6.8 LAND USE

6.8.1 INTRODUCTION

This section characterizes land uses in the Great Lakes Region and describes the potential impacts of the U.S. Custom and Border Protection's (CBP) program alternatives on these resources. Some categories of land use impacts are as likely to occur on the Canadian side of the border as the American side. For example, impacts from construction projects that introduce noise and light pollution along the border could reduce 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. The study area for land use, therefore, includes areas in the United States within 100 miles of the border and within 2 miles of the border in Canada, indicating that only those land uses close to the border may be affected by CBP's activities in this analysis. The U.S. Geological Survey (USGS) and Natural Resources Canada (NRC) define land cover and land use classifications.

Land use classifications reflect either natural or human activities at a given location. Land uses based on human activities include residential, commercial, industrial, airfield, recreational, agriculture, and other types of developed areas. Natural uses include resource production, such as forestry, mining, or agriculture, and resource protection, such as conservation areas, wild lands, and parks. Management plans, policies, and regulations specify the type and extent of land use allowable in specific areas, as well as the protection designated for environmentally sensitive areas.

6.8.2 AFFECTED ENVIRONMENT

This section describes land use and cover for the Great Lakes 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 10 sq km or larger compiled by the Canadian Council on Ecological Areas (CCEA) (NRC, 2009; NRC, 2007).

6.8.2.1 Land Cover and Related Land Uses in the Great Lakes Region

The Great Lakes Region covers about 52.3 million acres, approximately 32.5 percent of the land area of the states in the region (Michigan, New York, Ohio, Pennsylvania, and Wisconsin). The most prevalent land cover type within the study area is forested (41.7 percent), which makes up the majority of the study area in New York (50.7 percent), Pennsylvania (65.1 percent), and Wisconsin (84.0 percent). Agricultural land (30.3 percent total with 19.9 percent cultivated crops and 10.4 percent pasture/hay) is the next most prevalent and covers more than half of the study area in Ohio (Table 6.8-1). Water/wetlands make up 13.2 percent and are most prevalent in Michigan, where they cover almost a quarter of the study area. Developed areas make up just over 10 percent of the study area. Herbaceous (2.3 percent) and snow/ice/barren (2.2 percent) areas are the least prevalent land cover types.

With the exception of Wisconsin, the land cover in the study area of each state is representative of land cover in each state as a whole. In Wisconsin, the study area has a substantially lower amount of cultivated crops and water/wetlands and a substantially higher amount of forested area when compared to the entire state.

The study area includes a high percentage of developed areas and herbaceous land relative to the entire country, though the relative presence of these land cover types is a similar proportion to the land cover in the states as a whole. The study area has a relatively low percentage of snow/ice/barren and water/wetlands land cover relative to the entire country.

Table 6.8-1. Land Cover in the Great Lakes Region*

Border State		Total Land Area (thousands of acres)	Developed (%)	Cultivated Crops (%)	Pasture/ Hay (%)	Herbaceous (%)	Forested (%)	Water/ Wetlands (%)	Snow/Ice/ Barren Land** (%)
Michigan	Study area	17,646	11.9	17.5	7.0	4.3	35.8	22.4	1.1
	Statewide	37,344	10.6	19.2	6.7	4.9	35.6	21.6	1.4
New York	Study area	18,748	6.0	10.5	14.5	1.2	50.7	13.0	4.1
	Statewide	31,104	9.0	8.5	13.9	1.0	52.9	11.6	3.2
Ohio	Study area	10,273	17.3	47.6	8.5	1.6	21.4	3.2	0.4
	Statewide	26,505	14.1	39.4	11.1	1.6	31.2	2.0	0.5
Pennsylvania	Study area	5,161	6.9	8.7	11.3	1.4	65.1	3.4	3.1
	Statewide	29,707	11.0	9.3	15.3	0.5	60.1	2.4	1.4
Wisconsin	Study area	473	4.2	0.7	6.7	1.0	84.0	3.3	0.1
	Statewide	36,387	6.8	26.3	10.6	1.7	38.0	15.5	1.1
Great Lakes Region	Study area	52,301	10.3	19.9	10.4	2.3	41.7	13.2	2.2
	Selected states	161,047	10.1	20.2	11.3	2.1	43.3	11.5	1.5
Total United States* **		**2,053,000**	**5.0**	**21.9**		**14.1**	**31.2**	**27.7**	

*The Great Lakes includes all areas 100 miles south of the U.S.-Canada border in Michigan, New York, Ohio, Pennsylvania, and Wisconsin.

** "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: (USDOI, 2001).

Figures 6.8.1 and 6.8.2 show maps of land cover and use in the Great Lakes Region.

Recreation also occurs on other land not specifically designated for the activity and land other than that profiled in Section 6.17 (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 a low-end estimate of the area in which recreation is likely taking place.

Recreational land use in the Great Lakes Region accounts for 605,000 acres or 1.2 percent of total land area. This amount is substantially lower than the share of recreational land use for the country as a whole (10.1 percent) (Table 6.8-2). State parks and state recreation areas make up just over half of recreation lands. Of these, about half are in New York and half are in Michigan. The U.S. Forest Service (USFS) and the National Park Service (NPS) also manage recreational land in the Great Lakes Region. Recreational lands owned by cities and counties in New York and Ohio account for a substantial portion of the recreational land. Section 6.17 discusses the potential impacts of CBP's activities on recreational lands. Appendix I provides the recreational profiles of major U.S. Federal and Canadian recreation areas in the study area.

Conservation areas in the Great Lakes Region account for about 2 million acres or 3.7 percent of total land area (Table 6.8-3), which is substantially lower than the proportion of conservation land nationwide (14.6 percent). State and private conservation easements in New York make up over 500,000 acres alone. State lands in Michigan account for a similar amount of conservation land. The U.S. Fish & Wildlife Service (USFWS) and the NPS each manage roughly 150,000 acres in wilderness areas, wildlife management areas, refuges and other similar conservation designations.

Table 6.8-2. Recreational Land Use* in the Great Lakes Region

Border State		Recreational Land Use (thousands of Acres)	Share of Recreational Land Use (%)
Michigan	Study area	214	1.2
	Statewide	3,001	8.0
New York	Study area	169	0.9
	Statewide	540	1.7
Ohio	Study area	125	1.2
	Statewide	523	2.0
Pennsylvania	Study area	94	1.8
	Statewide	930	3.1
Wisconsin	Study area	3	0.5
	Statewide	1,793	4.9
Great Lakes Region	Study area	605	1.2
	Selected states	6,787.4	4.2
Total United States		**208,087.8**	**10.1**

The Great Lakes includes all areas 100 miles south of the U.S.-Canada border in Michigan, New York, Ohio, Pennsylvania, and Wisconsin.

* 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).

Sources: (USDOI, 2010).

Table 6.8-3. Conservation Land Use* in the Great Lakes Region

Border State		Conservation Land Use (thousands of Acres)	Share of Conservation Land Use (%)
Michigan	Study area	913	5.2
	Statewide	1,328	3.6
New York	Study area	882	4.7
	Statewide	1,013	3.3
Ohio	Study area	139	1.4
	Statewide	309	1.2
Pennsylvania	Study area	3	0.4
	Statewide	301	1.0
Wisconsin	Study area	2	0.4
	Statewide	839	2.3
Great Lakes Region	Study area	1,959	3.7
	Selected states	3,789	2.4
Total United States		**300,149**	**14.6**

The Great Lakes includes all areas 100 miles south of the U.S.-Canada border in Michigan, New York, Ohio, Pennsylvania, and Wisconsin.

* 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, etc.).

Source: (USDOI, 2010).

6.8.2.2 Land Cover and Related Land Uses in the Areas North of the Great Lakes Region

This section considers resources north of the border from the Great Lakes Region extending 2 miles into Canada. This area covers about 1.6 million acres (Table 6.8-4). Over 70 percent of this area is water/wetlands, which is substantially greater than the proportion of water/wetlands in either the province or the country as a whole. The next most prevalent land cover type is forested (20.5 percent), which accounts for a significantly smaller fraction of total land cover than in the province or nation. Developed areas make up a greater proportion of land in the study area compared to the province and the country. While no identified snow/ice/barren land cover occurs in the area north of the Great Lakes Region, 38.2 percent of land in Canada is classified as snow/ice/barren due to tundra in the northern parts of the country.

Table 6.8-4. Land Cover in Canada North of the Great Lakes Region

Border Province		Total Land Area (thousands of acres)	Developed (%)	Cultivated Crops (%)	Pasture/ Hay (%)	Forested (%)	Water/ Wetlands (%)	Snow/Ice/ Barren (%)
Ontario	Study area	1,614	0.9	0.0	5.8	20.5	72.9	0.0
	Province	265,010	0.2	0.0	5.8	60.4	11.8	21.9
Total Canada		**2,071,476**	**0.1**	**1.7**	**6.0**	**46.7**	**7.3**	**38.2**

The areas north of the Great Lakes Region in Canada include the portions of the Province of Ontario extending 2 miles north of the U.S.-Canada border.

Source: (NRC, 2009).

Table 6.8-5 shows that recreational land use in the areas of Canada north of the border from the Great Lakes Region accounts for about 121,000 acres, or 7.5 percent of the total land area, which is comparable to the proportion of recreational land use in Canada as a whole (6.1 percent).

The recreational lands include La Verendrye River Provincial Park, Quentico Provincial Park, and the St. Lawrence Islands National Park.

Conservation land in the areas north of the border from the Great Lakes Region accounts for about 12,000 acres, or 0.8 percent, of the area. This percentage is substantially less than the proportion of conservation areas in the country as a whole (4.7 percent) (Table 6.8-6).

Table 6.8-5. Recreational Land Use in Canada North of the Great Lakes Region*

Border Province		Recreational Land Use (thousands of acres)	Share of Recreational Land Use (%)
Ontario	Study area	121	7.5
	Province	16,745	6.3
Total Canada		**126,389**	**6.1**

* Areas north of the Great Lakes Region in Canada include the portions of the Province of Ontario extending 2 miles north of the U.S.-Canada border.

Source: (NRC, 2007).

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

Table 6.8-6. Conservation Land Use in Canada North of the Great Lakes Region*

Border Province		Conservation Land Use (thousands of acres)	Share of Conservation Land Use (%)
Ontario	Study area	12	0.8
	Province	7,603	2.9
Total Canada		**98,234**	**4.7**

* Areas north of the Great Lakes Region in Canada include the portions of the Province of Ontario extending 2 miles north of the U.S.-Canada border.

Source: (NRC, 2007).

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

Figure 6.8-1. Land Cover in the Great Lakes Region

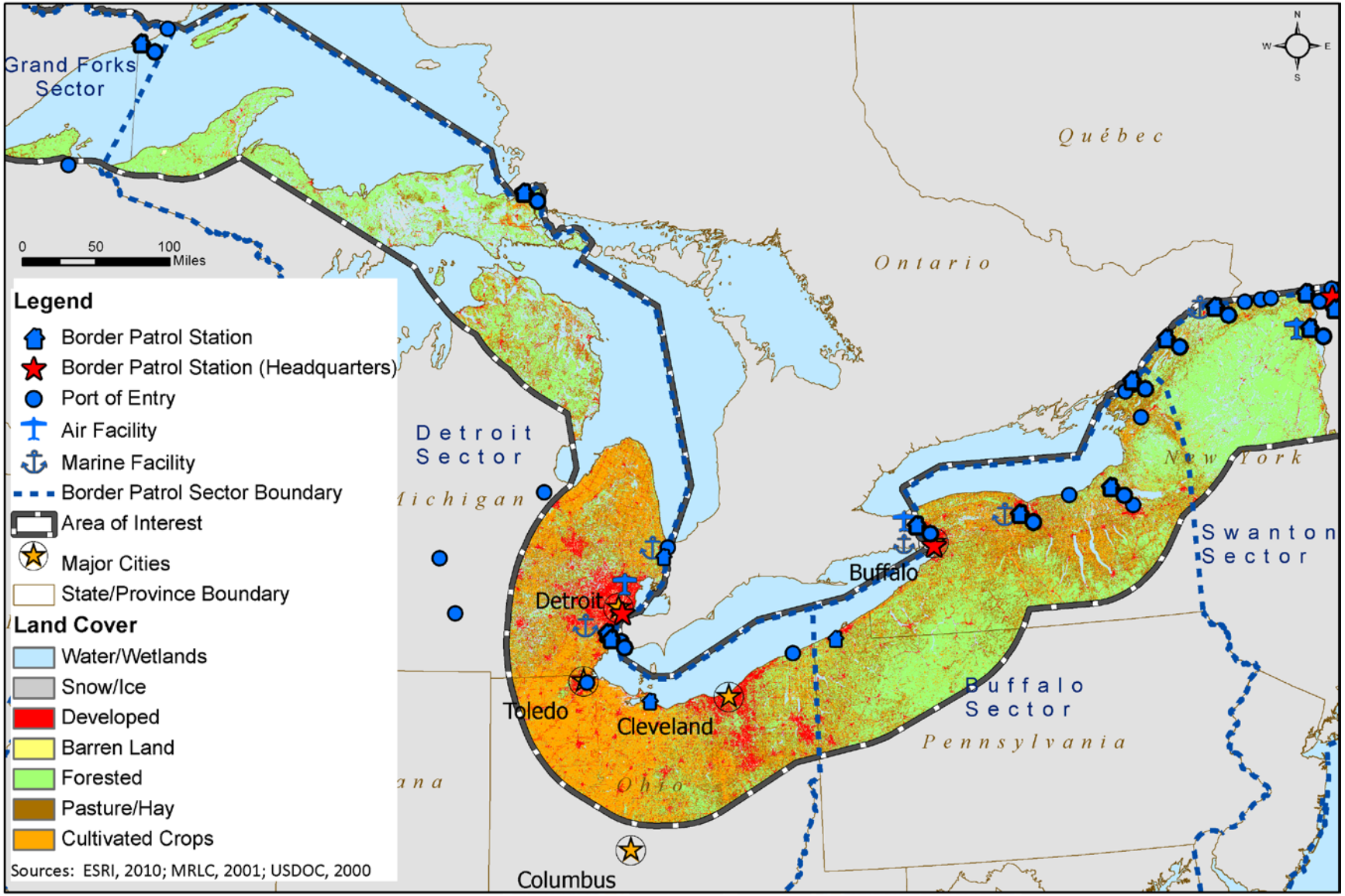
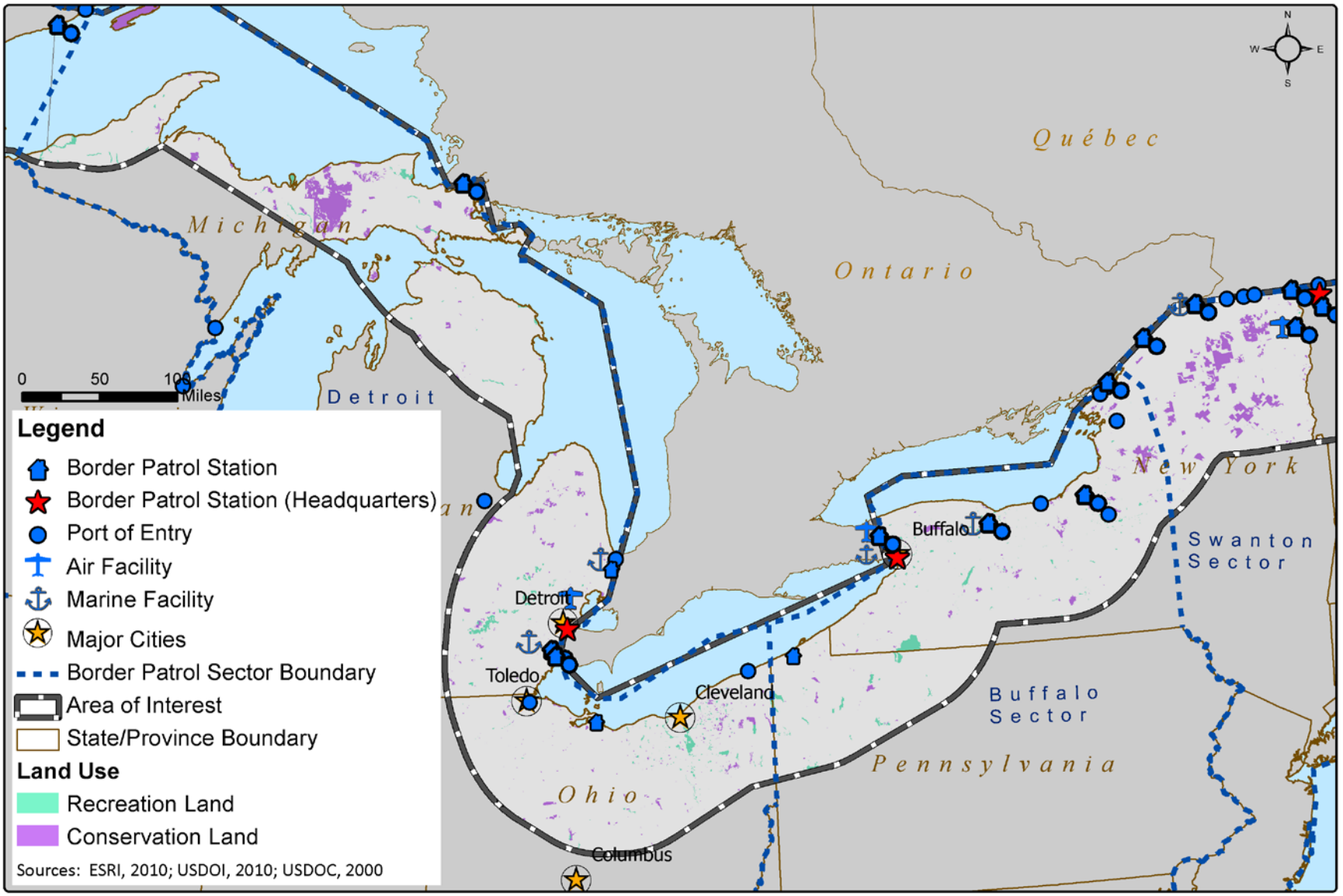


Figure 6.8-2. Land Use in the Great Lakes Region



6.8.2.3 Land Ownership in the Great Lakes Region in the United States

The major categories of land ownership identified in the Great Lakes Region in the United States are Federal (4.9 percent), state (11.0 percent), tribal (0.2 percent), and private (1.4 percent) (Table 6.8-7). Only about 17.5 percent of the Great Lakes Region is classified according to landowner, thus this discussion is subject to significant gaps in landowner information. Federal lands include national parks, national forests, conservation areas, and military lands, and are 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 Great Lakes Region includes about 2.5 million acres of Federal land, accounting for 4.9 percent of land ownership, which is substantially less than the proportion of federally owned land nationwide. The USFS manages the majority of these lands.

Approximately 5.8 million acres of state lands are located in the Great Lakes Region, accounting for 11.0 percent of total land ownership. The majority of these lands is classified as "other state land," such as state parks and natural areas (2.4 million acres), or is owned by state fish and wildlife agencies (2.2 million acres). The share of state land ownership in the region is slightly higher than that of the country as a whole.

The Great Lakes Region includes about 130,000 acres of tribal lands in Michigan and New York. In New York, the St. Regis Indian Reservation (13,000 acres) sits on the border within a mile of the Massena port of entry (POE). Fourteen reservations or other tribal lands occur within the study area: five in Michigan, and nine in New York. The proportion of tribal lands in the study area is far less than the proportion in the country as a whole, but representative of the amount in the region's states. For a complete discussion of Native American resources along the Northern Border, refer to Section 6.11 of this report.

The Great Lakes Region includes about 742,400 acres classified as private land. The majority of this private land occurs in New York (about 660,000 acres). The share of private land ownership in the study area is greater than the share for the country as a whole. Figure 6.8-3 maps the Great Lakes Region by landowner.

Table 6.8-7. Land Ownership in the Great Lakes Region*

Border State		Federal Land		State Land		Tribal Land		Private Land	
		Thousands of Acres	Share (%)	Thousands of Acres	Share (%)	Thousands of Acres	Share (%)	Thousands of Acres	Share (%)
Michigan	Study area	1,695	9.6	2,395	13.6	43	0.2	46	0.3
	Statewide	3,247	8.7	4,717	12.6	202	0.5	47	0.1
New York	Study area	165	0.9	2,825	15.1	87	0.5	658	3.5
	Statewide	258	0.8	4,156	13.4	88	0.3	735	2.4
Ohio	Study area	61	0.6	132	1.3	0	0.0	33	0.3
	Statewide	300	1.1	576	2.2	0	0.0	76	0.3
Pennsylvania	Study area	520	10.1	386	7.5	0	0.0	4	0.1
	Statewide	566	1.9	3,825	12.9	0	0.0	47	0.2
Wisconsin	Study area	111	23.4	27	5.7	0	0.0	2	0.3
	Statewide	1,908	5.2	1,434	3.9	0	0.0	310	0.9
Great Lakes Region	Study area	2,551	4.9	5,764	11.0	130	0.2	742	1.4
	Selected states	6,278	3.9	14,707	9.1	290	0.2	1,218	0.8
Total United States		**657,885**	**32.0**	**189,314**	**9.2**	**100,574.1**	**4.9**	**15,918**	**0.8**

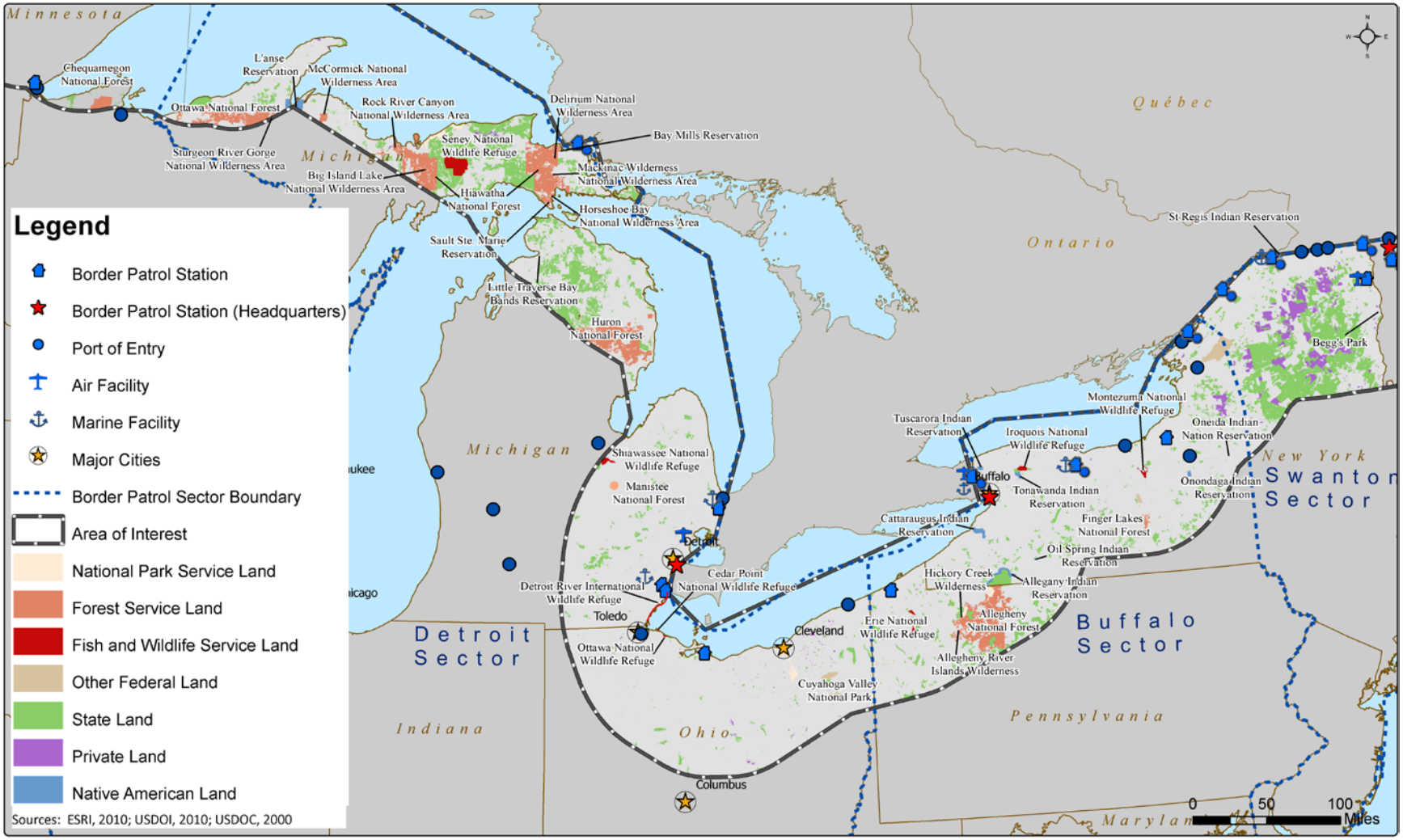
* The Great Lakes Region includes all areas 100 miles south of the U.S.-Canada border in Michigan, New York, Ohio, Pennsylvania, and Wisconsin.

