the EOR Region in Canada include the portions of Alberta, Manitoba, and Saskatchewan provinces extending 2 miles north of the U.S.-Canada border.

Source: (NRC, 2009).

As Table 5.8-5 indicates, recreational land use north of the border from the EOR Region accounts for about 52,000 acres, or 4.9 percent of the total land area, which is comparable to the proportion of recreational land use in Canada as a whole (6.1 percent).

In Alberta, the share of recreational land use in the areas north of the border from the EOR Region is greater than recreational land use in the province as a whole; the opposite is true in Manitoba. The majority of the recreational land area is in national parks (Grasslands National Park and Waterton Lakes National Park).

Conservation areas in the areas north of the EOR Region make up about 139,000 acres, or 13.1 percent of the total study area, which is greater than the proportion of conservation areas in Canada as a whole (4.7 percent). The proportion of conservation land in the areas north of the border from the EOR Region is more than four times that of the province (Table 5.8-6).

**Table 5.8-5. Recreational Land Use in Canada North of the EOR Region**

Border Province and Study Area EOR Region		Recreational Land Use (thousands of acres)	Share of Recreational Land Use (%)
Alberta	Study area EOR Region	24	10.9
	Province	10,782	6.8
Manitoba	Study area EOR Region	11	2.9
	Province	10,106	7.1
Saskatchewan	Study area EOR Region	18	3.7
	Province	4,187	2.7
Selected provinces	Study area EOR Region	52	4.9
	Total for selected provinces	25,075	5.5
<b>Total Canada</b>		<b>126,389</b>	<b>6.1</b>

\* Areas north of the EOR Region in Canada include the portions of Alberta, Manitoba, and Saskatchewan provinces extending two miles north of the U.S.-Canada border.

Source: (NRC, 2007).

Note: Recreation Lands were identified as all lands clearly identified in the NRC dataset as intended for recreation, for example, described as parks or recreation areas.



**Table 5.8-6. Conservation Land Use in Canada North of the EOR Region**

Border Province and Study Area EOR Region		Conservation Land Use (thousands of acres)	Share of Conservation Land Use (%)
Alberta	Study area EOR Region	21	9.7
	Province	868	0.5
Manitoba	Study area EOR Region	1	0.3
	Province	3,449	2.4
Saskatchewan	Study area EOR Region	117	24.4
	Province	8,782	5.6
Selected provinces	Study area EOR Region	139	13.1
	Total for selected provinces	13,099	2.9
<b>Total Canada</b>		<b>98,234</b>	<b>4.7</b>

\* Areas north of the EOR Region in Canada include the portions of Alberta, Manitoba, and Saskatchewan provinces extending two miles north of the U.S.-Canada border.

Source: (NRC, 2007).

Notes: Conservation lands are all lands clearly identified in the NRC dataset as intended for conservation; for example, described as reserves, preserves, protected areas, habitat areas.

Figure 5.8-1. Land Cover in the EOR Region

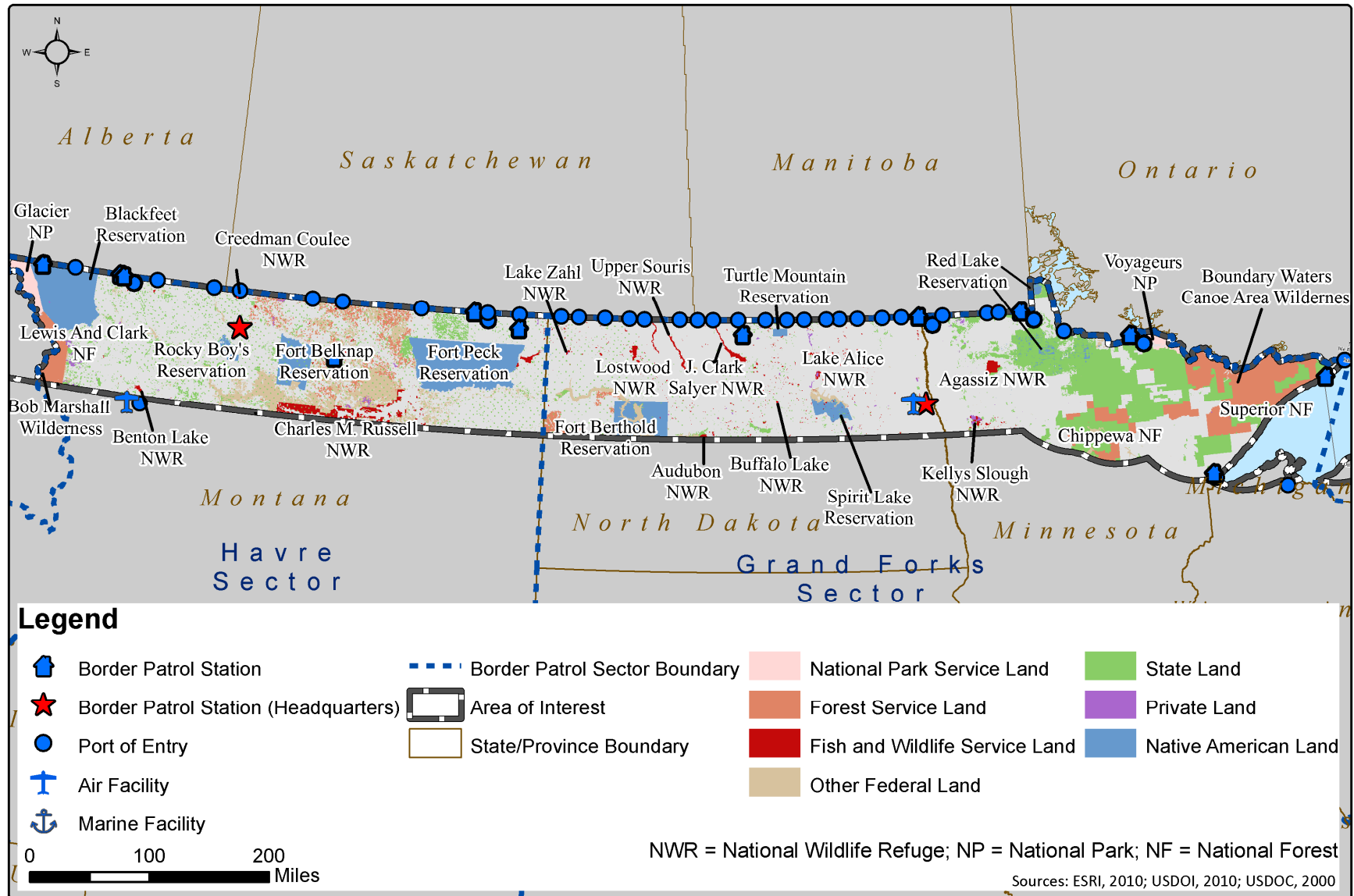
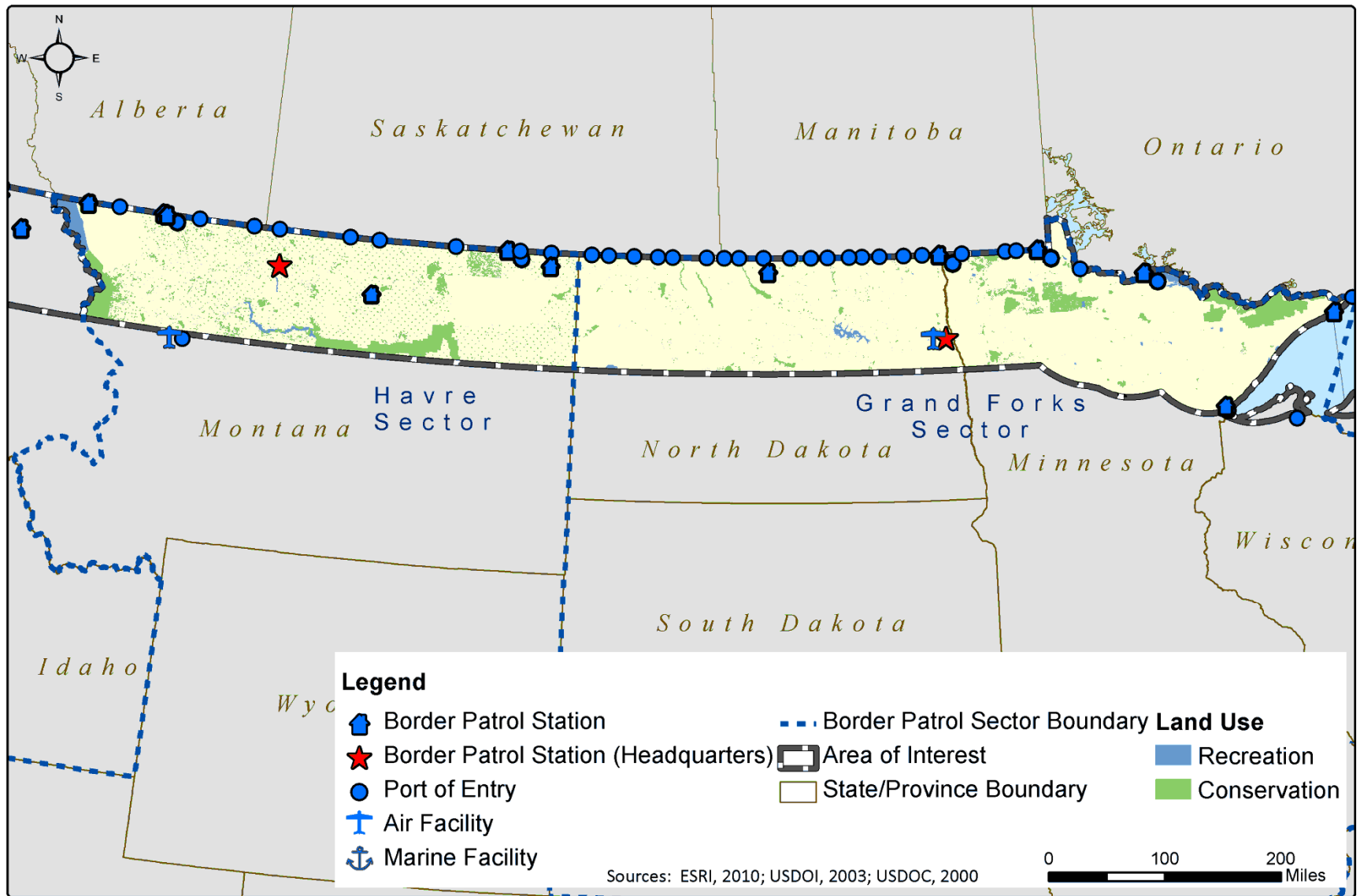


Figure 5.8-2. Land Use in the EOR Region



### 5.8.2.3 Land Ownership in the EOR Region in the United States

The major categories of land ownership in the EOR Region are Federal (13.3 percent), state (12.5 percent), tribal (10.2 percent), and minimal private lands (0.3 percent) (Table 5.8-7). Federal lands include national parks, national forests, conservation areas, and military lands managed by the Bureau of Land Management (BLM), Bureau of Reclamation (BOR), Department of Defense (DOD), Department of Energy (DOE), USFWS, USFS, NPS, or are classified as “other Federal land.” State lands are properties owned by state departments of conservation, departments of land, departments of natural resources, departments of transportation, fish and wildlife, historical societies, state land boards, parks and recreation, or classified as “other state land.” Tribal land accounts for regions owned by Native American Tribes and are recognized by the Federal Government. Federal laws and the Constitution grant Tribal Nations greater sovereignty than that granted to state or local governments. Private lands are those owned by the Audubon Society, the Rocky Mountain Elk Foundation, The Nature Conservancy (TNC), private universities, other conservation groups, or private non-profits, or classified as “private conservation easement/conservation deed restriction,” “private conservation land,” or “private institution–managed for biodiversity.”

The EOR Region includes about 9.1 million acres of Federal land, accounting for 13.3 percent of land ownership. The USFS manages the majority of Federal land in this region as national forests and national grasslands. In the study area in Montana, the BLM manages about 50 percent of Federal lands, 1.4 million acres of which is within the BLM’s Malta District.

Approximately 8.5 million acres of state land sit within the EOR Region, accounting for 12.6 percent of land ownership which is greater than the national average ratio for state land ownership. The majority of these lands—6.4 million acres—are state parks and wildlife management areas in Minnesota. Another 1.8 million acres are state trust land in Montana.

In the EOR Region, tribal lands account for about 6.2 million acres. Tribal land within the EOR Region in Montana includes the Blackfeet Reservation, Fort Belknap Reservation, Fort Peck Reservation, and Rocky Boy’s Reservation (Figure 5.8-3). The Blackfeet Reservation (1.5 million acres) lies on the border and contains the Piegan POE and the De Bonita POE. In North Dakota, the Spirit Lake Reservation, the Turtle Mountain Reservation, and almost all of the Fort Berthold Reservation are within the EOR Region. Tribal land within the Minnesota area of study includes the Red Lake Reservation, the Bois Forte Reservation, the Grand Portage Reservation, and most of the Leech Lake Reservation. Small portions of the White Earth and Fond du Lac Reservations skirt the area of study in Minnesota. The proportion of area that is tribal land is greater in the study area (10.2 percent) than in the selected states (6.5 percent) or in the country as a whole (4.9 percent). At nearly 2.1 million acres, the Fort Peck Reservation in Montana is the largest area of tribal lands in the region. For a more complete discussion of Native American resources along the northern border in the EOR Region, refer to Section 5.11.

The EOR Region includes about 210,000 acres of land area classified as private. The majority of this private land occurs in Montana (almost 200,000 acres) and is under state-managed conservation easements. The Nature Conservancy also own portions of this land in the region.

The share of private land ownership in the study area is less than that for the country as a whole. Figure 5.8-3 maps land ownership in the EOR Region.

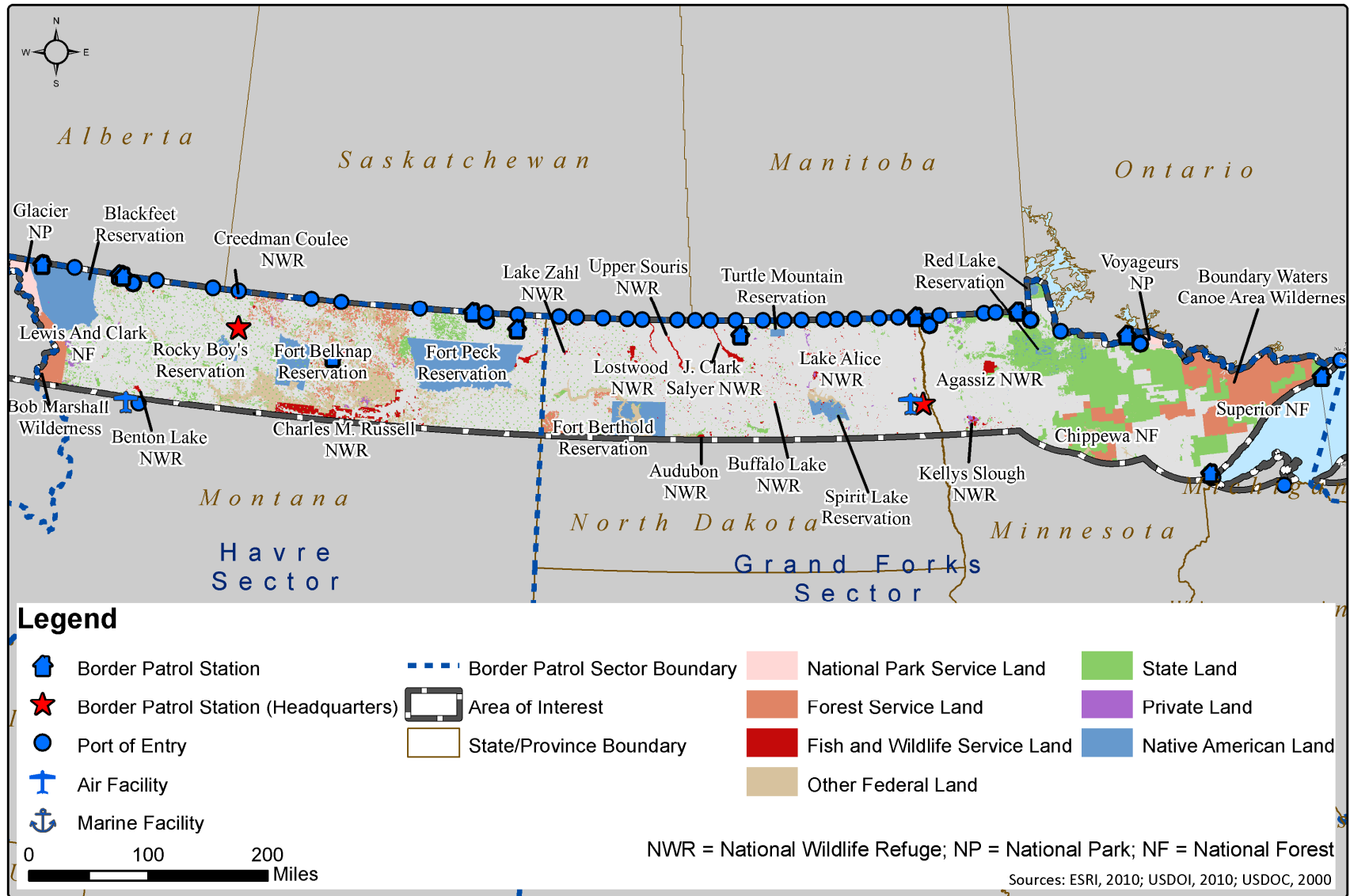
**Table 5.8-7. Land Ownership in the EOR Region\***

Border State (Thousands of Acres)		Federal Land		State Land		Tribal Land		Privately Held Conservation Land		Total Conservation & Tribal Lands	
		Thousands of Acres	Percentage of Study/ State Area	Thousands of Acres	Percentage of Study/ State Area	Thousands of Acres	Percentage of Study/ State Area	Thousands of Acres	Percentage of Study/ State Area	Thousands of Acres	Percentage of Study/ State Area
Minnesota	Study Area	3,262	16.6	6,219	31.6	1,362	6.9	52	0.3	10,895	55
	19,651										
	Statewide	4,042	7.9	9,115	17.9	2,163	4.2	253	0.5	15,573	31
	50,961										
Montana (EOR)	Study Area	4,730	16.9	1,905	6.8	4,382	15.7	123	0.4	11,140	40
	27,988										
	Statewide	26,975	29	5,646	6.1	8,248	8.9	2,998	3.2	43,867	47
	93,149										
North Dakota	Study Area	1,069	5.2	424	2.1	1,239	6.0	35	0.2	2,767	14
	20,558										
	Statewide	4,327	9.8	941	2.1	1,780	4.0	73	0.2	7,121	16
	44,161										
EOR Region	Study Area	9,061	13.3	8,548	12.5	6,983	10.2	210	0.3	24,802	36
	68,128										
	Selected States	35,344	18.8	15,702	8.3	12,191	6.5	3,324	1.8	66,561	35
	188,271										
<b>Total United States</b>		<b>657,885</b>	<b>32</b>	<b>189,314</b>	<b>9.2</b>	<b>100,574</b>	<b>4.9</b>	<b>15,918</b>	<b>0.8</b>	<b>963,691</b>	<b>47</b>

\* The EOR Region includes all areas 100 miles south of the U.S.-Canada border in Minnesota, North Dakota, and the portion of Montana east of the Rocky Mountains. Land ownership estimates do not sum to 100 percent for a given area due to gaps in information regarding land ownership within border states. Sources: (USDOI, 2010), (USDOC, 2012).

NOTE: For a complete discussion of Native American resources along the northern border, refer to Section 5.11 of this report.

Figure 5.8-3. Land Ownership in the EOR Region



#### 5.8.2.4 Land Ownership in Canada North of the EOR Region

Federal and provincial land ownership is characterized using the protected-areas data compiled by NRC. As a result, ownership (excluding aboriginal lands) is only determined for about 10.8 percent of the entire land area of the country. The following discussion, therefore, reflects only the relatively small portion in Canada for which landowners are identified.

The share of Federal land ownership in Canada north of the EOR Region is more than double that for the country as a whole (10.0 percent in the region versus 4.8 percent for the country) (Table 5.8-8). The region also contains a considerably higher proportion of Federal land compared to the selected provinces. The proportion of provincial ownership north of the EOR Region is greater than for the country.

Aboriginal land is characterized using NRC data of Indian reserves, land claim settlement lands, and related aboriginal designations. The share of aboriginal land in areas north of the EOR Region (0.7 percent) is less than the share of aboriginal land countrywide (7.4 percent) (Table 5.8-9).

**Table 5.8-8. Land Ownership in Canada North of the EOR Region**

Border Province and Study Area EOR Region		Federal Land		Provincial Land	
		Total Land Area	Share (%)	Total Land Area	Share (%)
Alberta	Study area EOR Region	23.5	10.9	21.0	9.7
	Province	4,887.6	3.1	6,762.4	4.3
Manitoba	Study area EOR Region	0.0	0.0	11.9	3.2
	Province	3,598.9	2.5	9,956.6	7.0
Saskatchewan	Study area EOR Region	83.0	17.3	51.4	10.7
	Province	3,045.2	1.9	9,923.7	6.4
Selected provinces	Study area EOR Region	106.5	10.0	84.3	7.9
	Total for selected provinces	11,531.7	2.5	26,642.7	5.8
<b>Total Canada</b>		<b>98,843.7</b>	<b>4.8</b>	<b>125,778.8</b>	<b>6.1</b>

\* Areas north of the EOR Region in Canada include the portions of Alberta, Manitoba, and Saskatchewan provinces extending two miles north of the U.S.-Canada border.

Source: (NRC, 2007).

Notes: Federal lands are all lands with the designation national park, migratory bird sanctuary, national wildlife area, Prairie Farm Rehabilitation Administration, and marine protected area. Provincial lands are all lands designated under provincial administration, which often includes funding and support from Federal agencies.

**Table 5.8-9. Aboriginal Land in Canada North of the EOR Region**

<b>Border Province and Study Area EOR Region</b>		<b>Aboriginal Lands (thousands of acres)</b>	<b>Share (%)</b>
Alberta	Study area EOR Region	1	0.2
	Province	1,920	1.2
Manitoba	Study area EOR Region	7	1.8
	Province	1,102	0.8
Saskatchewan	Study area EOR Region	0	0.0
	Province	2,385	1.5
Selected provinces	Study area EOR Region	7	0.7
	Total for selected provinces	5,407	1.2
<b>Total Canada</b>		<b>152,965</b>	<b>7.4</b>

\* Areas north of the EOR Region in Canada include the portions of Alberta, Manitoba, and Saskatchewan provinces extending two miles north of the U.S.-Canada border.

