

**U.S. DEPARTMENT OF THE INTERIOR**

**FISH AND WILDLIFE SERVICE**

**ENVIRONMENTAL ASSESSMENT**

July 2012

**Visitor Center for the  
Detroit River International Wildlife Refuge**

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# **Chapter 1: Purpose and Need**

## **1.1 Purpose**

The purpose of this Environmental Assessment (EA) is to consider alternatives for the construction and site location selection of a refuge office and visitor center that would provide facilities to meet the administrative and visitor outreach needs of the U.S. Fish and Wildlife Service (Service) and Detroit River International Wildlife Refuge (IWR).

## **1.2 Need**

Refuge staff is currently co-located in a U.S. Environmental Protection Agency (EPA) facility called Large Lakes Research Station (9311 Groh Road, Grosse Ile, MI 48138). It is a gated, high-security facility located adjacent to the Grosse Ile Municipal Airport. This property was formerly a Naval Air Station dating back to 1926. The actual building was constructed during World War II as part of the Naval Air Station. U.S. EPA has occupied the property since 1970. Due to the nature of some U.S. EPA operations and its proximity to the Grosse Ile Municipal Airport, it is considered a high security facility with very limited public access. It must also be noted that it is located on an island in the lower Detroit River that is not convenient for public access.

Overall, the Large Lakes Research Station building is in need of numerous repairs and upgrades. U.S. Fish and Wildlife Service has limited space within the building and cannot expand staff because of space limitations, has no room to add university students, cannot offer environmental education in the building, and cannot host public events. The building also has limited space for parking of Service vehicles.

## **1.3 Background**

The Detroit River IWR was established by an Act of Congress which became Public law 107-91 on December 21, 2001. Section 4 of the Act states the following purposes for the new IWR:

1. To protect the remaining high-quality fish and wildlife habitats of the Detroit River before they are lost to further development and to restore and enhance degraded wildlife habitats associated with the Detroit River
2. To assist in international efforts to conserve, enhance, and restore the native aquatic and terrestrial community characteristics of the Detroit River (including associated fish, wildlife, and plant species) both in the United States and Canada
3. To facilitate partnerships among the United States Fish and Wildlife Service, Canadian national and provincial authorities, State and local governments, local communities in the United States and in Canada, conservation organizations, and other non-Federal entities to promote public awareness of the resources of the Detroit River

Upon establishment in 2001, all lands within the former Wyandotte National Wildlife Refuge were incorporated into Detroit River IWR. The Wyandotte National Wildlife Refuge was established by an Act of Congress known as Public Law 87-119, 75 Stat. 243, 87th Congress, H.R. 1182, dated August 3, 1961: ... “to be maintained as a refuge and breeding place for migratory birds and other wildlife...”. Mud Island was added to Wyandotte NWR in January 2001 using the authority to accept donations of real property contained in the Fish and Wildlife Act of 1956 (16 U.S.C. 742f). The islands and shoals of the former Wyandotte NWR retain their original legislative purposes, as well as gaining new ones from the 2001 legislation.

Detroit River IWR currently owns nearly 2,000 acres divided into 13 separate units in southeast Michigan along the Detroit River and western basin of Lake Erie in Wayne and Monroe counties. Over 3,700 acres of additional land are divided into five units managed under cooperative management agreements between the Refuge and other landowners. The Refuge acquisition boundary stretches along 48 miles of Detroit River and western Lake Erie shoreline, from the Rouge River to the Ohio state line. Detroit River IWR is within a 45-minute drive of nearly seven million people in the Detroit Metropolitan Area, the Windsor/Essex County region of Ontario, and the Toledo (Ohio) Metropolitan Area.

Through the Comprehensive Conservation Plan process completed in 2005, all six priority wildlife dependent recreational uses, including hunting, fishing, wildlife observation and photography, and environmental education and interpretation, were found to be compatible. Current annual Refuge visitation is less than 10,000, but projected to increase to over 100,000 annually. In addition, the Refuge participates in numerous annual offsite events and programs, including:

- Pointe Mouillee Waterfowl Festival (8,000-10,000);
- Hawkfest at Lake Erie Metropark (5,000-7,000);
- Detroit River Days at the Detroit RiverWalk (over 1,000,000); and
- World Wetlands Day at Gibraltar Carlson High School (2,000).

Public facilities, including a visitor center, a bookstore/giftshop, trails, wildlife observation decks, an environmental education shelter, and others, would substantially increase visitation and help achieve the Refuge’s goal of teaching the next generation of conservationists in this nearly seven million person urban area.

#### **1.4 Decision Framework**

The Regional Director for the Midwest Region (Region 3 of the U.S. Fish and Wildlife Service) will select one of the alternatives analyzed in detail and will determine, based on the facts and recommendations contained herein, whether this Environmental Assessment is adequate to support a Finding of No Significant Impact (FONSI) decision, or whether an Environmental Impact Statement (EIS) will need to be prepared.

## **1.5 Authority and Legal Compliance**

The National Wildlife Refuge System includes federal lands managed primarily to provide habitat for a diversity of fish, wildlife, and plant species. National Wildlife Refuges are established under many different authorities and funding sources for a variety of purposes. The purposes for Detroit River IWR were derived from several federal statutes, including the Migratory Bird Conservation Act, Refuge Recreation Act, and Detroit River International Wildlife Refuge Establishment Act.

In 2005 a Comprehensive Conservation Plan for Detroit River IWR, which involved an Environmental Assessment, was approved. This plan addressed the future management of the Refuge with goals, objectives, and strategies in six categories including, visitor services. One of the goals is to provide a wide variety of wildlife-dependent recreational and educational opportunities to allow the public to enjoy the resources of the Refuge and support the National Wildlife Refuge System. Exposing more people to the Service and the National Wildlife Refuge System and providing increased volumes of information through exhibits and interpretive opportunities is a priority for the Refuge.