Note: For a complete discussion of Native American resources along the Northern Border, refer to Section 6.11 of this report.

Note: Land ownership estimates do not add up to 100 percent for a given area due to gaps in information regarding land ownership within border states.

Source: (USDOI, 2010).

Figure 6.8-3. Land Ownership in the Great Lakes Region



6.8.2.4 Land Ownership in Canada North of the Great Lakes 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 the region in Canada is significantly less than that throughout the country (0.5 percent in the region versus 4.8 percent in the country) (Table 6.8-8). Provincial ownership in the region accounts for a greater percentage of land area than for Canada as a whole.

Aboriginal land is characterized using NRC data of Indian reserves, land claim settlement lands, and related aboriginal designations. Table 6.8-9 indicates that the share of aboriginal land north of the border from the Great Lakes Region (2.7 percent) is less than the share countrywide (7.4 percent).

Table 6.8-8. Land Ownership in Canada North of the Great Lakes Region*

Border Province		Federal Land		Provincial Land	
		Total Land Area	Share (%)	Total Land Area	Share (%)
Ontario	Study area	8	0.5	126	7.8
	Province	635	0.2	23,714	8.9
Total Canada		**98,844**	**4.8**	**125,779**	**6.1**

* Areas north of the Great Lakes Region in Canada include the portions of the Province of Ontario extending 2 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 6.8-9. Aboriginal Land in Canada North of the Great Lakes Region*

Border Province		Aboriginal Lands (thousands of acres)	Share (%)
Ontario	Study area	43.7	2.7
	Province	1,996.3	0.8
Total Canada		**152,964.7**	**7.4**

* Areas north of the Great Lakes Region in Canada include the portions of the Province of Ontario extending 2 miles north of the U.S.-Canada border.

Source: (NRC, 2010).

6.8.2.5 Land Use Management

In the Great Lakes Region, access to remote roads on Federal lands remains 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 that ensure habitat protection for public trust species.

6.8.2.6 Consistency with Enforceable Policies of the Coastal Zone Management Act

In the Great Lakes Region, CBP's activities affect coastal zones and will have to comply with the appropriate state "enforceable policies" outlined below. Most CBP activities in the state coastal zones are anticipated to be in the negligible to moderate range, and are expected to comply with the Federal consistency requirements and procedures established by the individual states, which are identified below for the each of the states in this region.

Michigan

Michigan's Northern Border coastal zone generally extends a minimum of 1,000 feet from the ordinary high-water mark, but also extends further inland in some locations to encompass coastal lakes, river mouths, bays, floodplains, wetlands, dunes, urban areas, public parks, recreation areas, and natural areas (MDNR, 2010). The Administration Section in the Land and Water Management Division (LWMD) of the Michigan Department of Natural Resources (MDNR) administers the Michigan Coastal Management Program (MCMP). This program's enforceable policies are based on the regulatory statutes of the Natural Resources and Environmental Protection Act, which includes the following authorities (Antieau, 2010):

- Michigan Environmental Protection Act;
- Water resources protection;
- Soil erosion control and sedimentation control;
- Inland lakes and streams;
- Wetland protection;
- Natural rivers;
- Shorelands protection and management;
- Great Lakes submerged lands;
- Control of certain state lands;
- Wilderness and natural areas;
- Sand dune protection and management;
- Farmland and open space preservation;
- Endangered Species Act; and
- Aboriginal records and antiquities.

The Great Lakes Shorelands Unit in the LWMD reviews Federal agency activities for consistency with Michigan's program. Upon issuance of all necessary permits, projects are considered consistent with MCMP. In certain circumstances, a consistency determination may be made while a permit is pending. However, consistency determinations do not waive the need for permits required under other Federal, state, or local statutes (Antieau, 2010).

New York

New York's Northern Border coastal zone varies from region to region but has the following general conditions: the inland boundary is approximately 1,000 feet from the shoreline of the mainland; urbanized and developed coastal locations have a landward boundary that runs approximately 500 feet from the mainland's shoreline, or less than 500 feet if a roadway or railroad runs parallel to the shoreline at a distance of under 500 feet and defines the boundary; and the boundary extends inland to include major state-owned lands and facilities or electric power-generating facilities that abut the shoreline, (USDOC, 2010a). The New York Coastal Management Program (CMP) has 44 enforceable policies with which both Federal and state agencies must comply, to the maximum extent practicable. These policies are divided into the following categories (NYSDOS, 2002):

- Development policies (Policies 1–6);
- Fish and wildlife policies (Policies 7–10);
- Flooding and erosion hazards policies (Policies 11–17);
- General policy (Policy 18);
- Public access policies (Policies 19–20);
- Recreation policies (Policies 21–22);
- Historic and scenic resources policies (Policies 23–25);
- Agricultural lands policy (Policy 26);
- Energy and ice management policies (Policies 27–29);
- Water and air resources policies (Policies 30–43); and
- Wetlands policy (Policy 44).

The procedures for demonstrating consistency with the enforceable policies of the New York CMP are on the New York Coastal Resources online website (NYSDOS, 2010).

Ohio

Ohio's Northern Border coastal zone includes portions of nine counties bordering Lake Erie and its tributaries, and varies depending on the biophysical characteristics of various coastal regions. In the western part of the coast, the boundary extends inland up to 15 miles along low-lying wetlands and floodplains. Most of the eastern part of the state is characterized by areas with high bluffs; consequently, the boundary extends inland for only about an eighth of a mile with the exception of the Mentor Marsh area (USDOC, 2010a). The Ohio Department of Natural Resources coastal management's responsibilities under the Coastal Management Program (CMP) come from Ohio Revised Code, Chapter 1506 and additional state statutory authorities that contain the state's enforceable authorities regarding Federal consistency (USDOC, 2007). The enforceable authorities are organized into nine areas:

- Coastal erosion and flooding;
- Water quality;

- Wetlands and other ecologically sensitive resources;
- Ports and shoreline development;
- Recreational and cultural resources;
- Fish and wildlife management;
- Environmental quality;
- Energy and mineral resources; and
- Water quantity.

Chapter 7 of the "United States Department of Commerce Combined Coastal Management Program and Final EIS for the State of Ohio" (USDOC, 2007) contains the procedures for demonstrating consistency with the enforceable authorities of the Ohio CMP.

Pennsylvania

Pennsylvania's Northern Border coastal zone runs along 63 miles of Lake Erie shoreline and varies from 900 feet in urban areas to over 3 miles in more rural areas. It encompasses the floodplains of Lake Erie and tributary streams, bluff hazards, recession areas, and coastal wetlands. The coastal zone also extends to the middle of the lake, to the boundary with Canada, and inland 900 feet within the City of Erie. The lake also contains Presque Isle State Park and is one of the state ports for international shipping (USDOC, 2010a).

Program enforceable policies are divided into the following areas, administered by the Department of Environmental Resources, Coastal Zone Management Office (PADEP, 2010):

- Coastal hazard areas;
- Dredging and spoil disposal;
- Fisheries management;
- Wetlands;
- Public access for recreation;
- Historic sites and structures;
- Port activities;
- Energy facilities siting;
- Intergovernmental coordination (includes air and water resource protection);
- Public involvement; and
- Ocean resources (management of non-native, invasive aquatic or terrestrial plant and animal species).

The "Commonwealth of Pennsylvania Coastal Resources Management Program 394-0300-001 Technical Guidance Document" (PADEP, 2008) contains the procedures for demonstrating consistency with the enforceable policies of the Pennsylvania coastal zone management program.

Wisconsin

The 15 counties that front Lake Superior, Lake Michigan, or Green Bay make up Wisconsin's Northern Border coastal zone (USDOC, 2010a). The Wisconsin Coastal Management Program (CMP) is implemented by the Wisconsin Department of Administration. Specific state coastal policies are organized into seven areas (WDA, 2007):

- Coastal water quality and quantity and coastal air quality;
- Coastal natural areas, wildlife habitat, and fisheries;
- Coastal erosion and flood hazard areas;
- Community development;
- Economic development;
- Governmental interrelationships; and
- Public involvement.

The "Wisconsin Coastal Management Program, A Strategic Vision for the Great Lakes" contains the procedures for demonstrating consistency with the enforceable policies of the Wisconsin CMP (WDA, 2007).

6.9 AESTHETIC AND VISUAL RESOURCES

6.9.1 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 U.S. Customs and Border Protection (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 U.S. Bureau of Land Management 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).

6.9.2 AFFECTED ENVIRONMENT

6.9.2.1 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

Natural landscapes are those in which natural landforms and vegetation predominate, and signs of human activity are not apparent (USDOT, 1999). Coastlines, water bodies, mountains, and areas of varied relief are the most striking and tend to be the most conspicuous. Some natural landscapes are designated specifically for outdoor recreation. The Bureau of Land Management (BLM), U.S. Forest Service (USFS), U.S. Fish and Wildlife (USFWS), National Park Service (NPS), and state and local parks own most of these recreational lands. This area is typified by the Great Lakes. Wetlands are well represented in Michigan and New York, but some of the region's states have considerable forests, such as Wisconsin. Even where significant topographic relief occurs, 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. Tower facilities would be least compatible within a natural landscape; however, in forested areas that offer a diverse skyline or visual screening, the visibility of towers would tend to be lower.

Pictured Rocks National Lakeshore, Michigan

Source: (USDOI, 2011b).

Rural Landscapes

Rural landscapes include features such as croplands, orchards, fields, fences, and farm-related structures (USDOT, 1999). While border POEs and USBP stations 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 and are not typically found at higher elevations or in areas with complex topography. 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 agriculture areas. The states with the highest proportion of developed land along the border are Ohio (17.3 percent) and Michigan (11.9 percent) and these areas represent the visual setting for the largest portion of the

population. Here, as well as along other parts of the border, the POEs and USBP stations are more often found 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 6.9.2.3).

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. Relatively few industrial landscapes exist along the Northern Border in the Great Lakes Region. Such landscapes can absorb the greatest degree of visual change, due to existing dominant visual features and their generally low visual 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: (USDOI, 2008).

6.9.2.2 Areas with High Visual Sensitivity

Recreational users of public lands have expressed concern about visual impacts stemming from CBP's activities (USDHS, 2010a). Unlike the western states, the Great Lakes Region does not have as large a proportion of public lands that are sensitive to visual impacts. These public lands are also mostly along the Great Lakes; thus, tall structures have less competing interested with the skyline facing the lakes.

Lake Superior in the Winter

Source: (USDOI, 2010b).

6.9.2.3 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 USBP stations along the American-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's infrastructure and activity, except at locations where CBP's 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. The Great Lakes Region has substantial commuter and urban traffic. Six of the top ten busiest POE's are in this region, including the busiest, Buffalo/Niagara (see Traffic and Roadways, section 6.16.2).

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 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 (including recreational and conservation lands) in the Great Lakes Region, recreational users do not represent a large viewer group compared to the western states or the New England Region. 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.

6.10 SOCIOECONOMIC RESOURCES

6.10.1 INTRODUCTION

This section provides a socioeconomic profile of the Great Lakes Region and discusses potential impacts of the U.S. Custom and Border Protection's (CBP) 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 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's activities on Canadian socioeconomic resources are considered in addition to U.S. resources. The impacts of CBP's actions on communities and regional economies in Canada are most likely closest to the border. But since it is not possible to delineate precisely how far from the border impacts may extend, information is provided on the area 100 miles north of the border, mirroring the study area in the United States. This definition of the study area does not necessarily imply that impacts are equivalent in both 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 such things as population movement, density and age distribution, as well as economic considerations; including income levels, opportunities for employment, and overall economic trends. Section 6.10.2 of this chapter first provides an overview of the socioeconomic resources across the Great Lakes Region and north of the Great Lakes 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. This 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 nine port-of-entry (POE) and Border Patrol station (USBP station) sites. These sites include those POEs that are most active in terms of the annual number of crossings and the value of cargo transported.

6.10.2 AFFECTED ENVIRONMENT

6.10.2.1 Regional Demographics

To provide context for the potential impacts of CBP actions, some basic, descriptive, socioeconomic information is provided for the Great Lakes 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 American 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.

6.10.2.2 Population and Growth Trends

In the United States, approximately 19.3 million people live in the Great Lakes Region (Table 6.10-1). The segment of the population living in border communities accounts for 32.5 percent of those living in the Great Lakes Region states of Michigan, New York, Ohio, Pennsylvania, and Wisconsin. Michigan has the largest population in the region with approximately 7.0 million people. The border communities in Pennsylvania and Wisconsin are far less populated.

Between 2000 and 2009, while the population of the United States grew approximately 8.7 percent, border communities in all Great Lakes Region states experienced stagnant population growth or population declines ranging from 0.0 percent to -1.9 percent (Figure 6.10-1).

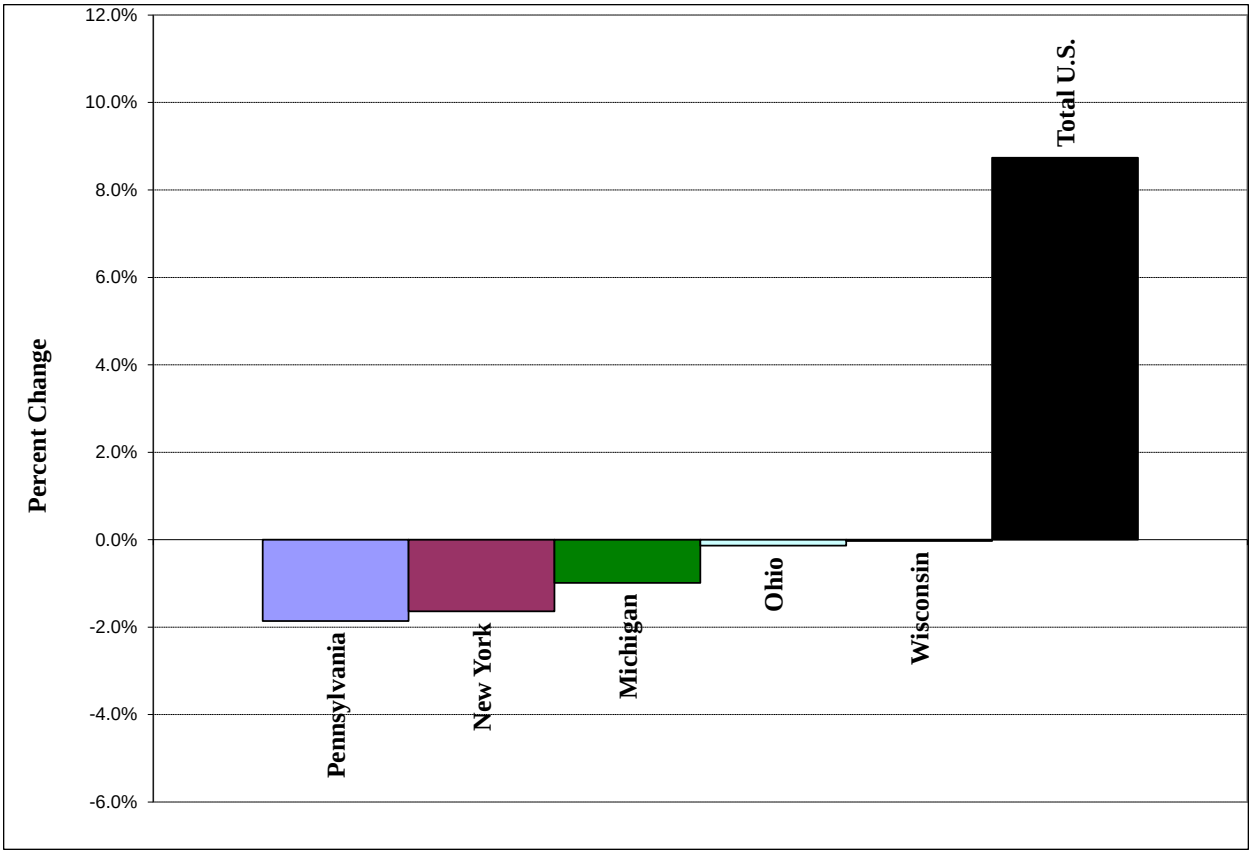
Table 6.10-1. Population of the Great Lakes Region*

Border State	Population within the Border Area**	Population Overall	Percent of Population within the Border Area
Michigan	7,015,171	9,969,727	70.4
New York	4,804,964	19,541,453	24.6
Ohio	6,259,768	11,542,645	54.2
Pennsylvania	1,110,381	12,604,767	8.8
Wisconsin	75,244	5,654,774	1.3
Great Lakes Region Total	19,265,528	59,313,366	32.5
Total United States	**28,412,077**	**310,973,729**	9.1

* 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 states within the Great Lakes Region. Total U.S. accounts only for the border area of all four regions.

Figure 6.10-1. Percent Change in Great Lakes Region Population, 2000–2009



Source: (USDOC, 2009a).

POEs and USBP stations on the U.S.-Canada border tend to be in rural, less densely populated areas outside of major metropolitan areas, while the majority of the population in the region 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 U.S. Census Bureau to report demographic statistics. Overall, for the Great Lakes Region, approximately 78.9 percent of the population lives in population centers (Table 6.10-2). The Great Lakes Region in Michigan includes the Detroit-Warren-Livonia MSA, which accounts for the majority of the population in the Great Lakes Region.

1 **Table 6.10-2. Population Centers in the Great Lakes Region***

Border State	Population Center	State's Great Lakes Population Living in Population Centers**	Total State Population in the Great Lakes Region	Percent of State's Great Lakes Population Living in Population Centers
Michigan	Ann Arbor	347,563	7,015,171	5.0
	Bay City	107,434	7,015,171	1.5
	Detroit-Warren-Livonia	4,403,437	7,015,171	62.8
	Flint	424,043	7,015,171	6.0
	Jackson	159,828	7,015,171	2.3
	Lansing-East Lansing	347,526	7,015,171	5.0
	Monroe	152,721	7,015,171	2.2
	Saginaw-Saginaw Township North	200,050	7,015,171	2.9
	Michigan State Total	6,142,602	7,015,171	87.6
New York	Buffalo-Niagara Falls	1,123,804	4,804,964	23.4
	Glens Falls	128,774	4,804,964	2.7
	Ithaca	101,779	4,804,964	2.1
	Rochester	1,035,566	4,804,964	21.6
	Syracuse	646,084	4,804,964	13.4
	Utica-Rome	293,280	4,804,964	6.1
	New York State Total	3,329,287	4,804,964	69.3
Ohio	Akron	699,935	6,259,768	11.2
	Canton-Massillon	408,005	6,259,768	6.5
	Cleveland-Elyria-Mentor	2,091,286	6,259,768	33.4
	Columbus	410,741	6,259,768	6.6
	Lima	104,357	6,259,768	1.7
	Mansfield	124,490	6,259,768	2.0
	Sandusky	76,963	6,259,768	1.2
	Toledo	672,220	6,259,768	10.7
	Youngstown-Warren-Boardman***	446,892	6,259,768	7.1
	Ohio State Total	5,034,889	6,259,768	80.4
Pennsylvania	Erie	280,291	1,110,381	25.2
	Pittsburgh	252,545	1,110,381	22.7
	Youngstown-Warren-Boardman***	116,071	1,110,381	10.5

Border State	Population Center	State's Great Lakes Population Living in Population Centers**	Total State Population in the Great Lakes Region	Percent of State's Great Lakes Population Living in Population Centers
	Pennsylvania State Total	648,907	1,110,381	58.4
Wisconsin	Duluth***	44,274	75,244	58.8
Great Lakes Region total		15,199,959	19,265,528	78.9
Total United States**		**261,110,826**	**310,973,729**	**84.0**

* 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 Great Lakes Region within each state.

*** The Great Lakes Region in Wisconsin includes only one population center. Thus, no state total column is presented.

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

In Canada, approximately 11.5 million people reside in the study area north of the Great Lakes Region (Table 6.10-3). Most major cities are located in the southern part of the country; therefore, Canada's population is more heavily concentrated along the border than the U.S. population. For example, in Ontario, approximately 95.6 percent of the population lives in border communities. Ontario has the largest population living in border communities in Canada. As some census divisions that overlap the 100-mile buffer area are large and extend well beyond 100 miles from the border, this analysis may overstate the Canadian population living in the study area north of the Great Lakes 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. However, during the economic recession in 2009 and 2010, the net flow of non-permanent residents decreased with more immigrants leaving the country, resulting in overall lower net international migration in 2010 than in the previous year. Population growth in Ontario (13.8 percent) outpaced growth for Canada as a whole (Figure 6.10-2).

Approximately 84.7 percent of the Canadian population in the study area north of the Great Lakes Region resides within population centers (Table 6.10-4).

