Planning Branch
Environmental Formulation Section

SEE DISTRIBUTION LIST,

Enclosed is a draft Environmental Assessment entitled Environmental Assessment, Permanent Barrier I, Lockport Pool, Chicago Sanitary and Ship Canal, Will County, Illinois. This documentation was prepared in accordance with the National Environmental Policy Act of 1969 and is being distributed for your review.

The project is for the proposed construction of Permanent Barrier I, an upgrade of the Aquatic Nuisance Species Demonstration Barrier, located near Romeoville, IL in the Chicago Sanitary and Ship Canal. Currently there are three electrical barriers: Demonstration Barrier, Barrier IIA and Barrier IIB. The proposed Permanent Barrier I is designed to replace the Demonstration Barrier.

Comments must be received within 30 days and may be sent to Mr. Mark Cornish, U.S. Army Corps of Engineers, Clock Tower Building, P.O. Box 2004, Rock Island, IL 61204-2004, by fax at 309/794-5157, or by email at Mark.A.Cornish@usace.army.mil. Questions should be directed to Mr. Cornish at 309/794-5385.

Sincerely,

Susanne J. Davis, P.E.
Chief of Planning Branch

Enclosure
PERMANENT BARRIER I
LOCKPORT POOL
CHICAGO SANITARY AND SHIP CANAL
WILL COUNTY, ILLINOIS

ENVIRONMENTAL ASSESSMENT

I. Introduction .................................................................................................................. EA-1
II. Purpose and Need For the Action ................................................................................ EA-1
III. Authority .................................................................................................................... EA-1
IV. Project Description ................................................................................................... EA-2
V. Alternatives ................................................................................................................ EA-6
VI. Affected Environment ............................................................................................... EA-6
VII. Environmental Impacts of the Preferred Alternative ................................................ EA-14
VIII. 17 Points of Environmental Quality ......................................................................... EA-17
IX. Cumulative Effects ..................................................................................................... EA-18
X. Compliance With Environmental Quality Statutes ...................................................... EA-21
XI. Environmental Impacts of the No Action Alternative .................................................. EA-23
XII. Probable Adverse Environmental Effects Which Cannot Be Avoided ....................... EA-24
XIII. Relationship Between Short-Term Use and Long-Term Productivity ..................... EA-24
XIV. Any Irreversible or Irretrievable Commitments of Resources .................................... EA-24
XV. Relationship of the Proposed Project to Land-Use Plans .......................................... EA-24
XVI. Conclusions ........................................................................................................... EA-24
XVII. Coordination ......................................................................................................... EA-25
XVIII. Citations ............................................................................................................... EA-25

FIGURES
Figure EA-1 Project Map ................................................................................................. EA-3
Figure EA-2 Cross section of the Electrical Barrier ............................................................ EA-4
Figure EA-3 Plan View of the Permanent Barrier I Design Layout in the CSSC .................. EA-5

TABLES
Table EA-1 Fish Captured in Lockport Pool Below the Barrier (Fixed Site Sampling in 2012) ..... EA-9
Table EA-2 Federally-Listed and Proposed as Endangered Species for Will County, Illinois .... EA-11
Table EA-3 Cumulative Effects Summary ........................................................................ EA-20
Table EA-4 Compliance with Environmental Statutes and Regulation .............................. EA-21

APPENDICES
Appendix EA-A Pertinent Correspondence
Appendix EA-B Illinois Endangered and Threatened Species
Appendix EA-C Draft Finding of No Significant Impact
Appendix EA-D Distribution List
I. INTRODUCTION

This Environmental Assessment (EA) documents the need for and impacts associated with a proposed upgrade of the Aquatic Nuisance Species Dispersal Barriers Project (Project) in the Chicago Sanitary and Ship Canal (CSSC). The U.S. Army Corps of Engineers (Corps), Chicago District, operates the Project, which is comprised of three electrical barriers: Demonstration Barrier, Barrier IIA and Barrier IIB. The barriers consist of steel electrodes mounted across the bed of the canal and on-land power generation and distribution equipment. The on-land equipment sends a pulsing DC current through the electrodes, creating an electric field in the water that repels and stuns fish. The Demonstration Barrier has been operational since 2002 and was rehabilitated in 2008 but it was designed and built with materials that were not intended for long-term use due to its demonstration status. This EA evaluates the potential impacts of replacing the Demonstration Barrier with Permanent Barrier I. Permanent Barrier I would incorporate the lessons learned from the operation of the Demonstration Barrier, Barrier IIA, and Barrier IIB in its design to improve durability and effectiveness. It would be capable of generating higher voltages and work in concert with Barriers IIA and IIB to prevent the movements of fish upstream of the barrier Project area.