## **Chapter 2: Description of Alternatives**

### **2.1 Formulation of Alternatives**

Alternatives for construction and site location of the refuge office and visitor center were developed based on internal meetings with engineers, facility managers, and refuge staff. All took into account the deficiencies of the current office space and the need to meet state and federal building codes, specifically related to seismic and ADA regulations.

An alternative of building a visitor center away from the Detroit River was not developed because the consensus among parties during the initial meetings was to take advantage of the interpretive opportunities near the river, which has greater diversity of fish, wildlife, and habitats than uplands away from the river. The placement of the visitor center along the river would galvanize a broad array of organizations whose missions reflect fish or wildlife conservation. Specifically, the lower Detroit River is a critically important area for fisherman, hunters, birders, and other fish and wildlife enthusiasts, which will help serve these groups and broader public's connection to this resource including the river, coastal wetlands, meadows, and uplands.

#### **2.1.1. Alternative 1: Construction of a New Facility at the Refuge Gateway (Preferred Alternative)**

Under this alternative, the U.S. Fish and Wildlife Service would construct a new refuge office and visitor center at the Refuge Gateway in Trenton, Michigan, consistent with the Comprehensive Conservation Plan for the Detroit River International Wildlife Refuge that identified the Refuge Gateway as “the proposed site of a future headquarters and visitor center” (Figure 1). The Refuge Gateway is owned by Wayne County and is 44 acres in size. U.S. Fish and Wildlife Service is looking to investigate options, including a possible land exchange of 4.2 acres at the Refuge Gateway for construction of a new facility and is working with Wayne County on those details. The Refuge Gateway is a former automotive manufacturing site that has been cleaned up and restored to meet all applicable state and federal standards for human health and wildlife.

Since acquisition of the property by Wayne County in 2002, the Service, Wayne County, and other partners have completed all recommended environmental cleanup of the site and restored habitats to expand the ecological buffer of Humbug Marsh, and to serve as the future home of the Refuge's headquarters and visitor center. As of 2012, 16 acres of wetlands have been restored, 25 acres of upland buffer habitat, 2.5 miles of shoreline at the Refuge Gateway and Humbug Marsh have had invasive *Phragmites* control, and 50 acres of upland habitats in Humbug Marsh have been treated for invasive plant species.

This site is located adjacent to the Refuge's Humbug Marsh Unit that is Michigan's only “Wetland of International Importance” designated under the Ramsar Convention. Humbug Marsh is considered an internationally important wetland because of its ecological importance in the Detroit River corridor and the Great Lakes Basin Ecosystem. It represents the last mile of undeveloped shoreline on the U.S. mainland of

Figure 1. Alternative locations for a Refuge Office and Visitor Center for the Detroit River International Wildlife Refuge.



the Detroit River and serves as vital habitat for 51 species of fish, over 100 plant species, 154 species of birds, seven species of reptiles and amphibians, and 46 species of dragonflies and damselflies.

The Refuge Gateway location has a compelling view of the “Conservation Crescent” (i.e., a series of islands and marshes spanning the lower river), 2.5 miles of hiking trails, two wildlife observation decks, a wetland boardwalk, interpretive signage in Humbug Marsh, and a kayak landing. It is also currently connected with 50 miles of continuous greenways through Downriver communities and has an existing kayak landing that is part of Detroit Heritage River Water Trail. Gravel access roads have already been constructed, as well as a temporary parking lot. Permanent parking areas for visitors and staff have been identified in the Master Plan to minimize loss of wildlife habitat.

This site is also one of 27 birding sites in the Windsor-Detroit metropolitan area that are featured in the “Byways to Flyways” bird driving tour map produced by the Refuge. It has also been identified as an Important Bird Area (IBA) by National Audubon Society and hosts a Christmas Bird Count. The waters adjacent to the Refuge Gateway and Humbug Marsh are part of the “walleye capital of the world” and boast the national record for the largest walleye ever caught in a Professional Walleye Trail tournament. A fishing pier has been designed to provide shore fishing in these waters. A boat dock for the Great Lakes school ship for environmental education will be constructed as part of the fishing pier where children from southeast Michigan can come and participate in vessel-based education in the Detroit River and western Lake Erie. These world-class public use opportunities are available within a 45-minute drive of nearly seven million people. The visitor center would be a LEED-certified facility, including geothermal heating/cooling, solar power, and energy efficient lighting, windows, and doors. The building would be universally accessible. The exhibits would showcase the unique features of the region’s fish, wildlife, and ecological assets including globally significant fish and wildlife migrations, imperiled Great Lakes forest communities, and well-preserved species and genetic resources only found at the adjacent Humbug Marsh and lower Detroit River Islands.

This project would also allow for a large increase in the number of educational and interpretive visits. The new facility would include a large open room that would primarily be used for educational activities. Currently, refuge staff does not have an area to give interpretive programs or other educational programs.

No changes in refuge regulations would be associated with this project. Some trails and activities might be closed during the construction process, but would be reopened after construction. Temporary parking would be provided during construction to access Humbug Marsh. Habitat impacts from parking will be very limited because of the site’s industrial history and the fact that parking has been planned through the Master Plan.

### **2.1.2. Alternative 2: Construction of a New Facility in Uplands of Humbug Marsh**

Under this alternative, the Service would construct a new office for refuge operations and a visitor center in Humbug Marsh in an area outside the Michigan Department of

Environmental Quality conservation easement currently in place to protect wetlands on site (Figure 1). This alternative would not have as compelling a view of the “Conservation Crescent” in the lower Detroit River and would cause the loss of approximately 6 acres of habitat in Ramsar “Wetland of International Importance.” It would not be in close proximity to the school ship dock, fishing pier, and kayak landing.

As in Alternative 1, the building would be LEED-certified and include geothermal heating/cooling, solar power, and energy efficient lighting, windows, and doors. The building would be universally accessible.