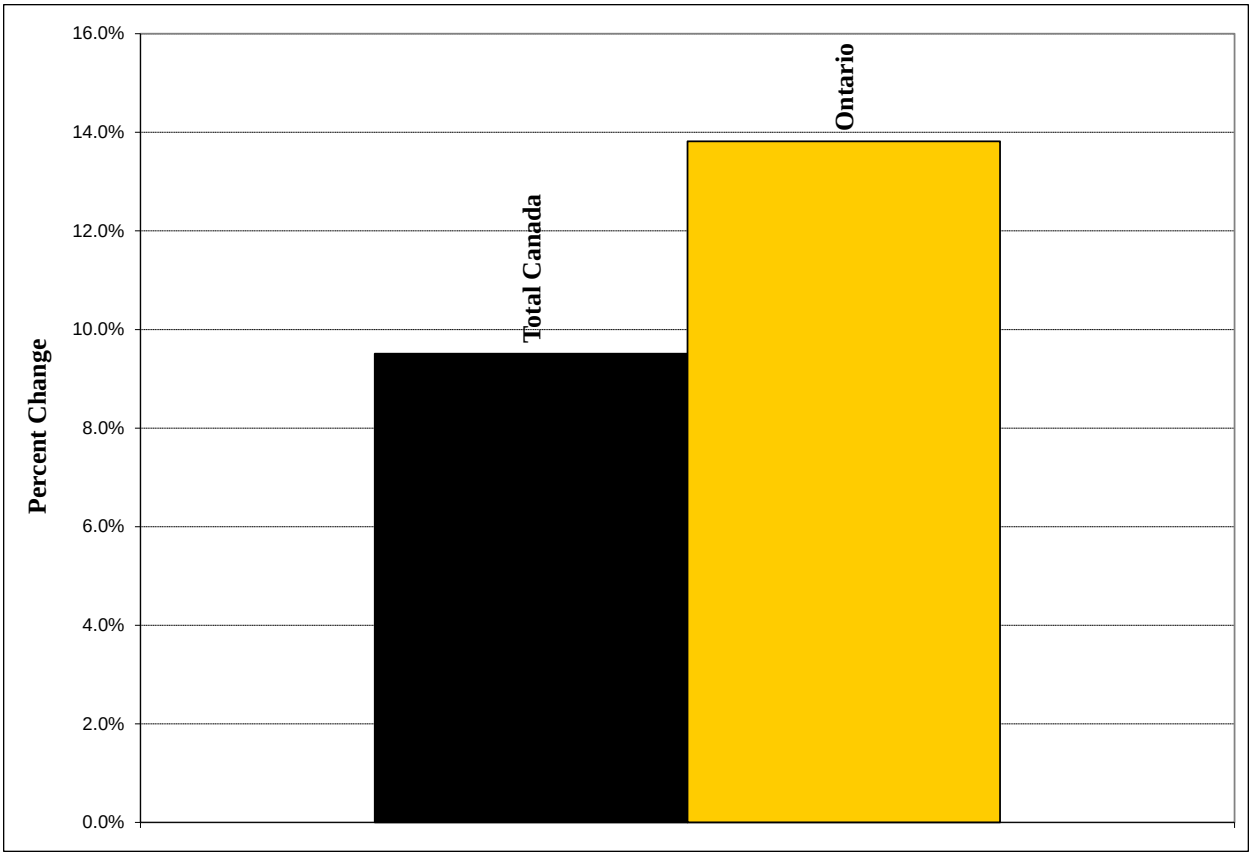
Table 6.10-3. Population North of the Great Lakes Region in Canada

Border Province	Study Area Population North of the Great Lakes Region*	Total Population in the Province	Percent of Total Province Population Residing in the Study Area North of the Great Lakes Region
Ontario	11,499,610	12,028,895	95.6
Total Canada	**25,562,910**	**31,241,030**	**81.8**

* 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 6.10-2. Percent Change in Canadian Population North of the Great Lakes Region, 1996–2006



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

Table 6.10-4. Population in Central Metropolitan Areas in Study Area North of the Great Lakes Region in Canada

Border Province	Population Center	Study Area Population Living in Population Centers North of the Great Lakes Region*	Total Study Area Population North of the Great Lakes Region*	Percent of Total Study Area Population North of the Great Lakes Region Living in Population Centers
Ontario	Barries	175,335	11,499,610	1.5
	Brantford	122,825	11,499,610	1.1
	Greater Sudbury	156,395	11,499,610	1.4
	Guelph	126,080	11,499,610	1.1
	Hamilton	683,450	11,499,610	5.9
	Kingston	148,475	11,499,610	1.3
	Kitchener-Cambridge-Waterloo	446,495	11,499,610	3.9
	London	452,580	11,499,610	3.9
	Oshawa	328,070	11,499,610	2.9
	Ottawa-Gatineau **	812,135	11,499,610	7.1
	Peterborough	385,035	11,499,610	3.3
	St. Catharines-Niagara	385,035	11,499,610	3.3
	Thunder Bay	121,050	11,499,610	1.1
	Toronto	5,072,075	11,499,610	44.1
	Windsor	320,730	11,499,610	2.8
	Ontario Province Total	9,735,765	11,499,610	84.7
Total Canada* **		**21,508,575**	**31,241,030**	**68.8**

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

** The population of Ottawa-Gatineau is split between the Provinces of Ontario and Quebec.

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

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

6.10.2.3 Income, Poverty, and Unemployment

The median household income of border communities within the Great Lakes Region ($53,486) is slightly higher than the national average ($53,051). The border communities in Michigan have one of the highest median incomes of all border communities across the U.S.-Canada border (Table 6.10-5). Border communities in New York, Pennsylvania, and Wisconsin are less wealthy than the state average (New York City, Philadelphia, Pittsburgh, and Milwaukee 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. The poverty rates for the Great Lakes Region states are all lower than the 12.4 percent for the United States as a whole (Table 6.10-5). In Wisconsin, the poverty rate for border communities is notably higher than the state average. In New York, however, the poverty rate for border communities is notably lower than the state average.

The unemployment rate in the Great Lakes Region states ranged from 8.2 percent to 14.3 percent (Table 6.10-6). Border communities in Michigan and Ohio have the highest unemployment rates of all border communities across the U.S.-Canada border.

Table 6.10-5. Income and Poverty Statistics for the Great Lakes Region

Border State and Great Lakes Region*		Median Household Income** ($)	Population Below the Poverty Line***	Percent of Population Below the Poverty Line
Michigan	Great Lakes Region	59,190	746,010	10.8
	Statewide	56,428	1,021,605	10.5
New York	Great Lakes Region	48,877	564,351	12.1
	Statewide	54,819	2,692,202	14.6
Ohio	Great Lakes Region	52,318	622,484	10.2
	Statewide	51,740	1,170,698	10.6
Pennsylvania	Great Lakes Region	44,878	125,742	11.5
	Statewide	50,666	1,304,117	11.0
Wisconsin	Great Lakes Region	43,018	8,386	11.5
	Statewide	55,322	451,538	8.7
Great Lakes Region total	Great Lakes Region	53,486	2,066,973	11.0
	Selected states	53,658	6,640,160	11.8
Total United States		**53,051**	**33,899,812**	**12.4**

* Statistics in the non-shaded rows account only for portions of the states within the Great Lakes 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 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 threshold, every individual in the family is included in the poverty count.

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

Table 6.10-6. Unemployment Rates for the Great Lakes Region

Border State and Great Lakes Region*		Unemployment Rate (%)
Michigan	Great Lakes Region	14.3
	Statewide	13.6
New York	Great Lakes Region	8.2
	Statewide	8.4
Ohio	Great Lakes Region	10.6
	Statewide	10.2
Pennsylvania	Great Lakes Region	9.2
	Statewide	8.1
Wisconsin	Great Lakes Region	8.7
	Statewide	8.5
Great Lakes Region Total	Great Lakes Region	11.2
	Selected states	9.6
Total United States		**9.3**

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

Source: (USDOL, 2009a).

The median household income north of the Great Lakes Region in Ontario is approximately $57,400 (in 2009 U.S. dollars) compared with $49,400 for Canada as a whole (Table 6.10-7). Ontario has the second 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 6.10-7 for an explanation of "economic family.") This threshold-based designation is comparable to the poverty statistics reported in the U.S. Census. In the study area north of the Great Lakes Region, the poverty rate is approximately 11.8 percent compared with 11.6 percent for Canada as a whole (Table 6.10-7).

The unemployment rate in Ontario was 6.4 percent in 2006 compared with 6.6 percent for Canada as a whole (Table 6.10-8). Within Ontario, the unemployment rate in border communities is the same as the unemployment rate of the entire province.

Table 6.10-7. Income and Poverty Statistics North of the Great Lakes Region in Canada

Border Province and Study Area North of the Great Lakes Region*		Median Household Income** ($US)	Number of Low-Income Economic Families***	Percent of Low-Income Economic Families***
Ontario	Study area north of Great Lakes Region	57,404	374,913	11.8
	Province	55,674	390,224	11.7
Total Canada		**49,393**	**1,006,911**	**11.6**

* 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 reported in the U.S. Census. The term, "economic family," refers to 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.

Source: (StatCan, 2006d).

Table 6.10-8. Unemployment Rates North of the Great Lakes Region in Canada

Border Province and Study Area North of the Great Lakes Region*		Unemployment Rate (%)
Ontario	Study area north of Great Lakes Region	6.4
	Province	6.4
Total Canada		**6.6**

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

Source: (StatCan, 2006c).

6.10.2.4 Property Values

In the Great Lakes Region, the median property value between 2006 and 2008 was approximately $136,400. This figure is lower than the median property value for the United States as a whole ($192,400) during the same time period (Table 6.10-9). Except for Michigan, the median property value within the border region is lower than that of each state as a whole. This differential is most pronounced in New York where statewide property values are skewed by New York City. Moreover, border communities in New York and Pennsylvania have the lowest median property values of all border communities across the U.S.-Canada border.

Table 6.10-9. Median Property Value for the Great Lakes Region

Border State and the Great Lakes Region*		Median Home Value** ($)
Michigan	Great Lakes Region	161,300
	Statewide	152,600
New York	Great Lakes Region	108,200
	Statewide	311,700
Ohio	Great Lakes Region	136,700
	Statewide	137,800
Pennsylvania	Great Lakes Region	103,400
	Statewide	155,400
Wisconsin	Great Lakes Region	125,400
	Statewide	168,500
Great Lakes Region total	Great Lakes Region	136,400
	Selected states	203,900
Total United States		**192,400**

* Statistics in the non-shaded rows account only for those portions of the states within the Great Lakes 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.

Source: (USDOC, 2008a).

Ontario has the second highest median property value in Canada. The median property value in the study area in 2006 was approximately $273,800 (in 2009 U.S. dollars) compared with $232,200 for Canada as a whole (Table 6.10-10). Border communities in Ontario have the third highest median property values among all border communities north of the U.S.-Canada border.

Table 6.10-10. Median Property Value North of the Great Lakes Region in Canada

Border Province and Study Area North of the Great Lakes Region*		Average Value of Dwelling** ($US)
Ontario	Study area north of Great Lakes Region	273,800
	Province	262,300
Total Canada		**232,200**

* 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).

6.10.2.5 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, 2008d). In this context, "Canadian visitors" refers to Canadian residents visiting the United States. The Great Lakes Region includes significant tourist destinations. New York is the most popular tourist destination, accounting for more than 16 percent of Canadian visitors and more than 23 percent of Canadian visitors arriving by surface transportation. Michigan is the fourth most visited American state by Canadians, behind New York, Florida, and Washington State.

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 border by surface transportation every day (USDOT, 2009a). Appendix Q of this analysis describes regional income and employment by economic sector along the entire Northern Border.

Crossing the border using surface 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, 2008e). While approximately 41 percent of Canadian visitors entering the United States by surface transportation visited the Great Lakes Region, spending in the region accounted for a relatively low percentage (16 percent) of these visitors' total spending in the United States. Canadian visitors entering by surface transportation contributed approximately $1.3 billion to the Great Lakes Region in 2008 (Table 6.10-11). The average visitor spent approximately $1,318

per visit. The most common stated purposes for visiting states in the Great Lakes Region were vacation (66 percent), visiting friends or relatives (24 percent), and business or employment (10 percent). The Great Lakes Region had the 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 6.10-11. Canadian Visitors Entering the Great Lakes 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 (%)
Michigan	1,375	2.5	293.8	214	85	8.5	29.5	62.0
New York	2,606	2.8	774.9	298	106	7.8	20.6	71.6
Ohio	516	2.6	118.4	230	89	19.2	24.1	56.5
Pennsylvania	686	2.5	131.1	191	77	12.3	25.7	62.0
Wisconsin	—**	—**	—**	—**	—**	—**	—**	—**
Border States in the Great Lakes Region	**5,183**	**2.7**	**1,318**	**254**	**96**	**9.7**	**24.0**	**66.3**

* Surface modes of transportation include autos, buses, and other non-air types 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, 2008a; USDOC, 2008b; USDOC, 2008c).

6.10.2.6 Economic Profiles of POEs and USBP Stations in the Great Lakes Region

This section provides regional economic profiles for border communities in the United States and Canada that surround selected POEs in the EOR Region. The purpose of this section is to characterize 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 USBP stations 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 USBP stations in the four Northern Border regions. This section profiles nine sites in the Great Lakes Region that represent 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 include USBP-only stations in states that do not have a land border with Canada (Ohio and Pennsylvania). Table 6.10-12 lists the sites ranked by crossing volume and provides information on associated crossing activity.

Table 6.10-12. Port of Entry and Border Patrol Station Sites Profiled in the Great Lakes 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
NY: Buffalo-Niagara Falls	13,820,263 (22.4%)	6,168,583 (19.4%)	1	$56,516,262,041 (16.7%)	2	• Vehicles and parts (22.8%) • Nuclear reactors, boilers, machinery and mechanical appliances (11%)	• Largest by number of crossings
MI: Detroit	8,789,270 (14.3%)	5,311,848 (16.7%)	2	$84,658,638,465 (25.1%)	1	• Vehicles and parts (34.7%) • Nuclear reactors, boilers, machinery and mechanical appliances (15.9%)	• Largest by value of trade • Roughly colocated with Detroit USBP station
MI: Port Huron	4,020,350 (6.5%)	2,201,531 (6.9%)	4	$52,558,024,751 (15.6%)	3	• Vehicles and parts (20.2%) • Nuclear reactors, boilers, machinery and mechanical appliances (12.1%)	

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
NY: Champlain-Rouses Pt.	2,814,228 (4.6%)	1,344,983 (4.2%)	5	$19,157,262,299 (5.7%)	4	• Nuclear reactors, boilers, machinery and mechanical appliances (10.1%) • Natural or cultured pearls, precious or semiprecious stones, precious metals (8.6%)	
NY: Alexandria Bay/Cape Vincent	1,753,626 (2.8%)	826,464 (2.6%)	6	$9,846,132,115 (2.9%)	8	• Paper and paperboard (10.5%) • Aluminum and articles thereof (9.9%)	•
NY: Massena	1,610,163 (2.6%)	837,361 (2.6%)	7	$428,879,812 (0.1%)	24	• Copper and articles thereof (34.2%) • Mineral fuels, mineral oils, bituminous substances (17.5%)	•
MI: Sault Ste. Marie	1,515,683 (2.5%)	836,655 (2.6%)	9	$1,901,340,785 (0.6%)	16	• Iron and steel (20.6%) • Paper and paperboard (13.7%)	• Roughly colocated with Sault Ste. Marie USBP station

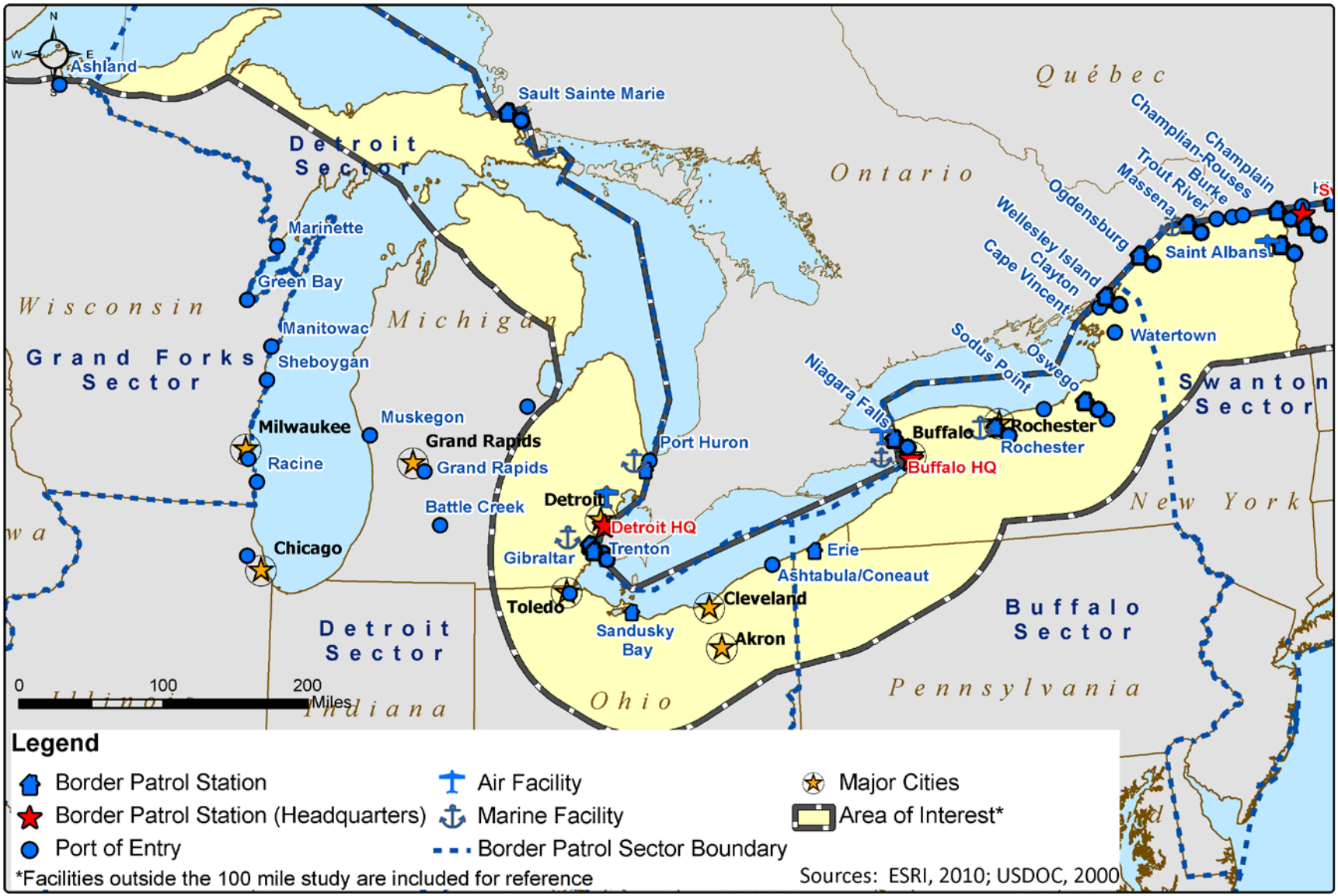
Port	Annual Individual Crossings (% of Total	Annual Vehicle Crossings (% of Total)	National Rank by Crossing Volume	Annual Trade Value (Surface Mode)	Rank by Trade Value	Two Largest Commodities (% of Port's Trade Value)	Important Features
PA: Erie**						•	• Only station in PA • USBP station only
OH: Sandusky**						•	• Only station in OH • USBP station only

* Size based on number of individual border crossings.

** BTS does not provide data on commodities and crossings at USBP stations.

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

Figure 6.10-3. Locations of Points of Entry and Border Patrol Stations in Great Lakes Region



The remainder of this section characterizes the regional economies of the U.S. counties and Canadian provinces containing the Great Lakes Region sites identified in Table 6.10-12 and Figure 6.10-3.

Chippewa County, Michigan

Chippewa County, Michigan, located in the Upper Peninsula of the state, contains the Sault Ste. Marie POE and USBP station. The county is a popular destination for outdoor recreational activities on the nearby Great Lakes and state and national parks. Trade, travel, and tourism are a major part of the regional economy. Accommodation and food services and retail trade together account for nearly half of all employment in Chippewa County. The major economic sectors in Chippewa County in terms of annual payroll are health care and social assistance ($54.6 million), accommodation and food services ($46.3 million), retail trade ($36.8 million), and manufacturing ($20.6 million).

- Sault Ste. Marie POE and USBP station: The International Bridge at Sault Ste. Marie is the only vehicular crossing between Ontario and Michigan for 300 miles (MDOT, 2010b). The bridge connects the twin cities of Sault Ste. Marie, Ontario and Sault Ste. Marie, Michigan. The communities served by the bridge have populations of 16,000 (Michigan) and 80,000 (Ontario). The bridge is also the site of the Soo Locks, which permit travel by water between Lake Superior and the lower Great Lakes. No pedestrian crossings exist at the site. A summer traffic survey found that nearly all International Bridge traffic carried Michigan or Ontario license plates. Ontario plates made up 75 percent of surveyed traffic on weekdays and 60 percent on weekends, likely due to the larger population on the Ontario side of the border. The percentage of low-frequency travel (once-per-year or once-only traveler) was higher than at other Michigan POEs, suggesting that this remote location is a throughway for infrequent, long-distance trips (OMOT, 2001).

A Note on Data Sources

All statistics presented for private, nonfarm employment, unless otherwise noted, are from U.S. Census 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.

- Sault Ste. Marie is the ninth largest POE in terms of individual border crossings, accounting for 1.5 million crossings in 2009 (2.5 percent of all U.S.-Canada crossings), but is smaller than the Detroit POE, which is also in Michigan. The value of commerce at the Sault Ste. Marie POE was $1.9 billion in 2009. The major commodities at Sault Ste. Marie are iron and steel (20.6 percent), paper and paperboard (13.7 percent), and machinery and mechanical appliances (12.9 percent). The Sault Ste. Marie POE is one of the largest commercial crossings that accounts for more than 20 percent of all U.S.-Canada trade in metals and ores.

Detroit-Warren-Livonia MSA, Michigan

The Port Huron and Detroit POEs in Michigan are located in the Detroit-Warren-Livonia MSA, which includes Lapeer, Livingston, Macomb, Oakland, St. Clair, and Wayne Counties. The POEs are located along major interstates in a large metropolitan area. Accordingly, Detroit and Port Huron are the most active crossing points for commercial trucks along with Buffalo-Niagara Falls. The Detroit-Warren-Livonia MSA is a major manufacturing region and is home to the Big Three automobile manufacturers. In terms of annual payroll, the largest economic sectors for the region are manufacturing ($12.1 billion), professional, scientific, and technical services ($11.9 billion), health care and social assistance ($10.7 billion), management of companies and enterprises ($7.5 billion), and wholesale trade ($5.3 billion). Across the border, Ontario is the largest automobile manufacturing region in North America.

- Detroit POE and USBP Station: The POE at Detroit consists of two crossing points: the Ambassador Bridge and the Detroit-Windsor Tunnel, both of which cross the Detroit River. The Ambassador Bridge is west of both downtown Detroit and downtown Windsor, Ontario. The Detroit-Windsor tunnel connects downtown Detroit to downtown Windsor. No pedestrian crossings occur at this POE, which is dominated by POVs and trucks. Peak traffic time on weekdays for this POE is 7 a.m. to 8 a.m. for U.S.-bound traffic, and 5 p.m. to 6 p.m. for Canada-bound traffic (OMOT, 2001). This pattern suggests that there is a large commuter population into the United States from Canada, a conclusion supported by survey data indicating that work trips are the most common reason for U.S.-bound travel on weekdays (21 to 25 percent of all weekday travel). In addition, more than 55 percent of travelers report that they make the trip daily or once a week. Weekend traffic tends to be heavy in both directions in the afternoon and early evenings, suggesting that shopping, recreation, and entertainment trips are popular at these times. The predominant reasons for weekend travel into Canada include visiting a casino (24.7 to 31.8 percent) and recreation/entertainment trips (20.3 to 21.4 percent), while travel into the United States is primarily to return home (over 60 percent). More than 60 percent of both weekday and weekend travel originates and terminates within a seven-county region of Michigan and the county of Essex in Canada.

  In 2009, Detroit was the largest POE in terms of trade value between the United States and Canada, accounting for $84.7 billion in commerce (approximately 25.1 percent of all U.S.-Canada trade), and the second largest POE in terms of individual crossings, representing 8.8 million crossings (approximately 14.3 percent of all U.S.-Canada crossings). Most significant, Detroit is the single largest POE for shipments of vehicles and parts crossing the U.S.-Canada border, accounting for $29.4 billion in 2009 (nearly half of all U.S.-Canada trade). The other major traded commodities at Detroit are machinery and mechanical appliances (15.9 percent), electrical machinery and equipment (8.1 percent), plastics (4.0 percent), and iron and steel (2.4 percent).

- Port Huron POE: The Port Huron POE is on the Blue Water Bridge—consisting of two bridges—which connects Point Edward, Ontario and Port Huron, Michigan across the St. Clair River at the southern end of Lake Huron. The bridge connects Highway 402 in Ontario to Interstates 94 and 69 in Michigan. This crossing provides the most direct route from Toronto to Michigan and represents one of the four shortest land routes between the American Midwest and northeastern United States (MDOT, 2010a).