Source: (NRC, 2010).

#### **5.8.2.5 Land Use Management**

In the EOR Region, access to Forest Service roads is an important factor in maintaining situational awareness throughout the border area. Access to these areas to secure lookouts or conduct surveillance is balanced with land management activities intended to ensure habitat protection for public trust species. The following areas pose specific access challenges to CBP: Glacier National Park, Superior National Forest, Voyageurs National Park, and Boundary Waters Canoe Area (a wilderness area).

#### **5.8.2.6 Consistency with Enforceable Policies of the Coastal Zone Management Act**

In the EOR Region, CBP activities in Minnesota have coastal zones relevant to the northern border and must comply with appropriate state “enforceable policies” outlined generally below. Most CBP activities in the state coastal zones are anticipated to be in the negligible to moderate range and would be expected to comply with the Federal consistency requirements and procedures established by the individual states (identified below for Minnesota).

#### **Minnesota**

Minnesota’s northern border coastal zone is divided into three areas: the portion of the St. Louis River in Carlton County, south of Duluth; the City of Duluth and surrounding areas of urban growth and expansion to the north and west; and the region between the Duluth City limits north to the Canadian border, also known as the “North Shore,” which includes portions of St. Louis, Lake, and Cook Counties (USDOC, 2010). The Department of Natural Resources (DNR) is designated the lead agency for Minnesota’s Lake Superior Coastal Program. A coalition of state resource agencies, including the Pollution Control Agency, Board of Water and Soil Resources, Department of Health, and Department of Agriculture work with DNR to coordinate the administrative and implementation functions of the program (MDNR, 1999).



Actions of Federal agencies, including direct activities, Federal licenses, permits, or other required Federal approvals to non-Federal applicants, and financial assistance programs to state agencies and local governments must also be consistent with the enforceable state policies of Minnesota's Lake Superior Coastal Program. Enforceable state policies of this program include:

- Coastal land management (shoreland development, floodplain management;
- Coastal shoreline erosion (county, municipal, and township planning and development);
- Coastal water management (Public Waters Work Permit Program and wetlands programs);
- Air and water quality (air quality, water quality, groundwater protection, water supply, and waste management);
- Fish and wildlife management;
- Forest management;
- Mineral resources;
- Energy facility siting; and,
- Environmental review (Minnesota Environmental Rights Act, Minnesota Environmental Policy Act, and Environmental Review Program).

The procedures for demonstrating consistency with the enforceable policies of the Minnesota Lake Superior Coastal Program are found in its "Model Federal Consistency Determination for Federal Agencies" (MDNR, 1999).

## **5.9 AESTHETIC AND VISUAL RESOURCES**

### **5.9.1 INTRODUCTION**

Visual resources include those features that define the visual character of an area—natural features, vistas, or viewsheds, and even urban or community visual characteristics that include architecture, skylines, or other characteristics. Visual resources and aesthetics are important due to their unique qualities and the responses they inspire in humans. This section provides the analytical tools to conduct a precise visual impact assessment for future site-specific projects or activities; it also offers examples of the types of landscapes that exist along the border. It analyzes how, in which settings, to what extent, and with which viewer groups the various CBP activities might create visual impacts. It does not characterize every potential vista or visual landscape along the entire northern border, but does provide guidelines for minimizing, mitigating, or avoiding such impacts.

The Visual Resource Management (VRM) system developed by BLM defines the visual sensitivity of an area and the potential effect of a project on a visual resource. It assigns ratings of Classes I to IV based on combinations of scenic quality, sensitivity levels, and distance zones (for the Framework for Characterizing Resource Impacts on the northern border, see Chapter 3, Section 3.9).

### **5.9.2 AFFECTED ENVIRONMENT**

#### **5.9.2.1 Affected Landscapes**

Four broadly defined landscapes occur within the potential settings of the proposed project. These four landscapes are: natural, rural, urban, and industrial (USDOT, 1999) and are briefly described below.

##### **Natural Landscapes**

More sparsely vegetated mountainous areas in the western United States are dominated by their geologic landforms, such as rock outcroppings, ridges, escarpments, and plateaus. Even where significant topographic relief occurs, the heavily forested landforms are undistinguished and tend to confine a viewer's attention to the immediate foreground. Many of these landscapes would fall into the "A" category for scenic quality and thus be sensitive to visual modifications. In locations like Voyageurs National Park in Minnesota, of which one third is water and exposed Precambrian rocky outcrops characterize the park's terrain, the natural lightscape is undisturbed, making for excellent astronomical viewing.

**Glacier National Park, Montana**



Source: (USDOI, 2010a).

**Rural Landscapes**

Rural landscapes include features such as croplands, orchards, fields, fences, and farm-related structures (USDOT, 1999). While border POEs and BPSs along the U.S.–Canadian border tend to be in rural, less densely populated areas well outside of major cities, the majority of the population in the study area lives in larger population centers. Agricultural areas are predominantly flat or gently rolling hills; these landscapes tend to be restricted to valleys and lowlands in the EOR Region and are not typically found at higher elevation or in areas with complex topography. A significant portion of the land in the EOR Region is used for agriculture, especially in Montana and North Dakota, which are 70 percent and 62 percent agriculture, respectively. Native vegetation grows in confined areas where land is steep or soils are unproductive. Views may extend for some distance, with vertical elements typically consisting of relatively low farm buildings, silos, water towers, utility poles, and trees. Distinct geometric patterns, such as rectangular or circular fields and property boundaries divided by section lines, may characterize the landscape. Towns are small and have relatively low skylines. In general, the few structures in such areas can be of aesthetic interest. Agriculture greatly influences the landscape. Land-use groups can sometimes categorize different agriculture practices. Other rural areas include forests or desert, which are influenced by roadways, the presence of small towns, and land-clearing activities, such as timber harvesting, strip mining, ski areas, and large reservoirs.

### **Urban Landscapes**

These landscapes represent only a fraction of the Nation's entire land area but are the dominant visual environment of roughly three-quarters of the American population (USDOT, 1999). Residential and suburban areas represent much of the urban landscape, with centralized primary commercial centers and business districts defining the most dominant visual characteristics. The scale of development in major urban areas is large and dominated by structures, highways, infrastructure, and trees. Urban landscapes can absorb a great degree of visual change because they already contain commanding visual features. Most urban landscapes are clustered around areas of usable natural resources, such as waterways and agricultural areas. In the EOR Region, most major cities, such as Duluth, Minnesota and Havre, Montana, are not adjacent to the border. Although these urban areas are not the most significant features in the EOR Region, they still represent the visual setting for the largest portion of the population. Here, as well as along other parts of the border, the POEs and BPSs are more often in rural areas. These landscapes already contain sizable amounts of infrastructure and would be able to absorb a greater amount of change and more additions to the visual environment than rural or natural landscapes. The largest concern in urban landscapes is the number and sensitivity of the visual user groups (see Section 5.9.2.3).

### **Industrial Landscapes**

Heavy and light industrial landscapes tend to be scattered, situated in specific zones or districts, such as along roads and waterfronts or near airports. Unlike the Great Lakes Region, there are relatively few industrial landscapes along the northern border in the EOR Region. Such landscapes can absorb the greatest degree of visual change, due to existing dominant visual features and their generally low scenic quality ("C" category). These landscapes are usually classified as Visual Resource Class IV in which major changes to the visual environment can occur without major impacts to the visual environment or viewer groups.

#### **Industrial Plant on River**



Source: (USDOl, 2008).

#### **5.9.2.2 Areas with High Visual Sensitivity**

The EOR Region has a larger amount of public lands sensitive to visual impacts compared with the other regions. Montana has about 1.2 million acres of recreational land in the study area, while 68.8 percent of the North Dakota study area is recreational land. Montana has about 5.1



million acres of conservation land in the study area (some of which is also considered recreational land), which may be negatively affected by changes in the visual environment.

**Theodore Roosevelt National Park, North Dakota**



Source: (USDOI, 2011a).

### **5.9.2.3 Affected User Groups**

Specific viewer groups within the study area can gauge viewer sensitivity and assure the selection of appropriate representative viewpoints during the visual impact evaluation. While POEs and BPSs along the U.S.–Canadian border are generally in rural, less densely populated areas outside of major metropolitan areas, most of the population in the study area lives in larger population centers. The following four categories of viewer/user groups were identified within the study area.

#### **Commuters and Through Travelers**

These viewers pass through the study area on a regular basis in automobiles on their way to work or other destinations. On most roads within the study area, the views are from street level. Typically, drivers have limited views of CBP infrastructure and activity, except at locations where CBP actions cross the road. Commuters and through travelers are typically moving, have a relatively narrow visual field due to roadside vegetation or structures, and generally are preoccupied with traffic and navigating the roadways. For these reasons, commuters and through travelers' perception of (and sensitivity to) visual quality and changes in the visual environment are likely to remain relatively low. Passengers in moving vehicles, however, have greater opportunities for off-road views of a project than do drivers.

#### **Local Residents**

These individuals may view the proposed actions from stationary locations, such as yards and homes, and while driving along local roads. The sensitivity of residents to visual quality varies and may be tempered by a viewer's exposure to existing CBP actions and infrastructure and other visually varied features already in existence. Presumably most residents will be highly sensitive to changes in the landscape viewable from their homes and neighborhoods. CBP also considers visual impacts to Native American sacred sites or trust resources before carrying out a project.

### **Business Employees**

These individuals work at local businesses, primarily in the commercial portions of the study area. Business employees will generally experience limited views of the alternative actions except at road crossings while driving to work or where CBP infrastructure and activity occurs near their place of employment. Most business employees work in one and two-story structures that may or may not have outside views. Those with views often look out on numerous, often varied, built features and the employees within are focused on their jobs. For these reasons, business employees are not likely to be sensitive to landscape changes

### **Recreational Users**

The states within the study area with the greatest share of Federal land ownership are Idaho (54.9 percent), Washington (38.3 percent), and Montana (27.6 percent). Given the amount of public land, which includes recreational and conservation lands, in the EOR Region, recreational users could represent a much larger viewer group than in either the Great Lakes or New England regions. Certain recreational users within the study area, however, already have clear views of current CBP infrastructure and activities. Proximity to existing infrastructure and activity may decrease their expectations of visual quality and their sensitivity to visual change.

## **5.10 SOCIOECONOMIC RESOURCES**

### **5.10.1 INTRODUCTION**

This section provides a socioeconomic profile of the EOR Region and discusses potential impacts of CBP's program alternatives on the region's resources. The study area includes areas in the United States and Canada within 100 miles of the border. Some categories of socioeconomic impacts, as discussed in the Environmental Consequences section, are as likely to be experienced on the Canadian side of the border as on the U.S. side. For example, time delays at border crossings may affect populations and businesses on both sides of the border. In addition, much of the economic activity in U.S. border regions involves cross-border movement of people and goods; therefore, the impacts of CBP activities on Canadian socioeconomic resources are considered along with the impacts to U.S. resources. The impacts of CBP actions on communities and regional economies in Canada are most likely to be felt closest to the border. But since it is not possible to delineate precisely how far from the border impacts may extend, information on the area 100 miles north of the border is provided to mirror the study area in the United States. This definition of the study area does not imply that impacts are necessarily equivalent in the two countries.

Much of the economic data presented here for Canada is not available below the provincial level, so the provinces provide the best available representation of the border region. This limitation does not necessarily suggest the scope of economic impacts; it merely reflects the level at which demographic and economic data are available. All monetary values are expressed in 2009 U.S. dollars, unless otherwise indicated.

The socioeconomic environment includes people and their communities, accounting for population movement, density, and age distribution, as well as economic considerations, including income levels, opportunities for employment, and overall economic trends. Section 5.10.2 provides an overview of the socioeconomic resources across the EOR Region and north of this region in Canada. It then provides a more detailed characterization of the regional demography, including population levels and distribution, regional growth trends, income, employment levels, poverty statistics, and property values. The section also profiles the regional economy, indexing important economic sectors in terms of income and employment. It further provides regionally focused information on important economic sectors for four POEs and BPSs. These sites include those POEs that are most active in terms of the annual number of crossings and the value of cargo transported.

### **5.10.2 AFFECTED ENVIRONMENT**

#### **5.10.2.1 Regional Demographics**

To provide context for the potential impacts of CBP actions, some basic, descriptive, socioeconomic information is provided for the EOR Region and the area north of this region in Canada and is compared to the broader states, provinces, and national economies, where possible. While the profiled region is defined as the area both 100 miles north and south of the U.S.-Canada border, the statistics in the various tables and text within this section include data for all U.S. counties and Canadian census divisions overlapping these 100-mile regions. These areas represent the finest geographic resolution available for these data and are used, therefore, to approximate values for populations and other demographic variables.

### 5.10.2.2 Population and Growth Trends

In the United States, approximately 1.0 million people live in the EOR Region (Table 5.10-1). The segment of the population living in border communities accounts for 14.7 percent of the population in the EOR Region states of Minnesota, Montana (EOR), and North Dakota. Minnesota has the largest population in the region with nearly 470,000 people. The border communities in Montana (EOR) and North Dakota are less populated.

Between 2000 and 2009, while the population of the United States grew approximately 8.7 percent, border communities in Minnesota (-0.1 percent) and North Dakota (-5.1 percent) experienced population declines (Figure 5.10-1). The border communities in Montana (EOR), however, grew 3.5 percent.

**Table 5.10-1. Population of the EOR Region\***

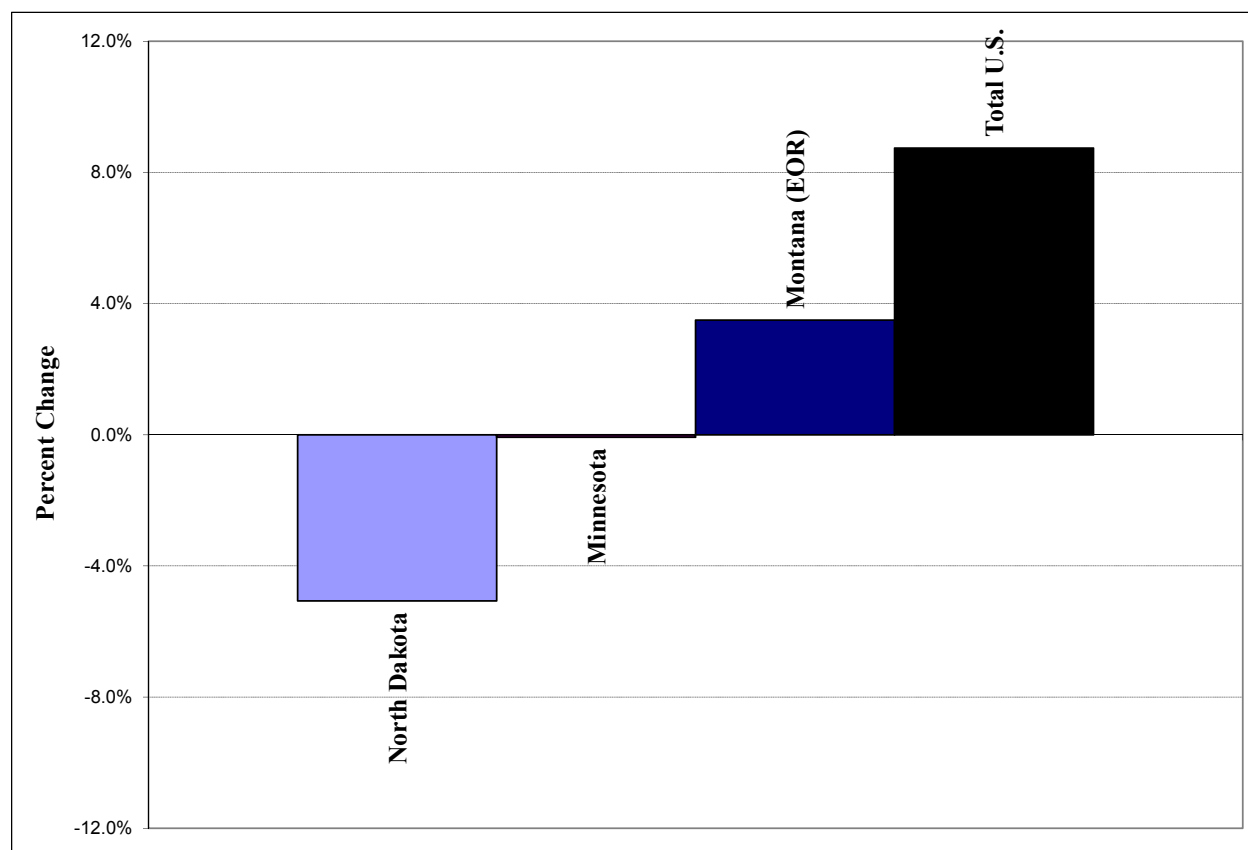
<b>Border State</b>	<b>Population within the Border Area**</b>	<b>Population Overall</b>	<b>Percent of Population within the Border Area</b>
Minnesota	469,275	5,266,214	8.9
Montana (EOR)	263,035	974,989	27.0
North Dakota	279,559	646,844	43.2
EOR Region total	1,011,869	6,888,047	14.7
<b>Total United States</b>	<b>28,412,077</b>	<b>310,973,729</b>	<b>9.1</b>

\* The American Community Survey provides estimates of demographic, social, economic, and housing characteristics every year for all states, as well as for all cities, counties, metropolitan areas, and population groups of 65,000 people or over (USDOC, 2000a).

\*\* Statistics in this column account only for those portions of the states within the EOR Region. Total United States accounts only for the border area of all four regions.

While border POEs and BPSs along the U.S.-Canada border tend to be in rural, less densely populated areas outside of major metropolitan areas, the majority of the region's population lives in larger population centers. Population centers in this report include all of the counties that overlap a metropolitan statistical area (MSA), defined by the Office of Management and Budget and used by the USCB to report demographic statistics. Overall approximately 39.9 percent of the EOR Region's population lives in population centers (Table 5.10-2).



**Figure 5.10-1. Percent Change in the EOR Region Population, 2000–2009**

Source: (USDOC, 2009a).

**Table 5.10-2. Population Centers in the EOR Region\***

<b>Border State</b>	<b>Population Center</b>	<b>State's EOR Living in Population Centers**</b>	<b>Total State Population in the EOR Region</b>	<b>Percent of State's EOR Population Living in Population Centers</b>
Minnesota	Duluth****	197,767	469,275	42.1
	Grand Forks****	30,776		6.6
	Minnesota State Total	228,543		48.7
Montana (EOR)***	Missoula	108,623	263,035	41.3
North Dakota***	Grand Forks****	66,414	279,559	23.8
EOR Region total		403,580	1,011,869	39.9
<b>Total United States*****</b>		<b>261,110,826</b>	<b>310,973,729</b>	<b>84.0</b>

\* The American Community Survey provides estimates of demographic, social, economic, and housing characteristics every year for all states, as well as for all cities, counties, metropolitan areas, and population groups of 65,000 people or more.

\*\* Statistics in this column account only for those portions of the EOR Region within each state.

\*\*\* The EOR Region in Montana and North Dakota has only one population center per state. Thus, no state total row is presented for these two states.

\*\*\*\* Population statistics for the Duluth population center are split between counties in Minnesota and Wisconsin (in the Great Lakes Region) and population statistics for the Grand Forks population center are split between counties in Minnesota and North Dakota.

\*\*\*\*\* Population statistics in this row represent the proportion of the total American population that resides in population centers across the whole country.

In Canada, approximately 2.9 million people reside in the study area north of the EOR Region (Table 5.10-3). Most major cities are in the southern part of the country; therefore, Canada's population is more heavily concentrated along the border than is the American population. For example, approximately 90.3 percent of the population lives in border communities in Manitoba. Alberta and Manitoba have some of the largest populations in border communities in Canada. As some census divisions overlapping the 100-mile buffer area are large and extend well beyond 100 miles from the border, this analysis may overstate the Canadian population in the study area north of the EOR Region.

Between 1996 and 2006, the population of Canada grew 9.5 percent. More recently, according to Statistics Canada, about two-thirds of Canada's growth between 2009 and 2010 was attributable to net international migration. The number of immigrants to Canada increased from 245,300 between 2008 and 2009 to 270,500 between 2009 and 2010. During the economic recession in 2009 and 2010, however, a decrease in the net flow of non-permanent residents took place, with more immigrants leaving the country, resulting in overall lower net international migration in 2010 than in the previous year. Overall, the area north of the EOR Region experienced population growth. Population growth in Alberta (27.0 percent) was the highest among the border provinces and outpaced growth for Canada as a whole (Figure 5.10-2).

Approximately 67.1 percent of the Canadian population in the study area north of the EOR resides within population centers (Table 5.10-4). While approximately 70 percent of the study area population within Alberta and Manitoba lives in population centers, less than half of the study area population within Saskatchewan does.