This project would not allow for as great an increase in the number of educational and interpretation visits as Alternative 1. Refuge staff would not have as desirable an area to give interpretive programs or other education programs because the river, school ship dock, fishing pier, and kayak landing would be a further distance away.

No changes in refuge regulations would be associated with this project. Habitat impacts of the building footprint and parking areas would be greater than Alternative 1 because all other refuge lands are currently managed for wildlife habitat. Again, approximately 6 acres of Humbug Marsh would be directly impacted. Currently, the uplands of Humbug Marsh are in a high quality state, with restoration work underway to improve ecological health.

### **2.1.3. Alternative 3: No Action**

Under this alternative, no construction of a new refuge office and visitor center would occur (Figure 1). Refuge staff would continue to be co-located with U.S. EPA at its Large Lakes Research Station that is a high security facility adjacent to the Grosse Ile Municipal Airport. This office is located on the island of Grosse Ile and not easily accessible to most southeast Michigan residents. No public use or educational activities can occur in this office because of the nature of some U.S. EPA operations by Criminal Investigations Division and Superfund, and its proximity to Grosse Ile Municipal Airport. The building was constructed during World War. U.S. EPA has occupied the property since 1970.

Overall, the Large Lakes Research Station building is in need of numerous repairs and upgrades. U.S. Fish and Wildlife Service has limited space within the building and cannot expand staff because of space limitations, has no room to add university students, cannot offer environmental education in the building, and cannot host public events. The building also has limited space for parking of Service vehicles.

Because of the age of the U.S. EPA building and the downsizing of U.S. EPA operations over the years, the Service is vulnerable if this facility closed.

## 2.2 Summary of Alternate Actions Table

<b>Actions</b>	<b>Alternative 1 (Preferred)</b>	<b>Alternative 2 (Rehabilitation)</b>	<b>Alternative 3 (No Action)</b>
Construct New Facility	Yes	Yes	No
Repair of Current Deficiencies	No	No	No
# Acres developed for building	Maximum of 4	Maximum of 4	0
# Acres developed for parking areas/trails	0 (parking already designated in Master Plan on former industrial land)	Maximum of 2	0
Access to established roads/parking areas	Yes	Yes	Yes
Utilities Present	Yes	No	Yes
Meet ADA Codes	Yes	Yes	Yes
Meet Seismic Codes	Yes	Yes	No
Increased Visitation	Yes (substantially)	Yes (but not as great as Alternative 1)	No
Increased Environmental Opportunities	Yes (substantially)	Yes (but not as great as Alternative 1)	No
Energy Efficient Design – LEED Certified	Yes	Yes	No

## **Chapter 3: Affected Environment**

### **3.1 Geographic Setting**

Detroit River IWR lands are located in Wayne and Monroe Counties in southeast Michigan. Prior to rapid anthropogenic alteration of the Detroit River and Lake Erie shorelines starting during European settlement (17<sup>th</sup> and 18<sup>th</sup> Centuries), the western Lake Erie shoreline consisted of open water shallow zones, followed by emergent wetlands of bulrushes and cattails with dynamic water levels, and transitioning to grassy zones dominated by bluejoint grass and sedges with forested wetlands. The Refuge contains lands that are part of freshwater deltas, drowned river mouths, and channelside wetlands. In the past, interior hardwood swamps were mosaicked further interior with prairies underlain by sand over clay where hydrology was continually re-engineered by beavers and shrubs inhibited by wildfire and Native American induced fire. Remnant patches of these former ecological features exist today in an altered, but very functional form that is critical to preservation of species in the region. Today, most of the shoreline is hardened with rock and concrete with the vast majority of wetlands drained for row crops. There are numerous communities including Trenton, Gibraltar, Rockwood, Estral Beach, Frenchtown, Monroe, and Erie. The remaining areas of unhardened shoreline containing plant and animal species adapted to the current western Lake Erie environment are held in State or Federal ownership as conservation land. Humbug Marsh is rare in that it has never been fully developed and exhibits a large amount of these ecological features in one location.

### **3.2 Socioeconomic Setting**

The regional population is nearly 7 million, so the economic landscape is complex and varies geographically. The site is located in Trenton, Michigan, but the City of Gibraltar and Grosse Ile Township are immediately adjacent. The 5-year estimates from 2006-2010 of median household income are as follows: Trenton (54,841); City of Gibraltar (60,250); Grosse Ile Township (81,118); Wyandotte (50,065); City of Monroe (42,673); Frenchtown Township (52,111); and Monroe Township (46,718). (U.S. Census Bureau 2012). The City of Detroit is 25 miles from the site with an estimated 5-year median income of 28,357. The immediate residents in the City of Trenton are 93.1% non-hispanic white, 1.3% African American, 0.5% Native American, 0.7% Asian, and 3.2% Hispanic or Latino. Michigan's median income is 48,432. The State contains 76.6 non-hispanic white, 14% African American, , 0.6% Native American, and 2.4% Asian and 4.4% Hispanic or Latino. Based on these most recent census data, there are no disproportionate minority or low income populations in the immediate project vicinity.

There is a high demand for access to Refuge land for compatible recreational uses. FLW Outdoors, one of the largest tournament fishing organizations in the world, has traditionally scheduled major bass and walleye tournaments offering up to \$1.5 million in prize money. In addition, the Professional Walleye Trail has offered Walleye Tour events on the Detroit River. All of these tournaments are economically important to local businesses. The Downriver Walleye Federation annually hosts numerous tournaments in the Detroit River and Lake Erie. Many local businesses specialize in bait, tackle, and boat

merchandise and charter fishing and hunting companies are available throughout the year. Waterfowl hunting is heavy on nearby state land and at the mouth of the Detroit River and Lake Erie.

Wildlife viewing, especially birdwatching, has become increasingly important in drawing visitors to the area's public lands. The Refuge is recognized as one of the best sites in North America to watch raptor migration. Passerine and waterbird migration is heavy during spring and fall, drawing birders into the region to see migration fallouts, hawk kettles, and specific species such as Swainson's hawk and golden eagle.