Toronto's proximity to Port Huron allows U.S. travelers to make multiple overnight trips easily in a year. Survey data indicate that about 10 percent of travelers make daily trips across this border. However, few travelers report work as the purpose of their travel—less than 10 percent of Canada-bound travelers and 13 percent of U.S.-bound travelers on weekdays. Conversely, nearly 25 percent of travelers report that they make infrequent trips across the border (one time only or once per year). The most commonly reported purposes of Canada-bound trips are visiting casinos and shopping, while shopping is the most commonly reported purpose of U.S.-bound travel. Over 90 percent of surveyed vehicle plates come from Michigan and Ontario on both weekends and weekdays (OMOT, 2001).

Port Huron was the third largest POE in terms of trade value between the United States and Canada, accounting for $52.6 billion in commerce (approximately 15.6 percent of all U.S.-Canada trade), and the fourth largest in terms of individual crossings, representing 4.0 million crossings (approximately 6.5 percent of all U.S.-Canada crossings) in 2009. The major commodities transported through Port Huron are vehicles and parts (20.2 percent), machinery and mechanical appliances (12.1 percent), plastics (6.6 percent), and electrical machinery and equipment (6.3 percent).

In addition, two U.S. states have no land border with Canada, but lie across the Great Lakes from Ontario. Sandusky and Erie are USBP stations, not POEs, and thus do not include merchandise trade activity.

Erie County, Ohio

The Sandusky USBP Station is located in Erie County, Ohio. Erie County is part of the Sandusky MSA, which has a population of slightly fewer than 80,000. The major economic sector in Erie County is manufacturing, which accounts for nearly one-third of income ($330.7 million in annual payroll) and 20.8 percent of jobs. The other dominant economic sectors by annual payroll are health care and social assistance ($168.3 million), retail trade ($104.6 million), and accommodation and food services ($73.2 million).

- Sandusky USBP Station: The Owen Sound Transportation Company operates a ferry across Lake Erie between Pelee Island, Ontario and Sandusky, Ohio between April and mid-December (OSTC, 2010). The Sandusky Bay Station is currently operating out of a temporary facility in Sandusky, Ohio. A permanent location has not yet been chosen for the new station. However, it is tentatively scheduled to be located in the Ottawa County area and is tentatively planned to be a joint facility—housing Border Patrol, Office of Field Operations, and CBP's Air and Marine offices. Sandusky will patrol the western and central portions of Lake Erie, along with five border counties along Lake Erie. The duties of agents will include marine patrol on Lake Erie, shoreline patrol, transportation checks, and land patrol of the area's routes of egress from the border, such as highways 80 and 90 (USDHS, 2010a).

Erie County, Pennsylvania

The Erie USBP Station is located in Erie County, Pennsylvania directly south of Lake Erie. Erie County is part of the Erie MSA and has a population of 280,000. Erie's economy is heavily based in manufacturing, which accounts for nearly one-third of income ($1.3 billion in annual

payroll) and 21.4 percent of jobs, roughly double the national average for employment in the sector. The General Electric Company is one of the top employers. The other major economic sectors by annual payroll are health care and social assistance ($825.1 million) and retail trade ($330.8 million). The top three sectors account for approximately half the employment in the county.

- Erie USBP Station: The Erie USBP Station began operations during the summer of 2004. Operations consist of boat patrols, marina checks, transportation checks, and rapid response to requests of other agencies. Vessels crossing into the United States are routinely boarded and searched. Local and state law enforcement entities frequently rely on agents to assist with aliens of all nationalities and to serve as liaisons with local antiterrorism task forces. The station patrols 65 miles along the border in Pennsylvania and New York, from 8 to 20 miles offshore in waters up to 200 feet deep (USDHS, 2010a).

Buffalo-Niagara Falls MSA, New York

Due to the location at Niagara Falls, one of the world's natural wonders, numerous hotels, casinos, cultural attractions, and other tourist venues sit on both the Canadian and U.S. sides of the border at Buffalo-Niagara Falls POE. The economy of the Buffalo-Niagara Falls MSA, which includes Erie and Niagara Counties in New York, while supported by tourism, is heavily industrialized, owing to the historical availability of inexpensive electricity from Niagara Falls and its strategic location as a water transportation hub (FRBNY, 2004). The largest economic sectors by annual payroll are health care and social assistance ($3.0 billion), manufacturing ($2.9 billion), finance and insurance ($1.5 billion), retail trade ($1.4 billion), and wholesale trade ($1.3 billion).

- Buffalo-Niagara Falls POE: The POE at Buffalo-Niagara Falls has the highest volume of individual crossings, with 13.8 million or 22.4 percent of all U.S.-Canada border crossings in 2009. The Buffalo-Niagara Falls POE consists of six international bridges over the Niagara River and Niagara Falls: Rainbow, Whirlpool, Lewiston-Queenston, and Peace Bridges along with two railroad bridges (NFBC, 2010). The four bridges from Ontario into Buffalo have a combined 38 lanes for POVs, making it the highest capacity land POE entering the United States. The Rainbow Bridge connects the tourist districts of Niagara Falls, New York with Niagara Falls, Ontario and no commercial trucks are permitted on this bridge. The Whirlpool Bridge connects the commercial zones and downtown districts of Niagara Falls, New York with Niagara Falls, Ontario and is restricted to NEXUS card carriers. The Lewiston-Queenston Bridge connects two heritage communities: the Town and Village of Lewiston, New York, with the Village of Queenston in the Town of Niagara-on-the-Lake, Ontario. The Peace Bridge is] near the center of downtown Buffalo, New York and Fort Erie, Ontario where it crosses the Niagara River. Heavy trucks can cross only at the Queenston-Lewiston Bridge and the Peace Bridge. Overall, border crossings into the United States at the Buffalo-Niagara Falls POE are predominantly POV and bus travel, with approximately half a million people entering as pedestrians in 2004.

  According to a 2000 survey, 70 percent of bridge travelers were American; the majority came from New York (OMOT, 2001). Canadian travelers, primarily originating in

Ontario, made up the bulk of the remainder of bridge crossings. Of the New York residents surveyed, 80 percent characterized the purpose of their trip as tourism. Monthly crossing data show a seasonal surge in July and August each year, which demonstrates that this POE is frequently used by summer vacationers.

Buffalo-Niagara Falls is the second largest POE by trade value, accounting for $56.5 billion (16.7 percent of all U.S.-Canada trade in 2009). It is the highest-value POE for the pharmaceutical industry, accounting for $3.2 billion in shipments of pharmaceutical products (39.4 percent of all U.S.-Canada trade). After Detroit, Buffalo-Niagara Falls is the second-highest value POE for shipments of vehicles and parts between Ontario and the United States, which accounted for $12.9 billion in trade (20.6 percent of all U.S.-Canada trade in 2009). The other major commodities crossing the border at Buffalo-Niagara Falls include machinery and mechanical appliances (11.0 percent), electrical machinery and equipment (6.0 percent), and plastics (5.4 percent).

Jefferson County, New York

Jefferson County, New York is nearly 250 miles northeast of Buffalo, 60 miles north of Syracuse, and 95 miles south of Ottawa and contains the Alexandria Bay/Cape Vincent POE. The county borders Lake Ontario to the west and the St. Lawrence River and the Thousand Islands Region, a popular tourist destination, to the north. Jefferson County has a population of approximately 120,000. Aside from its population centers, much of the land area is rural, comprised of open spaces, agriculture, and forests.

Fort Drum, a military training site in Jefferson County, is the largest employer in northern New York. In 2008, Fort Drum employed 18,681 soldiers and 4,396 civilians with payrolls (including contractors) totaling $1.0 billion. Each year, approximately 80,000 active and reserve troops receive training and mobilization at Fort Drum (JCNY, 2010). Dairy and farm operations are an important component of industry in Jefferson County. The largest private, nonfarm economic sectors by annual payroll are health care and social assistance ($204.7 million), retail trade ($156.6 million), and manufacturing ($111.0 million).

- Alexandria Bay/Cape Vincent POE: The Bureau of Trade Statistics aggregates crossing data for Alexandria Bay and Cape Vincent in New York. In 2006, BTS reported 51,000 ferry passengers traveled in either direction between Cape Vincent, New York, and Wolfe Island, Ontario, which is a small fraction of the 1.8 million individual crossings reported for the Alexandria Bay/Cape Vincent POE in 2009. The POE is the sixth largest POE in terms of crossing volume between the United States and Canada. A significant increase in POVs in the summer months suggests considerable tourist usage, with a large number returning from trips in Canada because inbound traffic is highest on Sunday and Monday and decreases throughout the week (NYDOT, 2005).

  The Alexandria Bay POE, also known as the Thousand Islands Crossing, connects Wellesley Island, New York with Hill Island, Ontario. The Thousand Islands International Bridge consists of one American span, three Canadian spans, and one International span. The International span across the border is 90 feet long and is the shortest international, vehicular bridge in the world (JCNY, 2010). There are no pedestrian or train crossings.

The Alexandria Bay/Cape Vincent POE is the eight largest in terms of trade value, accounting for $9.8 billion (2.9 percent of all U.S.-Canada trade in 2009). The major commodities in terms of trade value are paper and paperboard (10.5 percent), aluminum (9.9 percent), machinery and mechanical appliances (9.1 percent), and natural or cultured pearls, precious or semiprecious stones, and precious metals (8.0 percent).

St. Lawrence County, New York

St. Lawrence County, New York, which contains the Massena POE, is a large, but fairly rural area comprised of small towns, farms, and forests. It has a population of nearly 110,000. Part of the county is in the Adirondack region, a patchwork of private and public lands, with several hamlets, paper and wood product industries, and recreational areas for fishing, hunting, hiking, canoeing, birding, cycling, snowmobiling, back-country skiing, or sightseeing (SLCG, 2010). The county has thousands of acres of state land, including wilderness areas that are open to public recreational use. A casino lies 6 miles inside the U.S. border on the St. Regis Mohawk Reservation (Seaman et al., 2004). The dominant economic sectors in terms of annual payroll are health care and social assistance ($210 million), manufacturing ($187.9 million), and retail trade ($117.3 million).

- Massena POE: The Massena POE is a single crossing that connects the main street in Cornwall, Ontario with New York State Route 37 by way of two bridges across the St. Lawrence River. One bridge connects the U.S. mainland to Cornwall Island and the second connects the island to the Canadian mainland. The crossing is 65 miles southeast of Ottawa and 75 miles southwest of Montreal. Crossings at Massena are primarily by POV; there is no railway crossing the border. Massena has the seventh highest volume of individual crossings, approximately 1.6 million crossings in 2009 (2.6 percent of all U.S.-Canada crossings). Almost one-third of travelers surveyed in 1997 crossed the bridge daily, compared to less than 10 percent at other crossings (Seaman et al., 2004).

  Massena is a smaller POE is terms of trade value, accounting for $429.9 million (0.1 percent of all U.S.-Canada trade in 2009). The major commodities crossing the border at Massena in terms of trade value are copper (34.2 percent), mineral fuels and oils (17.5 percent), and special classification provisions (5.4 percent). The border is also a transportation throughway for the paper and wood product industries that operate in the region.

Clinton County, New York

Clinton County, New York, which contains the Champlain-Rouses Point POE, is the most northeastern county in the state. It borders Vermont across Lake Champlain to the east and Les Jardins-de-Napierville and Le Haut-Richelieu, Quebec to the north. Part of Clinton County is in the Adirondack region. The population is approximately 82,000. The dominant economic sectors in Clinton County in terms of annual payroll are health care and social assistance ($186.6 million), manufacturing ($150.1 million), retail trade ($107.0 million), and transportation and warehousing ($63.6 million). The top four sectors account for 60.5 percent of private, nonfarm jobs in the county.

- Champlain-Rouses Point POE: The Champlain-Rouses Point POE consists of four separate crossing points, one linking Champlain with Covey Hill, Quebec, and three

linking Champlain with Lacolle, Quebec. The most heavily traveled crossing is between Interstate 87 in the United States and Highway 15 in Canada. The Champlain-Rouses Point POE is 30 miles north of Plattsburg, 175 miles north of Albany, and 45 miles south of Montreal. It is the only major land crossing between New York and Canada that does not have a river crossing (Seaman et al., 2004). The Champlain-Rouses Point POE has the fifth highest crossing volume, accounting for 2.8 million individual crossings or 4.6 percent of all U.S.-Canada crossings in 2009.

Champlain-Rouses Point is the fourth largest POE in terms of trade value, accounting for $19.2 billion or 5.7 percent of all U.S.-Canada trade in 2009. It is one of the busiest truck crossing points between the United States and Canada. In the 1990s, cross-border truck shipments increased by 5.1 percent annually. The rapid growth of commercial trucking led to massive congestion and several fatalities involving truck drivers in the early 2000s. Champlain-Rouses Point is the single largest freight crossing for natural or cultured pearls, precious or semiprecious stones, and precious metals. In 2009, Champlain-Rouses Point accounted for $1.7 billion or 45.1 percent of U.S.-Canada trade for these particular commodities. Natural or cultured pearls, precious or semiprecious stones, and precious metals accounted for 8.6 percent of total trade value by surface transportation at the Champlain-Rouses Point POE. The other major commodities by percentage of trade value crossing the border at the Champlain-Rouses Point POE are machinery and mechanical appliances (10.0 percent), vehicles and parts (7.1 percent), mineral fuels and oils (6.2 percent), and paper and paperboard (6.0 percent).

Ontario, Canada

Ontario lies to the north of the Sault Ste. Marie POE and USBP Station, Detroit POE and USBP Station, Port Huron POE, Sandusky USBP Station, Erie USBP Station, Buffalo-Niagara Falls POE, Alexandria Bay/Cape Vincent POE, and Massena POE sites. Ontario is Canada's largest province in terms of population. It is home to 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, providing 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). Ingersoll, Brampton, Windsor, Oakville, St. Thomas, Oshawa, Alliston, Cambridge, and Woodstock have major motor vehicle assembly plants (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.

Quebec, Canada

Quebec lies to the north of the Champlain-Rouses Point POE in eastern-central Canada and shares an international border with New York, Vermont, New Hampshire, and Maine. Quebec is the second largest Canadian province, accounting for 24 percent of the entire population. Most of the population lives on either shore of the St. Lawrence River between Montreal and Quebec City. Half of Quebec's population lives inside the Montreal metropolitan area. French is the native language for 80 percent of the population. Montreal is a major tourist destination due to its rich history, distinct heritage, and culture. The International Jazz Festival and the Montreal Casino attract many visitors. In the winter, tourists travel to Quebec to enjoy the numerous ski resorts. Mont-Tremblant, 150 kilometers (93.2 miles) north of Montreal, is one of the most popular resorts for U.S. tourists. Quebec City, the capital of Quebec, is the second largest urban center. During the international Winter Carnival, Quebec City also hosts great numbers of visitors.

Quebec is home to several high-tech industries, including aerospace companies and the Canadian Space Agency, and a large public sector. Montreal is a center of commerce, industry, technology, culture, and finance, while the economy of Quebec City is dominated by public administration and government services. The dominant economic sectors in Quebec by annual payroll are manufacturing ($23.4 billion), health care and social assistance ($14.0 billion), professional, scientific, and technical services ($11.6 billion), and public administration ($11.2 billion). Significant paper and pulp products industry exist outside of the major urban centers. The lumber industry is the economic cornerstone of close to 250 of Quebec's municipalities and generates approximately 40,500 direct jobs (QFIC, 2010). Quebec is also an important agricultural producer. It is the largest dairy producer in Canada and produces nearly 75 percent of the world's maple syrup.

6.11 CULTURAL AND PALEONTOLOGICAL RESOURCES

6.11.1 INTRODUCTION

This section provides an overview of cultural and paleontological resources located in the Great Lakes Region of the Northern Border and discusses potential impacts of U.S. Customs and Border Protection's (CBP) program alternatives on those resources.

6.11.2 AFFECTED ENVIRONMENT

6.11.2.1 Archaeological Resources: Prehistoric/Precontact Context

Among the known cultural resources in the Great Lakes Region are archaeological 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 Great Lakes 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 de-glaciated 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 lifeways. 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. East of the Mississippi, some groups constructed large mounds that were used for burying their dead or other ceremonial purposes. In the millennium before contact with Europeans, many people in the eastern half of the United States came to rely heavily on maize, beans, and squash and started living in large villages that had defensive walls and were located in easily defendable locations, such as elevated terrain near rivers.

6.11.2.2 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 Great Lakes Region.

New York

For any given time period and geographic area, knowledge of the prehistoric past in New York State is minimal at best. The archaeological database indicates that Native American land-use patterns throughout the study area changed significantly in the approximately 12,000 years prior to contact with Europeans. While some landscape characteristics preferred by prehistoric groups for locating their occupations and activity sites are understood at a rudimentary level (such as proximity to water sources for consumption and transportation and a proclivity for sites to be on level terrain with relatively well-drained soils), our knowledge of these patterns is, in general, very scanty. For these reasons, the New York State Historic Preservation Office (SHPO) considers all previously uninvestigated, undisturbed areas to be potentially archaeologically sensitive and recommends Phase I archaeological field investigations of any project area that cannot be documented as having been disturbed to the point where it will not yield additional information concerning the prehistoric past, regardless of whether any other prehistoric archaeological resources have been identified nearby. However, some areas are considered to have greater archaeological sensitivity. For instance, in cases where known sites are in proximity to a project area, or for project areas located near sources of stone used for tool-making or close to water, including wetlands, rivers, lakes, the SHPO may recommend more intensive survey during the Phase I field investigation. The State of New York has no formal, standardized model for assessing prehistoric archaeological sensitivity. The identification of sensitive settings and the formulation of methods for investigating them are typically addressed during consultation with the SHPO on a project-specific basis.

Pennsylvania

For any given time period and geographic area, knowledge of the prehistoric past in Pennsylvania is minimal at best. Archaeological data indicates that Native American land-use

patterns throughout the study area changed significantly in the approximately 12,000 years prior to contact with Europeans. Although some landscape characteristics preferred by prehistoric groups for locating their occupations and activity sites are understood at a rudimentary level (such as proximity to water sources for consumption and transportation and a proclivity for sites to be on level terrain with relatively well-drained soils), our knowledge of these patterns is very scanty. For these reasons, the Pennsylvania Bureau of Historic Protection (BHP), which serves as SHPO, considers all previously uninvestigated, undisturbed areas to be potentially archaeologically sensitive and recommends Phase I archaeological field investigations of any project area that cannot be documented as having been disturbed to the point where it will not yield additional information concerning the prehistoric past, regardless of whether any other prehistoric archaeological resources have been identified nearby. However, some areas are considered to have greater archaeological sensitivity. For instance, in cases where known sites are in proximity to a project area, or for project areas located near sources of stone used for tool-making or close to water, including wetlands, rivers, lakes, the BHP may recommend more intensive survey during the Phase I field investigation. Pennsylvania has no formal, standardized model for assessing prehistoric archaeological sensitivity. The identification of sensitive settings and the formulation of methods for investigating them are typically addressed during consultation with the BHP on a project-specific basis.

Ohio

Knowledge of the prehistoric past in Ohio is minimal, at best, regardless of time period and geographic area. The archaeological database indicates that Native American land-use patterns throughout the study area changed significantly in the approximately 12,000 years prior to contact with Europeans. While some landscape characteristics preferred by prehistoric groups for locating their occupations and activity sites are understood at a rudimentary level (such as proximity to water sources for consumption and transportation and a proclivity for sites to be on level terrain with relatively well-drained soils), our knowledge of these patterns is, in general, very scanty. For these reasons, the Ohio Historic Preservation Office (OHPO), which acts as SHPO, considers all previously uninvestigated, undisturbed areas to be potentially archaeologically sensitive and recommends Phase I archaeological field investigations of any project area that cannot be documented as having been disturbed to the point where it will not yield additional information concerning the prehistoric past, regardless of whether any other prehistoric archaeological resources have been identified nearby. However, some areas are considered to have greater archaeological sensitivity. For instance, in cases where known sites are in proximity to a project area, or for project areas located near sources of stone used for tool-making or close to water, including wetlands, rivers, lakes, the OHPO may recommend more intensive survey during the Phase I field investigation. The State of Ohio has no formal, standardized model for assessing prehistoric archaeological sensitivity. The identification of sensitive settings and the formulation of methods for investigating them are typically addressed during consultation with the OHPO on a project-specific basis.

Michigan (Lower Peninsula)

An overarching understanding of the development and progression of prehistoric Native American land-use patterns across the eastern Lower Peninsula is uneven for some time periods. The distribution of sites and the environmental settings in which they occur was greatly influenced by changes in the natural environment and fluctuations in the levels of the Great

Lakes. Available information suggests that Paleo-Indian, Early Archaic, and Middle Archaic sites are associated with the morainal ridges and shores of Lake Algonquin and other relict beach ridges. The Saginaw River Valley, with its extensive tracts of wetland areas and river systems, was a major draw for prehistoric populations. With the variations in lake levels, the potential for deeply buried sites in the river valleys is greatly enhanced. Although more interior and upland settings were used for short-term resource extraction and winter hunting, many of the sites in these areas appear to be located close to water courses and wetland areas. Through the course of the Late Archaic period, use of major river valleys and upland areas intensified and a broader array of settings appear to have been used.

Early Woodland settlement patterns appear to have focused on the Saginaw River Valley and the uplands along other major river systems. During the Middle Woodland period, with its increased emphasis on the use of wetland and other aquatic resources, coastal and riverine settings continued to be emphasized. Other settings that probably figured prominently in the settlement systems were relict beach ridges, interior lakes and wetlands, smaller stream valleys, and headwater settings. These types of settings also played an important role in Late Woodland settlement patterns, although there appears to be an emphasis on placing larger settlements in riverine or near-coastal areas for access to Great Lakes fish in the north and easily tillable soils in the south.

Michigan (Upper Peninsula) and Wisconsin

Overarching understanding of the development and progression of prehistoric Native American settlement and land use in Michigan's Upper Peninsula and northern Wisconsin is uneven for some periods. The distribution of sites and understanding of their environmental settings is also greatly influenced by changes in the environment, both in terms of the distributions of natural resources and also in regards to fluctuations in the levels of the Great Lakes prior to modern lake levels. Although Paleo-Indian, Early Archaic, and Middle Archaic sites are uncommon, information at hand suggests that they focused on features such as the Lake Algonquin shoreline during the initial period, other proglacial lake features during later times, interior lake-side settings, and other contexts such as the uplands bordering the major river valleys and glacial moraines. Through the course of the Late Archaic period, use of these types of features intensified, particularly in areas of expanding population.

Early Woodland settlement patterns, though largely unknown, may be hypothesized to follow general patterns developed during the Late Archaic and earlier eras. Over the course of the Middle Woodland, with its increasing emphasis on aquatic resources, coastal and riverine environments continued to be emphasized. Within these zones, relict beach ridges and settings near the mouths of major rivers were particularly important. Other settings that figured importantly in the settlement systems include interior lakes, interior dunes, and the edges of interior wetlands. These types of settings continued to be used during the Late Woodland period with the addition of or increased emphasis on the use of coastal areas.

6.11.2.3 Historic Context

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

Contact between Indigenous people and Europeans began in the early 1600s along the eastern Great Lakes, extending throughout the Great Lakes by the 1640s. Visits by missionaries and fur traders increased in frequency after the 1650s. Beginning in central New York and eastern Michigan, French exploration spread from east to west. The earliest settlements were in Michigan and New York, as forts were established at lake points during the eighteenth century and extended into the northern Great Lakes. Prior to 1754, French forts were established at present-day locations such as Ogdensburg, Oswego, Youngstown (New York), Erie, Detroit, Mackinaw City, and Port Huron. Most of the Programmatic Environmental Impact Statement (PEIS) area was sparsely settled until the middle of the nineteenth century. The French and Indian War (1754–1763) began in the Ohio valley and spread throughout the Great Lakes as prominent battles were fought on both sides of the border (Starbuck, 1994). The American Revolution (1775–1783) features several battles on the frontier in New York and Ohio but was a minor presence in the western lakes. Jay's Treaty with Great Britain (1796) resolved several issues smoldering since the conclusion of the Revolution. As a result of the treaty, the British withdrew their soldiers from posts along the Northern Border between the United States and Canada, and a commission was established to settle outstanding border issues between the United States and Canada. Despite vacating their Great Lakes forts, Great Britain remained in control of the lakes until the conclusion of the War of 1812.