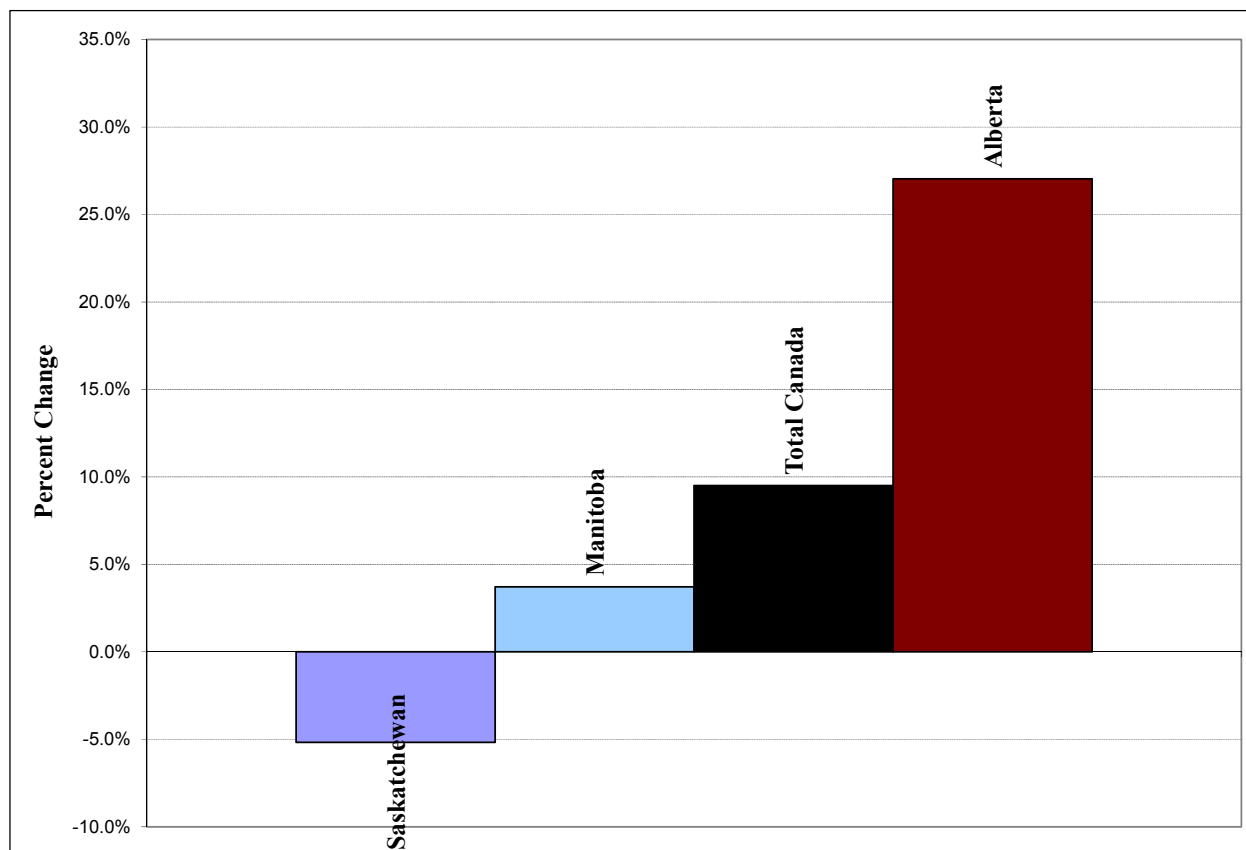
**Table 5.10-3. Population North of the EOR Region in Canada**

<b>Border Province</b>	<b>Study Area Population North of the EOR Region*</b>	<b>Total Population in the Province</b>	<b>Percent of Total Province Population Residing in the Study Area North of the EOR Region</b>
Alberta	1,486,400	3,256,360	45.6
Manitoba	1,023,460	1,133,515	90.3
Saskatchewan	393,290	953,850	41.2
EOR Region total	2,903,150	5,343,725	54.3
Total Canada	<b>25,562,910</b>	<b>31,241,030</b>	<b>81.8</b>

\* Statistics in this column account only for those portions of the provinces within the study area. Total Canada accounts only for those portions of the provinces within the study area across all four regions.

Source: (StatCan, 2006a).

**Figure 5.10-2. Percent Change in Canadian Population  
North of the EOR Region, 1996–2006**



Sources: (StatCan, 1996; StatCan, 2006a).

**Table 5.10-4. Population in Census Metropolitan Areas in Study Area North of the EOR Region in Canada**

<b>Border Province</b>	<b>Population Center</b>	<b>Study Area Population Living in Population Centers North of the EOR Region*</b>	<b>Total Study Area Population North of the EOR Region*</b>	<b>Percent of Total Study Area Population North of the EOR Region Living in Population Centers</b>
Alberta**	Calgary	1,070,295	1,486,400	72.0
Manitoba**	Winnipeg	686,040	1,023,460	67.0
Saskatchewan**	Regina	192,440	393,290	48.9
EOR Region total		1,948,775	2,903,150	67.1
Total Canada***		<b>21,508,575</b>	<b>31,241,030</b>	<b>68.8</b>

\* Population statistics in these columns account only for those portions of the CMAs and provinces within the study area.

\*\* The study area north of the EOR Region in Alberta, Manitoba, and Saskatchewan includes only one population center in each province. Thus, no province total rows are presented.

\*\*\* Population statistics in this row represent the proportion of the total Canadian population that resides in population centers across the whole country.

Source: (StatCan, 2006a).

### **5.10.2.3 Income, Poverty, and Unemployment**

Border communities in Montana (EOR) and North Dakota have the lowest median income among all border communities across the U.S.-Canada border (Table 5.10-5). In addition, border communities in the EOR Region are less wealthy than the state average (Minneapolis and St. Paul are outside of the study area).

The poverty rate is defined as the number of individuals included in the poverty count as a percentage of the population for whom the poverty status is determined. Border communities in the EOR Region of Montana and North Dakota have the highest poverty rates among all border communities across the U.S.-Canada border (Table 5.10-5). In Minnesota, the poverty rate for border communities is notably higher than the state average.

The unemployment rate in each state was below the national average, especially in North Dakota where the unemployment rate was about half the national average (Table 5.10-6). Except for Montana, the unemployment rate was higher in the border region than in the state as a whole.

**Table 5.10-5. Income and Poverty Statistics for States in the EOR Region**

<b>Border State and Study Area EOR Region*</b>		<b>Median Household Income** (\$)</b>	<b>Population Below the Poverty Line***</b>	<b>Percent of Population Below the Poverty Line</b>
Minnesota	Study area EOR Region	44,926	54,054	11.9
	Statewide	59,516	380,476	7.9
Montana (EOR)	Study area EOR Region	40,642	40,648	15.8
	Statewide	41,720	128,355	14.6
North Dakota	Study area EOR Region	41,654	37,654	13.2
	Statewide	43,716	73,457	11.9
EOR Region total	Study area EOR Region	42,891	132,356	13.3
	Selected states	55,462	582,288	9.3
<b>Total United States</b>		<b>53,051</b>	<b>33,899,812</b>	<b>12.4</b>

\* Statistics in the non-shaded rows account only for portions of the states within the EOR Region.

\*\* Median household income is reported in inflation-adjusted 2009 dollars.

\*\*\*To determine the poverty rate in the United States, the Census Bureau references income thresholds that vary by family size and the ages of family members. If a family's total income, not including noncash benefits (such as food stamps and housing subsidies), is below the family's income threshold, every individual in the family is included in the poverty count.

Sources: (USDOC, 2000a; USDOC, 2000b).

**Table 5.10-6. Unemployment Rates for the EOR Region**

<b>Border State and Study Area EOR Region*</b>		<b>Unemployment Rate (%)</b>
Minnesota	Study area EOR Region	9.4
	Statewide	8.0
Montana (EOR)	Study area EOR Region	4.9
	Statewide	6.2
North Dakota	Study area EOR Region	4.5
	Statewide	4.3
EOR Region total	Study area EOR Region	6.9
	Selected states	7.4
<b>Total United States</b>		<b>9.3</b>

\* Statistics in the non-shaded rows account only for portions of the states within the EOR Region.

Source: (USDOL, 2009a).

The median household income in Canada north of the EOR Region is approximately \$53,000 (in 2009 U.S. dollars) compared with approximately \$49,400 for Canada as a whole (Table 5.10-7). Alberta has the highest median household income among the border provinces.

The poverty rate in Canadian communities is defined as the percentage of low-income “economic families.” (See note in Table 5.10-7 for an explanation of economic family.) This threshold-based designation is comparable to the poverty statistics in the USCB. In the study area north of the EOR Region, the poverty rate is approximately 10.0 percent compared with 11.6 percent for Canada as a whole (Table 5.10-7). Border communities in Alberta and Saskatchewan have the lowest poverty rates among all border communities north of the U.S.-Canada border.

The unemployment rate in Canada north of the EOR Region was 4.4 percent in 2006 compared with 6.6 percent for Canada as a whole (Table 5.10-8). The unemployment rate in border communities was lower than the unemployment rate of the province as a whole. Border communities in Alberta and Saskatchewan have the lowest unemployment rates among all border communities north of the U.S.-Canada border.

**Table 5.10-7. Income and Poverty Statistics North of the EOR Region in Canada**

<b>Border Province and Study Area North of the EOR Region*</b>		<b>Median Household Income** (\$US)</b>	<b>Number of Low-Income Economic Families***</b>	<b>Percent of Low-Income Economic Families***</b>
Alberta	Study area north of EOR Region	60,101	35,886	8.8
	Province	58,928	77,399	8.7
Manitoba	Study area north of EOR Region	45,375	34,015	12.3
	Province	44,089	36,692	12.3
Saskatchewan	Study area north of EOR Region	46,024	9,699	8.8
	Province	43,012	26,166	10.2
EOR Region total	Study area north of EOR Region	53,002	79,600	10.0
	Selected provinces	52,939	140,257	9.7
<b>Total Canada</b>		<b>49,393</b>	<b>1,006,911</b>	<b>11.6</b>

\* Statistics in the non-shaded rows account only for portions of the provinces within the study area.

\*\* Median household income is reported in inflation-adjusted 2009 U.S. dollars.

\*\*\* The Canadian Census reports statistics for “low-income” economic families. This threshold-based designation is comparable to the poverty statistics in the USCB. The term “economic family” refers to a group of two or more persons who live in the same dwelling related to each other by blood, marriage, common-law, or adoption. A couple may be of opposite or same sex. Foster children are included.

Source: (StatCan, 2006d).

**Table 5.10-8. Unemployment Rates North of the EOR Region in Canada**

<b>Border Province and Study Area North of the EOR Region*</b>		<b>Unemployment Rate (%)</b>
Alberta	Study area north of EOR Region	4.0
	Province	4.3
Manitoba	Study area north of EOR Region	5.0
	Province	5.5
Saskatchewan	Study area north of EOR Region	4.5
	Province	5.6
EOR Region total	Study area north of EOR Region	4.4
	Selected provinces	4.7
<b>Total Canada</b>		<b>6.6</b>

\* Statistics in the non-shaded rows account only for portions of the provinces within the study area.

Source: (StatCan, 2006c).

#### **5.10.2.4 Property Values**

In the EOR Region, the median property values within each state, between 2006 and 2008, were lower than the median property value for the United States as a whole (\$192,400) during the same time period (Table 5.10-9). Except for North Dakota, the median property value within the EOR border region is lower than the median property value for each state as a whole.



**Table 5.10-9. Median Property Value for the EOR Region**

<b>Border State and Study Area EOR Region*</b>		<b>Median Home Value** (\$)</b>
Minnesota	Study area EOR Region	140,900
	Statewide	212,100
Montana (EOR)	Study area EOR Region	155,200
	Statewide	168,200
North Dakota	Study area EOR Region	125,400
	Statewide	106,200
EOR Region total	Study area EOR Region	140,900
	Selected states	195,500
<b>Total United States</b>		<b>192,400</b>

\* Statistics in the non-shaded rows account only for those portions of the states within the EOR Region.

\*\* The American Community Survey provides estimates of housing characteristics for all geographic areas with populations of 20,000 or more, including the Nation, all states and the District of Columbia, all congressional districts, and approximately 1,800 counties every 3 years. Due to the use of value categories rather than specific amounts collected for each individual housing unit in 2006 and 2007, property values cannot be inflation adjusted. Property values are reported in nominal dollar terms.

Sources: (USDOC, 2008a).

North of the EOR Region in Canada, the median property value in 2006 was approximately \$218,700 (in 2009 U.S. dollars) compared with \$232,200 for Canada as a whole (Table 5.10-10). Border communities in Alberta have the second highest median property values among all border communities north of the U.S.-Canada border. The median property value for border communities in Alberta is significantly higher than for the province as a whole. Conversely, border communities in Saskatchewan have the second lowest median property values among all border communities north of the U.S.-Canada border.

**Table 5.10-10. Median Property Value North of the EOR Region in Canada**

<b>Border Province/Study Area North of the EOR Region*</b>		<b>Average Value of Dwelling** (\$US)</b>
Alberta	Study area north of EOR Region	302,700
	Province	259,100
Manitoba	Study area north of EOR Region	137,300
	Province	135,200
Saskatchewan	Study area north of EOR Region	112,700
	Province	116,500
EOR Region total	EOR Region	218,700
	Selected provinces	207,300
<b>Total Canada</b>		<b>232,200</b>

\* Statistics in the non-shaded rows account only for those portions of the provinces within the study area.

\*\* A dwelling is defined as a set of living quarters designed for or converted for human habitation in which a person or group of persons reside or could reside. In addition, a private dwelling must have a source of heat or power and must be an enclosed space that provides shelter from the elements, as evidenced by complete and enclosed walls and roof and by doors and windows that protect from wind, rain and snow. Property values are reported in 2006 U.S. dollars.

Source: (StatCan, 2006b).

### 5.10.2.5 Regional Economies

Tourism is a major component of economic activity along the northern border. Canada is the top country of origin for visitors to the United States. In 2008, the number of Canadian visitors staying one or more nights in the United States was nearly 19 million (USDOC, 2008e). In this context, “Canadian visitors” refers to Canadian residents visiting the United States.

#### Trade with Canada

The flow of goods, services, and people across the border contributes significantly to economic activity in border communities. Canada is the largest trading partner of the United States. In 2009, the total value of merchandise trade with Canada was approximately \$429.6 billion—\$204.7 billion in exports and \$224.9 billion in imports. Shipments by surface modes of transportation, excluding pipelines, account for approximately 79 percent of total merchandise trade with Canada. The top exports to Canada by surface transportation are automobiles and automotive parts and accessories, and other machinery, appliances, and equipment. The top imports from Canada are automobiles and automotive parts and accessories, other machinery and appliances, and processed paper and pulp products. On average, approximately \$930 million in merchandise crosses the northern border by surface transportation every day (USBTS, 2009a). Appendix Q of this analysis provides trade statistics for surface transportation between the United States and Canada.

Crossing the northern border using surface modes of transportation is the principal means of entry for Canadians visiting the United States, accounting for two-thirds (12.6 million) of all

Canadian visitor entries (USDOC, 2008c). While approximately 15 percent of Canadian visitors who entered the United States by surface transportation visited states in the EOR Region, the spending in this region accounted for a relatively low percentage (less than 7 percent) of the visitors' total spending in the United States. Canadian visitors entering by surface transportation contributed approximately \$538 million to this region in 2008 (Table 5.10-11). The average visitor spent approximately \$286 per visit. The most common stated purposes for visiting states in the EOR Region were vacation (83 percent), visiting friends or relatives (12 percent), and business or employment (5 percent). The region had the third highest percentage of travel due to business or employment. While business travelers tend to spend more per trip, they rely more heavily on air travel and travel further from the border.

**Table 5.10-11. Canadian Visitors Entering the EOR Region by Surface Transportation\***

Destination	Visitors		Spending			Purpose of Trip		
	Number of Visitors (000s)	Average Nights Per Visit	Visitor Spending (\$US millions)	Spending per Visitor (\$US)	Average Daily Spending per Visitor (\$US)	Business, Convention, or Employment (%)	Visiting Friends or Relatives (%)	Holiday, Vacation, or Other (%)
Minnesota	530	2.6	162.5	307	119	8.9	16.7	74.3
Montana	634	3.1	189.4	299	96	5.1	11.7	83.2
North Dakota	718	2.1	186.4	259	123	2.5	8.7	88.8
<b>EOR Region</b>	<b>1,882</b>	<b>2.6</b>	<b>538</b>	<b>286</b>	<b>111</b>	<b>5.2</b>	<b>12.0</b>	<b>82.8</b>

\* Surface modes of transportation include autos, buses, and other non-air modes of transportation. Average nights per visit and average daily spending per visitor are based on total visitors, including air travelers.

\*\* The Office of Travel & Tourism Industries suppresses state data for which the sample size is fewer than 400,000.

Sources: (USDOC, 2008b, USDOC, 2008c; USDOC, 2008d).

#### **5.10.2.6 Economic Profiles of POEs and BPSs in the EOR Region**

This section provides regional economic profiles for border communities in the United States and Canada that surround selected POEs in the EOR Region. It characterizes the socioeconomic resources of specific border communities in the region to provide context for the discussion of potential consequences of CBP's alternative actions, and to highlight the diversity in regional economies surrounding POEs and BPSs along the northern border. Appendix Q of this report provides data on trade, employment, and payroll statistics by economic sector for U.S. counties and Canadian provinces that contain profiled POEs and BPSs in the four northern border regions.

This section profiles five sites in the EOR Region representing the most heavily used POEs along the U.S.-Canada border in the region in terms of total crossings and the total value of trade, along with some smaller, more rural POE sites. Additionally, sites were included based on their unique characteristics to reflect different socioeconomic conditions in border communities. For example, the sites profiled in the EOR Region include a POE on tribal lands. Table 5.10-12 lists the sites ranked by crossing volume and provides information on associated crossing activity.

**Table 5.10-12. Point of Entry and Border Patrol Station Sites Profiled in the EOR Region**

Port	Annual Individual Crossings (% of Total)	Annual Vehicle Crossings (% of Total)	National Rank by Crossing Volume	Annual Trade Value (Surface Mode)	Rank by Trade Value	Two Largest Commodities (% of Port's Trade Value)	Important Features
MN: International Falls	956,517 (1.6%)	478,935 (1.5%)	15	\$6,912,248,076 (2.0%)	10	<ul style="list-style-type: none"> <li>Plastics and articles thereof (16%)</li> <li>Fertilizers (12.7%)</li> </ul>	<ul style="list-style-type: none"> <li>Largest in MN*</li> <li>Roughly colocated with International Falls BPS</li> </ul>
ND: Pembina	759,402 (1.2%)	456,886 (1.4%)	17	\$15,251,286,009 (4.5%)	5	<ul style="list-style-type: none"> <li>Nuclear reactors, boilers, machinery and mechanical appliances (20.4%)</li> <li>Vehicles and parts (11.5%)</li> </ul>	<ul style="list-style-type: none"> <li>Largest in ND*</li> </ul>
MT: Sweetgrass	654,760 (1.1%)	381,912 (1.2%)	19	\$9,123,255,830 (2.7%)	9	<ul style="list-style-type: none"> <li>Nuclear reactors, boilers, machinery and mechanical appliances (26.9%)</li> <li>Electrical machinery and equipment (6.7%)</li> </ul>	<ul style="list-style-type: none"> <li>Largest in MT*</li> <li>Roughly 7 miles north of the Sweetgrass BPS</li> </ul>
MT: Piegan	207,694 (0.3%)	103,869 (0.3%)	37	\$11,590,854 (0.003%)	61	<ul style="list-style-type: none"> <li>Mineral fuels, mineral oils, bituminous substances (80.4%)</li> <li>Printed books and other products of the printing industry (3.5%)</li> </ul>	<ul style="list-style-type: none"> <li>In tribal land (Blackfeet Indian Reservation)</li> </ul>

# PROGRAMMATIC ENVIRONMENTAL IMPACT STATEMENT

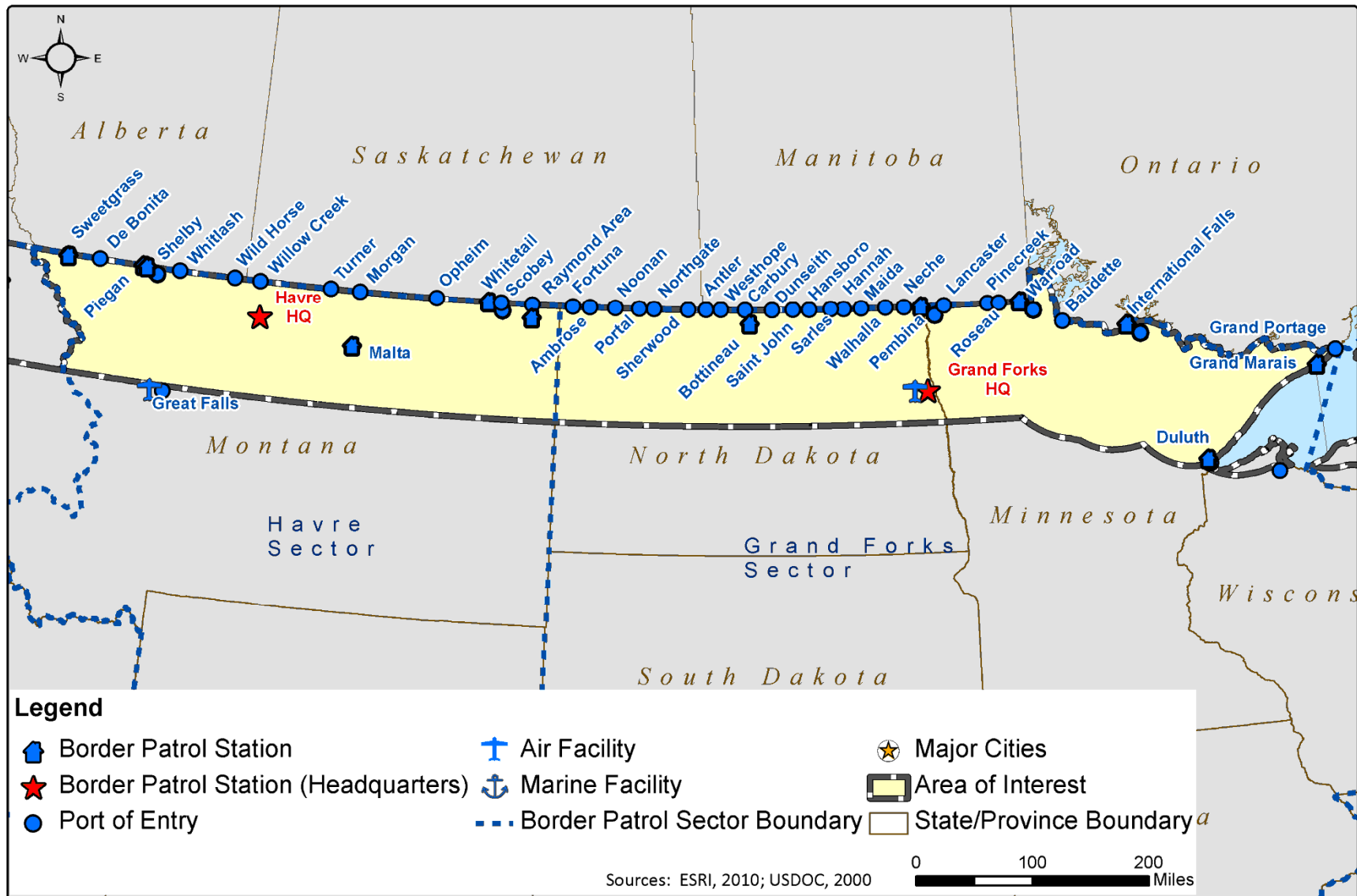
Port	Annual Individual Crossings (% of Total)	Annual Vehicle Crossings (% of Total)	National Rank by Crossing Volume	Annual Trade Value (Surface Mode)	Rank by Trade Value	Two Largest Commodities (% of Port's Trade Value)	Important Features
ND: Dunseith	150,886 (0.2%)	80,746 (0.3%)	38	38	38	<ul style="list-style-type: none"> <li>• Live animals (28.3%)</li> <li>• Nuclear reactors, boilers, machinery and mechanical appliances (17.8%)</li> </ul>	<ul style="list-style-type: none"> <li>• Adjacent to International Peace Garden tourist attraction</li> </ul>

\* Size based on number of individual border crossings.