### **3.3 Ecological Communities on the Refuge Gateway and Humbug Marsh**

Humbug Marsh, of which approximately 185 acres is shallow shoals or Great Lakes coastal marsh, is important spawning habitat for many fish species found in the Detroit River and western Lake Erie. Complex and diverse plant and animal communities are associated with this shallow shoal area dominated by wild celery (*Vallisneria* sp.), pondweeds (*Potamogeton* sp.), muskgrass (*Chara* sp.), and other aquatic plants. The food web in these areas includes important commercial and sport fish, whose fry are dependent upon the organisms associated with periphyton. These areas are especially critical to bowfin (*Amia calva*), pumpkinseed (*Lepomis gibbosus*), bluegill (*Lepomis macrochirus*), largemouth bass (*Micropterus salmoides*), northern pike (*Esox lucius*), longnose gar (*Lepisosteus osseus*), and golden shiner (*Notemigonus crysoleucas*). Especially abundant in the spring is walleye (*Sander vitreus*) that migrate north up the Trenton Channel and white bass (*Morone chrysops*). Insect hatches, especially mayflies (Ephemeroptera) are important in these areas and are a critical part of the food web. Furthermore, the productive shoal habitats like Humbug Marsh are important stopover habitat for migratory birds, including a high proportion of the continental population of canvasback (*Aythya valisineria*), redhead (*Aythya americana*), American black duck (*Anas rubripes*), and lesser (*Aythya affinis*) and greater scaup (*Aythya marila*) in the offshore areas and northern pintail, bufflehead, mallards, teal, geese and others in the aquatic beds closer to shore.

In the emergent marshes, communities of plants and animals are highly influenced by Great Lakes abiotic processes of frequent water level fluctuation, sediment and seed transport, and chemical cycling. Most emergent wetlands of the Refuge lay on top of shallow clay soil, creating very anoxic conditions near the surface further influencing ecological succession. In general, emergent wetland zones of Humbug Marsh are dominated by cattail (*Typha* sp.), reed (*Phragmites australis*), and river bulrush (*Bolboshoenus fluviatilis*) with associates being arrowhead (*Sagittaria* sp.), bur-reed (*Sparganium* sp.), bulrush (*Scirpus* sp.), and rushes (*Juncus* sp.). Muskrats (*Ondatra zibethicus*) are an important natural disturbance in these emergent wetlands by feeding on vegetation. Other important animals include many amphibians and reptiles, including northern leopard frog (*Rana pipiens*), northern water snake (*Nerodia sipedon*), garter snakes (*Thamnophis*), and turtles.

Wet meadow zones are the most species rich areas on Refuge land. These areas are dominated by warm and cool season grasses, including bluejoint grass (*Calamagrostis canadensis*) and reed canary grass (*Phalaris arundinacea*). Plant associates in these areas include Ohio spiderwort (*Tradescantia ohioensis*), marsh fern (*Thelypteris palustris*), sensitive fern, (*Onoclea sensibilis*) marsh rose mallow (*Hibiscus palustris*), water hemlock (*Cicuta maculata*), blue vervain (*Verbena hastata*), ironweed (*Vernonia*), goldenrods (*Solidago*), and numerous species of sedges (*Carex*) and bulrushes (*Juncus*). Two known wet meadow areas exist at Humbug Marsh at the southwest area of Humbug Island and adjacent to the Monguagon delta. The composition of these areas are dependent upon the amount and duration of perched water on top of the glacial lakeplain soils during the spring and summer growing season. These wet meadows have complex food webs with important plant-animal interactions that promote a high level of use by larger wildlife, especially reptiles, migratory birds, mink (*Neovison vison*), fox (*Urocyon cinereoargenteus*, *Vulpes vulpes*), coyote (*Canis latrans*), raccoon (*Procyon lotor*), and white-tailed deer (*Odocoileus virginianus*). These zones are important for eastern fox snakes (*Elaphe gloydi*), which are endemic to western Lake Erie. In appropriate soil and moisture conditions, forested wetlands have developed on much of Humbug Marsh and are dominated by silver maples (*Acer saccharinum*), ashes (*Fraxinus*), elms (*Ulmus*), and swamp white oak (*Quercus bicolor*). These forested wetlands are heavily used by rusty blackbirds (*Euphagus carolinus*), which migrate through the Refuge in an extremely constricted corridor of the Detroit River and western Lake Erie.

Upland areas are croplands in different stages of forest succession which are dominated by smooth (*Cornus amomum*) and rough-leaved dogwood (*Cornus drummondii*), hawthorns (*Crataegus*), ashes, and elms. During the 20<sup>th</sup> century, most of Humbug Marsh was pasture and a storage area for military fleets during World War II. In these areas, forest communities developed after military operations and grazing ceased in the 1940s and 1970s, respectively. The majority was brush-hogged in preparation for development in December of 1998 with approximately 40 acres left undisturbed on the mainland. The uncut areas contain oaks dating to the 18<sup>th</sup> century. The forest type is a “flatwoods”, which occur in low-relief poorly drained mineral soils on glacial lake plain creating vegetative mosaics from the differing degrees of standing water in concert with light availability, so that oak and hickory (*Carya*) dominates drier areas, while ash, elm, and red oak (*Quercus rubra*) and swamp white oak comprise the areas where water is perched longer in the spring. A diverse spring flora occurs in these areas and sustains highly structured food webs in these forest communities.

### **3.4 Plant Communities of the Refuge Gateway and Humbug Marsh**

The Refuge contains 1-6 foot deep open water environments of Detroit River and western Lake Erie with communities composed of *Potamogeton*, *Vallisneria*, *Chara*, *Heteranthera*, *Ceratophyllum*, *Najas*, *Elodea*, and others. Local processes determine species composition such as current speed, substrate, light availability, turbidity, temperature, pollutants and other plant associates.