While New York and Pennsylvania were two of the original 13 states, Wisconsin, Ohio, and Michigan were part of the Northwest Territories established in the late 1780s. Eastern Minnesota was included as part of the Northwest Territories and western Minnesota was part of the Louisiana Purchase. Northern Ohio and eastern Michigan were the scenes of numerous battles between Indians and the new Federal government in the period before the War of 1812. The Great Lakes and western New York were important theaters during that conflict.

Initial occupations in the region were fur trading, logging, and agriculture (with dairy farming developing during the nineteenth century). Timbering experienced resurgence in the late nineteenth century. Population of the Great Lakes area grew slowly until after the opening of the Erie Canal to Buffalo in 1825.

During the nineteenth century, development of transportation routes opened the region to settlement. New routes included a variety of highway types, canals, and later the railroads, which were heavily concentrated in the eastern United States. These new routes opened new locations and opportunities for conducting business. In the western lakes, copper and iron mining, manufacturing, and lake shipping were primary occupations. In the eastern lakes, Buffalo became a leading transshipment point for grain and coal coming east and people going west. This position was enhanced during the late-nineteenth century as railroads supplanted canals as primary carriers of coal.

Cities on the Great Lakes that became major manufacturing, heavy industry, and shipping centers after the Civil War and into the twentieth century included Duluth, Detroit, Cleveland, Sandusky, Youngstown (Ohio), Buffalo, and Rochester. Their exalted industrial position deteriorated during the last half of the twentieth century, as industrial plants closed and workers relocated.

6.11.2.4 Historic/Protohistoric Archaeological Site Probability

Among the known cultural resources in the Great Lakes 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 Great Lakes Region. This 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 began as early as the first half of the sixteenth century A.D. (450 to 400 B.P.). Items of European manufacture were quickly integrated into Native American lifeways during this time; examples include sheet brass; copper and iron kettles; items derived from sheet-metal kettles, such as tinkling cones, projectile points, and other tools and ornamental items; colorful glass trade beads; and iron axe blades.

Protohistoric and early historic developments throughout the Great Lakes area were dominated by the European-based fur trade and the participation in it by the Five-Nations Iroquois. Many groups throughout the area were either "dispersed" by the Iroquois (a process that began in the first half of the seventeenth century) or were impacted by Iroquois practices in other ways (such as adopting the remnants of dispersed groups). While the types of sites throughout the Great Lakes area remained largely consistent with those of earlier times, their numbers and distributions changed in ways that reflected the impacts of Iroquois fur-trade practices. In New York State, frequent Iroquois interaction with Europeans brought exposure to disease. Populations declined somewhat; settlements became smaller, but more numerous. In peripheral zones adjacent to the Iroquois Confederacy, populations largely disappeared for a time, such as in southwestern New York, northwestern Pennsylvania, and northern Ohio.

New York

In general, historical-period archaeological sites in the study area will be associated with mapped structures or documented historical events, such as battles. However, the precise locations of historical deposits are seldom known before archaeological investigations, and there is always the possibility that unmapped or unrecorded historical resources are present in the study area, particularly in its more remote locations. Thus, the New York SHPO considers all previously uninvestigated and undisturbed areas to be potentially sensitive for historical archaeological resources and recommends Phase I field investigations for project areas that cannot be documented as disturbed, regardless of whether any additional historical resources have been identified nearby. However, some areas are considered to have greater sensitivity for historical resources, such as those in proximity to mapped historical structures or events. In these cases, the SHPO may recommend a more intensive survey during the Phase I field investigation. The State of New York has no formal model for evaluating historical archaeological sensitivity. The identification of sensitive settings and the formulation of methods for investigating them are typically addressed during consultation with the SHPO on a project-specific basis.

Pennsylvania

In general, historical-period archaeological sites in the study area will be associated with mapped structures or documented historical events, such as battles. However, the precise locations of historical deposits are seldom known before archaeological investigations, and there is always the possibility that unmapped or unrecorded historical resources are present in the study area, particularly in its more remote locations. Thus, the Pennsylvania BHP considers all previously

uninvestigated and undisturbed areas to be potentially sensitive for historical archaeological resources and recommends Phase I field investigations for project areas that cannot be documented as disturbed, regardless of whether any additional historical resources have been identified nearby. However, some areas are considered to have greater sensitivity for historical resources, such as those in proximity to mapped historical structures or events. In these cases, the BHP may recommend a more intensive survey during the Phase I field investigation. The Commonwealth of Pennsylvania has no formal model for evaluating historical archaeological sensitivity. The identification of sensitive settings and the formulation of methods for investigating them are typically addressed during consultation with the BHP on a project-specific basis.

Ohio

In general, historical-period archaeological sites in the study area will be associated with mapped structures or documented historical events, such as battles. However, the precise locations of historical deposits are seldom known before archaeological investigations, and there is always the possibility that unmapped or unrecorded historical resources are present in the study area, particularly in its more remote locations. Thus, the OHPO considers all previously uninvestigated and undisturbed areas to be potentially sensitive for historical archaeological resources and recommends Phase I field investigations for project areas that cannot be documented as disturbed, regardless of whether any additional historical resources have been identified nearby. However, some areas are considered to have greater sensitivity for historical resources, such as those in proximity to mapped historical structures or events. In these cases, the OHPO may recommend a more intensive survey during the Phase I field investigation. The State of Ohio has no formal model for evaluating historical archaeological sensitivity. The identification of sensitive settings and the formulation of methods for investigating them are typically addressed during consultation with the OHPO on a project-specific basis.

State of Michigan (Lower Peninsula)

A variety of historic archaeological resources can be expected across the region. Early mission, fur-trading, and military posts have a limited distribution in the eastern Lower Peninsula, with most of this activity occurring in the Straits of Mackinac area, at Detroit, and in the extreme southeastern Lower Peninsula. After the area came under United States control, larger-scale settlement took place. In southern Michigan, much of this settlement was agrarian and occurred in proximity to roads and, eventually, railroads. Industrial development of the region, particularly by the lumber industry, had a significant impact on the landscape in the Saginaw River Valley and more northerly areas. Lumbering facilities were associated with harvested stands of trees, and lumber mills and other support facilities grew up along many of the river systems. The archaeological nature of other, more ephemeral, industrial and commercial developments remains unexplored and poorly understood.

Michigan (Upper Peninsula) and Wisconsin

A wide variety of historic archaeological resources can be expected across the region. These include early mission, fur-trade, and military posts from the era of early European contact, and a variety of sites associated with the historic development of the area after it came under American control. Among the latter site types are domestic and residential sites, transportation features, lumbering camps, and industrial facilities associated with the development of the mining

industry. Residential sites, including abandoned towns, are primarily associated with roadways, rail lines, and harbor settings that developed in conjunction with industry. The placement of lumbering and other industrial facilities was largely determined by the distribution of resources, although they had a close connection with the transportation system.

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.

6.11.2.5 Above-Ground Historic Properties

There are numerous above-ground historic properties along the Great Lakes Region border area that are National Register listed, eligible, or potentially eligible for listing.

New York State has a rich and regionally distinct architectural heritage, which formed from the physical characteristics and relationships shaped by generations of human occupation and led to distinctive patterns of land use and development through history. Architectural and historic resources represented in the 100-mile-wide study area span a period of more than 400 years. The northern half of New York is associated with significant events and people vital to both the history of the state and the nation. The completion of the Erie Canal in 1825 opened up westward expansion while providing critical commercial and transportation infrastructure for the state. New York's story of settlement, territorial struggle, invention, and expansion is physically and visually expressed in its artifacts, buildings, communities, waterways, and open spaces (NYOPRHP, 2009).

New York State possesses an impressive collection of domestic and commercial buildings associated with Erie Canal's period of significance. New York City's deep harbor and linkage to navigable waterways and corridors west and north promoted regional and international trade, which supported the development of the state's largest urban centers. In addition to an extensive canal system, valley floors supported railroads early in our nation's history and were used a century later in the development of modern highways.

Architectural styles of historic buildings and districts vary widely across the New York study area, which contains many National Register listed or eligible historic resources associated with the following historic and current uses: domestic, commerce/trade, social, government, education, religion, funerary, recreation and culture, agriculture/subsistence, industry/processing/extraction, health care, defense, landscape, and transportation. Some of these resources include examples of every popular architectural style spanning from Colonial through Modern. Significant examples of high-style, architect-designed buildings are found throughout the study area specifically in the major cities of Buffalo, Rochester, Syracuse, Watertown, Malone, and Plattsburgh. These include architectural works ranging from modest-vernacular to high-style examples of national, regional, and local significance.

New York State has a vast rural agricultural heritage, with farming vital to the development of each region in the study area (Western New York, Southern Tier, Finger Lakes, Central New York, and the North Country). Each of these regions features distinctive farm buildings and settings associated with particular farming practices and crops. For example, the traditional agricultural buildings common in the North-Country region such as enclosed barnyards, sugar

houses, hop kilns, ash houses, and smokehouses differ from those of the primarily dairy-farm heritage of Western and Central New York. Architectural styles and plans for farmhouses across the state include regional vernacular interpretations of popular domestic architectural styles to modest vernacular buildings lacking ornamental detail.

New York has an impressive collection of early-to-mid-nineteenth century cobblestone and stone masonry buildings. Beginning in the early nineteenth century, stone-masonry construction was common in the North-Country and Central regions of the state. In the western portion of the state within a 65-mile radius of Rochester, approximately 700 cobblestone structures were erected during a 35-year span in the middle of the nineteenth century. Types of cobblestone and stone buildings included homes, farmhouses, barns, stagecoach taverns, smokehouses, stores, churches, schools, and factories.

Other architectural resources unique to New York include modest- and large-scale summer homes, estates, and cottages located in the Thousand Islands, Adirondacks, Finger Lakes and the shores of Lakes Erie and Ontario. For example, from the late-nineteenth century until World War I, many of America's wealthiest and most prominent families purchased real estate in the Adirondacks and commissioned the construction of multi-building estates in a rustic, artistic style known as "Great Camps." During the same period, architect-designed summer estates also known as "castles" were built in the Thousand Islands.

The study area includes all of New York State's Seaway Trail, a state and national scenic byway, which follows 454 miles of the state's northern coastal region along the shores of Lake Erie, Lake Ontario, and the St. Lawrence River. The Great Lakes Seaway Trail is one of America's byways and is recognized for its unique landscape, scenic freshwater coastline, and historical significance. The Seaway Trail has some 25 historic lighthouses, sites associated with the French and Indian War and Revolutionary War, and 42 War-of-1812 sites. The Seaway-Trail region was the vital transportation and communication link between France and its colonies.

Pennsylvania's rich architectural heritage reflects the state's broad patterns of settlement, growth, and change. Historic architectural resources in the state span from the 1700s through1960 with the majority dating from the state's most intensive development in the late- and early twentieth century. The Commonwealth's wide range of regional and national architectural styles is represented in an array of high-style, architect-designed, pure examples and vernacular adaptations of designs that integrate styles and cultural influences. The historic buildings of Pennsylvania encompass many themes from government, education, agriculture, and industry, to religion, recreation, and commerce. Some architectural styles were modified for specific functions and some styles developed specifically for special uses.

Architectural styles of historic structures and districts vary widely across the large area encompassed by this study. Common historic building types in Pennsylvania include mills, agricultural and industrial complexes, railroad-related structures, schools, churches, novelty buildings, lake-transport and shipping facilities, forest and extraction industrial buildings, state-park structures, and a wide variety of vernacular domestic forms. These buildings may include details of established historic architectural styles, but their appearance is more dictated by necessity and the function they serve. Other historic resources include burial grounds and cemeteries.

Agriculture has played a critical role in the history and economy of Pennsylvania. The state has long been recognized for its rich historic farm landscape. Distinctive historic agricultural regions from ca. 1700–1960 in northwestern and north-central Pennsylvania include the following: Lake Erie Fruits and Vegetables; Northwestern Woodland, Grassland, and Specialized Farming; Allegheny Mountain Part-Time Farming; Northern Tier Grasslands; and North and West Branch Susquehanna Valleys.

Historic properties in Ohio include residences, commercial buildings, institutions (churches and schools), industrial buildings, farmsteads, and designed landscapes that reflect all aspects of the state's heritage. These historic resources illustrate life in Ohio ranging in date from approximately 1795 through 1960. Associated themes include agriculture, art and recreation commerce, finance, domestic architecture, education, government, social welfare, health, industry and manufacturing, military, planning and landscape architecture, religion, settlement, ethnic groups and migration, transportation, science, and communications. According to National Register data for Ohio, domestic architecture is the most prevalent category followed by settlement. Most domestic properties were constructed in the last half of the nineteenth century until the Depression, with the largest number of Ohio's domestic properties occurring in its twentieth-century neighborhoods. Numerous historic districts have been designated in the varied neighborhoods of Ohio's cities.

Northeast Ohio has a distinctive architecture and landscape due to the presence of numerous towns built by New Englanders. At the end of the 1700s, Northeast Ohio was a Connecticut colony, the Western Reserve. General Moses Cleaveland and a team of surveyors laid out five-mile-square townships from the Pennsylvania line west to the Cuyahoga River across the Lake Erie coast. Western-Reserve towns evoke New-England architectural and planning traditions, with central greens dominated by public buildings. New-England-trained carpenters incorporated into their building design patterns from builder's manuals (Ware, 2002). In addition to frontier buildings, Northeastern Ohio's historic-building stock is also distinguished, through its late-nineteenth-century industrial prosperity, with an array of high-style, Victorian-era buildings (e.g., domestic, commercial, religious, transportation, and education). Settlement in Northwest Ohio occurred much later due to the vast uninhabitable Great Black Swamp, which included 1,500 square miles of dense, wet forest. The setting for the architecture in Northwest Ohio is distinguished by the region's flat terrain.

Ohio's agricultural properties are concentrated along major transportation routes and the peripheries of the state's major cities. In northeastern Ohio, agriculture focused on dairy and cheese farms while near Lake Erie viticulture was prominent. Northwestern Ohio did not become productive agriculturally until the late-nineteenth century when the Great Black Swamp was tiled and drained. Designated agricultural properties include barns, farmhouses, outbuildings, and agricultural fields. Most buildings date to 1850–1899, followed by the 1900–1924 period (OHPO, 2010).

Buildings of most styles and forms established across the country exist in Michigan's Lower Peninsula. Perhaps the earliest building style constructed in Michigan was Greek Revival. Cobblestone houses or commercial buildings, often in Greek-Revival style, are also present in the lower part of the Peninsula. In Michigan, some variations on building forms, such as the Hen-and-Chicks, are present, particularly in the southern part of the state where settlement

occurred earlier. The I-House is also present in the state. Mid-Century-Modern homes are present across the state, although more are present in urban areas than in rural areas. Rustic-style homes and commercial buildings are often associated with the resort areas of northern Michigan, as are large-scale, Victorian-era hotels and lodges.

The most common building type across the state is the single-family home. Blocks of houses occupy most of southeast Michigan; apartments and condominiums are present primarily in urban areas. In more rural areas, houses are surrounded by agricultural buildings, forming farmstead complexes. Scientific farming has resulted in the decline of family-owned farms, but many complexes still survive in areas where scientific farming is impractical. Because of the large number of recreational opportunities associated with lakes, waterways, and hundreds of miles of lakeshore, Michigan boasts a large number of cottages and retreats. These same shorelines also contain lighthouses, docks, piers, and harbors. Early industrial buildings line many of the waterways in the state, particularly near harbors and shipping ports. Over the last half century, some of these industrial areas have been converted into parkland or "parks" of industrial buildings in less desirable locations.

Commercial centers are situated in most downtown areas, from the smallest community with a single gas station to the largest cities. Historically, these commercial centers consisted of multi-story buildings packed side by side. In the mid-twentieth century, the nationwide trend of indoor shopping centers made its way to the state. Even in the smallest community, commercial development tends to mean the construction of strip malls, where success is driven by automobile access.

The most prevalent above-ground resource in northern Michigan and Wisconsin is the single-family house. These buildings are found in both urban areas and in rural portions of the region, with a greater trend toward higher-style buildings in urban areas. Houses tend to be smaller than in the southern portions of Michigan's Lower Peninsula and southern Wisconsin. Apartments and condominiums may be present but tend to be found in urban areas rather than in small towns and rural areas. In rural areas, buildings may be part of a farmstead complex or a camp associated with logging or mining. Because of the large number of recreational opportunities associated with lakes, waterways, and hundreds of miles of lakeshore, the area boasts a large number of cottages and retreats, including housekeeping cabins in motel-like settings, first popularized in the 1930s with the advent of motor travel. Lighthouses, docks, piers, and harbors are situated along lakeshores. Other extant industrial buildings include modern and historic mining facilities.

While the earliest building style constructed in southern Michigan was Greek Revival, there are few buildings of this style present in the northern portion of Michigan's Lower Peninsula and in the Upper Peninsula because settlement came much later to these areas. Although distinctly more rural than the southern part of the Lower Peninsula, this area does include historic wealth and communities of sufficient size to permit construction of high-style buildings; Second-Empire, Italianate, Gothic-Revival, Beaux-Arts, and Tudor-Revival styles all exist there. Richardson-Romanesque buildings constructed from local red sandstone are scattered across the Upper Peninsula and along Wisconsin's southern Lake Superior shore.

While examples of the Art-Deco and Art-Moderne styles are less frequent in Michigan's Upper Peninsula and Wisconsin, the Craftsman Style Bungalow is found in virtually every community. Rustic-style homes and commercial buildings are often associated with the resort areas of northern Michigan. Large-scale, Victorian-era hotels and lodges constructed to serve those seeking pleasant summers away from allergens and city heat dot major tourist areas such as Mackinac Island, Michigan, and Bayfield, Wisconsin.

Tables 6.11-1, 6.11-3, and 6.11-4 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 Great Lakes states. Table 6.11-2 lists the historic buildings that reside on CBP property in New York.

Table 6.11-1. Cultural Resources in the Vicinity of CBP Facilities in New York and Pennsylvania

Component*	Type**	Name	Address	National, State, and Local Historical Designations and Environment
NEW YORK				
OFO	POE	Alexandria Bay	46735 Interstate Route 81 Alexandria Bay, NY 13607	Village in the Town of Alexandria; located along the south bank of the St. Lawrence River; Thousand Island Bridge is border crossing; 6 National Register properties in the vicinity (does not include Wellesley Island)
OFO	POE	Buffalo	726 Exchange St, Suite 400 Buffalo, NY 14210	2nd most populous city in state; county seat; located on eastern shore of Lake Erie at head of Niagara River; 78 National Register properties in vicinity including 3 lighthouses, 3 boats (a destroyer, harbor tug, and fireboat), 5 districts, 4 parks or park systems and 1 cemetery
OFO	POE	Lewiston Bridge Complex	Interstate 190 at the Border Lewiston, NY 14092	Sits on banks of Niagara River; portion of town located on top of the Niagara Escarpment; historically significant in European development in North America; Village of Lewiston final stop on Underground Railroad before crossing into Canada; 4 National Register properties in the vicinity including 1 district, 1 archaeological district, and a prehistoric Hopewell mound
OFO	POE	Peace Bridge	Baird Drive at the Border Buffalo, NY 14210	See previous description for the Buffalo POE.
OFO	POE	Rainbow Bridge	Niagara Street at the Border Niagara Falls, NY	City is built along the Niagara Falls waterfalls (which it shares with Canada) and the Niagara Gorge; American Falls & Bridal Veil Falls located on American side; 18 National Register properties in the vicinity including 1 district

Component*	Type**	Name	Address	National, State, and Local Historical Designations and Environment
OFO	POE	Whirlpool Bridge	Whirlpool Street at the Border Niagara Falls, NY	See previous description for the Niagara Falls POE
OFO	POE	Champlain	US Interstate 87 Champlain, NY 12919	Rural border town; important staging point for the military during the War of 1812; town contains 3 border crossings; Champlain POE is one of the most important commercial gateways into Canada; 2 National Register properties in town (See Rouses Point POE)
OFO	POE	Cannon Corners	Cannon Corners Rd at the Border Cannon Corners, NY 12959	Small rural hamlet in western portion of Town of Mooers; no National Register properties in vicinity
OFO	POE	Chateaugay	NY 374/County Rd 52 Chateaugay, NY 12920	Small rural town in North Country; Chateaugay River runs through middle of town; no National Register properties in vicinity
OFO	POE	Churubusco	US NY 189 Churubusco NY 12923	Small rural hamlet in the Town of Clinton near Quebec border; no National Register properties in vicinity
OFO	POE	Fort Covington	NY Route 132 Fort Covington, NY 12937	Small rural border town in the state's North Country; no National Register properties in the vicinity
OFO	POE	Jamieson Line	Country Rd 29/Jamieson Line Rd Burke, NY 12917	POE is located in the Town of Burke; boyhood home of Almanzo Wilder, husband of author Laura Ingalls Wilder; 1 National Register/State Register property which is the Almanzo Wilder Homestead
OFO	POE	Mooers	Hemmingford Road at the Border Mooers, NY 122958	Small border town in north-central Clinton County; formed from the Canada & Nova Scotia Refugee tract for those who took part in the Revolutionary War on the side of the colonies; no National Register properties in the vicinity
OFO	POE	Overton Corners	NY 276 at the Border Champlain, NY 12919	One of three border crossings in the Town of Champlain; see Champlain above; no National Register properties in the vicinity

Component*	Type**	Name	Address	National, State, and Local Historical Designations and Environment
OFO	POE	Rouses Point	NY 9B Rouses Point, NY 12979	Small lakefront village in the Town of Champlain along the "Adirondack Coast;" formed from the Canada & Nova Scotia Refugee Tract; part of the Underground Railroad; one of 3 border crossings in the town; 2 National Register properties in the vicinity including Fort Montgomery
OFO	POE	Massena	30M Seaway International Bridge NY Hwy 37 Rooseveltown, NY 13683	POE is in Hamlet of Rooseveltown in Town of Massena; near Racquette River; 1 National Register property (Robinson Bay Archaeological District) is in the town
OFO	POE	Ogdensburg	Ogdensburg Bridge Plaza Ogdensburg, NY 13669	Border and seaport city in the state's North Country; located along the St. Lawrence River; Ogdensburg-Prescottt International Bridge is POE; 8 National Register properties in the vicinity including 1 district
OFO	POE	Rochester	1200 Brooks Avenue Rochester, NY 14624	City is the "northwestern gateway to NY's Finger Lakes"; it boasts the 2nd largest regional economy in the state; is the county seat; 93 National Register properties including 3 bridges, 14 districts, 1 lighthouse, and the Municipal Park System of Rochester which is also a State Register property
OFO	POE	Trout River	17013 State Route 30 Constable NY 12926	Small border town in the state's "North Country;" no National Register properties in the vicinity
USBP	BPS	Massena	135 Trippany Road Massena, NY 13662	Border town along Racquette River; nicknamed "Gateway to the Fourth Coast;" 1 National Register property in the vicinity (Robinson Bay Archaeological District)
OAM	Air Facility	Massena	135 Trippany Road Massena, NY 13662	See previous description for the Massena BPS.
USBP	BPS	Ogdensburg	127 North Water St. Ogdensburg, NY 13669	See previous description for the Ogdensburg POE.
USBP	Sector HQ	Buffalo	600 Colvin Woods Parkway Tonawanda, NY 14150	Town is a northern suburb of Buffalo; 3 National Register properties in the vicinity

Component*	Type**	Name	Address	National, State, and Local Historical Designations and Environment
OAM	Air Facility	Buffalo	600 Colvin Woods Parkway Tonawanda, NY 14150	See previous description for the Tonawanda Sector HQ.
USBP	BPS	Niagara Falls	1708 Lafayette Avenue Niagara Falls, NY 14305	See previous description for the Niagara Falls POE.
OAM	Air Facility	Niagara	1708 Lafayette Avenue Niagara Falls, NY 14305	See previous description for the Niagara Falls POE.
USBP	BPS	Oswego	19 East Schuyler Street Oswego, NY 13126	Located on Lake Ontario in north-central portion of state; known as the Port City of Central NY; 28 National Register properties in vicinity including Fort Oswego, 1 cemetery, 2 districts, 1 lighthouse, and the Harbor Tug Nash
USBP	BPS	Rochester	171 Pattonwood Drive Rochester, NY 14617	See previous description for the Rochester POE.
USBP	BPS	Wellesley Island	45864 Landon Road Wellesley Island, NY 13640	One of the largest islands of the Thousand Islands; partly in towns of Alexandria and Orleans; linked to Canada by the Thousand Island Bridge; 3 state parks on island; 2 National Register properties in the vicinity including 1 Historic District. A third property, Cragside Manor, is a summer home located on the Border Patrol property and has been determined eligible for National Register listing.
PENNSYLVANIA				
OFO	POE	Erie	4459 West 12th Street Erie, PA 16505	4th largest city in state; county seat for Erie County; only lake port city in state; Presque Isle State Park; 24 National Register properties and 3 National Register districts in the vicinity as well as the National Register Freighter the U.S.S Niagara and the National Register Erie Land Lighthouse
USBP	BPS	Erie	7851 Traut Drive Fairview, PA 16415	See previous description for the Erie POE.