II. PURPOSE AND NEED FOR THE ACTION

The purpose of the Project is to deter the inter-basin establishment of Asian carp and other fish species from the Mississippi River to the Great Lakes Basin via the CSSC. The CSSC poses the greatest risk for the transfer of aquatic nuisance species between basins. The mechanical components that make up the dispersal barrier Project need to be maintained to properly function. Periodic shut downs of the individual barriers are required in order to perform necessary tasks such as replacement of parts, tune-ups, cleaning, etc., therefore multiple barriers are needed so at least one barrier can be active when other barriers are offline for maintenance. When the Downstream Barriers IIA and IIB are turned off, fish can swim up to the Demonstration Barrier. Unfortunately as part of the Corps’ testing of the Demonstration Barrier, it was discovered that small Asian carp are capable of swimming through an electrical field of similar strength to the Demonstration Barrier (Holliman 2010). Permanent Barrier I is needed to address this deficiency and to improve the overall reliability of the Project.

III. AUTHORITY

The National Invasive Species Act of 1990, as amended in 1996, authorized the Corps to examine potential methods to create an aquatic nuisance species barrier in the CSSC and construct the Demonstration Barrier. The Corps received additional authorization in Section 3061(b) of the Water Resources Development Act of 2007 to construct and operate Barriers IIA and IIB, and to “upgrade and make permanent Barrier I” (i.e. replace Demonstration Barrier).

(a) TREATMENT AS SINGLE PROJECT.—The Chicago Sanitary and Ship Canal Dispersal Barrier Project (in this section referred to as “Barrier I”), as in existence on the date of enactment of this Act and constructed as a demonstration project under section 1202(i)(3) of the Nonindigenous Aquatic Nuisance Prevention and Control Act of 1990 (16 U.S.C. 4722(i)(3)), and the project relating to the Chicago Sanitary and Ship Canal Dispersal Barrier, authorized by section 345 of the District of Columbia Appropriations Act, 2005 (Public Law 108–335; 118 Stat. 1352) (in this section referred to as “Barrier II”) shall be considered to constitute a single project.

(b) AUTHORIZATION.—
(1) IN GENERAL.—The Secretary, at Federal expense, shall—
(A) upgrade and make permanent Barrier I;
(B) construct Barrier II, notwithstanding the project cooperation agreement with the State of Illinois dated June 14, 2005;
(C) operate and maintain Barrier I and Barrier II as a system to optimize effectiveness;
(D) conduct, in consultation with appropriate Federal, State, local, and nongovernmental entities, a study of a range of options and technologies for reducing impacts of hazards that may reduce the efficacy of the Barriers; and
(E) provide to each State a credit in an amount equal to the amount of funds contributed by the State toward Barrier II.

The Aquatic Nuisance Species Dispersal Barriers Project is 100 percent Federal and there are no non-Federal sponsors.

IV. PROJECT DESCRIPTION

This Project is located near Romeoville, IL in the CSSC and it is comprised of three electrical barriers: Demonstration Barrier, Barrier IIA and Barrier IIB. At the Project site, the Sanitary Ship Canal is about 150 yards west of the I&M Canal and about 500 yards east of the Des Plaines River and Isle a la Cache. The Project site lies in the N ½ of the SW ¼ of section 35, T37N R10E; as shown on the Romeoville 7.5’ USGS topographic quadrangle map. The Project area extends about 350 yards north of E 135th Street (Romeo Road) (figure EA-1).

The dispersal barriers Project, including the proposed Permanent Barrier I Project, poses certain safety risks to commercial vessels, recreational boaters, and people on or in portions of the CSSC in the vicinity of the barriers. Consequently, the Coast Guard’s Ninth District Commander has concluded that a Safety Zone and Regulated Navigation Area are necessary to mitigate such risks. The Corps and its contractors would coordinate with the Coast Guard to ensure that safety standards are maintained during construction and throughout the Project life.
Figure EA-1. Project Map
The barriers are formed of steel electrodes that are secured to the bottom of the CSSC. The electrodes are connected through boreholes to components inside a control building (figure EA-2). The electrodes and parasitic structures will both consist of 5" x 5" steel bars resting on 2'-8" high concrete blocks on the canal bottom. Each of the 6 sets of active electrodes and 2 parasitic arrays will span the width of the canal and will stand no more than 3'-1" off of the canal bottom. The parasitic arrays are situated on either side of the electrode field and contain the electrical field to the area designed for fish deterrence. The low pool water depth in this location is 19'-0", leaving 15'-5" of clearance once the equipment is installed. The in-water structures will not be an impediment to navigation because the required navigation depth at the barriers is 9' from low pool, as required. Seven boreholes will be drilled diagonally through the surrounding bedrock to connect the electrodes to structures on the canal edge. Equipment in the control building generates a direct current pulse through the electrodes, creating an electric field in the water that discourages fish from crossing.

![Cross section of the Electrical Barrier](image)

**Figure EA-2.** Cross section of the Electrical Barrier

The construction of the Permanent Barrier I Project would be phased in three parts: Projects A, B, and C. These phases would be separated by approximately 1 year. Project A would include the work associated with preparation to construct a permanent building: clearing and grubbing, site grading, construct permanent road with curb and gutters and vehicle guardrails, borehole drilling, installation on the west side of the canal of cast-in-place sidewalk with embedded electrical conduits, mast lighting, and appurtenant equipment.