\*\* BTS does not provide data on commodities and crossings at BPSs.

Sources: (IEc analysis of Bureau of Transportation Statistics data: USDOT, 2009a; USDOT, 2009b; USDOT, 2009c).

**Figure 5.10-3. Locations of POEs and BPSs in the EOR Region**





The remainder of this section characterizes the regional economies of the U.S. counties and Canadian provinces containing the EOR Region sites identified in Table 5.10-12 and Figure 5.10-3.

### Glacier County, Montana

Glacier County contains one of the profiled POEs (Piegan POE). The tribal lands of the Blackfeet Indian Reservation are also located in this county. The Blackfeet are one of the few remaining Tribes in the United States that still live on ancestral lands. The reservation is bordered by Alberta, Canada to the north and Glacier National Park and the Rockies to the west (BN, 2010). The population of Glacier County is slightly less than 14,000. According to the USCB, median household income is well below the median for Montana and the poverty rate is approximately 25 percent, more than 10 percentage points higher than for the state as a whole. The major economic sectors in Glacier County by annual payroll are health care and social assistance (\$21.0 million), retail trade (\$10.4 million), accommodation and food services (\$8.7 million), and mining, quarrying, and oil and gas extraction (\$7.2 million). These four sectors account for nearly two-thirds of the county's employment.

- **Piegan POE:** This POE lies in the Blackfeet Indian Reservation and connects U.S. Route 89 with Highway 2 en route to Calgary, Alberta. Piegan is a relatively small POE; in 2009, it accounted for approximately 208,000 individual border crossings (less than 0.5 percent of all U.S.-Canada crossings) and less than \$12 million in commercial trade (less than 0.01 percent of all U.S.-Canada trade). The primary commodity group—mineral fuels and oils—accounts for more than 80 percent of the total value of commerce at Piegan. Piegan is a “permit port,” which means that cargo must be approved in advance by the Great Falls Service Port.

#### A Note on Data Sources

All statistics on private, nonfarm employment, unless otherwise noted, are from USCB County Business Patterns for 2008. All statistics on agricultural production employment, unless otherwise noted, are from the U.S. Department of Agriculture, Census of Agriculture for 2007. All Canadian statistics, unless otherwise noted, are from the Statistics Canada 2006 Census. All detail on border crossings and trade value, unless otherwise noted, are from the U.S. Department of Transportation Bureau of Transportation Statistics' Transborder Freight Data for 2009. Monetary values are expressed in 2009 U.S. dollars.

### Toole County, Montana

Toole County, Montana is 80 miles east of Glacier County and has a population of just over 5,000. Toole County contains one of the profiled POEs (Sweetgrass POE). The economy is heavily supported by agriculture and livestock as well as by oil and gas production (TCMT, 2010). The major economic sectors in Toole County by annual payroll are health care and social assistance (\$8.4 million), mining, quarrying, and oil and gas extraction (\$8.0 million), transportation and warehousing (\$6.0 million), and retail trade (\$3.4 million). The top private employer in Toole County is the Crossroads Correctional Facility. CBP is also a major employer in the area.

- **Sweetgrass POE:** The Sweetgrass POE, which connects Interstate 15 to Highway 4 in Alberta, has the highest volume of border traffic in Montana and is a 24-hour port. Sweetgrass is the ninth largest commercial land border crossing in terms of trade value, which totaled \$9.1 billion in 2009—approximately 2.7 percent of all U.S.-Canada trade.

Sweetgrass also has an airport. The top commodities by trade value are machinery and mechanical appliances and parts (26.9 percent), electrical machinery and equipment (6.7 percent), and meat products (6.5 percent). Sweetgrass is one of the primary locations for the transportation of meat products, accounting for more than 21 percent of U.S.-Canada trade. Built in 2004, the 100,000 square foot joint border facility contains six lanes of traffic flowing north into Canada and five lanes flowing south into the United States (TCMT, 2010).

### **Alberta, Canada**

Alberta lies to the north of the Piegan and Sweetgrass POEs. Alberta, the fourth largest province in Canada, is landlocked and borders Montana. Alberta has one of the strongest economies in Canada, supported by oil and natural gas, technology, and forestry-based industries. Alberta holds 70 percent of Canada's coal reserves and ranks second, after Saudi Arabia, in terms of proven global crude oil reserves. Alberta contains four major petrochemical plants with a combined annual production capacity of 8.6 billion pounds. The plants at Joffre and Fort Saskatchewan are the world's largest (GOA, 2010). The province has the highest median household income in Canada. Calgary is Alberta's largest city (approximately 1 million people) and is a major distribution and transportation hub. Coutts, the Canadian site of the joint border facility with Sweetgrass, has a population of less than 400. The major economic sectors in Alberta by annual payroll are mining, quarrying, and oil and gas extraction (\$9.3 billion), construction (\$8.4 billion), professional, scientific, and technical services (\$7.8 billion), and manufacturing (\$6.5 billion). Retail trade, the sixth largest sector by contribution to regional income, is one of the largest sectors in terms of employment, providing over 206,000 jobs.

### **Rolette County, North Dakota**

Rolette County, North Dakota has a population of about 14,000 and contains one of the profiled POEs (Dunseith POE). Approximately 71 percent of the county's population is Native American. Key economic sectors in terms of annual payroll are health care and social assistance (\$19.0 million) and retail trade (\$8.4 million). The county also supports electronics manufacturing and agricultural activities. Primary crops include wheat, durum, barley, and canola. Tourism and recreation are also important due to the swimming, fishing, hunting, and snowmobiling opportunities provided by the Turtle Mountains. In addition, the International Peace Garden, situated on the border between Manitoba and Rolette County, was established in 1932 as a symbol of friendship between the United States and Canada and attracts visitors from both countries. The botanical garden, along with a museum and monument attractions, spans 2,339 acres in both countries (RCND, 2011).

- **Dunseith POE:** The Dunseith POE occurs at the site of the International Peace Garden and connects Rolette County, North Dakota and Manitoba, Canada. The POE is open 24 hours and has approximately 151,000 individual border crossings per year (0.2 percent of all U.S.-Canada crossings in 2009). The Dunseith POE accounts for a relatively low fraction of total border trade value, supporting \$505 million, or 0.1 percent of all U.S.-Canada trade in 2009. A key characteristic of the POE is its situation at the International Peace Garden. While the POE constitutes only 0.2 percent of individual crossings and 0.3 percent of total vehicle crossings along the border, visitation to the garden for events may subject the crossing to periodic congestion.

### **Pembina County, North Dakota**

Pembina County, North Dakota is located in the northeastern corner of the state and contains one of the profiled POEs (Pembina POE). The major economic sectors in Pembina County by annual payroll are wholesale trade (\$15.7 million), agriculture (\$13.9 million), construction (\$10.7 million), retail trade (\$8.6 million), and transportation and warehousing (\$7.3 million).

Wholesale trade, retail trade, and transportation and warehousing account for more than one-third of private, nonfarm jobs in Pembina. Major employers in Pembina County include CBP and a satellite manufacturing plant of Motor Coach Industries, which assembles intercity buses for customers including Greyhound Lines (TMVI, 2010).

- **Pembina POE:** The Pembina POE connects Interstate 29 in Pembina County, North Dakota to Manitoba Highway 75 in Emerson, Manitoba. Pembina has the largest number of crossings in North Dakota, with more than 759,000 individual border crossings or 1.2 percent of all U.S.-Canada crossings in 2009. It is a significant crossing for road traffic headed to and from Winnipeg, Manitoba. Winnipeg is also the only major city between Vancouver, British Columbia and Thunder Bay, Ontario with direct U.S. rail connections. The Pembina POE has the fifth highest value of border commerce, \$15.3 billion or 4.5 percent of all U.S.-Canada trade in 2009. The major commodities crossing the border at Pembina are machinery and mechanical appliances (20.4 percent), vehicles and parts (11.5 percent), electrical machinery and equipment (5.9 percent), and plastics (5.0 percent).

### **Manitoba, Canada**

Manitoba lies to the north of the Dunseith and Pembina POEs. Manitoba is one of the three central prairies provinces. It shares its southern border with Minnesota and North Dakota. The province has a low population density, representing only 3.6 percent of the Canadian population. Approximately 60 percent of the population lives in the metropolitan area of Winnipeg.

Agriculture, a vital part of the economy, occurs mostly in the southern half of the province.

Approximately 12 percent of Canadian farmland is in Manitoba. The most common agricultural products in the province are cattle (34.6 percent), assorted grains (19.0 percent) and oilseed (7.9 percent) (StatCan, 2006e).

Manitoba is a popular destination for visitors seeking outdoor recreation and wildlife as well as historical and cultural sites. The Riding Mountain National Park of Canada attracts numerous visitors each year. Historically, Manitoba's unemployment rate has been below the unemployment rate for Canada as a whole, supported by a diverse agricultural sector and a robust manufacturing sector that accounts for nearly 63,000 jobs, more than 10 percent of employment in the province. The major economic sectors in terms of annual payroll in Manitoba are manufacturing (\$2.4 billion), health care and social assistance (\$2.3 billion), public administration (\$1.8 billion), education services (\$1.7 billion), retail trade (\$1.4 billion), and transportation and warehousing (\$1.3 billion).

### **Koochiching County, Minnesota**

Koochiching County, Minnesota, containing the International Falls POE and BPS, is geographically one of the largest counties in Minnesota with a population of slightly over 13,000. The region is a popular destination for outdoor activities including boating, fishing, hunting, and bird and wildlife watching. The Bois Forte Indian Reservation lies partially in the

county. The major economic sectors by annual payroll in Koochiching County are health care and social assistance (\$19.7 million), retail trade (\$14.9 million), and finance and insurance (\$10.2 million). Accommodation and food services account for the third largest sector in terms of employment. In International Falls, often referred to as the “Icebox of the Nation,” cold weather testing of major automobile products forms also an important component of the winter economy (CIFMN, 2010). International Falls also has one of three foreign trade zones in Minnesota, which provide companies with economic incentives for warehousing, importing, and exporting goods.

- **International Falls POE and BPS:** The border crossing at International Falls connects U.S. Route 53 with Highway 11 in Fort Frances, Ontario. Major U.S. cities near International Falls include Duluth, Fargo, and Minneapolis, while major Canadian cities near International Falls include Thunder Bay, Ontario, and Winnipeg, Manitoba (CIFMN, 2010). Trucks and privately owned vehicles (POVs) are the primary vehicles using the POE; however, it does have a significant number of bus, train, and pedestrian crossings as well. International Falls is the largest POE in Minnesota, with more than 956,500 individual border crossings (1.6 percent of all U.S.-Canada crossings) and more than \$6.9 billion in trade value (2.0 percent of all U.S.-Canada trade in 2009). The major trade commodities crossing the border at International Falls are plastics (16.0 percent), fertilizers (12.7 percent), wood and articles of wood (10.7 percent), mineral fuels and oils (9.8 percent), and wood pulp and other scraps (9.0 percent). Of particular note, International Falls accounts for approximately 30 percent of all U.S.-Canada trade crossings for fertilizers and wood pulp and other scraps.

### **Ontario, Canada**

Ontario lies to the north of the International Falls POE and BPS. Ontario is Canada’s largest province in terms of population. It is home to the Canada’s most populous city, Toronto, and the national capital, Ottawa. Ontario borders Minnesota, Michigan, and New York; Ohio and Pennsylvania lie across Lake Erie. Ontario is also home to the popular destination of Niagara Falls, which draws millions of tourists and provides upscale hotels, casinos, and cultural attractions in addition to the scenic views. Ontario accounts for more than half of the total value of all U.S.-Canada trade through the following POEs: Alexandria Bay/Cape Vincent, Buffalo-Niagara Falls, Detroit, International Falls, Port Huron, Massena, and Sault Ste. Marie.

Ontario contains Canada’s largest manufacturing sector and is the largest North American automobile manufacturer, ahead of Michigan and all of Mexico (GOO, 2010). There are major motor vehicle assembly plants in Ingersoll, Brampton, Windsor, Oakville, St. Thomas, Oshawa, Alliston, Cambridge, and Woodstock (ICAN, 2010). Ontario is also the center of high tech, financial services, and other knowledge-intensive industries, accounting for roughly half of all Canadian employment in those industries. In terms of annual payroll, the largest economic sectors in Ontario are manufacturing (\$42.2 billion), professional, scientific and technical services (\$24.1 billion), and health care and social assistance (\$21.5 billion). Retail trade accounts for the largest number of jobs after manufacturing.

## **5.11 CULTURAL AND PALEONTOLOGICAL RESOURCES**

### **5.11.1 INTRODUCTION**

This section provides an overview of cultural and paleontological resources located in the EOR Region of the northern border and discusses potential impacts of CBP's program alternatives on those resources.

### **5.11.2 AFFECTED ENVIRONMENT**

#### **5.11.2.1 Archaeological Resources: Prehistoric/Precontact Context**

Among the known cultural resources in the EOR Region are archeological sites from the prehistoric and pre-European contact periods. This section provides an overview of those periods. An expanded prehistoric and pre-European contact-period context and references can be found in Appendix H. In North America, the Prehistoric/Precontact era is generally divided into three broad periods: Paleo-Indian, Archaic, and Woodland/Ceramic/Late. During the Prehistoric era, North-American groups evolved from highly nomadic big-game hunters to politically sophisticated and sedentary Tribes and nations employing large-scale agriculture. There are thousands of known archaeological sites within the EOR Region, which represent a fraction of the potential sites that may exist in the region. This record of known sites has been built up over the years as a result of reports by amateurs and vocational archaeologists as well as the result of formal archaeological surveys conducted by professionals and academics. In parallel with the evolution of prehistoric groups from nomadic hunting to sedentary agriculture and the resulting increases in population, sites from the earlier periods (ca. 12,000 to ca. 7,000 years before present [B.P.]) are rare. Sites from the later periods account for the bulk of the known sites in the region.

#### **Paleo-Indian Period**

The Paleo-Indian period (ca. 12,000 to ca. 10,000 B.P.) is similar in much of the study area and was characterized by people inhabiting the recently deglaciated environment. Subsistence was dominated by big-game hunting of mastodon, mammoth, caribou, horse, bison, musk-ox, giant ground sloth, white-tailed deer, elk, moose, and wapiti, along with species of smaller mammals, birds, fish, reptiles, and shellfish. These early hunting groups generally had highly mobile life-ways. There are several types of Paleo-Indian sites including small camps; workshops/quarries; kill sites; rockshelters/cave camps; major, recurrently occupied camps; and possible cremation sites.

#### **Archaic Period**

During the Archaic period (ca. 10,000 to ca. 3,000 B.P.), the environment changed from unstable post-glacial conditions to an essentially modern state. In the context of this changing landscape came numerous cultural and technological changes. People gradually adopted less-mobile lifestyles. At the same time, they broadened the variety of resources on which they depended for food and shelter. Some groups began regularly interacting and trading with other people across large distances—sometimes over a thousand miles away. There are relatively few sites from the first 3,000 years of the Archaic known in the northern portion of the United States, a fact probably related to the continually changing climate and environment. Sites from the last 4,000 years of the period are more common and show people had developed a great variety of tool

types and styles, mostly made from stone, bone, and wood. In general, Archaic sites are found along water and on lake plains.

### **Woodland/Ceramic/Late Period**

The Woodland/Ceramic/Late period lasted from 3,000 B.P. to the time when European trade goods reached Indian groups (450 to 250 B.P.). During this time, people invented several new technologies, including clay pots and the bow and arrow. Long-distance trade intensified. Groups adopted agriculture, developed even less-mobile lifeways than before, and started living in larger settlements, some with over 1,000 inhabitants. Plains groups began living in tepees and participating in bison kills.

#### **5.11.2.2 Prehistoric Archaeological Site Probability**

Archaeologists use a variety of information and techniques to carry out *predictive modeling*, the process of assessing the probability of the existence of archaeological sites in a given location. This section provides an overview of the current understanding of archaeological site probability in the EOR Region.

### **Minnesota**

The Minnesota State Historic Preservation Office (SHPO) requires that all Federal projects be preceded by a Class I and Class III cultural-resource inventory and assessment. Such inventory projects are carried out under the guidelines of the Minnesota SHPO (2006) and the U.S. Secretary of Interior's Standards for Archeology and Historic Preservation (USDOT, 1993). These programs and guidelines follow the regulations established under the National Historic Preservation Act of 1966, as amended. A site-sensitivity model exists for prehistoric sites in Minnesota and is discussed below.

The Minnesota Department of Transportation (MNDOT) has developed a statewide archaeological predictive model, titled Mn/Model (Hudak et al., 2000), as a tool to assess the probability of encountering a prehistoric archaeological site anywhere on the landscape.<sup>1</sup> Such models are sometimes referred to as archaeological sensitivity maps because they indicate some locations as more sensitive for cultural resources than others. These predictive maps usually contain three zones: a high-sensitivity zone, where archaeological sites are most likely present; a medium-sensitivity zone, where sites are less likely; and a low-sensitivity zone, where sites are unlikely. These sensitivity maps serve as beneficial planning tools but by no means replace the appropriate project-level surveys, research, and thorough cultural-resource investigations.

### **North Dakota**

No standardized or widely accepted site-location predictive or sensitivity model for prehistoric sites exists for North Dakota.

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<sup>1</sup> Information on the use of the model may be obtained online at the MNDOT Mn/Model website (<http://www.mnmodel.dot.state.mn.us/index.html>) or by contacting the Office of the Chief Archaeologist, MNDOT.

A small fraction of the northern border area of North Dakota has been previously inventoried and evaluated for prehistoric sites. Actual numbers of recorded sites and previous project survey boundaries exist in the North Dakota SHPO database, but exact numbers of cultural resources are not available for this preliminary overview. It is estimated that at least 1,000 precontact/prehistoric sites are recorded within 100 miles of the North Dakota-Canada border.

### **Montana**

No standardized or widely accepted site-location predictive or sensitivity model for prehistoric sites exists for the Montana. Only a small fraction of the northern border area of Montana has been previously inventoried and evaluated for prehistoric sites. Actual numbers of recorded sites and previous project survey boundaries exist in the Montana SHPO database, but exact numbers of cultural resources are not available for this preliminary overview. It is estimated that at least 1,000 precontact/prehistoric sites are recorded within 100 miles of the Montana-Canada border. Most of the project area in Montana is sparsely populated, so the probability of finding intact precontact sites is very high. There is also a strong possibility that sites to be discovered will be highly significant and will meet the eligibility criteria for listing in the National Register.

#### **5.11.2.3 Historic Context**

This section provides a brief historic context that describes the development of the EOR Region after European contact. An expanded historic context and references can be found in Appendix H.

The areas east of the Continental Divide were acquired by the United States from France in 1803 as part of the Louisiana Purchase. Contact between Indigenous people and Europeans began in the mid-eighteenth century as French fur traders ventured through the Northern Plains to explore the Rocky Mountains. Visits to the region by Europeans or Americans were infrequent until after 1804, when Lewis and Clark passed through the area. The region attained sufficient population densities by the 1860s to require parceling into territories, later becoming states. Pioneers were largely engaged in oat and wheat farming. Closer to the Rocky Mountains, mining was essential to the local economies and attracted waves of settlers beginning in the 1860s. Gold was the earliest draw, but later silver, copper, lead, coal, and oil became sought-after commodities.

The U.S. Army established numerous forts in this region beginning in the 1860s, and Montana was the scene of numerous battles between the army and various Tribes over control of the land, including the Battle of Little Big Horn with the Lakota and battles with the Nez Perce. By the end of the Indian wars in the 1890s, mining, open and fee-simple ranching, and Bonanza and dairy-farm operations had been established throughout the region. Improvements in transportation became the major determinant of growth, as settlements first developed along Indian and fort trails and waterways. In the 1880s, railroads began to be constructed in the region and remained important until after World War II.

Beginning in the late nineteenth century, the Federal Government began purchasing large swaths of territory to serve as national parks, with Yellowstone being the first. Other parks include Glacier and Badlands National Parks and more than 20 national wildlife refuges. In the 1950s, North Dakota became the home of two large Air-Force bases: Minot and Grand Forks. Oil and natural gas exploration became important industries at the end of the twentieth century. Montana

contains seven Indian reservations: Fort Peck Indian Reservation, Fort Belknap Indian Reservation, Northern Cheyenne Indian Reservation, Crow Indian Reservation, Rocky Boy's Indian Reservation, Blackfeet Indian Reservation, and Flathead Indian Reservation.

#### **5.11.2.4 Historic/Protohistoric Archaeological Site Probability**

Among the known cultural resources in the EOR Region are archeological sites from the historic and post-European contact periods. This section provides an overview of the current understanding of historic archaeological site probability in the EOR Region. This section includes the Protohistoric period (defined as the time between the initial arrival of European goods and diseases and actual contact between Native Americans and non-Natives), which extended from about A.D. 1700 to A.D. 1850. Guns, horses, and other elements of material culture were quickly integrated into indigenous economic and subsistence systems and had profound impacts on Native American lifeways throughout the Great Plains, most notably the increased importance of the buffalo. The earliest direct contacts between Native Americans and Europeans in the EOR area were interactions between native groups and French explorers and fur traders in the mideighteenth century. After about 1780, the changes to Native American lifeways brought about by the contact process in the Northern Plains are visible in the archaeological record and have been designated the Equestrian Nomadic Tradition. Archaeological sites from this time include battle sites, camps, and animal-kill sites.

#### **Minnesota**

No standardized or widely accepted site-location predictive or sensitivity model for historic archaeological sites exists for the Minnesota; however, one can look at research concerning historic land uses across the landscape—such as railroads, mining areas, and ranching—to make certain predictions regarding the potential for discovering historic archaeological deposits.

Only a small fraction of the northern border area of Minnesota has been previously inventoried and evaluated for historic-period cultural sites. Actual numbers of recorded sites and previous project survey boundaries exist in the Minnesota SHPO database and within the Mn/Model system. As is the case with prehistoric sites in the project area, there is a high probability of discovering previously unrecorded, significant, historic-period cultural properties that will meet the eligibility criteria for listing in the National Register.

#### **North Dakota**

No standardized or widely accepted site-location predictive or sensitivity model for historic archaeological sites exists for North Dakota.

A small fraction of the northern border of North Dakota has been previously inventoried and evaluated for historic-period cultural sites. Actual numbers of recorded sites and previous project survey boundaries exist in the North Dakota SHPO database, but exact numbers of cultural resources are not available for this preliminary overview. It is estimated that at least 200 historic-period archaeological sites are recorded within 100 miles of the North Dakota-Canada border. As is the case with prehistoric sites in the project area, there is a high probability of discovering previously unrecorded, significant, historic-period cultural properties that will meet the eligibility criteria for listing in the National Register.