*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 6.11-2. Historic Buildings on CBP Property in New York

Building Name	Type	City	Number	Year Finished	Rating Class
U.S. Customs Warehouse	Warehouse	Alexandria Bay	NY-THO-01*	ca. 1950s	Not eligible
Peace Bridge	Bridge	Buffalo	NY-PBB-01*	1927	Eligible for National Register and State Register
Peace Bridge American Plaza Main Administration Building	Other	Buffalo	NY-PBB-02*	1954	Not eligible
Peace Bridge American Plaza Commercial Inspection Building	Other	Buffalo	NY-PBB-03*	1954	Not eligible
Border Inspection Station	Border Station	Burke	NY-BUR-01*	ca. 1950-1960s	Not eligible
Dwelling	Residence	Cannon Corners	NY-CNN-01*	ca. 1910s	Not eligible
Customs Residence	Residence	Chateaugay	NY0587CI** NY-CHT-02*	1933	5a*** Recommended National Register eligible
Immigration Residence	Residence	Chateaugay	NY0588CI** NY-CHT-03*	1933	5a*** Recommended National Register eligible
Inspection Center	Border Station	Chateaugay	NY0586CI** NY-CHT-01*	1933	4**** Recommended National Register eligible
U.S. Border Station	Border Station	Fort Covington	NY0059ZZ** NY-FTC-01*	1932	5a*** Recommended National Register eligible
Customs Residence	Residence	Mooers	NY0628MI** NY-MOO-02*	1932	Not rated Recommended National Register eligible

Building Name	Type	City	Number	Year Finished	Rating Class
Immigration Residence	Residence	Mooers	NY0627MI** NY-MOO-03*	1932	Not rated Recommended National Register eligible
Inspection Building	Border Station	Mooers	NY0626MI** NY-MOO-01*	1932	4**** Recommended National Register eligible
Whirlpool Rapids Bridge	Bridge	Niagara Falls / Whirlpool	NY-WHL-01*	1897°	Eligible for National Register and State Register
Niagara Falls Bridge Commission Warehouse	Other	Niagara Falls/ Whirlpool	NY-WHL-02*	1950°	Not eligible
Whirlpool Rapids Bridge Tollhouse	Tollhouse	Niagara Falls / Whirlpool	NY-WHL-03*	Pre-1950°	Not eligible
Border Inspection Station	Border Station	Niagara Falls	NY-WHL-04*	Pre-1950°	Eligible for National Register and State Register
Border Inspection Station	Border Station	Overton Corners	NY-OVE-01*	1932	Recommended National Register eligible
U.S. Border Station	Border Station	Rouses Point	NY0196ZZ** NY-ROU-01*	1931	4**** Recommended National Register eligible
U.S. Border Station	Border Station	Trout River	NY0216ZZ** NY-TRO-01*	1931	4**** Recommended National Register eligible
Cragside Manor	Summer Home	Wellesley Island	NYSHPO USN# 04502.00076	1886	Determined National Register eligible by the NYSHPO but does not appear on National Register List

*Historic Resource Inventory Form Number from New York State Office of Parks, Recreation & Historic Preservation Inventory form.

**Listed in General Services Administration (GSA) Public Buildings Service (PBS) publication "Held in Public Trust: PBS Strategy for Using Historic Buildings" (May, 1999): Appendix C, GSA Historic Buildings.

***GSA Historic Rating Class 5a: A building 50-years old 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; for complete citation see footnote above).

****GSA Historic Rating Class 4: A building considered potentially eligible for the National Register based on historical documentation and/or informal consultation with the NYSHPO. Appears to meet the criteria, but has not been listed or evaluated ("Held in Public Trust" Appendix C; for complete citation see footnote above).

Table 6.11-3. Cultural Resources in the Vicinity of CBP Facilities in Michigan

Component	Type	Name	Address	National, State, and Local Historical Designations and Environment
OFO	POE	Battle Creek	4950 Dickman Road Battle Creek, MI 49037	1 National Register property
OFO	POE	Benton Harbor Seaport	Benton Harbor, MI	1 National Register property; 3 State Register properties
OFO	POE	St. Joseph Seaport	St. Joseph, MI	2 National Register properties (1 bridge, 1 lighthouse); 4 State Register properties; 1 State Register district
OFO	POE	Detroit	477 Michigan Avenue, Rm. 210 Detroit, MI 48226	35 National or State Register properties and 9 districts
OFO	POE	Detroit-Windsor Tunnel	Detroit, MI	See previous description for the Detroit POE.
OFO	POE	Monroe Seaport	Monroe, MI	10 National Register properties (including 2 districts, 1 monument, 1 battle site); 3 State Register properties (including 1 cemetery)
OFO	POE	Ambassador Bridge Passenger Facility	Detroit, MI	1 National Register property
OFO	POE	Port Huron	526 Water Street, Room 301 Port Huron, MI 48060	12 National Register properties (including 1 district, 2 lighthouses, 1 fort site, 2 bridge/tunnel); 12 State Register properties
OFO	POE	Sault Sainte Marie	900 International Bridge Plaza Sault Sainte Marie, MI 49783	12 National Register properties (including 1 ship); 7 State Register properties (including 1 cemetery)
OFO	POE	Alpena Seaport	Alpena, MI	11 State Register properties
OFO	POE	Cheboygan Seaport	Cheboygan, MI	3 National Register properties (including 1 bridge); 4 State Register properties
OFO	POE	De Tour Seaport	De Tour, MI	1 National Register property

Component	Type	Name	Address	National, State, and Local Historical Designations and Environment
OFO	POE	Escanaba Seaport	Escanaba, MI	3 National Register properties (including 1 lighthouse); 3 State Register properties
OFO	POE	Houghton Seaport	Houghton, MI	9 National Register properties (including 1 historic district); 6 State Register properties (including 1 historic district)
OFO	POE	Marquette Seaport	Marquette, MI	10 National Register properties (including 1 historic district, 1 lighthouse); 10 State Register properties (including 1 cemetery)
OFO	POE	Munising Seaport	Munising, MI	3 National Register properties (including 1 lighthouse); 4 State Register properties
OFO	POE	Port Dolomite Seaport	Port Dolomite, MI	None
OFO	POE	Port Inland Seaport	Port Inland, MI	1 National Register property (lighthouse); 1 State Register property
OFO	POE	Rogers City Seaport (Port of Calcite)	Rogers City, MI	1 National Register property; 1 State Register property
USBP	Sector HQ	Detroit	1331 Atwater Street Detroit, MI 48232	19 National or State Register properties
OAM	Air Facility	Detroit	1331 Atwater Street Detroit, MI 48232	See previous description for the Detroit Sector HQ.
USBP	BPS	Sault Sainte Marie	208 Bingham Avenue Sault Sainte Marie, MI 49783	See previous description for the Sault Sainte Marie POE.

*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 6.11-4. Cultural Resources in the Vicinity of CBP Facilities in Wisconsin

Component	Type	Name	Address	National, State, Local Historical Designations, Historic Environment
OFO	POE	Racine	603 Main Street, Room 207 Racine, WI 53401	National Register and State Register property, US Post Office built 1925; approximately 20 other National Register properties located in downtown Racine
OFO	POE	Milwaukee	4915 South Howell Avenue Milwaukee, WI 53207	None within vicinity, located northwest of South Milwaukee, near airport, surrounded by suburban developments
OFO	POE	Green Bay	2077 Airport Drive Green Bay, WI 54313	None within vicinity, located southwest of city, near airport, near casinos

*OFO = CBP Office of Field Operations

**POE = Port of Entry

6.11.2.6 Native American Resources

This section provides information about the potential location of Native American cultural resources, sacred sites, and traditional cultural properties (TCPs) in the Great Lakes geographic region, based on the geographic location of Native Americans both historically and in the present. There are 33 tribal groups within the Great Lakes area (Table 6.11-5). Nineteen of these tribes have reservations within the Great Lakes study area (Figure 6.11-1).

Table 6.11.-5. Native American Tribes that Have a Reservation, Judicially Established Interest, or Established Traditional Ties to Land within the 100-mile PEIS Corridor

Bad River Band of the Lake Superior Tribe of Chippewa Indians	Menominee Indian Tribe of Wisconsin
Bay Mills Indian Community of the Ojibwe	Oneida Indian Nation of New York
Burt Lake Band of Ottawa & Chippewa Indians, Inc.	Oneida Tribe of Indians of Wisconsin
Cayuga Nation of New York	Onondaga Nation of New York
Delaware Tribe-Ohio	Pokagon Band of Potawatomi Indians (Michigan & Indiana)
Forest County Potawatomi Community	Red Cliff Band of Lake Superior Chippewa Indians of Wisconsin
Grand Traverse Band of Ottawa and Chippewa Indians	Saginaw Chippewa Indian Tribe of Michigan
Hannahville Indian Community	Saint Regis Mohawk Tribe
Ho-Chunk Nation of Wisconsin	St. Croix Chippewa Indians of Wisconsin
Huron Potawatomi, Inc. (Nottawaseppi Huron Band)	Sokaogon Chippewa Community
Keweenaw Bay Indian Community	Sault Ste. Marie Tribe of Chippewa Indians of Michigan
Lac Courte Oreilles Band of Lake Superior Chippewa Indians of Wisconsin	Seneca Nation of New York
Lac du Flambeau Band of Lake Superior Chippewa Indians	Stockbridge Munsee Community
Lac Vieux Desert Band of Lake Superior Chippewa Indians	Tonawanda Band of Seneca Indians of New York
Little River Band of Ottawa Indians	Tuscarora Nation of New York
Little Traverse Bay Bands of Odawa Indians	Wyandot Nation of Ohio
Match-e-be-nash-she-wish Band of Pottawatomi Indians	

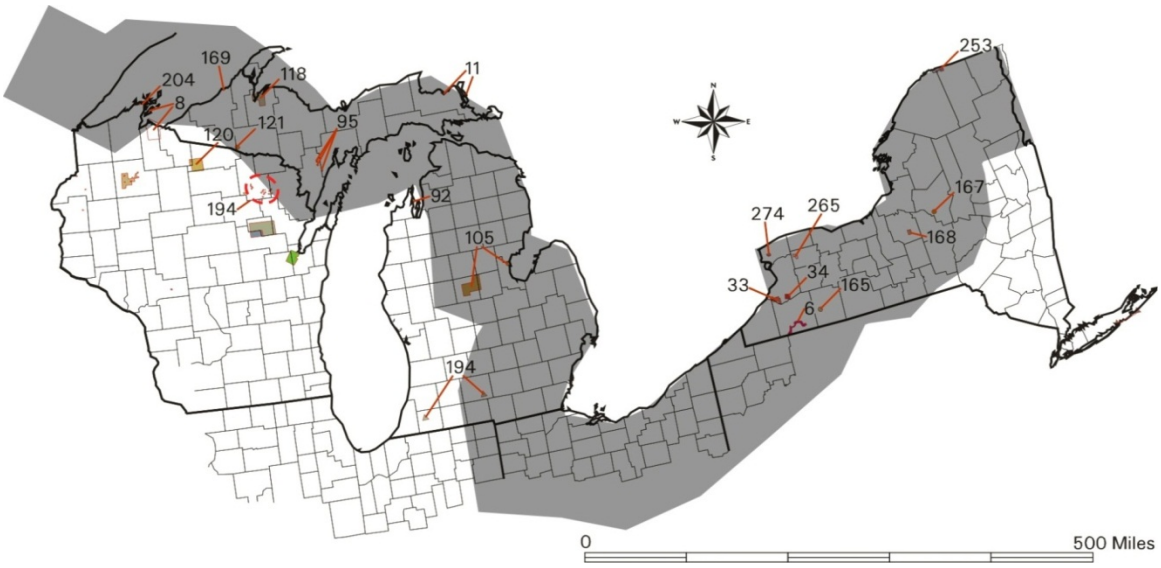
The following maps indicate federally recognized tribes that have a reservation within approximately 100 miles of the Canadian border, have a judicially established connection to land within the 100-mile corridor, or have established traditional ties that may involve traditional cultural properties or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

1. A map of Indian reservations located within the 100-mile corridor (Figure 6.11-1);
2. A USGS map showing nineteenth-century cessions, reservations, and portages (Figure 6.11-2). This map was retrieved from 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 6.11-3). 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 6.11-4). The information was derived from anthropological, archaeological, and linguistic studies. The map generally corroborates the other maps with regard to traditional tribal areas.

Figure 6.11-1. Native American Lands Within the 100-mile PEIS Corridor Crossing Wisconsin, Michigan, Ohio, Pennsylvania, and New York

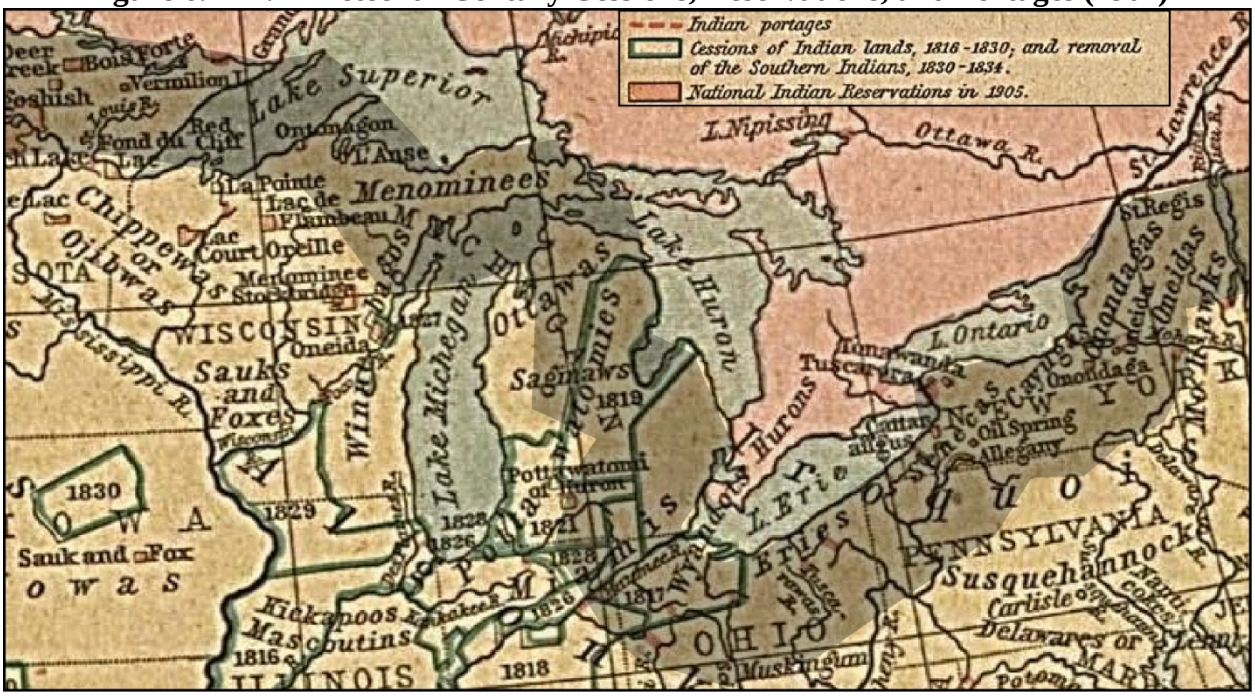


Key for Figure 6.11-1			
8	Bad River band of the Lake Superior Tribe of Chippewa Indians	167	Oneida Indian Nation of New York
11	Bay Mills Indian Community of the Ojibwe	168	Onondaga Nation of New York
34	Cayuga Nation of New York	204	Red Cliff Band of Lake Superior Chippewa Indians of Wisconsin
194	Forest County Potawatomi Community	105	Saginaw Chippewa Indian Tribe of Michigan
92	Grand Traverse Band of Ottawa and Chippewa Indians	253	Saint Regis Mohawk Tribe
118	Keweenaw Bay Indian Community (L'Anse)	6	Seneca Nation of New York (Allegany)
169	Keweenaw Bay Indian Community (Ontonagon)	33	Seneca Nation of New York (Cattaraugus)
120	Lac du Flambeau Band of Lake Superior Chippewa Indians	165	Seneca Nation of New York (Oil Springs)
121	Lac Vieux Desert Band of Lake Superior Chippewa Indians	265	Tonawanda Band of Seneca Indians of New York
		274	Tuscarora Nation of New York

Source: (USDOI, 1999).

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

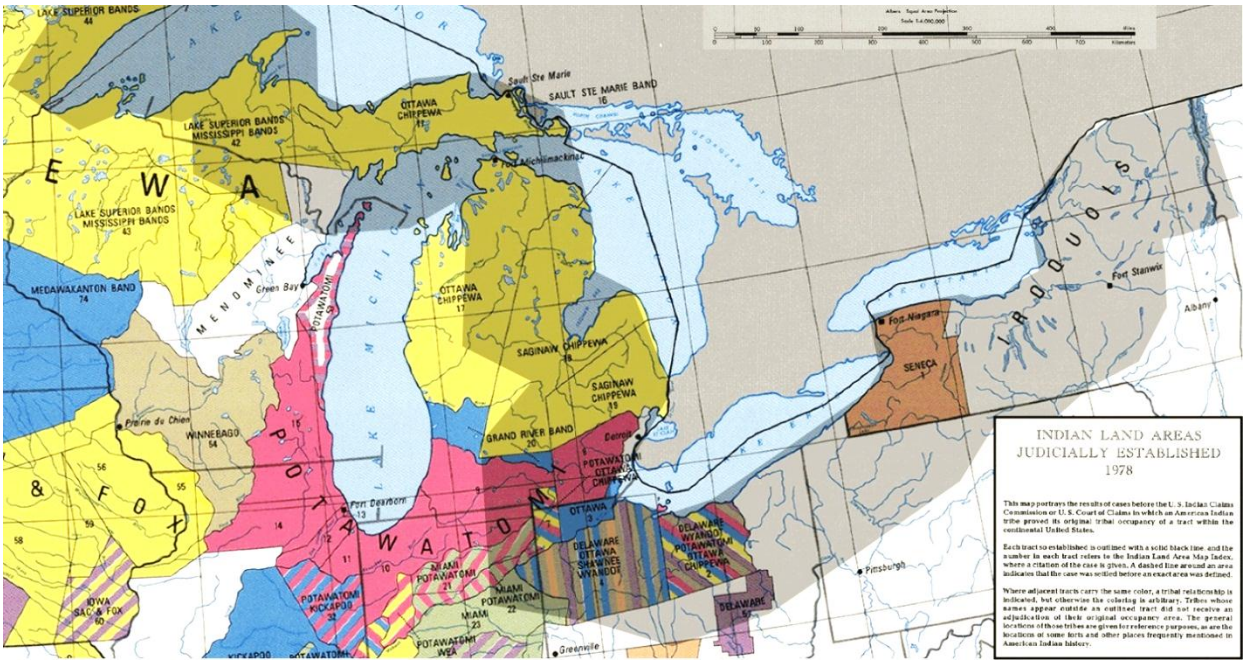
Figure 6.11-2. Nineteenth-Century Cessions, Reservations, and Portages (1907)



Source: (ancestry.com, No Date).

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

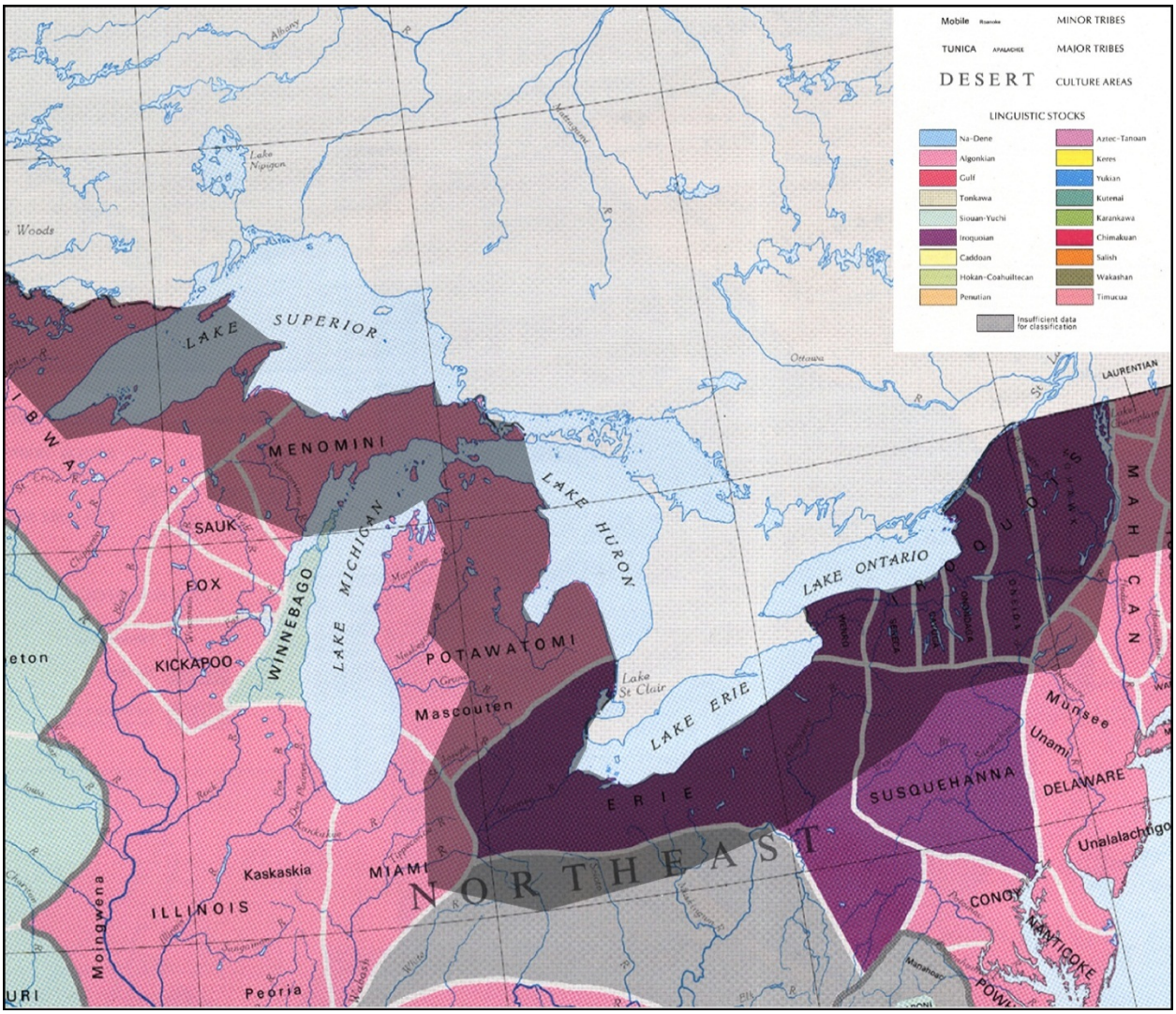
Figure 6.11-3. Judicially Established Indian Land Areas as of 1978



Source: (USDOI, 1978).