Refuge emergent wetland communities are diverse depending on hydrological processes, soil, ice scour, and the ability of invasive species to colonize. The Monguagon delta of

Humbug Marsh exhibits low flow-through, but relatively high water level fluctuation seeming to promote river bulrush (*Bolboschoenus fluviatilis*), *Schoenoplectus tabernaemontani*, and *Juncus effusus* with heavy colonization by *Typha Xglauca* and *Phragmites* until control efforts have reduced coverage of these species in the last few years.

The wet meadow zones at Humbug Marsh are dominated by blue-joint grass, reed canary grass, *Carex* (*C. lacustris*, *C. vulpinodea*, etc.) and are generally void of many trees because of the extreme hydrologic range from wet spring conditions to summer drought. Rough-leaved dogwoods do establish in some areas. Invasive European black alder (*Alnus glutinosa*) is common and being controlled by Refuge staff within the wet meadow zones.

Forest communities range widely in disturbance history and in invasive species establishment. Some communities on more drained sites are dominated by oak and hickory with associates of basswood, cherry, and walnut. The understory of Humbug Marsh is dominated by a mix of woodland grasses (e.g., *Leersia oryzoides*, *Glyceria striata*) and *Carex* (*C. blanda*, *C. cephalophora*, *C. molesta*, *C. pennsylvanica*, etc.) with *Polygonum*, *Ranunculus*, *Impatiens*, etc. Humbug Marsh contains numerous canopy black walnuts that inhibit woody plant growth underneath them with the understory dominated by cool season grasses (e.g., orchard grass and panic grass) with associates of blue-eyed grass, ironweed, goldenrods, roses, raspberries, and wild bergamot.

### **3.5 Animal Communities of the Refuge Gateway and Humbug Marsh**

#### **3.5.1 Fish**

Fish in the shallow waters of Humbug Marsh are diverse, including largemouth, small mouth, and white bass, bowfin, bullhead, gar, pike, rock bass, blue gill, pumpkinseed, emerald shiner, and yellow perch. The Refuge underwater habitats contain slow flowing wild celery beds, and faster currents around cobble, rip-rap, and boulders. The diversity of habitats makes many shallow water zones critical for spawning and nursery for many species.

#### **3.5.2 Mammals**

No mammal surveys have been conducted at Humbug Marsh.

#### **3.5.3 Birds**

The aquatic plant beds of Humbug Marsh are critical stopover habitat for spring and fall migrating canvasback, redhead, scaup, and tundra swans. The fall migration of migratory birds, and especially raptors, has been well known for decades. Each year, approximately 150,000 or more raptors are counted from the Detroit River Hawk Watch, a joint project between the Refuge and its Friends' Group, the International Wildlife Refuge Alliance. Humbug Marsh in particular provides unusually high quality bird-watching in spring and fall. Spring migration has large species diversity from regularly passing common loons and large flocks of northbound Bonaparte's gulls in March and April to dozens of species of neotropical migrants fueling on emerging foliage of oaks, hickories, elms, and ashes in

May. Fall migration is characterized by days of high volume passages of waterbirds, raptors, and songbirds all influenced by the geography of the lower Detroit River, being seen at Humbug Marsh Unit as they pass south or southwest. Rusty blackbirds are abundant during migration at Humbug Marsh and can be seen in the thousands during peak migration in March and again in October through November.

#### **3.5.4 Reptiles and Amphibians**

Humbug Marsh contains American toads, northern leopard frogs and western chorus frogs. Turtles likely include midland painted turtle, common snapping turtle, common map turtle, eastern spiny softshell, and Blanding's turtle. Snakes include eastern fox snake, northern water snake, eastern garter snake, Butler's garter snake

#### **3.5.5 Insects**

The Rouge River Bird Observatory has surveyed the dragonflies, damselflies, and butterflies at Humbug Marsh and the Refuge Gateway. Forty-six species of Odonata were recorded in 2007 and 2008: fifteen species of damselflies and 31 species of dragonflies. There have been 38 species of adult butterflies and skippers identified at Humbug Marsh.

### **3.6 Federally Threatened and Endangered Species**

The Indiana bat (*Miotis sodalis*), northern riffleshell (*Epioblasma torulosa rangiana*), and rayed bean (*Villosa fabalis*) are Federally endangered species that have the potential to be on the Refuge in the future, but are not currently known to be present. The eastern prairie fringed-orchid (*Platanthera leucophaea*) is Federally threatened and is known to occur only at Pointe Mouillee State Game Area and Cedar Point and Ottawa National Wildlife Refuges at this time. The eastern massasauga (*Sistrurus catenatus*) is a candidate for listing under the Endangered Species Act and has the potential to be on the Refuge, but is not currently known to be present.

#### **Indiana Bat (Endangered)**

The range-wide population of the Indiana bat has declined by nearly 60% since it was listed as endangered in 1967. Several factors have contributed to its decline, including the loss and degradation of suitable hibernacula, human disturbance during hibernation, pesticides, forest fragmentation, and particularly, loss of forest stands with large, mature trees.

Indiana bats may summer in a wide range of habitats, from agricultural landscapes to intact forests. Female Indiana bats exhibit strong site fidelity to summer roosting and foraging areas, tending to return to the same summer range annually to bear their young. These traditional summer sites are essential to the reproductive success and persistence of local populations.

Indiana bats are known to use a wide variety of tree species for roosting, but structure (i.e., crevices or exfoliating bark) is probably most important in determining if a tree is a suitable roost site. Roost trees are generally dead, dying or live trees (e.g., shagbark hickory [*Carya ovata*] and oaks [*Quercus*]) with peeling or exfoliating bark which allows

the bat to roost between the bark and bole of the tree. Indiana bats will also use narrow cracks, split tree trunks and/or branches as roosting sites. Southern Michigan maternity roost trees are typically in open areas exposed to solar radiation. Roost trees vary considerably in size, but those used by Indiana bat maternity colonies usually are large relative to other trees nearby and typically greater than 9 inches in diameter. Male Indiana bats have been observed roosting in trees as small as 3 inches in diameter.