## **Montana**

No standardized or widely accepted site-location predictive or sensitivity model for historic archaeological sites exists for the Montana.

Only a small fraction of the northern border of Montana has been previously inventoried and evaluated for historic-period cultural sites. Actual numbers of recorded sites and previous project survey boundaries exist in the Montana SHPO database, but exact numbers of cultural resources are not available for this preliminary overview. It is estimated that at least 400 historic-period archaeological sites are recorded within 100 miles of the Montana-Canada border. As is the case with prehistoric sites in the project area, there is a high probability of discovering previously unrecorded, significant, historic-period cultural properties that will meet the eligibility criteria for listing in the National Register.

In general for the entire area, historic archaeological sites can occur in or near present-day municipalities and villages as well as along historic-period roads, particularly cross-roads. Sites may also be found along certain railway sections and waterways.

### **5.11.2.5 Above-Ground Historic Properties**

There are numerous above-ground historic properties along the EOR border area that are National Register listed, eligible or potentially eligible for listing. The density of above-ground historic properties, however, decreases moving to the west toward the Rockies. The border area in Minnesota includes a wide range of architectural types: agricultural, commercial, industrial, residential, tourism/recreation, religious, transportation, and civic/governmental. Examples of all popular national architectural styles are represented in the state, ranging from frontier-type resource through the popular Craftsman and Prairie; particularly distinctive are the log, subsistence (non-log early settlement structures), and rustic. Minnesota also has distinctive grand lodges, hotels, resorts, health spas, camp facilities, dude ranches. These tourism/recreation resources include architect-designed buildings executed in rustic/park, frontier revival, and simple wood frame. Other property types include agriculture, agricultural process, and resources related to the state's lumber industry.

Across the large area encompassed by this study, architectural styles of historic structures and districts vary widely. Because Montana and North Dakota are rural, agriculturally dependent states, the majority of historic-resource types are associated with farms and ranches. In the 1920s, North Dakota, like other agricultural areas, experienced economic failure and a decade-long draught. During the Great Depression of the 1930s, numerous Federal relief construction work programs were initiated in the state. Two main stylistic tendencies, the Art Deco and Works Progress Administration-Rustic, characterize most Depression-era architecture. As one of the prominent historic industries in the state, the extraction industry (e.g., lignite) has left behind examples of its works as well.

A small fraction of the EOR area has been previously inventoried and evaluated for historic structures. Actual numbers of recorded above-ground historic properties and previous project survey boundaries exist in SHPO databases and files, but exact numbers of cultural resources are not readily available for this overview. As is the case with other site types in the project area, there is a high probability of discovering previously unrecorded and significant above-ground historic properties that will meet the criteria for listing in the National Register.

Tables 5.11-1, 5.11-2, and 5.11-3 identify historic properties that have been designated as historically important at the national, state, and local levels and briefly describe the historic environments in the vicinity of CBP facilities in the EOR states. Table 5.11-4 lists the historic buildings that reside on CBP property in Montana.

**Table 5.11-1. Cultural Resources in the Vicinity of CBP Facilities in Minnesota**

Component*	Type**	Name	Address	National, State, and Local Historical Designations and Environment
OFO	POE	Baudette	HWY 72 N Baudette, MN 56623	1 National Register property
OFO	POE	Duluth MN/ Superior WI	515 West First Street Duluth, MN 55802	Located at the National Register property 1929 U.S. Courthouse and Customs House in downtown Duluth; within the Duluth Civic Historic District, which consists of four additional properties: City Hall, County Jail, Soldiers and Sailors Monument, and County Courthouse; 159 National Register properties in Duluth; 18 National Register properties in Superior
OFO	POE	Grand Portage	9403 East Highway 61 Grand Portage, MN 55605	One National Register property (on Grand Portage Indian Reservation)
OFO	POE	Grand Marais Station	315 South Broadway Grand Marais, MN 55604	Four locally listed properties (including a lighthouse keeper's house)
OFO	POE	International Falls	2 Second Avenue International Falls, MN 56649	One State Register property; One local property
OFO	POE	Lancaster	4151 Highway 59 Lancaster, MN 56735	None
OFO	POE	Pine Creek	41937 State Highway 89 Roseau, MN 56751	None
OFO	POE	Roseau	41967 State Highway 310 Roseau, MN 56751	None
OFO	POE	Warroad	41059 State Highway 313 Warroad, MN 56763	None
USBP	BPS	Warroad	502 State Avenue South, Highway 11 Warroad, MN 56763	None

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Component*	Type**	Name	Address	National, State, and Local Historical Designations and Environment
USBP	BPS	Duluth	4431 Endeavor Drive Duluth, MN 55811	Located eight miles northwest of Duluth
USBP	BPS	International Falls	1580 Highway 11 International Falls, MN 56649	None
USBP	BPS	Pembina	4151 US Highway 75 Noyes, MN 56740	None
USBP	BPS	Grand Marais	315 South Broadway Grand Marais, MN 55604	See previous description for Grand Marais Station POE.

\*OFO = CBP Office of Field Operations, USBP = U.S. Border Patrol

\*\*POE = Port of Entry, BPS = Border Patrol station

**Table 5.11-2. Historic Buildings on CBP Property in Minnesota**

Building Name	Type	City	Number	Year Finished	Rating Class*
U.S. Border Station, Noyes, MN	Border Station	Noyes	MN0521NB	1932	

**Table 5.11-3. Cultural Resources in the Vicinity of CBP Facilities in North Dakota**

Component*	Type**	Name	Address	National, State, and Local Historical Designations and Environment
OFO	POE	Ambrose	10934 State Highway 42 Ambrose, ND 58833	None
OFO	POE	Antler	10945 Highway 256 Antler, ND 58711	One National Register property in the vicinity
OFO	POE	Carbury	10919 Highway 14 Northeast Souris, ND 58783	One National Register property in the vicinity
OFO	POE	Dunseith	10947 Highway 281 Dunseith, ND 58329	One National Register property in the vicinity
OFO	POE	Fortuna	10935 Highway 85 Northwest Fortuna, ND 58844	None
OFO	POE	Grand Forks	2787 Airport Drive Grand Forks, ND 58203	None
OFO	POE	Hannah	10951 Highway 13 Hannah, ND 58239	None
OFO	POE	Hansboro	10944 Highway 4 Hansboro, ND 58339	None
OFO	POE	Fargo	1801 23 <sup>rd</sup> Avenue, Room 105 Fargo, ND 58102	Three National Register properties on North Dakota State University campus
OFO	POE	Maida	10947 State Highway 1 Langdon, ND 58249	None
OFO	POE	Neché	10949 Highway 18 Neché, ND 58265	None
OFO	POE	Noonan	10945 North 40 Noonan, ND 58765	Two National Register properties in the vicinity (One farm, One hotel)
OFO	POE	Northgate	10921 Highway 8 Flaxton, ND 58737	None
OFO	POE	Pembina	10980 Highway 29 Pembina, ND 58271	U.S. Border and Customs House is a National Register property; in village of Pembina

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Component*	Type**	Name	Address	National, State, and Local Historical Designations and Environment
OFO	POE	Portal	301 West Railway Avenue Portal, ND 58772	Two National Register properties in the vicinity
OFO	POE	Sarles	10949 State Highway 20 Sarles, ND 58372	None
OFO	POE	Sherwood	10927 Highway 28 Sherwood, ND 58782	None
OFO	POE	Saint John	Route 1 Highway 30 North Saint John, ND 58369	One state-listed property; two miles NW (Saint Claude Mission)
OFO	POE	Walhalla	10955 State Highway 32 Walhalla, ND 58282	Two National Register properties: Gingras Trading Post three miles NE (also state listed) and the Walla Theater in the village; One state-listed property: Walhalla State Historic Site, birthplace of Walhalla, 0.5 mile NW
OFO	POE	Westhope	10923 Highway 83 Westhope, ND 58793	None
USBP	BPS	Portal Station	Railway Avenue and Makee Street Portal, ND 58772	None
USBP	BPS	Bottineau	1235 11 <sup>th</sup> Street East Bottineau, ND 58318	One National Register property in Bottineau (Main building, School of Forestry)
USBP	Sector HQ	Grand Forks	1816 17 <sup>th</sup> Street Northeast Grand Forks, ND 58203	None
OAM	Air Facility	Grand Forks	1816 17 <sup>th</sup> Street Northeast Grand Forks, ND 58203	None

\*OFO = CBP Office of Field Operations, USBP = U.S. Border Patrol, OAM = CBP Office of Air and Marine

\*\*POE = Port of Entry, BPS = Border Patrol station

**Table 5.11-4. Historic Buildings on CBP Property in North Dakota**

<b>Building Name</b>	<b>Type</b>	<b>City</b>	<b>Number</b>	<b>Year Finished</b>	<b>Rating Class*</b>
Ambrose Border Station Res 1, Ambrose, ND	Residence	Ambrose	ND0502AK	1932	
Ambrose Border Station Res 2, Ambrose, ND	Residence	Ambrose	ND0503AK	1932	
Sherwood Border Station Garage, Sherwood, ND	Garage	Sherwood	ND0552AP	1937	
St. John Border Station Res 1, St. John ND	Residence	St. John	ND0532AN	1931	
St. John Border Station Res 2, St. John, ND	Residence	St. John	ND0533AN	1931	
U.S. Border Station, Portal, ND	Border Station	Portal	ND0521AM	1932	
U.S. Border Station, St. John, ND	Border Station	St. John	ND0531AN	1931	
U.S. Border Station, Ambrose, ND	Border Station	Ambrose	ND0501AK	1932	

**Table 5.11-5. Cultural Resources in the Vicinity of CBP Facilities in Montana**

Component*	Type**	Name	Address	National, State, and Local Historical Designations and Environment
OFO	POE	Del Bonita	4071 Chalk Butte Road Cut Bank, MT 59427	City; county seat; end of the Cherokee Trail or Rocky Mountain Trail; location of Captain Meriwether Lewis skirmish with Blackfeet in the vicinity; no National Register properties in the vicinity
OFO	POE	Great Falls	2108 21 <sup>st</sup> Avenue South Great Falls, MT 59405	City (second largest in state); county seat; National Landmark: Great Fall Portage (Lewis & Clark 1805–06) in the vicinity; Four National Register districts; 19 National Register properties in the vicinity
OAM	Air Facility	Great Falls	2108 21 <sup>st</sup> Avenue South Great Falls, MT 59405	See description for Great Falls above.
OFO	POE	Morgan	53869 US Highway 191 N Loring, MT 59537	Small rural community; no National Register properties in the vicinity
OFO	POE	Opheim	6071 State Highway 24 North Opheim, MT 59250	Small rural community; no National Register properties in the vicinity
OFO	POE	Piegan	4999 Highway 89 North Babb, MT 59411	Small community on the Blackfeet Reservation; Piegan Border Station and Quarters and the Chief Mountain Border Station and Quarters are both National Register properties; One National Register district in the vicinity
OFO	POE	Raymond Area	Highway 16 North of Raymond Raymond, MT 59256	Small community; One National Register property in the vicinity
OFO	POE	Roosville (WOR)	7915 Highway 93 North Eureka, MT 59917	Small town; Two National Register properties in the vicinity
OFO	POE	Scobey	1440 Highway 13 North Scobey, MT 59263	Small city; Three National Register properties in the vicinity
OFO	POE	Sweetgrass Area	39825 Interstate 15 Sweetgrass, MT 59484	Small community; U.S. Customs Building is a National Register property; no other listings in the vicinity

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Component*	Type**	Name	Address	National, State, and Local Historical Designations and Environment
OFO	POE	Turner	Highway 24 at the Border Turner, MT 59542	Small rural community; 12 miles south of port of entry
OFO	POE	Whitetail	1281 Highway 511 North Whitetail, MT 59276	Small village; no National Register properties in the vicinity
OFO	POE	Whitlash	Highway 409 at the Border Whitlash, MT 59545	Rural community; near East Butte of the Sweet Grass Hills hunting/battle/spiritual grounds; no National Register properties in the vicinity
OFO	POE	Wild Horse	29966 Wild Horse Road Havre, MT 59501	City; One National Register district; Seven National Register properties including the Wahpa Chu'gn Buffalo Jump and Archeological Site (24HL101) and nineteenth-century Fort Assiniboine in the vicinity
OFO	POE	Willow Creek	29942 Saint Joe Road Havre, MT 59501	See description for Wild Horse above.
USBP	BPS	Shelby	25 Airport Road Shelby, MT 59474	City; Three National Register properties in the vicinity
USBP	BPS	Saint Mary	4999 US Highway 89 Babb, MT 59411	See previous description for the Piegan POE.
USBP	BPS	Sweetgrass	37 Nine Mile Road Sunburst, MT 59482	Rural town; no National Register properties in the vicinity
USBP	BPS	Scobey	131 C Highway 5 East Scobey, MT 59263	Small city; Three National Register properties in the vicinity
USBP	BPS	Plentywood	31 Highway 16 North Plentywood, MT 59254	Incorporated community; no National Register properties in the vicinity
USBP	BPS	Malta	47152 US Highway 2 Malta, MT 59538	City; Four dinosaur fossils found in the vicinity; Phillips County Carnegie Library on S. 1 <sup>st</sup> Street is a National Register property.
USBP	Sector HQ	Havre	345 16 <sup>th</sup> Avenue West Havre, MT 59501	See previous description for the Wild Horse POE.



## PROGRAMMATIC ENVIRONMENTAL IMPACT STATEMENT

Component*	Type**	Name	Address	National, State, and Local Historical Designations and Environment
USBP	BPS	Eureka (WOR)	7695 Airport Road Eureka, MT 59917	See previous description for the Roosville POE.
USBP	BPS	Whitefish (WOR)	1295 Highway 93 West Whitefish, MT 59937	City; Three National Register properties in the vicinity

\*OFO = CBP Office of Field Operations, OAM = CBP Office of Air and Marine, USBP = U.S. Border Patrol

\*\*POE = Port of Entry, BPS = Border Patrol station

**Table 5.11-6. Historic Buildings on CBP Property in Montana**

Building Name	Type	City	Number	Year Finished	Rating Class*
Chief Mountain Border Station <sup>2</sup>	Border Station	Babb	MT0501AD	1939	National Register listed
Chief Mountain Border Station Pump House	Other	Babb	MT0503AD	1939	Not rated
Chief Mountain Border Station Garage	Garage	Babb	MT0502AD	1939	Not rated
Piegian Border Station Apartment Complex	Border Station	Babb	MT0551AE	1933	National Register listed
Roosville Border Station Residence Customs	Residence	Eureka	MT0703AG	1933	5a
Roosville Border Station Residence Immigration	Residence	Eureka	MT0702AG	1933	5a
Roosville Border Station	Border Station	Eureka	MT0701AG	1933	5a

Source:(USGSA, 1999; Appendix C, GSA Historic Buildings).

\*GSA Historic Rating Class 5a: A building 50-yearsold or older that has not been evaluated for National Register eligibility but is likely eligible, such as a courthouse, custom house, or historic office building ("Held in Public Trust" Appendix C; see footnote above).

### 5.11.2.6 Native American Cultural Resources

This section provides information about the potential location of Native American cultural resources, sacred sites, and traditional cultural properties (TCPs) in the EOR Region, based on the geographic location of Native Americans both historically and in the present. There are 18

<sup>2</sup> <http://www.nationalregisterofhistoricplaces.com/mt/Glacier/state.html>, April 27, 2012, 15:32.

tribal groups within the EOR area (Table 5.11-5). Twelve of these Tribes have reservations within the EOR study area (Figure 5.11-1).

**Table 5.11-5. Native American Tribes that Have a Reservation, Judicially Established Interest, or Established Traditional Ties to Land within the 100-mile PEIS Corridor**

Assiniboine and Sioux Tribes of the Fort Peck Indian Reservation	Minnesota Chippewa Tribe
Bois Forte Band of Chippewa Indians	Prairie Island Indian Community in the State of Minnesota
Chippewa-Cree Indians of the Rocky Boy's Reservation	Red Lake Band of Chippewa Indians
Fond du Lac Band	Shakopee Mdewakanton Sioux Community of Minnesota
Fort Belknap Indian Community of the Fort Belknap Reservation of Montana	Spirit Lake Tribe
Grand Portage Band of Lake Superior Chippewa	Standing Rock Sioux Tribe (North Dakota & South Dakota)
Leech Lake Band of Chippewa Indians	Three Affiliated Tribes of the Fort Berthold Reservation (Mandan, Arikara, and Hidatsa)
Lower Sioux Indian Community	Turtle Mountain Band of Chippewa Indians of North Dakota
Mille Lacs Band of Ojibwe	White Earth Band of Minnesota Chippewa

The following maps indicate federally recognized Tribes that have a reservation within approximately 100 miles of the Canadian border, have a judicially established connection to land within the 100-mile corridor, or have established traditional ties that may involve traditional cultural properties or archaeological sites. The maps include:

1. A map of Indian reservations located within the 100-mile corridor (Figure 5.11-1);
2. A USGS map showing nineteenth-century cessions, reservations, and portages (Figure 5.11-2). This map was retrieved from [ancestry.com](http://ancestry.com); while the sourcing is unclear, the accuracy is corroborated by a 1992 map compiled by the Bureau of Indian Affairs and a 1998 GIS layer created by USGS (not included). The map shows Tribes that had a presence along the Northern Border 100 years ago and indicates cases where Indian lands were ceded prior to that period;
3. A USGS map showing judicially established Indian land areas as of 1978 (Figure 5.11-3). The map portrays the results of cases before the U.S. Indian Claims Commission or U.S. Court of Claims in which an American-Indian Tribe proved its original tribal occupancy of a tract within the continental United States; and,
4. A USGS map indicating early tribal, cultural, and linguistic areas (Figure 5.11-4). The information was derived from anthropological, archaeological, and linguistic studies. The map generally corroborates the other maps with regard to traditional tribal areas.





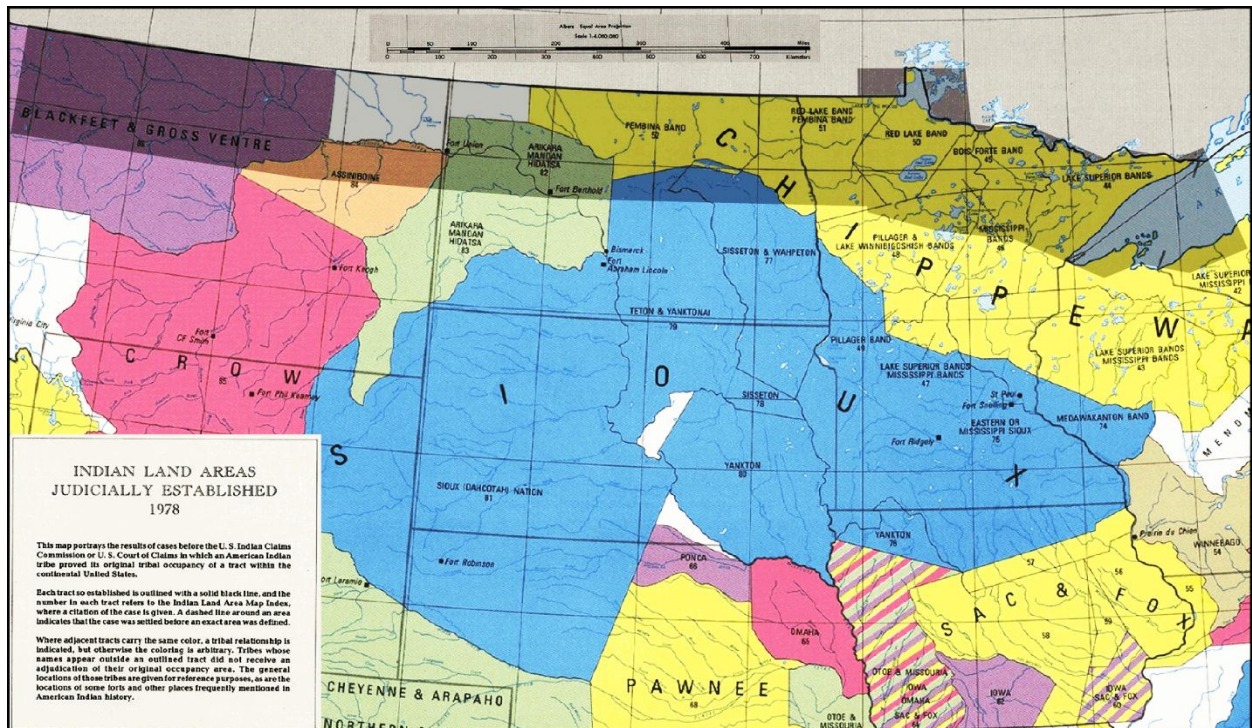
Figure 5.11-2. Nineteenth-Century Cessions, Reservations, and Portages (1907)



Source: (ancestry.com, No Date).

Note: A shaded 100-mile corridor has been added.