Project B would include in-water installation of the electrodes and parasitic structures.

Project C includes construction of the on-land control building, installation of electrical equipment, and connection of the electrodes to the building. The building and surrounding property will house transformers; DC power supplies; DC pulse generators; emergency backup generators; equipment cooling systems; lighting; computer control systems; lighting protection; fire suppression and fire alarm systems; and heating, ventilation, and air conditioning equipment (figure EA-3).

No sediment dredging or filling activities would be included in the proposed work. The bed material is limestone. Sediment or debris located in the electrode placement area may be pushed aside during installation, but significant sediment disturbance or accumulations in the area are not expected. The proposed barrier would not block the flow of water or the movement of vessels. Heavy construction vehicles would use 135th Street to reach the Project site and then Des Plaines River Road to access the western bank and Old Romeo Road to access the eastern bank. Any impacts to traffic would be short-term and temporary. Construction staging would be land-based and cofferdams or other temporary dewatering measures are not required for construction activities.
Figure EA-3. Plan View of the Permanent Barrier I Design Layout in the Chicago Sanitary & Ship Canal
V. ALTERNATIVES

A. No Action

Under the No Action alternative the three electrical barriers: Demonstration Barrier, Barrier IIA and Barrier IIB would continue to operate and be maintained. Each individual barrier in the barrier system will at times need to be shut down for maintenance. When the Barriers IIA and IIB are turned off, the barriers Project will remain vulnerable to the passage of small fish at the Demonstration Barrier. Other actions to prevent the transfer of aquatic nuisance species may occur in the Chicago Area Waterways System (CAWS) through the implementation of the measures identified in the Corps’ Efficacy Study or the Great Lakes and Mississippi River Interbasin Study; however these studies do not authorize construction. The activities of the interagency Asian Carp Regional Coordination Committee and the Monitoring and Rapid Response Working Group (MRRWG), including overharvest and periodic rotenone applications in the CAWS, would also continue.

B. Replacement of the Demonstration Barrier with Permanent Barrier I

This Alternative involves the construction of Permanent Barrier I as a replacement for the Demonstration Barrier. It would be capable of emitting higher voltages and work in concert with Barriers IIA and IIB to prevent the movements of fish past the Project area. The Corps determined the replacement of the Demonstration Barrier with Permanent Barrier I to be the Preferred Alternative.

VI. AFFECTED ENVIRONMENT

The Project reach/environment that the Preferred Alternative would affect is the Lockport Pool of the CSSC, River Miles 296-296.5. The following environment description is generalized for the portion of the Lockport pool and surrounding riparian zone.

A. Physical Resources

1. Climate. The climate of the Project area is typical of northeast Illinois and may be classified as humid continental, characterized by warm summers, cold winters, and daily, monthly, and yearly fluctuations in temperature and precipitation. National Weather Service data collected from the area around Chicago report average temperatures of 24.9° F in winter and 71° F in summer. Mean annual precipitation is 36.57 inches with the majority of the precipitation occurring April through October. Accumulated snowfall averages 46.2 inches for the study area. Wind speed averages 11 to 12 miles per hour. Early spring floods may occur when snow accumulations extend into a period of increasing temperature that results in melting. If this occurs when soils are already saturated, and given the amount of impervious surfaces within the study area, runoff increases dramatically. The start of the growing season as defined for agricultural purposes usually occurs from late April to early May, and the first frost typically occurs between late September and mid-October, with the frost free season ranging from 158 to 178 days.

2. Air Quality. The Chicago Metropolitan area, including the study area, is a non-attainment area for both ozone (and ozone precursors) and particulates (with a diameter less than 2.5 microns). Existing air quality data are available for Will County from the USEPA Air Data database. Although
the trends overall show improvement over the last 10 years, individual measurements and monitoring stations still have measurements that exceed the national standards. The existing air quality should be considered marginal, but improving over time.

3. **Geology.** The Project is located on the Central Lowland Province that contains some bedrock outcroppings and moraines but is generally flat and moderately- to poorly-drained. The Project area is approximately 585 feet above sea level. Although little of the glacial soils are present on site, the glacial geology of the region plays a significant role in the hydrology that drives the local ecosystems. The bedrock on site is covered by overburden soils and fill material ranging in thickness from 0 to approximately 10 feet. Much of the natural material was directly deposited as glacial till and outwash from melting glaciers, which were subsequently altered by weathering, erosion and biological processes. The overburden on site consists of silty sandy clay with organic material and gravel. The uppermost bedrock located within the Project area is comprised of Silurian dolomite which varies in thickness from ~100 to 300 feet locally and is nominally 130 feet thick on site. Ordovician shale and shaley dolomite of the Maquoketa Group ranges from 80 to 250 feet thick locally and is nominally 180 feet thick on site, underlying the upper dolomitic formations. Bedrock below the Maquoketa Group consists of a series of lower Paleozoic dolomites, limestones, sandstones and shales, overlying Precambrian crystalline rock.