### **Northern Riffleshell (Endangered)**

The northern riffleshell is a mussel occupying suitable habitat in less than 5% of its former range. Dams and reservoirs have flooded most of this mussel's habitat, reducing its gravel and sand habitat and probably affecting the distribution of its fish hosts. Reservoirs act as barriers that isolate upstream populations from those downstream. Erosion caused by farming has added silt to many rivers, which can clog the mussel's feeding siphons. Other threats include pollution from agricultural and industrial runoff. Toxic organochlorine compounds have become concentrated in the body tissues of filter-feeding mussels. Zebra and quagga mussels (*Dreissena polymorpha* and *D. rostriformis*), non-native species that have established themselves throughout the Great Lakes and the eastern U.S., also pose a threat. They attach in great numbers to native mussels. This mussel is found in a wide variety of streams. It buries itself in bottoms of firmly packed sand or gravel with its feeding siphons exposed. Reproduction requires a stable, undisturbed habitat and a sufficient population of host fish to complete the mussel's larval development.

The northern riffleshell historically occurs in three streams within the Refuge acquisition boundary:

- Detroit River in Wayne County;
- Huron River in Wayne and Monroe County; and
- River Raisin in Monroe County

### **Rayed Bean (Endangered)**

Extant populations of the rayed bean are known from 22 streams and a lake in five states, including Michigan and Ohio. The rayed bean appears to be declining range-wide and has been eliminated from 78% of the total number of streams and other water bodies from which it was historically known.

The rayed bean is considered to be very uncommon and of sporadic occurrence and has only been known to occur within the Refuge acquisition boundary in the lower Huron River.

This mussel is generally known from smaller, headwater creeks. They are usually found in or near shoal or riffle areas, and in the shallow, wave-washed areas of glacial lakes including Lake Erie. Substrates typically include sand and gravel. Threats to the rayed bean can include agricultural runoff and sedimentation.

### **Eastern Prairie Fringed-Orchid (Threatened)**

The eastern prairie fringed-orchid occurs in remnant patches of lakeplain prairie where trees and shrubs are prohibited from establishing. The Refuge currently exhibits some small areas of potentially suitable habitat for eastern prairie fringed-orchid, but it is not currently known to be present. Current water levels would make discovery more likely in specific locations within the Humbug Marsh Unit (Island only), Strong Unit, Fix Unit, Brancheau Unit, and Gibraltar Wetlands Unit. These units have some areas that combine lacustrine soil with high seasonal fluctuation of water levels and suitable plant communities dominated by bluejoint grass (*Calamagrostis canadensis*), *Scirpus*, *Typha*, and *Juncus*. Some of these areas are currently dominated by a non-native haplotype of reed (*Phragmites australis*) and more habitat may be possible after ecological restoration is conducted.

The most recognized threat to eastern prairie fringed-orchid is competitive encroachment of shrubs and trees in open, wet prairie habitat. Similarly important to its survival is maintenance of suitable hydrological conditions; perched water in spring discourages competing species and maintains a moist mineral surface from which the plant will germinate (Penskar and Higman 2000). When water levels rise along Lake Erie and the Detroit River, landward refugia are needed so that the species is able to seed and germinate inland until water levels recede and plants can reestablish shoreward.

### **Eastern Massasauga (Candidate)**

The current range of the eastern massasauga covers portions of ten states including much of the lower peninsula of Michigan. Throughout its range, this snake has declined primarily due to habitat loss and persecution.

Although there are no reports of massasauga sightings in the Refuge, they have been reported to exist in a number of habitat types found near the Refuge; namely, wet prairie, meadows, and old fields. Preferred habitats tend to have a generally open vegetative structure of grasses or sedges relative to surrounding areas. Sphagnum is often an important component of the substrate. Sites include thinly distributed trees and shrubs and are typically associated with shallow wetland systems. Massasaugas may show seasonal shifts in habitat use, moving to drier sites in the summer. This species is associated with saturated soils and crayfish burrows during hibernation.

## **3.7 Cultural Resources**

The Michigan Office of the State Archaeologist (MOSA) Inventory Files for the Refuge Gateway site indicates there are no recorded archaeological sites. The Refuge Gateway site was graded and filled in the 1930s and early 1940s. The eastern two-thirds of the site is comprised of introduced fill into wetlands adjacent to the Detroit River. Because the site is mainly fill, was an automotive plant and cleaned up and capped to meet human health and safety standards, there is likely to be no archaeological or cultural resources. Eleven sites south of the Refuge Gateway, including Humbug Marsh, required Phase 2 archaeological investigations out of 17 prehistoric and three historic sites after an initial Phase 1 investigation in 1999. None of the eleven sites qualified for listing in the National Register of Historic Places.

Cultural resources are important parts of the Nation’s heritage. The Service is committed to protecting valuable records of human interactions with each other and the landscape. Protection is accomplished in conjunction with the Service’s mandate to protect fish, wildlife, and plant resources.

### **3.8 Recreational Opportunities**

A complete review of future public uses will be addressed in the Visitor Services Plan. Currently, Humbug Marsh is open to the public during scheduled events and programs when Refuge staff is available. No hunting is currently allowed on the Refuge, but will be allowed on the island after completion of the Hunting Chapter of the Visitor Services Plan. In general, as described in the Comprehensive Conservation Plan, public uses at the Humbug Marsh mainland to be considered include: a combination of hiking interpretative trails, wildlife viewing and photography areas, environmental education stations, visitor center with exhibits, and special seasonal wildlife programs. Some proposed areas for hunting may not be available for other public uses.