Figure 5.11-3. Judicially Established Indian Land Areas as of 1978

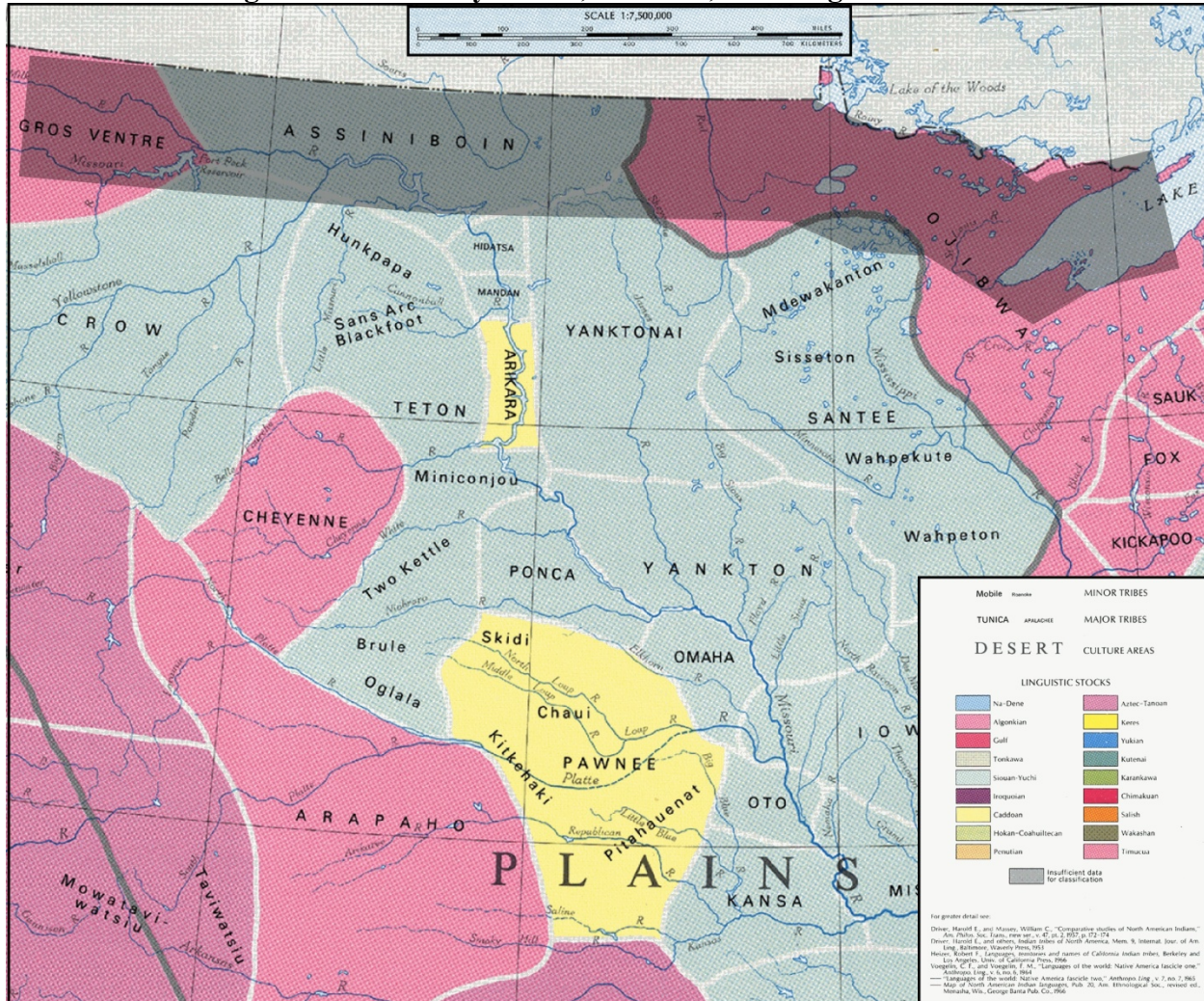


Source: (USDOI, 1978).

Note: A shaded 100-mile corridor has been added



Figure 5.11-4. Early Tribal, Cultural, and Linguistic Areas



Source: (USDIO, 1991).

Note: A shaded 100-mile corridor has been added.

### 5.11.2.7 Paleontological Resources

As with archaeology, paleontologists use a variety of information and techniques to carry out *predictive modeling*, the process of assessing the probability of existence of paleontological sites in a given location. This section provides an overview of the current understanding of paleontological site probability in the EOR Region. An expanded discussion of paleontological resources and references can be found in Appendix H.

Within the study area, four major geological groups were identified: sedimentary, volcanic, plutonic, and metamorphic. Of these rock groups, only sedimentary rocks have a high or moderate potential for containing paleontological materials. Both plutonic and volcanic rocks rarely contain fossils because igneous environments are not suitable for living things.

Metamorphic rocks rarely contain fossils because the conditions of metamorphism tend to alter the texture of the rocks and destroy any fossils contained within.

### **Minnesota**

Paleontologically sensitive geological units in Minnesota include predominantly Precambrian and Cenozoic deposits. Banded iron formations and stromatolites (formed in shallow water) mark Precambrian deposits. Paleozoic deposits consist of tropical sandy coastline and shallow marine deposits. Limestone and dolostone are common from this age. Cenozoic deposits in the study area include mostly glacial deposits containing mastodons, mammoths, musk ox, and other large mammals.

### **North Dakota**

Paleontological-sensitive geological units in North Dakota consist predominantly of Mesozoic and Cenozoic deposits. Paleozoic deposits only exist in the study area in the most eastern part of the state. Paleozoic deposits represent fluctuating sea levels with large assemblages of different marine invertebrates. Mesozoic deposits are predominantly of shallow marine origin and include many fishes, reptiles, and birds. Cenozoic deposits range from subtropical, swampy lowlands to glacial deposits.

### **Montana**

Paleontologically sensitive geological units in Montana consist predominantly of Precambrian, Cretaceous, and Tertiary sedimentary units. Precambrian sedimentary units include shallow sea stromatolites and trace fossils. Paleozoic deposits are from warm and shallow marine waters that created a thin blanket over almost all of Montana. Mesozoic deposits are of terrestrial and tropical marine origin. The Cenozoic marks the retreat of the ocean and the onset of a colder period. Deposits from the Cenozoic thus range from tropical shallow seas to glacial deposits.

## **5.12 ENVIRONMENTAL JUSTICE AND PROTECTION OF CHILDREN**

### **5.12.1 INTRODUCTION**

Executive Order (EO) 12898 of February 11, 1994 (EO 12898, 1994), titled “Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations,” requires that each Federal agency identify and address any disproportionately high and adverse effect of its programs, policies, and activities on minority and low-income populations. The USEPA defines *environmental justice* as “the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies” (USEPA, 2010).

EO 13045 of April 21, 1997 (EO 13045), titled “Protection of Children from Environmental Health Risks and Safety Risks,” places a high priority on the identification and assessment of environmental health and safety risks that may disproportionately affect children. The order requires that each agency “ensure that its policies, programs, activities, and standards address disproportionate risks to children that result from environmental health or safety risks.” EO 13045 considers that physiological and social development of children makes them more sensitive than adults to adverse health and safety risks and recognizes that children in minority, low-income, and indigenous populations are more likely to be exposed to, and have increased health risks from, environmental contamination than the general population (USEPA, 2010).

### **5.12.2 AFFECTED ENVIRONMENT**

This section describes the affected environment for the assessment of potential environmental-justice effects that could result from implementation of any of the CBP program alternatives in the EOR Region. The affected-environment section identifies and describes minority and low-income populations, as well as populations of children that may be present in the defined study area and that may be differentially affected by actions proposed under each of the alternatives considered in this PEIS.

The study area for the evaluation of environmental-justice effects is defined—in accordance with Section 5.10, Socioeconomic Resources—as the border communities in both the United States and Canada within 100 miles of the U.S.-Canada border. The U.S. portion of this study area (EOR Region) includes the border communities in the states of Minnesota, North Dakota, and Montana east of the Continental Divide. The study area north of the EOR Region in Canada includes the border communities in the Provinces of Alberta, Saskatchewan, and Manitoba. For comparison purposes, the analysis also includes the populations of the respective border states and Canadian provinces as a whole. Border communities are defined geographically by the administrative boundaries of U.S. counties and Canadian census divisions contained within or overlapping the study area. A detailed demographic analysis of the study area is in Section 5.10.

#### **5.12.2.1 Minority Populations**

The most recent USCB data for minority populations available for all counties and states in the United States are part of the Decennial Census for the year 2000 (UDOC, 2000a). Statistical data from this census have been used to characterize the minority populations within the EOR

Region. Summary statistics for minority populations in the EOR Region, their respective states, and the Nation are presented in Table 5.12-1.

The minority component of the border-communities population is lower than that for the state population as a whole in the state of Minnesota but slightly higher for the states of Montana and North Dakota. The individual study areas of both Montana and North Dakota also have a higher proportion of minorities in their populations than is present in the EOR Region as a whole. American-Indian and Native-Alaskan populations represent the largest single minority identification within the border communities, with 6.7 percent of the total study-area population. These populations also represent the largest category in each of the individual state study areas.

**Table 5.12-1. Minority Statistics for the EOR Region  
(Percent of Population)**

<b>Border State/Region*</b>		<b>White</b>	<b>Black or African American</b>	<b>American Indian and Alaska Native</b>	<b>Asian, Native Hawaiian, Pacific Islander, Other</b>	<b>More Than One Group</b>	<b>Hispanic Origin**</b>
Minnesota	EOR Region	93.1	0.5	4.0	1.1	1.3	1.1
	Statewide	89.5	3.4	1.1	4.2	1.8	2.9
Montana	EOR Region	85.9	0.5	10.4	0.9	2.3	1.6
	Statewide	90.6	0.3	6.1	1.1	1.9	2.0
North Dakota	EOR Region	89.2	0.7	7.6	1.0	1.5	1.5
	Statewide	92.5	0.6	4.9	0.9	1.2	1.2
EOR Region Total	EOR Region	90.1	0.6	6.7	1.0	1.6	1.3
	Selected States	89.9	2.7	2.2	3.4	1.8	2.6
<b>Total United States</b>		<b>75.1</b>	<b>12.2</b>	<b>0.9</b>	<b>9.2</b>	<b>2.6</b>	<b>12.5</b>

Source: (USDOC, 2000a).

\*Statistics presented in the unshaded rows include only those portions of the states that lie within the study area; this includes all counties overlapping the area within 100 miles south of the border.

\*\*Hispanic origin is an ethnicity that may include individuals who are also represented in other categories (such as White or Black). Therefore, Hispanic origin is a separate measure and is calculated separately from the other categories.

Data on minority populations north of the EOR Region in Canada were taken from the 2006 Census of Canada (Table 5.12-2). The minority component of the border communities north of the EOR Region represents a slightly larger percentage of the population, 13 percent, than is present for the three provinces that contain the study area, 11.2 percent. However, both the study area and the three provinces that contain the study area have a smaller percentage of minorities in the population than the national population of Canada as a whole, 16.2 percent. Minority populations are present in greater proportions in the study area in Alberta Province, 17.2 percent, than for the total population of the study area north of the EOR Region in Canada. The study-



area segments of both the Provinces of Manitoba and Saskatchewan have smaller minority components in their populations.

The “Other Visible Minority” population (including multiple ethnicities) constitutes the largest single minority category in both the study area north of the EOR Region and in the three respective provinces. This category consists primarily of the following groups: Chinese, South Asian, Arab, West Asian, Filipino, Southeast Asian, Latin American, Japanese, and Korean. However, Aboriginal Peoples constitute the largest single identifiable minority within the study area.

**Table 5.12-2. Visible Minority Statistics North of the EOR Region in Canada\*  
(Percent of Population)**

Border Province/Region**		Not a Visible Minority	Black	Other Visible Minority***	Two or More Visible Minorities	Aboriginal Peoples****
Alberta	North of the EOR Region	82.8	1.6	15.1	0.5	3.4
	Province	86.1	1.4	12.1	0.4	5.8
Manitoba	North of the EOR Region	89.5	1.5	8.7	0.3	11.8
	Province	90.4	1.4	8.0	0.3	15.5
Saskatchewan	North of the EOR Region	96.0	0.6	3.2	0.1	7.9
	Province	96.4	0.5	2.9	0.1	14.9
North of the EOR Region Total	North of the EOR Region	87.0	1.4	11.2	0.4	7.0
	Selected Provinces	88.8	1.3	9.6	0.3	9.5
<b>Total Canada</b>		<b>83.8</b>	<b>2.5</b>	<b>13.3</b>	<b>0.4</b>	<b>3.8</b>

Source: (StatCan, 2006a).

\*Canada’s Employment Equity Act (2005) defines *visible minorities* as “persons, other than Aboriginal peoples, who are non-Caucasian in race or non-white in color.”

\*\*Statistics presented in the unshaded rows account only for those portions of the provinces that lie within the study area; this includes all census divisions overlapping the area within 100 miles north of the border.

\*\*\*The “Other Visible Minority” population consists mainly of the following groups: Chinese, South Asian, Black, Arab, West Asian, Filipino, Southeast Asian, Latin American, Japanese, and Korean.

\*\*\*\*Self-identification by Aboriginal Peoples does not preclude self-identification inclusion in one of the other categories. The “Aboriginal Peoples” column of this table is, therefore, not additive with the other columns.

### 5.12.2.2 Low-Income Populations

Data from the most recently completed USCB (USDOC, 2000b; USDOC, 2000c) were used to characterize low-income minority populations for the EOR Region. Median household income and poverty rates are in Table 5.12-3.

For the EOR Region, the median household income is \$11,114 lower than the median for the total American border region and \$10,160 lower than the median for the Nation as a whole. The median household income for border communities within each individual state is lower than the national median.

The percentage of populations below the poverty line is higher than the national median for border communities in the states of Montana and North Dakota but slightly lower for those in the state of Minnesota. In all three states, poverty rates for the study-area portion of the state exceed the rates for the state population as a whole.

**Table 5.12-3. Income and Poverty Statistics for the EOR Region**

Border State/Region*		Median Household Income** (\$US)	Percent of Population Below the Poverty Line
Minnesota	EOR Region	44,926	11.9
	Statewide	59,516	7.9
Montana	EOR Region	40,642	15.8
	Statewide	41,720	14.6
North Dakota	EOR Region	41,654	13.2
	Statewide	43,716	11.9
EOR Region Total	EOR Region	42,891	13.3
	Selected States	55,462	9.3
<b>Total United States</b>		<b>53,051</b>	<b>12.4</b>

Source: (USDOC, 2000b; USDOC, 2000c).

\*Statistics presented in the unshaded rows include only those portions of the states that lie within the study area; this includes all counties overlapping the area within 100 miles south of the border.

\*\*Median household income is reported from the 2000 USCB in inflation-adjusted 2009 U.S. dollars.

Data on median household income and populations living below the poverty level north of the EOR Region in Canada were gathered from the 2006 Census of Canada. Statistics for this study area are in Table 5.12-4.

The median income for the border communities north of the EOR Region in 2006 was \$53,002, or \$3,609 higher than the median for the Canadian population as a whole. Median income in the border communities of the Province of Alberta exceeded the national median. In all three provinces, the median household income in the study-area portion of the province was higher than the median for the respective province as a whole.

Based on the percentage of low-income economic families, the poverty rate for border communities north of the EOR Region is 1.6 percent lower than for the Nation as a whole. The study-area portions of both the Provinces of Saskatchewan and Alberta had poverty rates substantially below the national rate.

**Table 5.12-4. Income and Poverty Statistics North of the EOR Region in Canada**

Border Province/Region*		Median Household Income** (\$US)	Percent of Low-Income Economic Families***
Alberta	North of the EOR Region	60,101	8.8
	Province	58,928	8.7
Manitoba	North of the EOR Region	45,375	12.3
	Province	44,089	12.3
Saskatchewan	North of the EOR Region	46,024	8.8
	Province	43,012	10.2
North of the EOR Region Total	North of the EOR Region	53,002	10.0
	Selected Provinces	52,939	9.7
<b>Total Canada</b>		<b>49,393</b>	<b>11.6</b>

Source: (StatCan, 2006b).

\*Statistics presented in the unshaded rows include only those portions of the provinces that lie within the study area; this includes all census divisions overlapping the area within 100 miles north of the border.

\*\*Median household income is reported from the 2006 Canadian Census in inflation-adjusted 2009 U.S. dollars.

\*\*\*The Canadian Census reports statistics for “low-income” economic families. This threshold-based designation is comparable to the poverty statistics reported in the USCB. An *economic family* is a group of two or more persons who live in the same dwelling and are related to each other by blood, marriage, common-law, or adoption. A couple may be of opposite or same sex. Foster children are included.

### 5.12.2.3 Population of Children under 18 Years of Age

The distribution of population by age for the EOR Region is in Table 5.12-5. For the border communities within individual states, both Montana and North Dakota have larger percentages of children under 18 years of age than does the national population.

**Table 5.12-5. Age Distribution in the EOR Region  
(Percent of Population)**

<b>Border State/Region*</b>		<b>Under 18</b>	<b>18-24</b>	<b>25-34</b>	<b>35-44</b>	<b>45-54</b>	<b>55-64</b>	<b>65+</b>
Minnesota	EOR Region	24.1	9.6	10.2	15.1	14.5	10.1	16.5
	Statewide	26.2	9.5	13.6	16.9	13.5	8.2	12.1
Montana	EOR Region	27.0	8.2	10.7	16.1	14.4	9.3	14.3
	Statewide	25.5	9.5	11.4	15.9	14.9	9.4	13.4
North Dakota	EOR Region	25.8	10.7	11.2	15.1	13.1	8.5	15.6
	Statewide	25.1	11.3	11.9	15.4	13.3	8.3	14.7
EOR Region Total	EOR Region	25.3	9.6	10.6	15.4	14.1	9.4	15.7
	Selected States	26.0	9.7	13.2	16.6	13.7	8.4	12.5
<b>Total United States</b>		<b>25.6</b>	<b>9.6</b>	<b>14.1</b>	<b>16.3</b>	<b>13.4</b>	<b>8.6</b>	<b>12.4</b>

Source: (USDOC, 2000c).

\*Statistics presented in the unshaded rows account only for those portions of the states that lie within the study area; this includes all counties overlapping the area within 100 miles south of the border.

The distribution of population by age north of the EOR Region in Canada is in Table 5.12-6. For the border communities in all three provinces, children under 20 years of age represent 26.2 percent of the total population. This is slightly smaller than the percentage of children in the combined population of the three provinces that contain the study area, but 1.5 percent greater than the national percentage of 24.7. The percentage of children under 20 is greater than the percentage in the national population for border communities in each of the three individual provinces and for the population of the individual provinces as a whole.

**Table 5.12-6. Age Distribution North of the EOR Region in Canada  
(Percent of Population)**

<b>Border Province/Region*</b>		<b>Under 20</b>	<b>20-24</b>	<b>25-34</b>	<b>35-44</b>	<b>45-54</b>	<b>55-64</b>	<b>65+</b>
Alberta	North of the EOR Region	26.1	7.5	15.0	15.9	15.8	9.7	9.9
	Province	26.7	7.7	14.5	15.4	15.6	9.8	10.2
Manitoba	North of the EOR Region	26.4	6.9	12.4	14.3	15.3	11.2	13.7
	Province	27.2	6.8	12.3	14.2	15.1	11.0	13.4
Saskatchewan	North of the EOR Region	25.8	6.7	11.7	13.5	15.8	11.0	15.4
	Province	27.5	7.0	11.8	13.3	15.2	10.6	14.6
North of the EOR Region Total	North of the EOR Region	26.2	7.2	13.6	15.0	15.6	10.4	12.0
	Selected Provinces	26.9	7.4	13.6	14.8	15.4	10.2	11.7
<b>Total Canada</b>		<b>24.7</b>	<b>6.6</b>	<b>12.8</b>	<b>15.3</b>	<b>15.8</b>	<b>11.7</b>	<b>13.0</b>

Source: (StatCan, 2006c).

\*Statistics presented in the unshaded rows account only for those portions of the provinces that lie within the study area; this includes all census divisions overlapping the area within 100 miles north of the border.

## **5.13 HUMAN HEALTH AND SAFETY**

### **5.13.1 INTRODUCTION**

Many of the routine activities conducted by CBP in the EOR Region have the potential to affect human health and safety (HH&S). HH&S relates to the health and safety of the general public (including vehicle occupants), CBP and station employees, and maintenance personnel. Safety can also refer to safe operations of aircraft or other equipment.

This section considers the potential adverse and beneficial impacts of CBP's alternative actions on HH&S.

### **5.13.2 AFFECTED ENVIRONMENT**

#### **Construction**

HH&S concerns during construction and modernizing of facilities involve exposing workers to conditions that pose a health or safety risk. Construction site safety is largely a matter of adherence to regulatory requirements. These regulatory requirements are imposed for the benefit of employees and they implement operational practices that reduce risks of illness, injury, death, and property damage. The U.S. Occupational Safety and Health Administration (OSHA) issues standards that specify the amount and type of safety training and education required for industrial workers, the use of protective equipment and clothing, engineering controls, and maximum exposure limits with respect to workplace stressors (29 CFR 1910). CBP applies and adheres to these standards in policy and practice.

#### **Routine Operations**

##### ***Trade and Travel Processing at POEs***

The affected environment of agricultural inspections is the inspection location. Agricultural inspections are typically conducted onsite at POEs, but officers sometimes escort the shipment to the receiver site for inspection (USDHS, 2011). Inspections can also take place on the vessel or train transporting cargo into the United States. After inspection, many types of shipments are released to the appropriate agency.

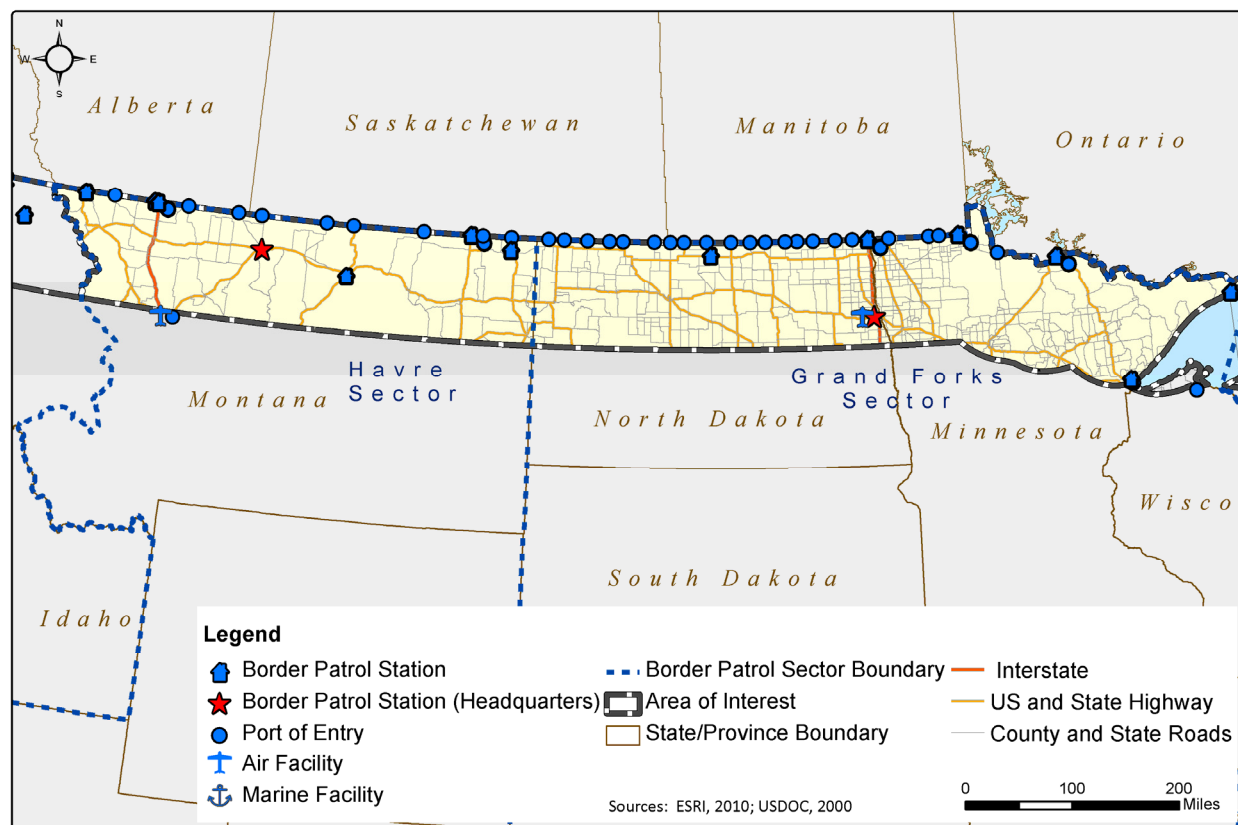
During these interceptions, HH&S effects are possible. Release of nonindigenous diseases into the United States would be harmful to HH&S. To prevent nonindigenous diseases from entering the United States, CBP places bans on certain animals, animal products, and other possible carriers of disease. In 2003, in Canada a positive case of bovine spongiform encephalopathy ("mad cow" disease) touched off an immediate ban on ruminant meat from Canada into the United States. That same year, there was an outbreak of monkeypox in the United States. This outbreak was linked to exotic animals being imported into the United States as pets. A ban was immediately imposed on certain live rodents from Africa, and agricultural specialists still enforce this ban (USDHS, 2004a). Preventing nonindigenous diseases from entering the United States has a beneficial effect on HH&S because it limits the outbreak of disease.