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

Figure 6.11-4. Early Tribal, Cultural, and Linguistic Areas



Source: (USDOI, 1991).

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

6.11.2.7 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 Great Lakes 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.

New York

Paleontologically sensitive geological units in New York include predominantly Paleozoic and Cenozoic deposits. Paleozoic deposits represent a fast-rising and then eventually falling sea level. Fossils of trilobites, brachiopods, clams, and other marine organisms can be found in these rocks. Other geological units within the study area represent early deltas that contained small forests and other plants. Cenozoic deposits consist of Pleistocene glacial deposits, such as terminal and lateral moraines, containing large-vertebrate fossils.

Pennsylvania

Paleontological-sensitive geological units in Pennsylvania include predominantly Paleozoic and Cenozoic deposits. Paleozoic deposits range from shallow marine deposits that contain limestone and mudstones to terrestrial sandstone deposits. Inscribed in the Cenozoic deposits of the study area is also the continental collision of Gondwana. Fossils include many different marine forms such as trilobites and terrestrial deposits such as scale trees and ferns. Cenozoic deposits include glacial deposits containing large-vertebrate fossils.

Ohio

Paleontological-sensitive geological units in Ohio include only Paleozoic age and Cenozoic age sedimentary deposits. Paleozoic deposits reflect changing sea levels and include sandstone, siltstone, and mudstone. Other sedimentary deposits also include deltas and swamp deposits within the study area. Cenozoic deposits represent the massive glacial advances and retreats and contain many different large-vertebrate fossils.

Michigan

Paleontologically sensitive geological units in Michigan include some of the oldest known fossils from the Precambrian, including filamentous algae. Most parts of the study area are covered with Paleozoic-age rocks representing shallow, tropical seas as well as nearshore, coal-forming swamps. Other deposits consist of Cenozoic glacial deposits containing large-vertebrate fossils.

Wisconsin

Paleontological-sensitive geological units in Wisconsin include Paleozoic sandstone, siltstone, and mudstone representing shallow sea environments. A large range of marine life from brachiopods to sharks as well as soft-bodied fossils have been found. Other deposits are of Cenozoic age and represent glacial deposits containing wooly-mammoth and other large-vertebrate fossils.

6.12 ENVIRONMENTAL JUSTICE AND PROTECTION OF CHILDREN

6.12.1 INTRODUCTION

Executive Order 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 U.S. Environmental Protection Agency (EPA) 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).

Executive Order 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).

6.12.2 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 U.S. Customs and Border Protection (CBP) program alternatives in the Great Lakes 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 Programmatic Environmental Impact Statement (PEIS).

The study area for the evaluation of environmental-justice effects is defined—in accordance with section 6.10, 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 (Great Lakes Region) includes the border communities in the States of Michigan, New York, Ohio, Pennsylvania, and Wisconsin. The study area north of the Great Lakes Region in Canada includes the border communities in the Province of Ontario. For comparison purposes, the analysis also includes the population(s) of the respective border states and Canadian province as a whole. Border communities are defined geographically by the administrative boundaries of American counties and Canadian census divisions contained within or overlapping the study area. A detailed demographic analysis of the study area is in Section 6.10.

6.12.1.1 Minority Populations

The most recent U.S. Census (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 (USDOC, 2000a). Statistical data from this census have been used to characterize the minority populations within

the Great Lakes Region. Summary statistics for minority populations in the Great Lakes Region, their respective states, and the Nation are presented in Table 6.12-1.

In three of the states within the region—New York, Pennsylvania, and Wisconsin—the minority percentage of the population in the border communities is substantially lower than that found in the general population of the state. The population of the border communities in Michigan contains a somewhat higher minority percentage than the State of Michigan as a whole. Minority percentages for both the Ohio portion of the study area and the Ohio State population are relatively similar, with a difference of 0.1 percent. Within the Great Lakes Region, African-American populations constitute the largest single minority. These populations are present in proportions similar to that for the regional population, 11.9 percent, and for the national population, 12.4 percent. Populations of Hispanic origin, although making up 6.9 percent of the combined population of all five states in the region, represent only 2.6 percent of the study-area population.

Table 6.12-1. Minority Statistics for the Great Lakes Region (Percent of Population)

Border State/Region*		White	Black or African American	American Indian and Alaska Native	Asian, Native Hawaiian, Pacific Islander, Other	More Than One Group	Hispanic Origin**
Michigan	Great Lakes Region	76.7	17.4	0.6	3.2	2.2	2.9
	Statewide	80.1	14.1	0.6	3.1	2.1	3.2
New York	Great Lakes Region	88.1	7.2	0.6	2.6	1.6	2.8
	Statewide	67.9	15.7	0.4	12.7	3.2	15.1
Ohio	Great Lakes Region	85.0	11.3	0.2	2.0	1.5	2.4
	Statewide	84.9	11.3	0.2	2.0	1.5	1.9
Pennsylvania	Great Lakes Region	95.3	2.8	0.1	0.8	0.9	1.0
	Statewide	85.4	9.9	0.2	3.3	1.3	3.2
Wisconsin	Great Lakes Region	92.3	0.3	5.1	0.8	1.5	0.8
	Statewide	89.0	5.6	0.9	3.1	1.3	3.6
Great Lakes Region Total	Great Lakes Region	83.4	11.9	0.5	2.5	1.7	2.6
	Selected States	79.0	12.4	0.4	6.1	2.1	6.9
Total United States		**75.1**	**12.2**	**0.9**	**9.2**	**2.6**	**12.5**

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 Great Lakes Region in Canada are taken from the 2006 Census of Canada (Table 6.12-2). For the border communities of the Province of Ontario, minority populations constitute 23.8 percent of the total population. This is 1 percent higher than the 22.8 percent minority population of the province as a whole and substantially higher than the 16.2 percent visible minority population of Canada as a whole.

The "Other Visible Minority" population (including multiple ethnicities) constitutes the largest single minority category in both the study area north of the Great Lakes Region and in the Province of Ontario as a whole. This category consists primarily of the following groups:

Chinese, South Asian, Arab, West Asian, Filipino, Southeast Asian, Latin American, Japanese, and Korean. However, populations identifying as Black constitute the largest single identifiable minority within this study area and the provincial population. The percentage of the population represented by Black populations exceeds the percentage of these populations in the national population.

Table 6.12-2. Visible Minority Statistics North of the Great Lakes Region in Canada (Percent of Population)

Border Province**		Not a Visible Minority	Black	Other Visible Minority***	Two or More Visible Minorities	Aboriginal Peoples****
Ontario	North of the Great Lakes Region	76.2	4.1	19.0	0.7	1.8
	Province	77.2	3.9	18.2	0.6	2.0
Total Canada		**83.8**	**2.5**	**13.3**	**0.4**	**3.8**

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 row account only for those portions of the province 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.

6.12.1.2 Low-Income Populations

Data from the most recently completed U.S. Census (USDOC, 2000b; USDOC, 2000c) were used to characterize low-income minority populations for the Great Lakes Region. Median household income and poverty rates are in Table 6.12-3.

The median household income for the border communities in the Great Lakes Region, $53,486, was slightly lower than the $54,005 median for the total American border region and $435 higher than the national median of $53,051. The study area in the State of Michigan had a higher median income than either the total Great Lakes Region study area or the national population as a whole. Median incomes for the border communities in the remaining four states were generally lower than the national level.

In 2000, the poverty rate for the Great Lakes Region was 1.4 percent lower than that for the Nation as a whole and comparable to the rate for the total American border region of 10.8 percent. Border communities in the study areas in all five states considered individually had a generally lower poverty rate than the Nation as a whole. However, the border communities in the States of Michigan, Pennsylvania, and Wisconsin had higher rates than was evident for their respective state populations.

Table 6.12-3. Income and Poverty Statistics for the Great Lakes Region

Border State/Region*		Median Household Income** ($US)	Percent of Population Below the Poverty Line
Michigan	Great Lakes Region	59,190	10.8
	Statewide	56,428	10.5
New York	Great Lakes Region	48,877	12.1
	Statewide	54,819	14.6
Ohio	Great Lakes Region	52,318	10.2
	Statewide	51,740	10.6
Pennsylvania	Great Lakes Region	44,878	11.5
	Statewide	50,666	11.0
Wisconsin	Great Lakes Region	43,018	11.5
	Statewide	55,322	8.7
Great Lakes Region Total	Great Lakes Region	53,486	11.0
	Selected States	53,658	11.8
Total United States		**53,051**	**12.4**

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 U.S. Census in inflation-adjusted 2009 U.S. dollars.

Data on median household income and populations living below the poverty level north of the Great Lakes Region in Canada were gathered from the 2006 Census of Canada. Statistics for Ontario Province are in Table 6.12-4.

The median income for the border communities of Ontario Province, $57,404, was slightly higher than the median for the province as a whole and $8,011 higher than the national median. Based on the percentage of low-income economic families, the poverty rate for border communities in Ontario is generally similar (within 0.2 percent) to that for the province as a whole and for the national population.

Table 6.12-4. Income and Poverty Statistics North of the Great Lakes Region in Canada

Border Province*		Median Household Income** ($US)	Percent of Low-Income Economic Families***
Ontario	North of the Great Lakes Region	57,404	11.8
	Province	55,674	11.7
Total Canada		**49,393**	**11.6**

Source: (StatCan, 2006b).

*Statistics presented in the unshaded row include only those portions of the province 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 U.S. Census. 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.

6.12.1.3 Population of Children under 18 Years of Age

The distribution of population by age for the Great Lakes Region is in Table 6.12-5. With the exception of the State of Michigan, which has a slightly higher percentage of children in both the border communities and the statewide population, the border communities of the remaining states and the individual states themselves do not have a higher percentage of children under the age of 18 in their populations than does the Nation as a whole.

Table 6.12-5. Age Distribution in the Great Lakes Region (Percent of Population)

Border State/Region*		Under 18	18-24	25-34	35-44	45-54	55-64	65+
Michigan	Great Lakes Region	25.9	9.0	14.0	16.4	13.9	8.7	12.2
	Statewide	26.1	9.4	13.6	16.2	13.7	8.7	12.3
New York	Great Lakes Region	24.8	9.7	12.4	16.1	13.7	8.9	14.3
	Statewide	24.6	9.3	14.4	16.5	13.5	8.9	12.9
Ohio	Great Lakes Region	25.4	8.7	12.8	16.0	14.0	9.1	14.1
	Statewide	25.4	9.3	13.3	16.1	13.7	8.9	13.3
Pennsylvania	Great Lakes Region	24.1	9.0	11.9	15.5	13.9	9.4	16.1
	Statewide	23.8	8.9	12.6	16.0	13.9	9.2	15.6
Wisconsin	Great Lakes Region	24.2	9.5	11.1	15.7	14.5	9.7	15.2
	Statewide	25.5	9.7	13.1	16.5	13.6	8.5	13.1
Great Lakes Region Total	Great Lakes Region	25.4	9.1	13.1	16.1	13.9	8.9	13.6
	Selected States	24.9	9.3	13.6	16.3	13.7	8.9	13.5
Total United States		**25.6**	**9.6**	**14.1**	**16.3**	**13.4**	**8.6**	**12.4**

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 Great Lakes Region in Canada is in Table 6.12-6. For the Province of Ontario, children under 20 years of age represent 25.3 percent of the population of the border communities. This is comparable to the percentage for the province as a whole and slightly higher than the national percentage of 24.7 percent.

Table 6.12-6. Age Distribution North of the Great Lakes Region in Canada (Percent of Population)

Border Province and Study Area*		Under 20	20-24	25-34	35-44	45-54	55-64	65+
Ontario	North of the Great Lakes Region	25.3	6.6	12.8	15.9	15.3	11.1	12.8
	Province	25.3	6.6	12.7	15.9	15.4	11.2	12.9
Total Canada		**24.7**	**6.6**	**12.8**	**15.3**	**15.8**	**11.7**	**13.0**

Source: (StatCan, 2006c).

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

6.13 HUMAN HEALTH AND SAFETY

INTRODUCTION

Many of the routine activities conducted by CBP in the Great Lakes 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.

6.13.1 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 on-site at ports of entry (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.

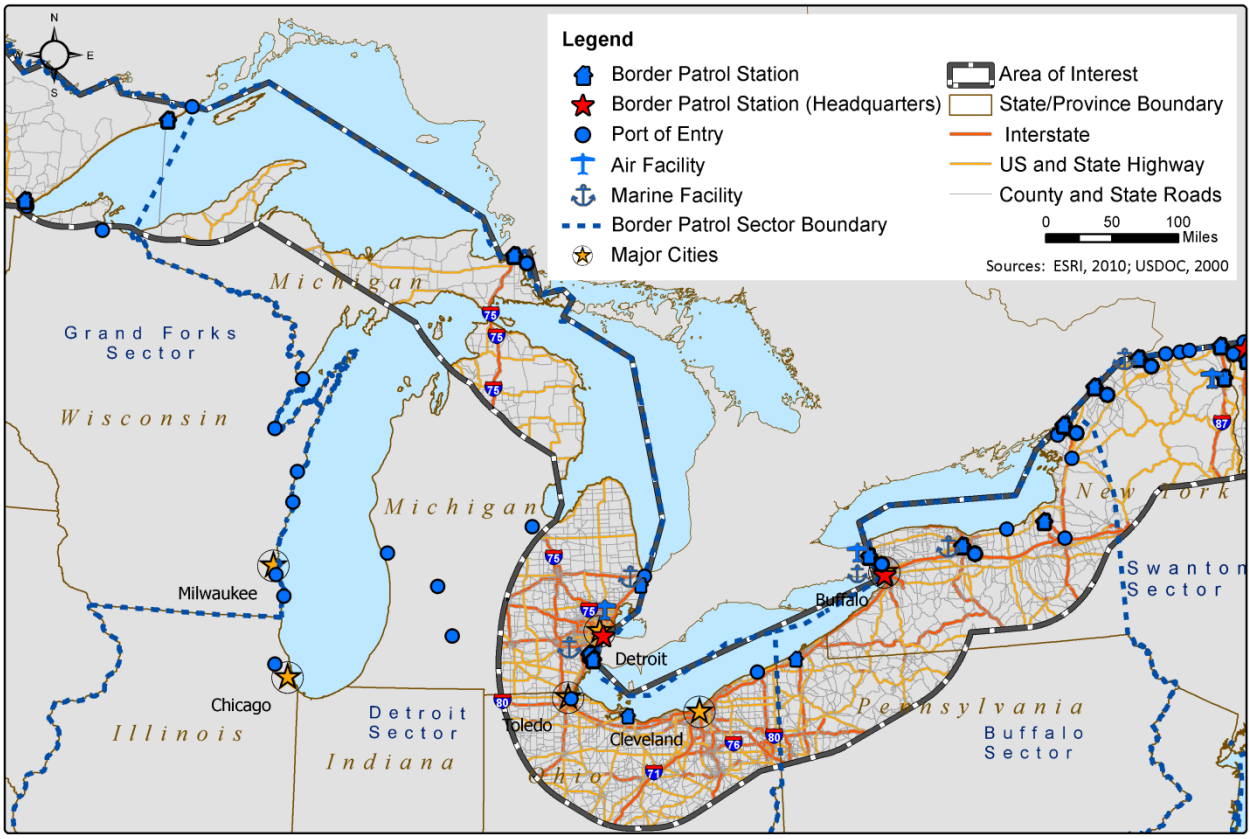
During these interceptions, HH&S effects are possible. Release of nonindigenous diseases into the United States would be harmful to HH&S. To prevent nonindigenous diseases from entering the United States, CBP places bans on certain animals, animal products, and other possible carriers of disease. In 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 American national, state, county, and local municipalities' paved roads. Figure 6.13-1 shows American national, state, and county roads that USBP agents can use for motorized patrolling in the Great Lakes 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 on 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 6.13-1. U.S., Interstate, State, and County Roads in the Great Lakes Region



Aircraft Operations

Manned aerial surveillance patrols are operated 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 can occur along the Great Lakes border. The Buffalo and Swanton Office of Air and Marines (OAMs) possess different equipment and resources for aerial patrols. In order to fly for CBP, USBP agents must have a Federal Aviation Administration (FAA)-issued license (USDHS, 2010a). Accidents during manned aerial surveillance patrols could potentially injure CBP's officers or members of the general public.

Unmanned Aircraft System (UAS) patrols can occur along the Great Lakes Region. 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's 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 unmanned aircraft in the civil airspace can be appropriately mitigated.

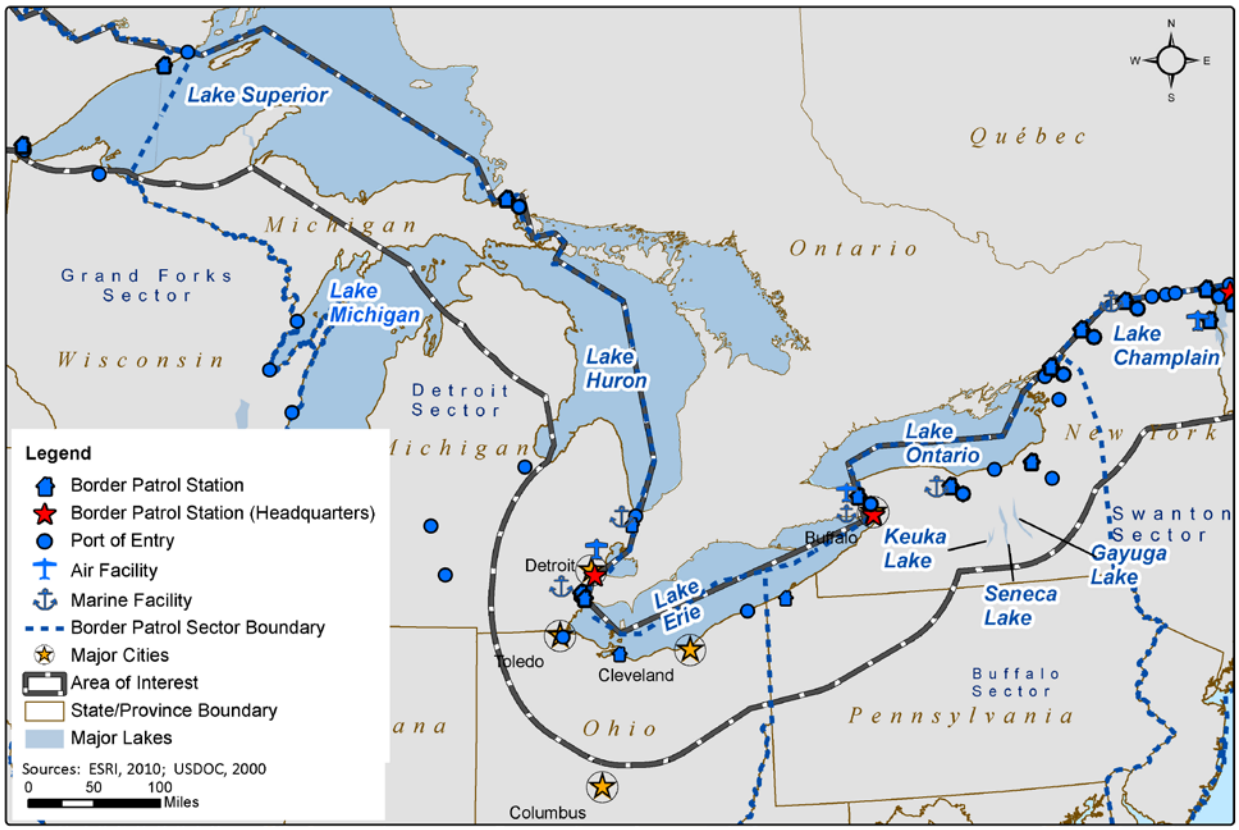
To minimize the risk of operating a UAS, the FAA frequently requires risk mitigations before granting a COA. These mitigations include special provisions unique to the requested type of operation. For example, the applicant may be restricted to operating only in a defined airspace or operating only during 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

The majority of waterways patrols along the Great Lakes Region occur on the Great Lakes. Figure 6.13-2 shows the navigable water in this region. To assist in river or lake patrols, OAM provides the USBP agents in this region with a range of watercrafts (USDHS, 2011). Accidents during patrols could take place between CBP, cross-border violators, and the general public.

Figure 6.13-2. Navigable Water in the Great Lakes 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 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 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).

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

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).

OSHA regulates RF and EM emissions 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 when exposed in the fair field of an RF transmitting source (USDHS, 2008a).

There are two tiers or 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).

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 8-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).

U.S. Environmental Protection Agency (EPA) 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).

Figure 6.13-3 CBP Officers Train at Firing Range

Source: (USDHS, No Date).

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).

6.14 HAZARDOUS AND OTHERWISE REGULATED MATERIALS

6.14.1 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.

6.14.1.1 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).

6.14.1.2 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 Environmental Protection Agency (EPA) or a state regulation as a hazardous waste. Hazardous wastes listed by the EPA 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 is hazardous combustion, or incineration, which is used to destroy hazardous organic components and reduce the volume of waste (USEPA, 2009a).

6.14.1.3 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 EPA has the authority to regulate these special-hazard substances under the Toxic Substances Control Act 15 U.S.C. 53. The EPA 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.

6.14.2 AFFECTED ENVIRONMENT

6.14.2.1 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.

6.15 UTILITIES AND INFRASTRUCTURE

6.15.1 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 U.S. Border Patrol stations, and construction, modernization, and operation of ports of entry (POEs). This section then describes the utility resources of most CBP facilities: USBP stations, POEs, forward operating bases (FOBs), traffic checkpoints, and communication towers.

6.15.2 AFFECTED ENVIRONMENT

6.15.2.1 Water Supply

Municipal water systems or rural lines, which supply facilities such as the Erie and Burke Border Patrol stations in Pennsylvania and New York, respectively, pump a minimum of 35,000 gallons of water per day from 88- to 100-million-gallon-capacity reservoirs, lakes, or systems of groundwater wells (USDHS, 2009h; USDHS, 2009i). A substantial reserve capacity remains in these lakes or reservoirs. Such systems provide water to between 1,100 to 250,000 customers (USDHS, 2009i; USDHS, 2009h).

For those sites with wells present such as the Churubusco and Cannon Corners POEs in New York, a number of scenarios for water provisioning may be employed. Some utilize on-site 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 on-site well. Generally, wells are within 50 feet of the main building; water is pumped through an in-line water filter system and stored in multiple storage tanks (USDHS, 2009j). When necessary (and possible), water is filtered, softened, distilled, or treated as required for potable uses. If no usable on-site well exists for potable water, the water may come from a leased, off-site 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 on-site 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 5-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.