There are four major aquifers in the Chicago area: glacial drift, shallow bedrock consisting of Silurian dolomites, and two deep bedrock aquifers, the Cambrian-Ordovician and the Mount Simon. The glacial drift aquifer is absent on the Permanent Barrier Site. The shallow bedrock aquifer directly underlies the overburden soils or glacial drift in the Chicago area.

4. **Soils.** The US Department of Agriculture Soil Survey of Will County, Illinois describes two soil series found on the study area; Orthents on the east bank and Romeo silt loam on the west bank of the CSSC. Orthents are characterized as disturbed soil material and Romeo silt loams are shallow alluvial soils found over bedrock. Rare dolomite prairies have been found on Romeo silt loams, however prairie grasses are not found in the Project area. Prime farmlands do not occur along or on the Project footprint.

5. **Land Use.** Pre-settlement land cover of the study area was primarily prairie, with pockets of rare dolomite prairie and wetland depressions. Land use along the CSSC is generally urban with extensive industrial development. Basin stakeholders include the City of Chicago and 31 suburban municipalities. Flow in the CSSC is dominated by treated wastewater from 5 million residents and an additional industrial load of approximately 4.5 million population equivalents. Land use has been converted from these natural types to industrialized and residential grounds with intermittent pockets of highly disturbed forest and wetland. Most of the land adjacent to the CSSC is owned by the Metropolitan Water Reclamation District of Greater Chicago (MWRDGC). Due to the addition of a new barrier, there will be an increase in ground potentials in the soil and rock in the immediate vicinity of the fish barriers. The impact of this increase is being addressed by operational changes to the barriers and by monitoring adjacent properties. There are both industrial and domestic wells utilizing ground water within the immediate area of the site. There are no known impacts of the existing barriers on groundwater chemistry and biochemistry in these adjacent wells.

6. **General Hydrology.** The CAWS consists of 78 miles of canals and modified streams. The CAWS consists of the Chicago River, its two main branches (North Branch and South Branch), as
well as the Cal-Sag Channel, the CSSC, and the tributaries in an area extending from the metropolitan Chicago area to the Lockport vicinity. It also includes Lake Calumet. To facilitate a reversal of the flow of the Chicago River to divert water from Lake Michigan to the CAWS, the CSSC, the Calumet-Sag Channel and the North Shore Channel were constructed over 100 years ago. The diversion and the artificial waterways facilitated navigation and protected the drinking water intakes in Lake Michigan from Chicago wastes. The Little Calumet River North Leg, the Chicago River, the South Branch of the Chicago River and North Branch of the Chicago River downstream from its confluence with the North Shore Channel are natural rivers that have been modified through channelization and widened and deepened.

Chicago’s wastewater system was developed with a combined sewer system that accepted both storm water and sanitary waste. After rainstorms, the capacity of the sewer system became overwhelmed on a regular basis and combined sewer overflows occurred. These combined sewer overflows are discharged into the CAWS and occasionally from the river into Lake Michigan through the Chicago Lock on the Chicago River, Wilmette Pumping Station on the North Shore Channel, or the Thomas J. O’Brien Lock and Controlling Works on the Calumet River. To address this problem, the MWRDGC developed the Tunnel and Reservoir Project (TARP), which included the construction of the Deep Tunnel project. The Deep Tunnel is a series of tunnels that lay 250 to 300 feet below the Chicago River and are located parallel to it. The first phase of the TARP or “Deep Tunnel” Project has been completed. During periods of heavy rainfall, the TARP directs combined sanitary waste and infiltrating rainwater into massive tunnels and collection reservoirs where it can be withdrawn for treatment after the rain subsides.

7. Water Quality. The CSSC is on the 2012 Final Draft Illinois 303(d) list of impaired waters. These waters include both natural and man-made waterways which serve as receiving waters for the tributary streams and water reclamation plant effluents, combined sewer overflows, and storm water runoff, and are therefore of marginal quality, and are unlikely to improve. The CSSC is classified by the Illinois Pollution Control Board as a “Secondary Contact and Indigenous Aquatic Life Use Waterways”, which indicates a highly modified waterway, not suited for general use activities (e.g. swimming, water skiing). Water quality may be capable of supporting indigenous aquatic life, but limited by the physical configuration of the canal, characteristics and origin of the water, and the presence of contaminants in amounts that do not exceed the water quality standards. These Secondary Contact waters are all currently listed as impaired for supporting indigenous aquatic life and/or fish consumption. Since the construction of the canal system, poor water quality inhibited development of a diverse and abundant aquatic community. At the present, side-stream aeration stations, as well as improvements in wastewater treatment have significantly improved water quality in the canal system to where dissolved oxygen levels are no longer a limiting factor for the survival of tolerant fish species.