## **Ground Surveillance and Situational Response Activities**

### ***Motorized and Nonmotorized Patrols***

Motorized patrols take place on U.S. national, state, county, and local municipalities' paved roads. Figure 5.13-1 shows U.S. national, state, and county roads that USBP agents can use for motorized patrolling in the EOR Region. In rural areas along the border, USBP agents also use dirt roads for motorized and nonmotorized patrols. Dirt roads along the border region were built to be 24-feet wide, but due to vegetation growth the roads are now typically less than 10 feet wide (USDHS, 2011). USBP agents also use other Federal agencies' roads, including roads in national forests and national parks. When possible, the USBP agents remain on existing roads to apprehend cross-border violators but when required they go off-road. Off-road vehicles and nonmotorized patrols take place off-road and in remote areas along the border.

**Figure 5.13-1. U.S., Interstate, State, and County Roads in the EOR Region**





### ***Aircraft Operations***

Manned aerial surveillance patrols are generally between 300 feet above ground level (AGL) and flight level (FL) 250. Aircraft patrols are operated at different heights based on different operational and environmental conditions including weather conditions and high-traffic environments. Manned aerial surveillance patrols are conducted along the EOR border, and can be operated out of the Grand Forks Air and Marine Branch. This Office of Marine and Air (OAM) branch possesses equipment and resources for aerial patrols. In order to fly for CBP, OAM agents must have a Federal Aviation Administration (FAA)-issued license (USDHS, 2010a). Accidents during manned aerial surveillance patrols could potentially injure OAM officers or members of the general public.

Unmanned Aircraft Systems (UAS) are remotely piloted aircraft. UAS patrols are conducted out of the Grand Forks Sector in the EOR Region. UASs are operated at 18,000 feet above ground level or higher. The FAA sets the constraints for where a UAS may operate and how these operations may be conducted safely in the National Airspace System (NAS). Their main focus when evaluating UAS operations in the NAS is to make sure a UAS will not endanger other users of the NAS or compromise the safety of persons or property on the ground.

The FAA recognizes the great potential of UASs in homeland security and strives to accommodate the DHS's needs for UAS operations, without jeopardizing safety. Because airspace is a finite resource, the FAA sets aside Restricted or Prohibited Areas to help mitigate risks. These Restricted or Prohibited Areas are for an operator's exclusive use when needed.

For CBP UASs to gain access to the civil airspace, CBP must go through the FAA's Certificate of Waiver or Authorization (COA) process. This is the avenue by which public users (Government agencies and Federal, state, and local law enforcement) that wish to fly a UAS can gain access to the NAS, provided that the risks of flying the UAS in the civil airspace can be appropriately mitigated.

To minimize the risk of operating a UAS, the FAA frequently requires risk mitigations before granting a COA. These mitigations include special provisions unique to the requested type of operation. For example, the applicant may be restricted to operating only in a defined airspace or operating only during certain times of the day. The UAS may be required to have a transponder if it is to be flown in a certain type of airspace. Other safety enhancements may be required, depending on the nature of the proposed operation. To ensure safety, the COA application is reviewed for feasibility; airspace experts review and ensure that the operation will not severely impact the efficiency of the NAS. As of April, 2011, CBP has been issued 12 COAs.

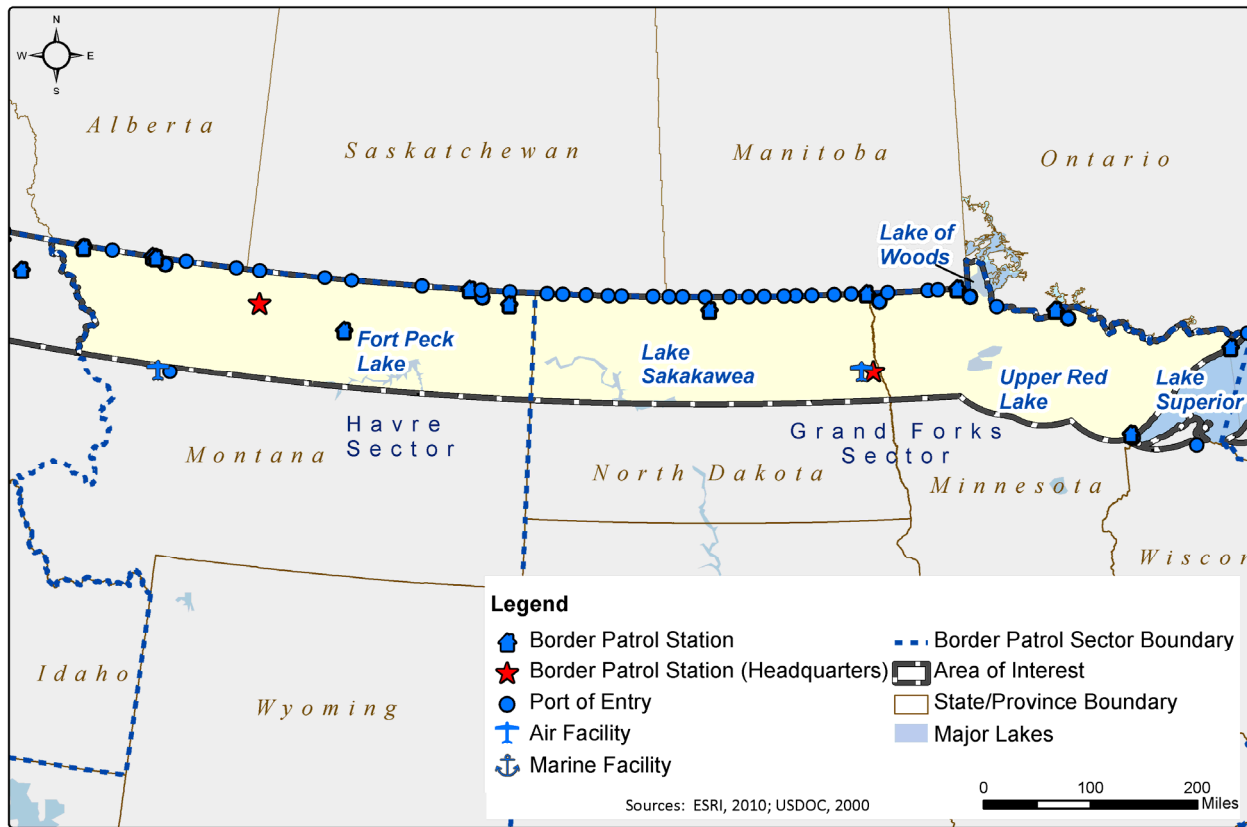
Given that there are emergency and disaster situations where the use of UASs has saved lives and otherwise mitigated emergency situations, the FAA has issued three special disaster COAs, one of which was to CBP (Kalinowski & Allen, 2010).

### ***Vessel Operations***

Waterways patrolled along the EOR Region mainly occur along the northern border in Minnesota. Figure 5.13-2 shows the approximately 1,735 square miles of navigable water in this

region (ESRI, 2010). To assist in river or lake patrols, OAM provides the USBP agents in this region with a range of watercraft (USDHS, 2011). Accidents during patrols could take place between CBP, cross-border violators, and the general public.

Figure 5.13-2. Navigable Water in the EOR Region



### Radiation

CBP uses X-rays and gamma rays to inspect merchandise and conveyances, eliminating the need for an intrusive manual search. These detection systems provide images of material enclosed in cars, trucks, railcars, sea containers, personal luggage, packages, parcels, and mail (USDHS, 2009a). Increasing the efficiency and the number of searches can have a beneficial effect on HH&S. Beneficial effects could result if the number of interdictions increases and the occurrence of intentional destructive acts (IDAs) decreases as a result of using X-ray and gamma rays. The affected environment includes the location of equipment that produces X-rays and gamma rays, as well as the area immediately surrounding the equipment.

X-rays and gamma rays have the potential to expose people to ionizing radiation. The Nuclear Regulatory

**Occupational dose** is the dose received by an individual in a restricted area or in the course of employment in which the individual's assigned duties involve exposure to radiation and to radioactive material from licensed and unlicensed sources of radiation, whether in the possession of the licensee or other person. The individuals subject to the occupational dose classification must closely monitor their degree of radiation exposure using dosimeters (USDHS, 2004b).

**Exposure dose** is the dose received by a member of the public from exposure to radiation and to radioactive material released by a licensee, or to another source of radiation either within a licensee's controlled area or in unrestricted areas (USDHS, 2004b).

Commission (NRC) sets regulations and establishes standards for protection against radiation arising from activities conducted under licenses it issues. CBP has adopted the NRC standard because OSHA addresses only occupational dose exposure limits. These requirements are set forth in 10 CFR Part 20 (USDHS, 2004b).

In 10 CFR Part 20, the NRC identifies two classifications of radiation dose: occupational dose and exposure dose (USDHS, 2004b). Neither of these doses includes background radiation, radiation patients receive from medical practices, radiation received from participation in medical research programs, or radiation received as a member of the general public.

As set by the NRC in 10 CFR Part 20, the maximum permissible level of radiation dose to individual members of the general public in unrestricted areas (i.e., exposure dose) is 0.1 rem per year above the typical 0.360 rem per year dose provided by natural and man-made background radiation.

As part of its “as low as is reasonably achievable” (ALARA) program, CBP has determined that the radiation dose received by its personnel shall not exceed the public dose (USDHS, 2004b).

In 10 CFR 20.1003, NRC defines the philosophy of ALARA in relation to exposure:

ALARA (acronym for “as low as is reasonably achievable”) means making every reasonable effort to maintain exposures to radiation as far below the dose limits in this part as is practical consistent with the purpose for which the licensed activity is undertaken, taking into account the state of technology, the economics of improvements in relation to state of technology, the economics of improvements in relation to benefits to the public health and safety, and other societal and socioeconomic considerations, and in relation to utilization of nuclear energy and licensed materials in the public interest.

Exposure to radiation can be harmful to HH&S. Because of the difficulties in determining if the health effects that are demonstrated at high radiation doses are also present at low doses, current radiation protection standards and practices are based on the premise that any radiation dose may result in detrimental health effects, such as cancer and hereditary genetic damage.

When discussing potential impacts caused by radiation exposure it is important to relate how much exposure is anticipated. In an August 2004 revised position statement on radiation risk, the Health Physics Society recommended against the quantitative estimation of health risks below an individual dose of 0.5 rem in one year or a lifetime dose of 10 rem above that received from natural sources. Doses from natural background radiation in the United States average about 0.360 rem per year (HPS, 2004).

### ***Radio Frequency***

The radio frequency (RF) environment refers to the presence of electromagnetic (EM) radiation emitted by radio waves and microwaves on the human and biological environment. RF waves have a frequency or rate of oscillation within the range of approximately 3

**Uncontrolled exposure** occurs when the general public is exposed or when persons employed are not made fully aware of the potential for exposure or cannot exercise control over their exposure (USDHS, 2008a).

**Controlled exposure** occurs when a person is exposed to RF fields as part of their employment and the person has been made fully aware of the potential exposure and can exercise control over their exposure. (USDHS, 2008a).

Hertz (Hz) to 300 gigahertz (GHz). This energy can interact with matter (USDHS, 2008a).

OSHA regulates RF environment and EM radiation for employees under 29 CFR 1910. The Federal Communications Commission (FCC) is responsible for licensing frequencies and ensuring that the approved use does not interfere with television or radio broadcasts, or substantially affect the natural or human environment (USDHS, 2008a). The FCC has adopted a modified version of the American National Standards Institute (ANSI) guidelines and Institute of Electrical and Electronics Engineers (IEEE) standards to evaluate exposure due to RF transmitters licensed and authorized by the FCC. The FCC's guidelines also reflect the National Council of Radiation Protection and Measurements exposure guidelines.

The National Council of Radiation Protection and Measurements and ANSI/IEEE exposure criteria identify the same threshold level at which harmful biological effects may occur. The whole-human-body absorption of RF energy varies with the frequency of the RF signal. The most restrictive limits on exposure are in the frequency range from 30 to 300 megahertz where the human body absorbs RF energy most efficiently (USDHS, 2008a).

There are two tiers of exposure limits: occupational or "controlled," and general or "uncontrolled." In order for a transmitting facility or operation to be out of compliance with the FCC's RF guidelines in an area where levels exceed maximum permissible exposure (MPE) limits, it must first be accessible to the public. The MPE limits indicate levels above which people may not be safely exposed regardless of the location where those levels occur (USDHS, 2008a).

Adverse biological effects associated with RF energy are typically related to the heating of tissue by RF energy. This is typically referred to as a thermal effect, where the EM radiation emitted by an RF antenna passes through and rapidly heats biological tissue; similar to the way a microwave oven cooks food. According to the Health Physics Society, numerous studies have shown that environmental levels of RF energy routinely encountered by the general public are typically far below levels necessary to produce significant heating and increased body temperature; RF energy that would produce harmful heating is generally associated only with workplace environments near high-powered RF sources, such as those used for molding plastics or processing food products. In such cases, exposure of human beings to RF energy could exceed MPE and restrictive measures or actions would thus be required to ensure the public's safety (USDHS, 2008a).

There is also some concern that signals from some RF devices could interfere with pacemakers or other implanted medical devices; however, electromagnetic shielding has been incorporated into the design of modern pacemakers to prevent RF signals from interfering with the electronic circuitry in the pacemaker (USDHS, 2008a).

Because RF devices emit RF energy and EM radiation, adverse impacts could occur. The severity of these impacts depends on the equipment used and the elevation of the tower (USDHS, 2008a).

Beneficial impacts from RF devices could also occur. The use of RF could increase the frequency of interdictions along the northern border, improving the HH&S of the American population.

### ***Firing Ranges***

HH&S can be affected by noise levels and exposure to lead from firing ranges on both indoor and outdoor ranges in this region. Humans become exposed to lead associated with shooting ranges through lead-contaminated soil. Another potential pathway is through inhalation of lead dust by shooters during firing when airflow on the firing line is blocked. Range workers may also be exposed to lead dust while performing routine maintenance operations, such as raking or cleaning out bullet traps. Each of these pathways is site specific and may or may not occur at individual ranges (USDA, 2010).

**Figure 5.13-3 CBP Officers Train at Firing Range**



Source: (USDHS, No Date).

OSHA sets regulations for protecting workers who handle or are exposed to lead, including airborne lead at indoor firing ranges (NSSF, 2001; 29 CFR 1910.1025). The OSHA standard for airborne lead exposure is 30 micrograms per cubic meter of air with an eight-hour time-weighted average (29 CFR 1910.1025).

Spent ammunition on ranges is not regulated as solid/hazardous waste unless it is discarded and left to accumulate for a long period of time. It is not regulated if it is recovered or reclaimed on a regular basis. If the range poses an imminent or substantial danger to human health or the environment it can be addressed through the Resource Conservation and Recovery Act (RCRA).

USEPA regions also set guidelines and establish best management practices (BMPs) for building new ranges and for remediating outdoor ranges. These guidelines are in place to help minimize lead contamination in soil and water. HH&S would be adversely affected if USBP agents were exposed to lead on firing ranges or if the public's water supply was contaminated with lead (USEPA, 2003). The frequency and severity of response to lead exposure in humans depend on the amount of exposure. Symptoms include neurological, gastrointestinal, reproductive, and renal effects (NYDH, 2009).

In addition to lead exposure, the noise generated on firing ranges may have an adverse effect on the health of CBP agents. Exposure to harmful levels of noise over a long time period can damage sensitive structures in the ear, resulting in noise-induced hearing loss (NIDCD, 2008). To protect employees from noises at harmful levels, OSHA sets noise standards and guidelines for the work environment. The OSHA noise exposure limit is set at a maximum permissible exposure limit of 90 decibels, A-weighted (dBA), averaged over an 8-hour time period (29 CFR 1910.95).

## **5.14 HAZARDOUS MATERIALS**

### **5.14.1 INTRODUCTION**

Hazardous materials are materials that are capable of posing an unreasonable risk to health, safety, and prosperity. Hazardous materials can be classified into roughly three categories:

- Hazardous or regulated substances;
- Hazardous or regulated waste; and,
- Special hazards.

#### **5.14.1.1 Hazardous Substances**

Any substances that are considered severely harmful to human health or the environment may be classified as “hazardous.” Hazardous substances take many forms. Many are commonly used substances that are harmless in their normal uses but are quite dangerous when released. They are defined in terms of those substances either specifically designated as hazardous under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), commonly known as the Superfund Law, or those substances identified under other laws (USEPA, 2011a). A great deal is known about hazardous substances and their effects. This information helps responders act quickly and safely to reduce the risks from emergency situations (USEPA, 2011b).

#### **5.14.1.2 Hazardous Waste**

A hazardous waste is defined by the Resource Conservation and Recovery Act (RCRA) as a solid waste, or combination of solid wastes, that, because of its quantity; concentration; or physical, chemical, or infectious characteristics may:

- Cause or significantly contribute to an increase in mortality or an increase in serious irreversible, or incapacitating reversible, illness; or,
- Pose a substantial present or potential hazard to human health or the environment when improperly treated, stored, transported, or disposed of, or otherwise managed.

Hazardous wastes fall into two categories: characteristic wastes and listed wastes. Characteristic hazardous wastes are materials that are known or tested to exhibit a hazardous trait such as ignitability (i.e., flammability), reactivity, corrosiveness, and toxicity. Listed hazardous wastes are materials specifically listed by the USEPA or a state regulation as a hazardous waste. Hazardous wastes listed by the USEPA fall into two categories:

- Process wastes from general activities (F-listed) and from specific industrial processes (K-listed); and,
- Unused or off-specification chemicals, container residues, and spill cleanup residues of acute hazardous-waste chemicals (P-listed) and other chemicals (U-listed).

These wastes may be found in different physical states as gases, liquids, or solids. Furthermore, a waste is deemed hazardous if it cannot be disposed of by common means like other byproducts of our everyday lives. Depending on the physical state of the waste, treatment and solidification



processes might be available. In other cases, however, there is not much that can be done to prevent harm (Leonard, 2009).

Certain types of hazardous wastes are subject to special management provisions intended to ease the management burden and facilitate the recycling of such materials. These are called universal wastes; their associated regulatory requirements are specified in 40 CFR 273. Four types of waste are currently covered under the universal waste regulations: hazardous-waste batteries, hazardous-waste pesticides that are either recalled or collected in waste pesticide collection programs, hazardous-waste thermostats, and hazardous-waste lamps.

The RCRA regulates the management and disposal of hazardous waste. One common method of treatment method is hazardous combustion, or incineration, which is used to destroy hazardous organic components and reduce the volume of waste (USEPA, 2009a).

#### **5.14.1.3 Special Hazards and Otherwise Regulated Materials**

Special hazards are those substances that might pose a risk to human health; they are addressed separately from other hazardous materials. Special hazards include asbestos-containing material, polychlorinated biphenyls (PCBs), and lead-based paint (LBP). The USEPA has the authority to regulate these special-hazard substances under the Toxic Substances Control Act 15 U.S.C. 53. The USEPA has established regulations regarding asbestos abatement and worker safety under 40 CFR 763, with additional regulation concerning emissions (40 CFR 61). Depending on the quantity or concentration, the disposal of LBP waste is potentially regulated by the RCRA at 40 CFR 260. The disposal of PCBs is addressed in 40 CFR Parts 750 and 761.

### **5.14.2 AFFECTED ENVIRONMENT**

#### **5.14.2.1 Hazardous Substances, Hazardous Wastes, Special Hazards, and Otherwise Regulated Materials**

Due to the duplicative discussion of hazardous substances, hazardous wastes, special hazards and otherwise regulated materials, complete descriptions of the range of hazards are found in Section 3.14.

## **5.15 UTILITIES AND INFRASTRUCTURE**

### **5.15.1 INTRODUCTION**

Infrastructure consists of the systems and physical structures that enable a population in a specified area to function. Infrastructure is wholly man-made; generally, the more urban and developed an area, the more infrastructure it has (USDHS, 2008a). This section describes ranges of use for each utility resource based on recent CBP site-specific analyses of protection, relocation, construction, and operation of BPSs, and construction, modernization, and operation of POEs. This section then describes the utility resources of most CBP facilities: BPSs, POEs, forward operating bases (FOBs), traffic checkpoints, and communication towers.

### **5.15.2 AFFECTED ENVIRONMENT**

#### **5.15.2.1 Water Supply**

Municipal water systems or rural lines, which supply facilities such as the Beddown OAM and Havre BPS, pump up to 1.87 million gallons of water per day from nearby reservoirs, lakes, or a system of groundwater wells (USDHS, 2008d). A substantial reserve capacity remains in these lakes or reservoirs. Such systems provide water to nearly 10,000 customers (COH, 2000).

For those sites with wells present, such as the Morgan, Wild Horse, and Del Bonita POEs in Montana, a number of scenarios for water provisioning may be employed. Some sites utilize onsite wells by tapping a nearby water main. In more remote locations (where tapping a water main is not feasible), potable water is provided by an onsite well, which can range from 90 to 610 feet from the main building (USDHS, 2009b; USDHS, 2010a). Generally, wells are within 90 feet of the main building; water is pumped through an in-line water filter system and stored in multiple storage tanks, with roughly 100 to 220 gallons of storage capacity (USDHS, 2009c; USDHS, 2009d). When necessary (and possible), water is filtered, softened, distilled, or treated as required for potable uses. If no usable onsite well exists for potable water, the water may come from a leased offsite well located several hundred yards away. In a few locations, well water is run through a chlorination or reverse osmosis system for non-drinking usage.