6.15.2.2 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 872,000 to 4.5 million customers over a 36,100 square mile area throughout the Great Lakes Region (NYSEG, 2011; USDHS, 2009h). Service providers have a capacity of 14,000 MW (FEC, 2011). 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

facilities, and secondary electrical service is provided from a pole-mounted transformer. Many of these facilities have an on-site emergency electric generator with a 250-, 275-, 500-, or 1,000-gallon diesel fuel tank (USDHS, 2003d; USDHS, 2003e; USDHS, 2003f; USDHS, 2003g), which is required for periods when the primary power supply is not available. The Cannon Corners POE in New York, for example, loses power five to ten times a year due to storms (USDHS, 2010c).

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 monopole towers by the commercial power grid; in addition, communication relay towers (CRTs) typically utilize a 17-kW generator. Remote video surveillance system (RVSS) CRTs have a 30-kW generator (USDHS, 2008b). If the commercial power grid is not immediately available when towers are deployed, primary power is supplied by a 30-kW generator and a 2,000-gallon propane-fueled generator until the commercial power infrastructure is in place. Back-up power for each tower site is 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; the primary power source is 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 modem.

6.15.2.3 Fuel Supply

Propane, or natural gas, supplies fuel for heating, ventilation, and air conditioning (HVAC). On-site propane or diesel tanks stored on-site can also power emergency generators; alternatively a 5,000-gallon heating oil tank can provide for fuel storage, as is the case at the Massena POE (USDHS, 2003e). Some facilities have one or two additional 275-gallon fuel oil tanks (USDHS, 2003g). Others are serviced by underground natural gas pipelines. Service providers transport natural gas to nearly 731,000 customers (USDHS, 2009h).

Each tower utilizes a 500-gallon propane tank to fuel a back-up generator in case of power outages (USDHS, 2008b). Each 500-gallon tank would 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 30kW generator using a larger, 2,000-gallon propane tank. These larger propane tanks would be refueled every seven days (USDHS, 2008b).

6.15.2.4 Wastewater Management

Urban CBP facilities such as the Erie and Burke Border Patrol stations are connected via municipal piping systems to wastewater treatment plants, which operate at up to a 68.8 million gallon capacity per day (mgd) (CoE, 2011). As an example, the Erie sanitary treatment plant in

New York is permitted for 68.8 mgd for hydraulic flow and an organic loading of 124,000 pounds per day, and it had a 2001 average flow of 40.5 mgd and an organic loading of 73,344 pounds (CoE, 2011; USDHS, 2009i).

In more rural locations, like the Churubusco and Cannon Corners POEs in New York, sanitary waste is disposed to an on-site septic tank. 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. 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 treated twice a year, but those approaching capacity can be pumped as often as once every three months.

The state Department of Transportation or appropriate county-level department generally provides snow removal on state highways, and on-site snow removal service is contracted out to a janitor or maintenance company (USDHS, 2009j).

6.16 ROADWAYS AND TRAFFIC

6.16.1 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 LPOEs 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 provides an overview of traffic and transportation regulations and describes the general traffic conditions for urban, suburban, rural, and remote areas.

6.16.2 AFFECTED ENVIRONMENT

6.16.2.1 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. The areas along the Great Lakes border range from remote to urban. Travel destinations can be as diverse as national parks, national forests, and wilderness areas to major tourist attractions like Niagara Falls and metropolitan destinations such as Buffalo, Detroit, and Chicago.

The number of motor vehicles in the United States has been steadily increasing, with more than 200 million vehicles registered in 1996. The increase during the 10-year period from 1986 to 1996 was greater than 17 percent. The number of passenger cars nationwide decreased during that period by 0.3 million, and the number of trucks grew by almost 30 million, most in the light-truck category. The number of motorcycles decreased from 5.2 million to 3.9 million.

Annual travel on American roadways reached an estimated 2.5 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 accounted for 1.5 trillion vehicle-miles in 1996, or 61 percent of the total, compared to 44 percent in 1960. 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 6.16-1.

Table 6.16-1. Percent Distribution of Traffic by Vehicle Class, Total United States

Type of Roadway	Vehicles (%)	
	Noncommercial	Commercial
Rural		
Interstate	81.6	18.4
Other principal arterials	87.2	12.8
Minor arterial, collector and local	88.5	11.5
Rural average	86.6	13.4
Urban		
Interstate	88.2	11.8
Other freeways and expressways	90.5	9.5
Other principal arterials	89.5	10.5
Minor arterials	90.4	9.6
Collectors	90.3	9.7
Local	91.0	9.0
Urban average	89.8	10.2

Source: (USDOT, 1996).

6.16.2.2 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) defined: LOS A represents the best operating conditions with no congestion, and LOS F is the worst 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.

6.16.2.3 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, and 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 and more spread out, occurring 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.

6.16.2.4 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, 7:00–9:00 a.m. and 4:00–6:00 p.m., Monday through Friday. Other reasons for congestion in urban areas are emergency vehicles, accidents, and vehicle breakdowns. Buffalo and Syracuse, NY; Erie, PA; Detroit, MI; Chicago, IL; and Cleveland, OH are urban areas within 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 characterized by very unstable or forced traffic flow.

Urban streets show less variation than other areas. Most users 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 7:00–9:00 a.m. and 4:00–6:00 p.m. Traffic congestion in suburban areas is normally confined to primary and secondary arterials, not residential areas. Public transportation is often provided, and traffic reports are available for updated roadway conditions.

6.16.2.5 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 in 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 NPS traffic reports are the primary sources of updates for rural and remote roadway conditions (USDOI, 2010).

6.16.2.6 Federal and State Transportation Regulations

LPOEs across the regions are accessed by a number of highways that are maintained by each state's Department of Transportation (DOT) or municipal highway authority. In remote areas where trails and gravel roadways are used, it is the maintaining agencies 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 S-1.

6.16.2.7 CBP's Activities Affecting Roadways and Traffic

CBP's activities include enforcement of customs, immigration, and agriculture regulations at American 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 LPOEs, 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.

Land Ports of Entry

Many different roadways including interstates, American highways, state highways, and rural roadways approach the Land Ports of Entry (LPOEs) along the Northern Border within this region.

These cross-border access points are often co-located with towns and cities adjacent to the border, and roadways facilitate traffic approaching and departing from the LPOEs.

Vehicles entering LPOEs from Canada proceed across the border and then separate into inspection lanes. Often inspections of commercial vehicles and passenger vehicles are conducted in separate areas. These are normally parking areas for vehicles that are selected for secondary inspection, with dedicated truck lanes to help facilitate flow of larger vehicles. At some of the larger 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 LPOEs serving predominantly business travel. Monthly variations are more severe on rural LPOEs than on urban entry points. Vehicle queues are common, particularly at urban LPOEs, 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 LPOE from a transportation and traffic standpoint. The busiest LPOEs in the Great Lakes Region are in Table 6.16-2. A complete list of LPOEs and their level of use by transportation mode is provided in Appendix S-2.

Table 6.16-2. Busiest Land Points of Entry for Passenger Vehicles in the Great Lakes Region

Rank	Port Name	Annual Personal Vehicles	Annual Personal Vehicle Passengers
1	NY: Buffalo-Niagara Falls	5,291,623	11,817,527
2	MI: Detroit	4,082,030	7,270,765
4	MI: Port Huron	1,570,273	3,319,652
5	NY: Champlain-Rouses Pt.	1,040,154	2,198,127
7	NY: Massena	809,696	1,558,704
8	MI: Sault Ste. Marie	787,692	1,422,293
11	NY: Alexandria Bay/Cape Vincent	646,851	1,514,682
17	MN: International Falls	453,695	907,392
21	NY: Ogdensburg	265,008	556,515
24	NY: Trout River/Fort Covington/Chateaugay	191,545	385,094

Source: (USDHS, 2009).

At LPOEs 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 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 LPOE 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 American 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, easily influenced by exchange rates and economic conditions (BPRI, 2010).

All LPOEs facilitate pedestrians and cyclists. However, pedestrian and bicycle circulation is infrequent at most rural LPOEs because of their remote locations and distance from residential areas. Some LPOEs have provisions for bike storage. Many LPOEs 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.

Nonroad and Off-road Activities

Traffic surveillance operations off-road 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.

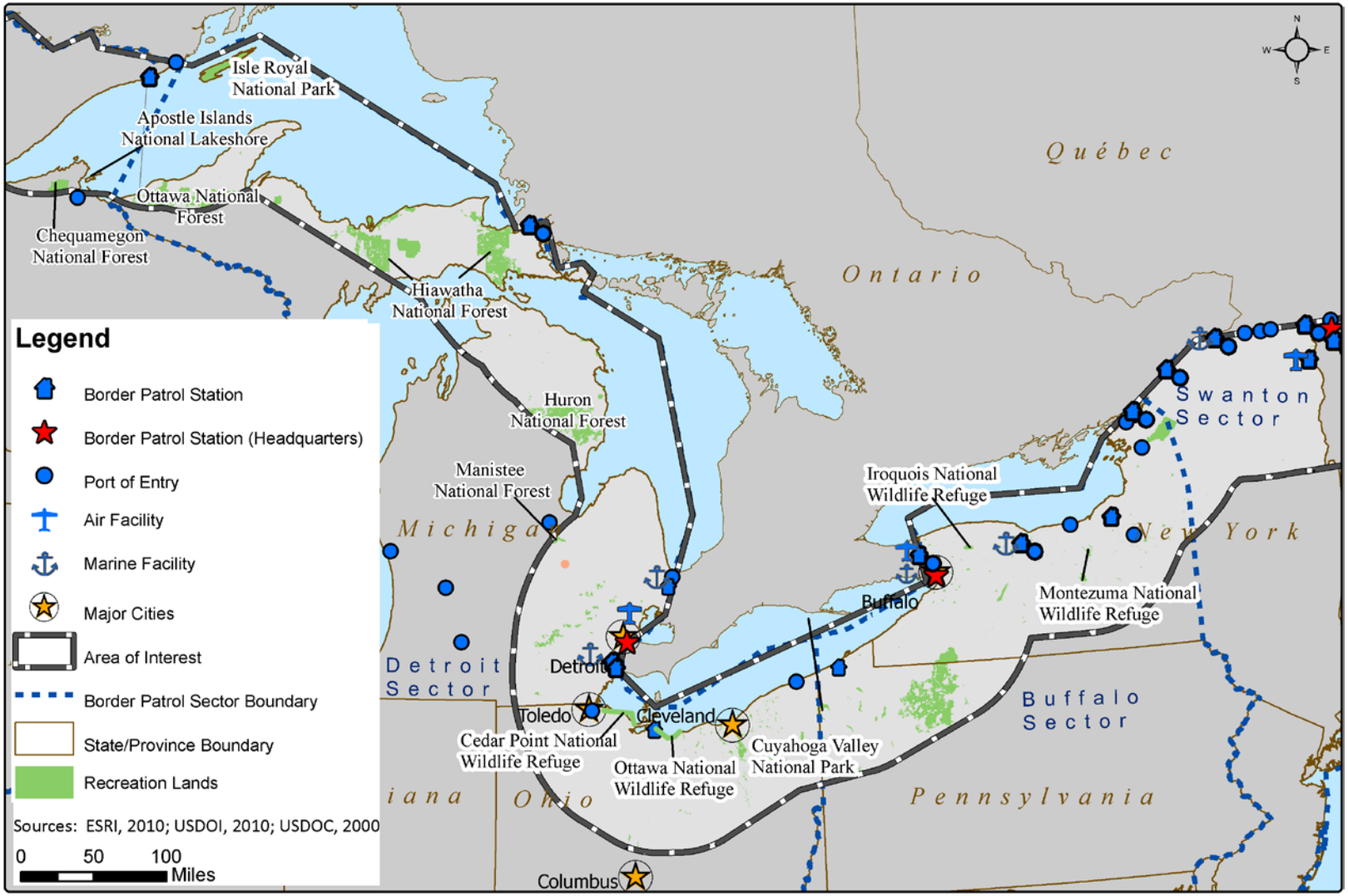
USBP Stations vary in size and typically include any or all of the following components: administrative and support buildings, vehicle maintenance garages, equine and canine facilities, vehicle wash facilities, fuel tanks, small arms practice ranges, undocumented alien processing and temporary holding facilities, confiscated vehicle storage facilities, and agent and visitor parking. CBP's 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's activities that may affect transportation resources include UAS activities, Manned Aerial Surveillance Patrols, and other patrols.

6.17 RECREATION

6.17.1 INTRODUCTION

A wide variety of recreation areas exists along the Northern Border on both the U.S. and Canadian sides. On the U.S. side, these recreational areas include national parks (NP), 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. American recreation categories are described briefly below, since the designation bears on the nature of activities permitted. Figure 6.17-1 shows a map of federally protected recreation areas in the Great Lakes Region. It also includes the Wildcat Brook Wild and Scenic River.

Figure 6.17-1. Federally Protected Recreation Areas, Including National Forests, Parks, Recreation Areas, and Wildlife Refuges in the Great Lakes Region



6.17.2 AFFECTED ENVIRONMENT

National parks, national forests, national wilderness areas, national wildlife refuges, and national recreation areas within the Great Lakes 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 impacted by activities along the border.

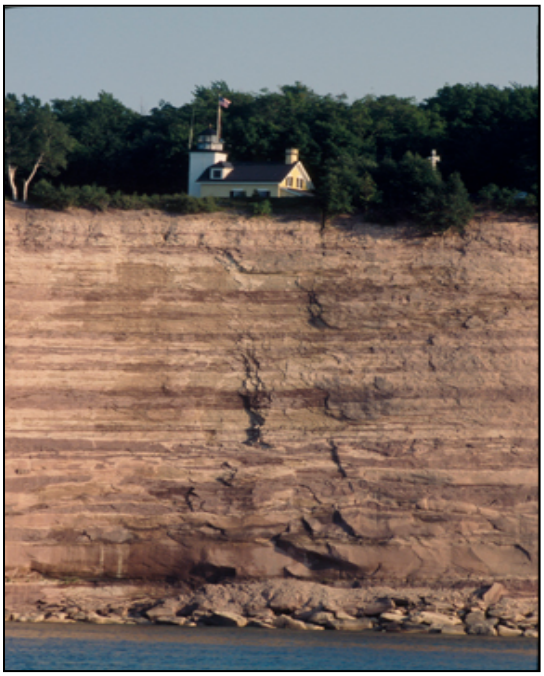
The Great Lakes Region contains varied types of recreation areas. The area contains high-, medium-, and low-impact use areas, with slightly more low- and high-impact areas. Many recreation areas contain multiple types of use areas. National forests, national wildlife refuges, and national parks all occur within this study area. Water-related recreation resources, including Wild and Scenic Rivers, swimming beaches, and boating and canoeing areas predominate. Popular recreation activities include fishing, hiking, off-highway vehicle (OHV) riding, camping, motorized and nonmotorized boating, hunting, and swimming.

6.17.2.1 Michigan

Hiawatha National Forest

This 1 million acre national forest lies between Lake Superior and Lake Michigan, near Canadian marine boundaries. It has five National Wild and Scenic Rivers: the Carp, Indian, Sturgeon, Tahquamenon, and Whitefish. It also includes Grand Island National Recreation Area, Whitefish Scenic Byway, and five wilderness areas: Big Island Lake Wilderness, Delirium Wilderness, Horseshoe Bay Wilderness, Mackinac Wilderness, Rock River Canyon Wilderness, and Round Island Wilderness. Recreational activities include beachcombing, mountain biking, climbing, fishing, hiking, hunting, OHV riding, picnicking, and nature viewing. In addition, the forest has two rental cabins, 24 campground and group campsites, and 24 dispersed (primitive) campsites. Several boat launches and facilities for motorized boating also exist. Nonmotorized boating and swimming is allowed in many lakes and rivers. The annual visitation estimate is 490,700 visits. Much of this area can be categorized as a high-impact use area with some low- and medium-impact use areas (USDA, 2009j; USDA, 2010g).

Lighthouse in Hiawatha National Forest



Source: USDA, 2010j.

Huron-Manistee National Forest

The Huron-Manistee National Forest is in the upper northeast corner of Michigan, near the Canadian border that runs through Lake Huron. It approaches 1 million acres in size. Each year, the forest receives approximately 4 million recreation visits. The forest includes the 3,450-acre Nordhouse Dunes Wilderness Area, the Au Sable National Scenic River, and the Pere Marquette River National Wild and Scenic River. Approximately 10 miles of trails run within the wilderness and are accessible from two developed trailheads. Within the forest, recreation activities include hiking, bicycling, beachcombing, horse riding, fishing, hunting, OHV riding, and picnicking. Over 30 campsites and several sites for RV camping also exist. Non-campground camping is allowed almost everywhere in the forest. Many developed campgrounds have launches for motorized boats. In the winter, snowmobiling, cross-country skiing, and snowshoeing are also allowed. The annual visitation estimate for forest visits is 4,063,100. Much of this park can be categorized as a high-impact use area (USDA, 2010h; USDA, 2009k).

Ottawa National Forest

This forest approaches 1 million acres and is located in the western upper peninsula of Michigan. It borders Lake Superior, which includes the Canadian underwater border. The forest includes the Sylvania Wilderness and Sylvania Recreation Area; when combined, these two areas encompass 18,327 acres of wilderness. In addition, the forest includes the Sturgeon Wild and Scenic River, the Sturgeon River Gorge Wilderness (which includes few overgrown trails and one campground), the McCormick Wilderness (very rugged with a few unmaintained trails), the Lake Ottawa Recreation Area, and the Black River Harbor Campground Recreation area. Overall, 22 developed campgrounds exist in the Ottawa NF. All are accessible by road and most service both tent and trailer campers. One large group campground can accommodate 100 campers; dispersed camping is also allowed in the forest. In addition, more than 196 miles of

hiking and backpacking trails run through the forest along with paved day-hiking trails from the Ottawa Lake Recreation Area. Other recreation activities include bicycling, beachcombing, horse riding, fishing, hunting, OHV riding, and picnicking. There are 450 miles of groomed snowmobile trails and areas for cross-country skiing and snowshoeing. The national forest's annual visitation estimate is 507,000. Much of this park can be categorized as a high-impact use area (USDA, 2009l; USDA, 2010i).

Isle Royale National Park

Isle Royale National Park sits on Isle Royale in Lake Superior—less than 10 miles from the underwater Canadian border and a little over 20 miles from Canadian land. It is only accessible by boat or seaplane. The park has 132,018 acres of designated wilderness. In the wilderness, there are 36 established primitive campgrounds and 170 miles of trail and shorelines. Canoeing and kayaking on Isle Royale is very popular (some campgrounds are only accessible by canoe or kayak). There are several dock campgrounds. Motorized canoeing is only allowed in Lake Superior. Other recreational activities include fishing, day hiking, and scuba diving to explore shipwrecks. Between 2000 and 2009, the annual visitation ranged from 14,038 to 21,096 visitors per year. Most of this area can be categorized as a low-impact use area (USDOI, 2006b; USDOI, 2009l).

Ranger III is the largest ship owned and operated by the NPS and supports and provides transportation services to Isle Royale National Park

Source: USDOI, 2009l.

6.17.2.2 New York

Iroquois National Wildlife Refuge

This refuge sits midway between Rochester and Buffalo, New York, near Lake Ontario and has three nature trails and four wetland overlooks. Nonmotorized canoeing and kayaking is allowed on Oak Orchard Creek. There is one skiing trail. Regulated hunting is also permitted, but camping is not allowed. The NWR has numerous interpretive activities and events. Most of this area can be categorized as a low-impact use area (USDOI, 2010g).

Montezuma National Wildlife Refuge

Montezuma NWR lies between Rochester and Syracuse, approximately 20 miles from Lake Ontario. It is near Seneca Falls and the Finger Lakes. It contains 7,068 acres of land. There are six short trails (one mile or less) in the NWR. There is also a wildlife drive route, a visitor

center, and several observation and photography locations. Most of this area can be categorized as low-impact use area (USDOI, 2010h).

6.17.2.3 Ohio

Cuyahoga Valley National Park

The Cuyahoga Valley National Park is near Cleveland and Lake Erie. It has five primitive backcountry campsites at one campground along with an inn within park boundaries. Canoeing and kayaking are permitted, but discouraged due to potential water pollution. The park contains 125 miles of hiking trails. Other recreational activities include biking along designated bike paths, a scenic train ride, fishing, geocaching, golfing on one of four golf courses within the park, horseback riding, and picnicking. There is also a winter sports center that supports activities such as cross-country skiing, sledding, and ice fishing. Between 2000 and 2009, annual visitation ranged from 2,468,816 to 3,206,175. Much of this area can be categorized as a medium-impact use area (USDOI, 2010i; USDOI, 2009m).

Cedar Point National Wildlife Refuge

This small refuge is near Toledo, Ohio, on the shore of Lake Erie, approximately 20 miles from the underwater Canadian border. The refuge has 2,445 acres of marsh; most of it is closed to the public except for a fishing area that is open in the summer. Most of this area can be categorized as a low-impact use area (USDOI, 2009n).

Ottawa National Wildlife Refuge

This NWR sits slightly south of Cedar Point NWR on the shores of Lake Erie. The refuge is part of the Ottawa NWR Complex, which includes Cedar Point NWR, West Sister Island NWR, and Schoonover Waterfowl Production Area. In total, the complex includes over 9,000 acres. The refuge has ten miles of gravel/grass trails, monthly guided "hike the dikes" program in closed areas, and a shuttle service for disabled visitors. There is also a photo blind and monthly auto tours for wildlife observation. Camping and off-road vehicle use are not allowed. Controlled and regulated hunting and fishing are allowed in certain areas. Most of this area can be categorized as a low-impact use area (USDOI, 2010i).

6.17.2.4 Pennsylvania

Alleghany National Forest

Alleghany National Forest, in the northwest corner of Pennsylvania, features topography that varies a great deal in elevation. The park contains over 600 campsites and cabins, six boat launches, many miles of hiking, snowmobiling, and ATV trails. The park contains two designated wilderness areas—the Hickory Creek Wilderness and Allegheny Islands Wilderness—as well as two Wild and Scenic rivers—the Allegheny and Clarion rivers. Popular recreation activities include auto touring, fishing, hunting, horseback riding, skiing, hiking, camping, climbing, and ATV and snowmobile riding. This area can be categorized as a medium-impact use area (USDA, 2006).

6.17.2.5 Wisconsin

Chequamegon-Nicolet National Forest

The Chequamegon-Nicolet National Forest is in the upper northeast corner of Wisconsin, close to the Michigan border. It covers over 1.5 million acres and includes the Headwaters Wilderness (18,000 acres), Blackjack Springs Wilderness (5,800 acres), Porcupine Lake Wilderness (4,446 acre), Rainbow Lake Wilderness (6,583 acres), and Whisker Lake Wilderness (7,500 acres). It also includes the well-developed and maintained Anvil National Recreation Trail and the Morgan Falls St. Peter's Dome Trail. There are 800 miles of trails, 51 campgrounds, and eight rustic cabins. Many campgrounds offer space for RVs. Fishing and hunting are also very popular in this national forest. Certain trails are designated for mountain biking, horse riding, or OHV riding. Other activities include boating (motorized and nonmotorized), swimming, waterskiing, snowmobiling, cross-country skiing, and snowshoeing. The annual visitation estimate is 725,800. Much of this park can be categorized as a high-impact use area with some designated low-impact use areas (USDA, 2010j USDA, 2009m).

Apostle Islands National Lakeshore

The Apostle Islands sit in Lake Superior offshore of Wisconsin. The park includes 21 islands and 12 miles of mainland. Established group and individual campsites, as well as backcountry camping zones, exist in the park. Other recreation activities include boating, fishing, hiking, hunting, kayaking, and scuba diving. The islands have 50 miles of maintained trails (including some boardwalks). According to a visitor survey in 2004, the most common activities that visitors participated in during their visit included sightseeing (80 percent), walking on beaches (66 percent), and photography (57 percent). Between 2000 and 2009, visitation ranged from 151,881 and 189,051 visitors per year. Much of this area can be categorized as a medium-impact use area (USDOI, 2009o; USDOI, 2010j).