B. Biological Resources

The CSSC is a created structure built to transport sewage through a heavily industrialized and urbanized area with poor water quality generally limiting the aquatic resources of the canal. For this reason, fisheries populations in the CSSC and the upper Illinois River declined over many years to a point where they were virtually nonexistent except for the most pollutant-tolerant of species. As a completely channelized structure, the CSSC only provides main channel and main channel border
habitats with virtually no spawning habitat, and it significantly reduces the quality and quantity of habitat available for fish and wildlife resources.

1. **Riverine Habitat.** The CSSC was incised through the native dolomite limestone. As a result, aquatic habitat in the vicinity of the proposed sites is fairly homogeneous, consisting of vertical limestone walls that extend 27 feet from the water surface to the bottom and approximately 35 feet from the top of the bank to the canal bottom. These nearly perpendicular walls of the canal offer little or no littoral zone for aquatic species. The walls have crumbled down enough at various locations along the reach that may provide limited littoral habitat for present species. The bottom of the canal is essentially flat with virtually no fine substrates; however, rock or flagstone is present on the bottom of the canal where the vertical walls have been gouged away by barge traffic. There are also intermittent areas of woody debris and detritus that may be used as cover for certain benthic organisms.

2. **Riparian Plant Communities.** The Project is located on highly disturbed lands and is largely unvegetated, with small patches of volunteer plant communities. What vegetation is present is dominated by Late Boneset (*Eupatorium serotinum*) and tall goldenrod (*Solidago altissima*). Trees are largely absent, with occasional stems of White mulberry (*Morus alba*) and Elderberry (*Sambucus canadensis*) sprouting between periods of soil disturbance.

3. **Aquatic Communities.** The present day Lockport Pool of the CSSC supported no aquatic life prior to its construction. Fish species that colonized the new canal came from nearby waters including the Des Plaines River, Lake Michigan and several small streams that flowed into the CSSC.

There were 27 species of fish collected in the Lockport Pool downstream of the dispersal barrier Project area in 2012 by the MRRWG. The most abundant fish species were gizzard shad (*Dorosoma cepedianum*), followed by emerald shiner (*Notropis atherinoides*), green sunfish (*Lepomis cyanellus*), bluntnose minnow (*Pimephales notatus*), and largemouth bass (*Micropterus salmoides*). A list of species captured can be found in table EA-1. None of these species rely upon the CSSC as a migration route.

<table>
<thead>
<tr>
<th>Species</th>
<th>Number Captured</th>
</tr>
</thead>
<tbody>
<tr>
<td>gizzard shad</td>
<td>3,190</td>
</tr>
<tr>
<td>emerald shiner</td>
<td>382</td>
</tr>
<tr>
<td>green sunfish</td>
<td>222</td>
</tr>
<tr>
<td>bluntnose minnow</td>
<td>134</td>
</tr>
<tr>
<td>largemouth bass</td>
<td>88</td>
</tr>
<tr>
<td>oriental weatherfish</td>
<td>75</td>
</tr>
<tr>
<td>bluegill</td>
<td>70</td>
</tr>
<tr>
<td>common carp</td>
<td>67</td>
</tr>
<tr>
<td>pumpkinseed</td>
<td>39</td>
</tr>
<tr>
<td>golden shiner</td>
<td>32</td>
</tr>
<tr>
<td>mosquitofish</td>
<td>28</td>
</tr>
<tr>
<td>yellow bullhead</td>
<td>21</td>
</tr>
<tr>
<td>threadfin shad</td>
<td>14</td>
</tr>
<tr>
<td>hybrid sunfish</td>
<td>7</td>
</tr>
<tr>
<td>spotfin shiner</td>
<td>7</td>
</tr>
<tr>
<td>channel catfish</td>
<td>5</td>
</tr>
<tr>
<td>banded killifish</td>
<td>3</td>
</tr>
<tr>
<td>smallmouth bass</td>
<td>3</td>
</tr>
<tr>
<td>brown bullhead</td>
<td>2</td>
</tr>
<tr>
<td>freshwater drum</td>
<td>2</td>
</tr>
<tr>
<td>goldfish</td>
<td>2</td>
</tr>
<tr>
<td>longnose gar</td>
<td>2</td>
</tr>
<tr>
<td>spottail shiner</td>
<td>2</td>
</tr>
<tr>
<td>white sucker</td>
<td>2</td>
</tr>
<tr>
<td>black bullhead</td>
<td>1</td>
</tr>
<tr>
<td>muskellunge</td>
<td>1</td>
</tr>
<tr>
<td>northern pike</td>
<td>1</td>
</tr>
</tbody>
</table>

**Table EA-1.** Fish Captured in Lockport Pool Below the Barrier Through MRRWG Fixed Site Sampling in 2012
Though Asian carp are the focus of the barrier Project, the Illinois DNR characterized the abundance of bighead carp (*Hypophthalmichthys nobilis*) and silver carp (*H. molitrix*) as “rare” in Lockport pool below the Project area and in Brandon Road Pool, which is located immediately downstream of Lockport pool, based on the findings of MRRWG monitoring. At the end of 2012, the detectable population front of Asian carp in the Illinois Waterway (IWW) was located about 47 miles from Lake Michigan and had made little upstream movement from 2006-2012 for unknown reasons. Two factors that may influence the location of the detectable population front include the lack of riverine habitat CAWS (including the CSSC) and the lack of a sustained flood pulse which is known to trigger Asian carp movements.