Hunting opportunities proposed on the Detroit River IWR already exist on state lands in Monroe County. Currently, Monroe County has nearly 9,265 acres of State land open for hunting of big game, small game and migratory birds. These lands offer a wide range of outdoor recreational opportunities in the form of state parks, game areas, and state recreation areas. The Huron-Clinton Metropolitan Authority manages the Metroparks which comprise thirteen individual parks and 24,000 acres of public land. These lands offer the most widely available outdoor recreation with bike paths, fishing opportunities, and boating. Other publicly accessible land is available through universities, non-profit organizations, and local governments, although limited in hunting and fishing opportunities.

## **Chapter 4: Environmental Consequences**

### **4.1 Alternative 1: Construction of a New Facility (Preferred Alternative)**

#### **4.1.1 Habitat Impacts**

The new facility would be constructed at the Refuge Gateway – a former brownfield with fish and wildlife habitat constructed and restored on the surrounding landscape through hydrological restoration (daylighting of the Monguagon drain with retention basin and emergent wetland), construction of a wetland shelf on the historically human-filled shoreline, and upland forest and prairie restoration.

The area around the immediate vicinity of the new facility will be used for educational programs and will incorporate natural habitat and sound stewardship.

#### **4.1.2 Biological Impacts**

Biological impacts will be minimal since the primary footprint of the building will be on former industrial property that is being cleaned up and restored as an ecological buffer for Humbug Marsh and for public use. All habitat of the adjacent Humbug Marsh Unit will remain undisturbed and has been restored through invasive species control and careful stewardship with prescribed fire and other correctly executed beneficial disturbances.

#### **4.1.3 Listed, Proposed, and Candidate Species**

An Intra-Service Section 7 Biological Evaluation Form was completed in consultation with the East Lansing Field Office and concluded a “no effects” determination for five species. This Section 7 evaluation is available as a component of the EA.

#### **4.1.4 Public Use**

There are currently no exhibits or displays that expose the public to the Refuge in any way. The new visitor center would include an exhibit area, a book store, theater room, large multi-purpose classroom and meeting room, and office space. These improvements will greatly enhance wildlife viewing and education opportunities. Public use is expected to increase substantially over the current level of visitors (less than 10,000 annually).

#### **4.1.5 Refuge Operations**

Current office space is limited. This project would include office space for the staff creating a more effective work environment. Storage space would also be increased with the new facility to more effectively store program and management materials and files. Refuge staff is currently co-located in a U.S. EPA facility called Large Lakes Research Station. It is a gated, high-security facility located adjacent to Grosse Ile Municipal Airport. This property was formerly a Naval Air Station dating back to 1926. Overall, the Large Lakes Research Station building is in need of numerous repairs and upgrades. U.S. Fish and Wildlife Service has limited space within the building and cannot expand staff because of space limitations, has no room to add university students, cannot offer environmental education in the building, and cannot host public events. The building also has limited space for parking of Service vehicles.

#### **4.1.6 Environmental Justice**

None of the alternatives described in this Environmental Assessment will disproportionately place any adverse environmental, economic, social, or health impacts on minority or low-income populations.

This alternative would have positive impacts on low-income or minority populations. The new visitor center will provide additional free outdoor wildlife viewing opportunities and improved environmental education facilities. These resources are within short driving distance of low-income and minority populations in the region.

#### **4.1.7 Cultural Resources**

The facility would be located on a former brownfield that has been highly manipulated over time with fill introduced prior to Chrysler’s occupancy and further fill to cap the site for clean-up. Since becoming the Refuge Gateway, it has been cleaned up to meet human

health and wildlife standards and habitats restored to serve as an ecological buffer for a Humbug Marsh.

#### **4.1.8 Cumulative Impacts**

No long term cumulative impacts would occur to cultural resources or to any wildlife species due to activities associated with this alternative or similar action by the Service or other agencies.

Overall, construction under this alternative would not result in any loss of existing habitat restoration. Indeed, the site cleanup and restoration is resulting in a net gain of 16 acres of wetlands and 25 acres of riparian buffer habitat. The master plan was developed with the specific intent of restoring habitats to protect Humbug Marsh and house the visitor center at the Refuge Gateway. In addition to no loss of habitat, the facility will ensure long-term investment by the public to learn and steward the surrounding habitats.

Public use, the amount of public use facilities, and educational resources and opportunities would all increase substantially under this alternative. Other related environmental facilities locally include the Environmental Interpretive Center at the University of Michigan-Dearborn and Lake Erie Metropark Marshlands Museum, and Ojibway Nature Centre. While these facilities offer public interpretation displays, none are alone sufficient to serve nearly seven million people. Future visitor or educational facilities by other agencies would have cumulative positive effects on the local area, for public education, recreation, and wildlife observation, as well as the local economy by increasing regional visitation.

## **4.2 Alternative 2: Construct a New Facility in an Alternative Location on Refuge Property**

### **4.2.1 Habitat Impacts**

All alternative Refuge lands serve as wildlife habitat. Therefore, construction of a new facility on an alternative location at Humbug Marsh would undoubtedly impact existing habitat.

The area around the immediate vicinity of the new facility will be used for educational programs and will incorporate demonstration plots of a variety of native plants and shrubs. Any disturbance of existing habitats through hydrological alteration, exposure of bare soil, and introduction of fill promotes the establishment of noxious invasive weeds that would jeopardize the ecosystem health of the surrounding Refuge land.

Approximately 6 acres of Humbug Marsh would be directly impacted. Currently, the uplands of Humbug Marsh are in a high quality state or are restorable to good ecological health in the near future.

#### **4.2.2 Biological Impacts**

Fish and wildlife may be impacted with this alternative because all alternative Refuge land is considered functional habitat.

#### **4.2.3 Listed, Proposed, and Candidate Species**

An Intra-Service Section 7 Biological Evaluation Form was completed in consultation with the East Lansing Field Office and concluded a “no effects” determination for five species. This Section 7 evaluation is available as a component of the EA.