When onsite wells are rendered obsolete or no well exists, as is often the case in this region due to high lead content, CBP supplies drinking water in commercial water bottles. At larger facilities the delivered potable water is stored in five-gallon jugs and is sometimes used for cooking. For those few facilities where bottled water is delivered, on average between 50 and 60 gallons are used per month.

#### **5.15.2.2 Electrical and Communications Utilities**

Electrical power is provided to most CBP facilities by a commercial grid system. These local or regional utility cooperatives and distribution companies serve from 1,000 to 355,000 customers over a 30,000 to 168,000-square-mile area throughout the EOR Region (BFECI, 2010; MDUC, 2010). Service providers have a capacity of 42,125 kilowatt (KW) with peak demand at 23,314 kW (USDHS, 2008c). The electrical power is fed from the main service to an automatic transfer switch and electrical panels, then through the buildings. Primary electrical service is provided by overhead transmission lines to the facilities and secondary electrical service is provided from a

pole-mounted transformer. Many of these facilities have an onsite emergency electric generator with a 500-gallon diesel fuel tank (USDHS, 2010b).

At seasonal facilities in more rural areas, electricity is provided by one or two smaller generators connected to the automatic transfer switches and building power system.

Monopole communication towers do not utilize more than 3,650 kW-hours per month from commercial grid power (USDHS, 2008b). Primary power is provided to most monopole towers by the commercial power grid, but some in remote locations are powered by solar photovoltaic arrays with battery storage systems. Communication relay towers (CRTs) typically utilize a 17-kW generator. Remote video surveillance system (RVSS) are connected to the commercial grid where available. If commercial power is not available, the towers are supplied by either a generator of up to 30-kW or a solar photovoltaic generator (USDHS, 2008b). If a commercial power grid is not immediately available when towers are deployed, primary power is supplied by a 30-kW generator with a propane-fueled motor supplied by a 2,000-gallon tank until the commercial power infrastructure is in place. Back-up power for each tower site would be provided by a battery back-up system. All power lines are installed overhead from the main trunk power line to the tower-site shelter and then on elevated cable trays to the tower, with the primary power source being the commercial grid. At facilities lacking communication towers, antennas are mounted on posts attached to the main building.

Most POEs are provided telephone service by a nearby telephone substation. Existing telephone lines run underground or overhead (or some combination of the two) and when possible, follow a highway right-of-way. Most telephone lines consist of one or two T-1 lines and one to six dial tone lines. Where T-1 or fiber-optic service is not available, Internet service is accessed through telephone modems.

#### **5.15.2.3 Fuel Supply**

Propane or natural gas supplies fuel for heating, ventilation, and air conditioning (HVAC) systems. The propane, which can also power emergency generators, is stored in 250-, 500-, 1,000-, or 1,200-gallon onsite tanks (USDHS, 2009e; USDHS, 2009b). Some facilities are serviced by interconnections with commercial natural gas suppliers through underground natural gas pipelines.

Each tower that normally receives electric power from the commercial grid has a 500-gallon propane tank to fuel a back-up generator in case of power outages (USDHS, 2008b). Each 500-gallon tank would need to be refueled every two months (USDHS, 2008b), assuming approximately two hours of run time monthly for a generator maintenance check and other operations as needed. When commercial grid power is not immediately available upon tower deployment, primary power would be supplied temporarily by a 30-kW generator using a larger, 2,000-gallon propane tank. These larger propane tanks would be refueled approximately every seven days (USDHS, 2008b).

#### **5.15.2.4 Wastewater Management**

Urban CBP facilities, such as the Havre Border Patrol Station in Montana, are connected via municipal piping systems to wastewater treatment plants, which operate at up to a six million gallon capacity per day (mgd), or 3,000 gallons per minute (USDHS, 2008c; COH, 2000).

In rural locations like the Morgan and Wild Horse POEs in Montana, sanitary waste is disposed to one 1,500-gallon or two 66-gallon onsite septic tanks (USDHS, 2009f; USDHS, 2009d). Types of septic tanks vary; some have a grinder pump, a lift station, or two venting pipes, but all are connected to the appropriate drainage mound and field or leach field. An average ground drainage field is 2-feet high, 60-feet long, and 50-feet wide (USDHS, 2009d). Solid waste is removed from sites by a cleaning contractor or a private disposal company. Average septic tanks are pumped once every two years and are treated twice a year. However, those approaching capacity can be pumped as often as once every three months.

The state DOT or appropriate county department generally provides snow removal on state highways, and onsite snow removal service is contracted out to a janitor or maintenance company (USDHS, 2009g). At some POEs, facility staff utilizes snow blowers or tractors for snow removal (USDHS, 2009e).

## 5.16 ROADWAYS AND TRAFFIC

### 5.16.1 INTRODUCTION

The United States relies heavily on a vast transportation network to expedite the flow of goods and people to and from Canada. CBP's mandate to enable efficient border crossing while providing the highest level of security and safety for all motorists is of utmost importance. Over the past decade, many POEs have been upgraded for highway safety, as well as technologically for ease of access. States and municipalities maintain the roadways leading to the borders to allow for tourism and trade in their areas. The following text provides an overview of traffic and transportation regulations and describes the general traffic conditions for urban, suburban, rural, and remote areas.

### 5.16.2 AFFECTED ENVIRONMENT

#### 5.16.2.1 Existing Roadway Network and Roadway Effectiveness

The majority of the roadways within 100 miles of the northern border within this region are primarily secondary and tertiary paved roads, although there are state highways throughout. Many of the areas in the EOR region are remote, and some include travel destinations such as national parks, national forests, and wilderness areas.

The number of motor vehicles in the United States has been steadily increasing, with more than 254 million vehicles registered in 2009 (BTS 2012). Annual travel on U.S. roadways reached over 2.9 trillion vehicle-miles, or about three times the level reported in 1960. Travel grew about 47 percent during the 1960s, another 38 percent in the 1970s, and another 41 percent in the 1980s. Travel in urban areas in 2009 accounted for over 1.9 trillion vehicle-miles, or 66 percent of the total, compared to 44 percent in 1960 (BTS 2012a). On the rural interstate system, automobiles, light trucks, and buses account for 77 percent of average daily traffic volumes, with heavy trucks representing the remainder. Percent distribution of traffic for commercial and noncommercial vehicles in both rural and urban areas is shown in Table 5.17-1.

**Table 5.16-1. Percent Distribution of Traffic by Vehicle Class, Total U.S.**

Type of Roadway	Vehicles (%)	
	Noncommercial	Commercial
<b>Rural</b>		
Interstate	81.6	18.4
Other principal arterials	87.2	12.8
Minor arterial, collector and local	88.5	11.5
<b>Rural average</b>	86.6	13.4
<b>Urban</b>		
Interstate	88.2	11.8
Other freeways and expressways	90.5	9.5
Other principal arterials	89.5	10.5

Type of Roadway	Vehicles (%)	
	Noncommercial	Commercial
Minor arterials	90.4	9.6
Collectors	90.3	9.7
Local	91.0	9.0
<b>Urban average</b>	89.8	10.2

Source: USDOT, 1996.

#### **5.16.2.2 Level of Service**

Level of service (LOS) is a qualitative measure of the operating conditions of an intersection or other transportation facility. There are six levels of service (A through F): LOS A represents the best operating conditions with no congestion, and LOS F represents the worst operating conditions with heavy congestion. Roadways and intersections with LOS E or F are those with traffic conditions at or above capacity. Traffic patterns are congested, unstable, and normally unacceptable to individuals attempting to access and use roadways and intersections with LOS E or F (TRB, 2000). LOS has been used to facilitate a general discussion of traffic conditions in urban, suburban, rural, and remote areas. This discussion of typical patterns for different types of roadway networks is not meant to substitute for local studies and analyses that may be required.

#### **5.16.2.3 Variability**

Traffic varies by month of the year, day of the week, and hour of the day. Often the capacity of the roadway system can be exceeded by the volume of traffic using it. This can cause breakdown flow (i.e., LOS E or F) and initiate effects that extend far beyond the time during which the demand exceeded capacity. This type of traffic may take several hours to dissipate. Seasonal peaks in traffic demand are also of importance, particularly for recreational facilities.

Seasonal fluctuations in traffic demand reflect the social and economic activity of the area being served by the highway. These seasonal fluctuations typically exhibit several relevant characteristics:

- Monthly variations are more severe on rural routes than on urban routes;
- Monthly variations are more severe on rural routes serving primarily recreational traffic than on rural routes serving primarily business traffic; and,
- Daily traffic patterns vary by month of year most severely for recreational routes.

Traffic variations by day of the week are related to roadway type. Normally, weekend volumes are lower than weekday volumes for highways serving predominantly business travel, such as urban freeways. In comparison, peak traffic occurs on weekends on main rural and recreational highways. Furthermore, the magnitude of daily variation is highest for recreational access routes and lowest for urban commuter routes.

Typical hourly variation in traffic is related to highway type and day of the week. The typical morning and evening peak hours are evident for urban commuter routes on weekdays. The evening peak is generally somewhat more intense than the morning peak. On weekends, urban routes show a peak travel period that is less intense, more spread out, and occur in early to mid afternoon. Recreational routes also have single daily peaks. Saturday peaks on such routes tend to occur in the late morning or early afternoon (as travelers go to their recreational destination) and in late afternoon or early evening on Sundays (as they return home).

Traffic analysis focuses on the peak hour of traffic volume because it represents the most critical period for operations and has the highest capacity requirements. If the highest hourly volumes for a given location were listed in descending order, a large variation in the data would be observed, depending on the type of roadway.

#### **5.16.2.4 Urban and Suburban Transportation Networks**

Delays and heavy traffic can be prevalent in all major cities. These delays are most frequent during rush hour times, 7:00 to 9:00 a.m. and 4:00 to 6:00 p.m., Monday through Friday. Other reasons for congestion in urban areas are emergency vehicles, accidents, and vehicle breakdowns. There are no urban areas in this region.

The ability of urban streets to function well is generally limited by the capacity of signalized intersections, with traffic normally uninterrupted on roadway segments between intersections. Signal timing plays a major role in the capacity of urban streets, limiting the portion of time available for movement between intersections. Traffic conditions may vary greatly, and such factors as curb parking, transit buses, lane widths, upstream intersections, and other factors may substantially affect roadway conditions. In urban areas, LOS at critical intersections would typically be E or F during peak periods, and would be characterized by very unstable or forced traffic flow.

Urban streets show less variation than other areas. Most users of these streets are daily commuters or frequent users, and special event traffic is less common. Furthermore, many urban routes are filled to capacity during each peak hour, and variation is therefore severely constrained.

Traffic in suburban areas is similar to that in urban areas; however, traffic delays are less of an issue unless traffic is being routed through residential areas. As with urban areas, there may be heavy traffic during rush hour; typically 7:00 to 9:00 a.m. and 4:00 to 6:00 p.m. Traffic congestion in suburban areas is normally confined to primary and secondary arterials and does not enter residential areas. Public transportation is often provided, and traffic reports are available for updated roadway conditions.

#### **5.16.2.5 Rural and Remote Transportation Networks**

In rural and remote areas, traffic is mainly affected by roadway conditions. Heavy traffic volumes are rare and normally only occur due to road closure and construction activities. Rural highways in the United States and Canada rarely operate at volumes approaching capacity. In addition, rural and recreational routes often show a wide variation in peak-hour volumes. Extremely high volumes occur on a few weekends or on other peak periods, and traffic during the rest of the year is substantially less, even during the peak hour. For example, highways

addition, rural and recreational routes often show a wide variation in peak-hour volumes. Extremely high volumes occur on a few weekends or on other peak periods, and traffic during the rest of the year is substantially less, even during the peak hour. For example, highways serving resorts and recreational areas may be virtually unused during much of the year, only to be subject to oversaturated conditions during peak summer periods.

Seasonal weather conditions are the primary cause of inefficient access on rural and remote roadways. Snow, flooding, and mudflows can make roads impassable; these events usually occur between October (when snow accumulations begin) and April (when melting snow and rains can cause flooding and mudslides). Local municipalities are prepared for maintenance of rural roadways, and residents often have alternate means of transportation, such as snowmobiles, ATVs, and horses. Remote areas, by definition, are sparsely populated, but the few residences within these areas normally have alternate transportation sources in case of emergencies. Television, radio, and National Park Service (NPS) traffic reports are the primary sources of updates for rural and remote roadway conditions (USDOJ, 2010).

#### **5.16.2.6 Federal and State Transportation Regulations**

POEs across the regions are accessed by a number of highways that are maintained by each state's DOT or municipal highway authority. In remote areas where trails and gravel roadways are used, it is the maintaining agency's responsibility to inform the public of road and trail closures. In the United States, each state has its own regulations and governing agency, although most regulations are similar for the purpose of uniformity. In most states, the roadway design manual is based upon recommendations in the American Association of State Highway and Transportation Officials (AASHTO) Policy on Geometric Design of Highways and Streets, commonly referred to as the "Green Book." The Green Book is not a design manual but rather a series of recommended roadway design parameters (USDOT, 2010). In addition, many Federal departments have also adopted their own traffic code for enforcement on their respective reservations (e.g., national parks and military bases). A list of the state DOTs and regulatory agencies that plan and administer the roadway design regulations is provided in Appendix K-1.

#### **5.16.2.7 CBP's Activities Affecting Roadways and Traffic**

CBP activities include enforcement of customs, immigration, and agriculture regulations at U.S. borders, and CBP has primary responsibility for preventing unlawful entry into the United States while ensuring the safe and efficient flow of goods and people. For the northern border within this region, these activities are focused around the POEs, but construction activities, the operation of other facilities, and patrol activities have some effects to transportation resources. A general description of these activities is provided in Chapter 2. This section outlines these activities from a transportation and traffic standpoint.

#### **Ports of Entry (POEs)**

Many different roadways including interstates, U.S. highways, state highways, and rural roadways approach the POEs along the northern border within this region. These cross-border access points are often colocated with towns and cities adjacent to the border, and roadways facilitate traffic approaching and departing from the POEs.



facilities, there are committed areas for secondary truck inspections that may involve offloading and detailed examination.

As with any other roadway, cross-border traffic varies by month, day of the week, and hour of the day. Seasonal fluctuations in traffic demand reflect the social and economic activity of the area being served by the facility. Canadian traffic reaches a peak in either July or August and ebbs to a low-point in February. Summer peaks are consistently 65 to 75 percent higher than winter lows (BPRI, 2010). Normally, weekend volumes are lower than weekday volumes for POEs serving predominantly business travel. Monthly variations are more severe on rural POEs than on urban entry points. Vehicle queues are common, particularly at urban POEs, and can last for several minutes to several hours in rare cases. In general, queue length and wait times determine the overall LOS of a POE from a transportation and traffic standpoint. The busiest POEs in the EOR region are in Table 5.15-2. A complete list of POEs and their level of use by transportation mode is provided in Appendix K.

**Table 5.16-2. Busiest POEs for Passenger Vehicles in the EOR Region**

Rank	Port Name	Annual Personal Vehicles	Annual Personal Vehicle Passengers
20	ND: Penbina	265,210	530,420
23	MN: Grand Portage	222,708	445,206
26	MN: Baudette	165,224	330,570
31	MN: Warroad	110,797	218,600
36	ND: Portal	80,758	149,892
40	ND: Dunseith	56,850	123,028
47	ND: Neche	44,223	85,380

Source: USDOT, 2009.

At POEs in urban areas, special lanes are used for frequent travelers and commercial vehicles with Nexpress radio frequency units for fewer delays. Buses are provided for public transportation and pedestrian walkways are provided for tourists. CBP and other non-government organizations provide real-time traffic information via the internet, twitter and mobile applications (USDHS, 2010). Other technologies used to improve the functionality of POE are described in Chapter 2.

Vacation travel and occasional same-day shopping trips are important travel purposes along most of the border. Several Canadian and U.S. near-border cities and towns are common consumer destinations. Vacation and same-day recreational travel are less frequent and more seasonal than consumer trips in the paired-cities model. In addition, these types of travel are highly discretionary and are easily influenced by exchange rates and economic conditions (BPRI, 2010).

All POEs facilitate pedestrians and cyclists. However, pedestrian and bicycle circulation is infrequent at most rural POEs because of their remote locations and distance from residential

areas. Some POEs have provisions for bike storage. Many POEs have boat and seaplane landing areas.

### **Transportation Checkpoints**

Traffic checkpoints are conducted on roads leading from the border and consist of inspections of interior-bound conveyances, including passenger vehicles (cars, trucks, vans, and buses) and container vehicles and cargo trucks. These checkpoints provide an opportunity to detect and interdict cross-border violators that have thus far avoided apprehension. Vehicle checkpoints are generally traffic lanes temporarily controlled by CBP. Checkpoints may include support buildings to provide temporary office and holding space, as well as lights, signage, and other support equipment.

Checkpoints are established at airports for commercial aircraft and at locations along railroad lines for passenger and freight trains.

### **Non-road/Off-road Activities**

Off-road traffic surveillance operations can include agents stationed at specific observation points or driving predetermined routes (line watch); detection of any disturbances in natural terrain that could indicate the passage of people, animals, or vehicles (sign cutting); and road patrols. All sectors use a variety of vehicles, including four-wheel drive vehicles, sedans, scope trucks, ATVs, motorcycles, snowmobiles, and bike patrols in urban areas or over rough terrain.

BPSs vary in size and typically include any or all of the following components: administrative and support buildings, vehicle maintenance garages, equine and canine facilities, vehicle wash facilities, fuel tanks, small arms practice ranges, illegal immigrant processing and temporary holding facilities, confiscated vehicle storage facilities, and agent and visitor parking. CBP agents use a variety of off-road transportation modes to patrol border areas. These consist of four-wheel drive vehicles, ATVs, snowmobiles, horses, and, in some sensitive habitats, agents operating on foot. As outlined in Chapter 2, CBP activities that may affect transportation resources include unmanned aerial surveillance (UAS) activities, manned aerial surveillance patrols, and other patrols.

## **5.17 RECREATION**

### **5.17.1 INTRODUCTION**

A wide variety of recreation areas exist along the northern border on both the U.S. and Canadian sides. On the U.S. side, recreational areas include national parks (NPs), national recreation areas (NRA), national forests (NF), lakesides, national wildlife refuges (NWR), and designated wilderness areas. On the Canadian side, recreational areas include National Park Reserves, Provincial Parks, Protected Areas, and Natural Areas. U.S. recreation categories are described briefly below, since the designation bears on the nature of activities permitted. Figure 5.17-1 shows a map of federally protected recreation areas in the EOR Region.

**Figure 5.17-1. Federally protected recreation areas, including Protected Recreation Areas, Including National Forests, Parks, Recreation Areas, and Wildlife Refuges in the EOR Region**



### 5.17.2 AFFECTED ENVIRONMENT

National parks, national forests, national wilderness areas, NWR, and NRA within the EOR study area are profiled below by the impact category they most closely match. In addition to national protected areas, which are the primary focus of this analysis, many state and regional parks and protected areas along the northern border include recreation areas that could be affected by activities along the border.

The EOR Region contains a significantly lower proportion of federally owned recreation lands compared to the other regions; national forests and NWR constitute the only Federal lands. Despite the small number of distinct federally protected areas, a large portion of this region is wilderness or otherwise undeveloped lands. These recreation areas are primarily low-impact use areas, with one medium-impact use area and one high-impact use area. Common recreation includes wildlife observation, hunting, fishing, hiking, and some camping and water sports. Appendix I contains profiles of Canadian protected areas.

#### **American bittern with Plains garter snake in Medicine Lake NWR**



Source: USDOI, 2009j.

#### 5.17.2.1 Montana

##### **Medicine Lake National Wildlife Refuge**

Medicine Lake NWR Complex includes Medicine Lake NWR, Northeast Montana Wetland Management District (WMD), and Lamesteer NWR. The complex totals 31,702 acres and consists of two separate tracts. Common recreational activities include photography, observation, hunting, fishing, and environmental education. Camping is not allowed. Most of this area can be categorized as a low-impact use area (USDOI, 2009j).

##### **UL Bend National Wildlife Refuge (inside Charles M. Russell National Wildlife Refuge)**

UL Bend NWR is a “refuge within a refuge,” inside the Charles M. Russell NWR. This refuge contains 20,000 acres of designated wilderness. Recreational opportunities include fishing, hunting, and a self-guided auto tour. Most of this area can be categorized as a low-impact use area (USDOI, 2009k).

##### **Lewis and Clark National Forest**

The Lewis and Clark NF is a small park in the center of Montana over 100 miles south of the northern border. A small portion of the Bob Marshall Wilderness Complex lies within the Lewis and Clark National Forest. This forest also includes 29 developed campsites and five rental

cabins. In addition to hiking, other activities include winter sports, such as skiing, scenic driving, and hunting. The annual visitation estimate for forest visits is 406,800. Much of this area could be categorized as a medium-impact use area (USDA, 2009h; USDA, 2010e).

#### **5.17.2.2 North Dakota**

##### **Lostwood National Wildlife Refuge**

Lostwood NWR sits approximately 20 miles south of the northern border in North Dakota. Lostwood is fairly small but the American Bird Conservancy named it one of America's top 500 globally important bird areas. The refuge habitat produces more ducks than any other region in the lower 48 states. Vehicle and hiking trails exist for public use as does a sharp-tailed grouse blind. In addition, the wilderness areas offer hiking during certain months, along with snowshoeing and cross-country skiing. Most of this area can be categorized as a low-impact use area (USDOI, 2009l).

**A duck at Lostwood NWR**



Source: USDOI, 2009l.

#### **5.17.2.3 Minnesota**

##### **Superior National Forest**

Superior NF is in the upper northeast corner of Minnesota, adjacent to the northern border and Lake Superior. The Boundary Waters Canoe Area Wilderness (1 million acres) lies within the forest. There are 2,000 miles of trails for different uses, including hiking, hunting, fishing, biking, horseback riding, cross-country skiing, snowmobile and ATV riding, and observing nature. There are 23 developed "fee" campgrounds, 18 rustic campgrounds, and more than 277 backcountry campsites, most of which are on a body of water. Water recreation includes boating, fishing, swimming, or picnicking at one of 77 lake accesses, 13 fishing piers, 10 swimming beaches, or 22 picnic areas. Three scenic byways are also in the park. The annual visitation estimate is 1,375,900 visits. Much of this park can be categorized as a high-impact use area (USDA, 2010f; USDA, 2009i).