However, multiple bighead carp have been captured in landlocked Chicago area urban fishing ponds above the barrier. It is likely that these fish were accidentally introduced during stocking for the Illinois DNR’s urban fishing program of catchable sized channel catfish in the 2002-2003 timeframe (Illinois DNR 2010). An individual bighead carp was captured in Lake Calumet in 2010 and eDNA for both silver and bighead carp have been collected above the barrier. The connection between these occurrences and the dispersal barriers Project is poorly understood. Because of this uncertainty, the Corps operates the Project as if Asian carp are continually challenging the dispersal barrier because both bighead and silver carp are capable of rapidly moving long distances, and because small populations of Asian carp could have eluded capture during monitoring.

Macroinvertebrate diversity is low in the CSSC according to the MWRDGC. In 1999, the MWRD collected two crayfish species, rusty crayfish (*Orconectes rusticus*) and virile crayfish (*O. virilis*), from the CSSC. The rusty crayfish is introduced from the Ohio River system via the release of unused live fishing bait. There are no other significant aquatic resources known to occur in the Project area.

4. Other Wildlife. Terrestrial wildlife communities on the study area have been degraded due to hydrologic and geomorphic alterations and fragmentation of habitats by industrialization. The site has very little vegetation and high human use. Migrating waterfowl occasionally use the CSSC in the Project area for feeding and resting. The steep walls of the canal and general human activity around the electrical barrier deter small mammals such as muskrat (*Ondatra zibethicus*), beaver (*Castor canadensis*), mink (*Mustela vison*), and raccoon (*Procyon lotor*) from using the Project area.

5. Natural Areas. Two components of the Des Plaines River preservation system are located within one mile of the Project area. The 95-acre Isle a la Cache County Forest Preserve is located west of the Project area and the Romeoville Prairie Nature Preserve is located on 314 acres northwest of the Project area. These preserves protect forest, prairie, and wetland habitats, and a portion of the Des Plaines River. The Centennial Bike Trail is also located west of the Project area. It parallels the Des Plaines River and the CSSC for 11 miles from Romeo Road (135th Street) to the north.

6. Threatened & Endangered Species. There are eight federally-listed and proposed to be listed species for Will County, Illinois (table EA-2).
Table EA-2. Federally-Listed and Proposed as Endangered Species for Will County, Illinois

<table>
<thead>
<tr>
<th>Species</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Eastern prairie fringed orchid \emph{(Platanthaera leucophaea)}</td>
<td>Threatened</td>
</tr>
<tr>
<td>Freshwater Sheepnose mussel \emph{(Plethobasus cyphyus)}</td>
<td>Proposed as Endangered</td>
</tr>
<tr>
<td>Eastern massasauga \emph{(Sistrurus catenatus)}</td>
<td>Candidate</td>
</tr>
<tr>
<td>Snuffbox \emph{(Epioblasma triquetra)}</td>
<td>Proposed as Endangered</td>
</tr>
<tr>
<td>Lakeside daisy \emph{(Hymenopsis herbacea)}</td>
<td>Threatened</td>
</tr>
<tr>
<td>Leafy-prairie clover \emph{(Dalea foliosa)}</td>
<td>Endangered</td>
</tr>
<tr>
<td>Mead's milkweed \emph{(Asclepias meadii)}</td>
<td>Threatened</td>
</tr>
<tr>
<td>Hine's emerald dragonfly \emph{(Somatochlora hineana)}</td>
<td>Endangered</td>
</tr>
</tbody>
</table>

The eastern prairie fringed orchid is listed as threatened and considered to potentially occur in Will County. It occupies mesic to wet prairies. It requires full sun for optimal growth and flowering. The substrate of the sites where this orchid occurs includes glacial soils, lake plain deposits, muck, or peat. There is no critical habitat designated for this species. This species should be searched for whenever wet prairie remnants are encountered.

The range of the freshwater sheepnose mussel \emph{(Plethobasus cyphyus)} is within the Project area. It is declining throughout its national range and is currently Proposed as Endangered. This species is currently going through the listing process and may be included in the list of threatened and endangered species in the near future. The sheepnose mussel is primarily a larger stream species occurring mainly in shallow shoal habitats with moderate to swift currents over coarse sand and gravel but includes mud, cobble, and boulders as well. This includes larger rivers with deep runs, while those specimens found in streams occur mainly in stable flow refuges with little sediment turbidity.