#### **4.2.4 Public Use**

There are currently no exhibits and displays available to expose the public to the Refuge in any meaningful way. The new visitor center would include an exhibit area, a book store, theater room, large multi-purpose classroom and meeting room, and office space. These improvements will greatly enhance wildlife viewing and education opportunities. Public use is expected to increase substantially over the current level of visitors (less than 10,000 annually).

#### **4.2.5 Refuge Operations**

This alternative would include office space for the staff, creating a more effective work environment. Storage space would also be increased with the new facility to more effectively store program and management materials and files.

Refuge staff is currently co-located in a U.S. Environmental Protection Agency (EPA) facility called Large Lakes Research Station (9311 Groh Road, Grosse Ile, MI 48138). It is a gated, high-security facility located adjacent to Grosse Ile Municipal Airport. This property was formerly a Naval Air Station dating back to 1926. Overall, the Large Lakes Research Station building is in need of numerous repairs and upgrades. U.S. Fish and Wildlife Service has limited space within the building and cannot expand staff because of space limitations, has no room to add university students, cannot offer environmental education in the building, and cannot host public events. The building also has limited space for parking of Service vehicles.

#### **4.2.6 Environmental Justice**

None of the alternatives described in this Environmental Assessment will disproportionately place any adverse environmental, economic, social, or health impacts on minority or low-income populations.

This alternative would have positive impacts on low-income or minority populations. The rehabilitation will provide additional free outdoor wildlife viewing opportunities and improved environmental education facilities. These resources are within short driving distance of low-income and minority in the region.

#### **4.2.7 Cultural Resources**

The Service may have to conduct an evaluation if the facility is constructed on an Alternative site. The region has abundant cultural resources dating back well before

European settlement and a thorough investigation would be need to take place on any alternative site.

#### **4.2.8 Cumulative Impacts**

No long term cumulative impacts would occur to cultural resources or to any wildlife species due to activities associated with this alternative or similar action by the Service or other agencies.

Overall, construction under this alternative would negatively impact existing habitat. This loss of habitat could be offset by a future restoration project in similar habitat, but is more risky than restoring or maintaining existing quality habitats with well established ecological communities. However, if the Service or other agencies completed other projects that continued to incrementally reduce the overall amount of upland habitats, the cumulative impacts would be a minor loss of existing upland habitat on a larger landscape scale, but would have negative impacts to local flora and fauna. The local loss of flora and fauna may erode genetic diversity of species which is acknowledged to potentially have a negative impact in the region because it may decrease their resiliency to future stresses (invasive species, pollution, climate change) and jeopardize populations on the landscape scale.

Public use, the amount of public use facilities, and educational resources and opportunities would all increase under this alternative.

### **4.3 Alternative 3: No Action**

#### **4.3.1 Habitat Impacts**

No new development would occur. There would be no impacts to existing habitats from construction activities.

#### **4.3.2 Biological Impacts**

No impact to wildlife would occur due to construction activities.

#### **4.3.3 Listed, Proposed, and Candidate Species**

No impact to wildlife would occur due to construction activities. An Intra-Service Section 7 Biological Evaluation Form was completed in consultation with the East Lansing Field Office and concluded a “no effects” determination for five species. This Section 7 evaluation is available as a component of the EA.

#### **4.3.4 Public Use**

Refuge staff is currently co-located in a U.S. EPA facility called Large Lakes Research Station (9311 Groh Road, Grosse Ile, MI 48138). It is a gated, high-security facility located adjacent to Grosse Ile Municipal Airport. This property was formerly a Naval Air Station dating back to 1926. The actual building was constructed during World War II as part of the Naval Air Station. U.S. EPA has occupied the property since 1970. Due to the nature of some U.S. EPA operations and its proximity to the Grosse Ile Municipal

Airport, it is considered a high security facility with very limited public access. It must also be noted that it is located on an island in the lower Detroit River that is not considered convenient for public access and not conducive to supporting environmental education and interpretation activities.

#### **4.3.5 Refuge Operations**

Inefficient office space would continue to be utilized. Refuge staff and storage space limitations in the existing office are currently a concern, and the problem of limited facilities would continue to increase as the Refuge expands in size.

#### **4.3.6 Environmental Justice**

None of the alternatives described in this Environmental Assessment will disproportionately place any adverse environmental, economic, social, or health impacts on minority or low-income populations.

This alternative would have no impacts on low-income or minority populations.

#### **4.3.7 Cultural Resources**

No construction is planned for this alternative, therefore, no historic properties nor other cultural resources would be impacted.

#### **4.3.8 Cumulative Impacts**

No long term cumulative impacts would occur to cultural resources or to any wildlife species due to activities associated with this alternative or similar action by the Service or other agencies.

No loss of habitat would be lost under this alternative.

There would be long term negative cumulative impacts to public use, the amount of public use facilities, and educational resources and opportunities due to activities associated with this alternative or similar action by the Service or other agencies.

#### 4.4 Summary of Environmental Consequences by Alternative

Actions	Alternative 1 (Preferred)	Alternative 2 (Alternative Site)	Alternative 3 (No Action)
Habitat lost to construction	No	Approx. 6 acres of negative impacts	None
Impact on Wildlife	None	Approx. 6 acres of negative impacts	None
Increase public use facilities and interpretation	Yes	Yes	None
ADA Compliance	Improved; Satisfies codes	Improved; Satisfies codes	No change
Seismic Compliance	Satisfies codes	Satisfies codes	No change
Enhanced office work environment	Yes	Yes	None
Positive effect on minority populations	Yes	Yes	None
Economic Impacts	Positive	Positive	No change
Impact on cultural resources	None	Further investigation required	None
Energy Efficient – LEED Certified	Yes	Yes	No
Cumulative Impacts	Positive	Positive	Negative

## Chapter 5: References

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## **Chapter 6: List of Preparers**

### **6.1 List of Preparers**

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## **Chapter 7: Public Comment and Response**

### **7.1 Public Comment and Response**

This Environmental Assessment was made publically available from August 1, 2012 through September 7, 2012. No comments were received.