The eastern massasauga snake is a candidate species for Will County. This species is currently going through the listing process and may be included in the list of threatened and endangered species in the near future. The eastern massasauga has a range from western New York and Southern Ontario to southern Iowa and a narrow band in northeastern Missouri. They live in wet areas but may also use adjacent uplands during part of the year. They are often found in wet prairies, marshes, and low areas along rivers and lakes.

The snuffbox mussel is proposed as endangered for Will County. This species is currently going through the listing process and will be added as endangered species in the near future. The snuffbox once had a wide distribution, occurring in 208 streams but has been reduced to 74 streams, mostly geographically isolated populations. They are found in small to medium sized creeks in areas of swift current. Some can be found in large rivers and in Lake Erie.

The lakeside daisy is listed as threatened and is known to occur in Will County. The lakeside daisy is found in rocky areas like dry dolomite prairies, gravel prairies, cliff ledges, and limestone quarries. It prefers well drained mesic to dry soils and full sun. The lakeside daisy grows in the Great Lakes states and the Canadian shore of Lake Huron.

The leafy prairie-clover is listed as endangered for Will County and is known to occur in prairie remnants along the Des Plaines River. It is found in thin mesic soils in dolomite prairies and rocky river banks. The leafy prairie clover has been threatened by development, grazing animals, and encroachment of trees and shrubs into grassland areas.
The range of the Mead’s milkweed is within the Project area. It is declining throughout its national range and is currently listed as threatened for Will County. Mead’s milkweed is found in mesic to dry mesic conditions of upland prairies. It is currently known in 171 sites in Kansas, Missouri, Iowa, and Illinois.

The endangered Hine’s emerald dragonfly is found only in certain areas in Illinois, Michigan, Missouri, and Wisconsin. Loss of habitat has been the largest threat to Hine’s emerald dragonfly survival. The dragonfly depends on high quality wetlands and streams. Much of the wetland habitat that the Hine’s emerald dragonfly depended on has been filled or drained. The dragonfly lives in spring-fed marshes and meadows with dolomite bedrock and high calcium carbonate. The female dragonfly will lay eggs into shallow water by repeatedly dipping the tip of her body into the water. From the egg will hatch the larval form of the dragonfly called the nymph. The dragonfly will stay in the nymph stage for 2 to 4 years, shedding its skin as it grows. The nymph will crawl out of the water onto nearby vegetation or rocks and shed its skin for the last time. Hine’s emerald dragonflies will live as adults for 4 to 5 weeks.

There are 64 state-listed species for Will County, Illinois (Appendix EA-B).

D. Cultural, Archaeological & Social Resources

The CSSC is located entirely within the State of Illinois and provides economic benefits throughout the Midwest. The CSSC is part of the inland navigation system that links Lake Michigan with the Mississippi River and connects with the Atlantic Ocean via the Great Lake Region, St. Lawrence Seaway, and Inland Coastal Waterway. The City of Chicago has been dependent upon the CSSC for both economic growth and the elimination of wastewater. The Illinois Assembly authorized creation of sanitary districts in 1889 in an effort to address the sewage problem associated with the growth of Chicago. The incorporated Sanitary District of Chicago encompassed Chicago and five adjacent communities comprising 185 square miles. The initial phase of construction of the CSSC took place from 1892 to 1900, linking the Chicago and Des Plaines Rivers. At approximately 27 feet deep, with a varied bottom width of 110 to 160 feet and a top width of 162 to 290 feet, the canal provided navigation as well as diverting sanitary system sewage.

The Chicago Sanitary District commenced a second phase of construction in 1905 referred to as the Main Channel Extension. This phase was completed in 1908 and included a 10,700-foot extension of the CSSC from the windage basin north of Lockport to the head of navigation at the Des Plaines River south of Lockport. The extended canal was generally the same width (160 feet) and grade (1 to 20,000) as that of the canal completed in 1900. In addition, a new 22-foot-wide navigation lock, 120-foot-long concrete dam, and a large powerhouse (385 feet long, 70 feet-wide, and 48 feet-high) were built at Lockport. The aquatic nuisance species barrier Project area is 3.25 miles upstream of the Main Channel Extension.

In January 2013, the Corps, the MWRDGC, and the IHPA determined that the CSSC was eligible for listing to the National Register of Historic Places. Following a review of the Phase I Architectural and Engineering Inventory of Properties Within the Chicago Sanitary and Ship Canal, Cook, Du Page, and Will Counties, Illinois (draft dated July 2003), the Corps, the MWRDGC, and the IHPA concurred that 1) the CSSC was determined historically significant under criteria A and C of 36 CFR Part 60 as a landmark in wastewater control and treatment and one of the largest public works at the

EA-12
time which set new standards in construction in a rapidly developing urban area and 2) that the CSSC Historic District consists of three structures (Main Channel, Willow Springs Spillway, and the Lockport Controlling Works), one site (Butterfly Dam Remnant) and one district (Lockport Lock, Dam, and Power House Historic District). The Main Channel has seven contributing features consisting of the cut natural walls, laid-up stone walls, stone bridge abutments, commemorative tablet, original spoil piles, main channel extension, and original earthen walls. The Lockport Lock, Dam, and Power House Historic District has five contributing structures: the Sanitary District Lock, the New Lock, the Dam, the Power House, and the Control Station.

1. **Social Setting.** The Project area is located solely within Will County. Will County has a population of 677,560 and according to the 2010 census is one of the fastest growing counties in the United States. The Will County median household income is $76,453 and the median home value is $236,300. This county has a number of suburban communities and a diverse industrial and commercial base.

The IWW Navigation System is a connecting link between Lake Michigan and the Mississippi River. This waterway is one of the nation’s busiest routes for commercial barge transportation. The Waterway includes the Chicago, Des Plaines, and Illinois Rivers, and the CSSC, the Calumet-Sag Channel, and the navigable portions of the Little Calumet and Calumet Rivers.

2. **Recreation.** The undeveloped nature of large portions of the Des Plaines River valley and the CSSC makes this area a popular destination for outdoor sports including bird watching, biking, fishing and boating. The Forest Preserve District of Will County manages part of the Centennial Trail, an asphalt bike trail that parallels the Des Plaines River and CSSC west of the Project area for 11 miles from Willow Springs Road to Romeo Road (135th Street). The Isle a la Cache Museum is also located west of the Project area and focuses on the 18th-century history of French voyageurs and native Potawatomi. The Museum features interactive exhibits of the Great Lakes fur trade of the 1700s and a replica of a Native American longhouse.

E. **Hazardous, Toxic and Radioactive Wastes**

1. **Aerial Photography Review.** Possible HTRW locations were investigated by examining the past and present land uses of the Project area. Topographic maps from 1892, 1923, 1954, 1962, and 1993 and aerial photographs from 1938-39, 1954 and 1961 were reviewed. Although the earliest photographs show some industrial development, the area closest to the Project area site, between the Des Plaines River and CSSC, remained undeveloped until relatively recently. Development present in the 1954 map and photo includes a refinery northeast of the Project site and homes east of the Project site. By 1961 the refinery has expanded south to Romeo Road. Barge facilities and other current industrial development in this area were not seen on the 1938-39, 1954, or 1961 historical photographs.

2. **Database Review.** Review of a database search provided by Environmental Data Resources identified HTRW sites within a mile of the Project site. Two Resource Conservation and Recovery Act corrective action sites were found within 0.5 mile of the Project site. Beatrice Foods Co. Hi-Temp Division, located at 135th Street and New Avenue, was assigned a medium corrective action priority in 1991 and 1993. Based on the ASTM guidelines for environmental site assessments and recommended search distance, the site may be of potential environmental concern with respect to the Project site. However, considering the relatively nonintrusive nature of the project construction
activities, the site is of minimal environmental concern with respect to the implementation of the proposed Permanent Barrier I Project. Cliffs Container Dorion Drum Co., located at 135th Street and the Des Plaines River, was assigned a high corrective action priority in 1993. This site is also listed in the Illinois Northeastern Illinois Planning Commission Solid Waste Landfill Inventory. As the site is separated from the Project site by multiple land use barriers, including the Des Plaines River, the site will have a minimal environmental impact on the Project site.

Union Oil Co. of California, located approximately 0.5 mile east of the Project site, is listed in the Surface Impoundment Inventory, maintained by the Illinois Waste Management and Research Center. The facility’s Standard Industrial Classification code represents petroleum refining. The site is an industrial surface impoundment, in operation for at least 10 years. The purpose of the impoundment is indicated as treatment and the explanation given is settling; the impoundment was most likely a settling step in the facility’s wastewater treatment process. The record indicates the surface area of the impoundment is 550 acres, and the impoundment held a bottom liner of chemically modified clay. Four monitoring wells are associated with the impoundment, although no additional information given on any sampling activities. The site is separated from the Project site by multiple land use barriers, including a railroad and the I&M Canal; the site will have a minimal environmental impact on the Project site.

3. Site Visit. The Project site area and adjacent area directly to the north and south have large mounds of material composed mostly of concrete, dirt, and vegetation. A small amount of debris was also observed in the mounds, including industrial debris, municipal debris, and one tire; the debris may possibly be due to dumping. The 1999 HTRW investigation observed slag at the proposed Permanent Barrier I site, and the slag was sampled and analyzed. The 1999 HTRW report concluded,

The physical tests indicate that the material is inert, however it did contain polynuclear aromatic hydrocarbons (PAHs). The sample was also tested for TCLP metals and organics. The tests showed that the sample passed TCLP, which means that the material is not considered to be hazardous waste.

No HTRW investigation can wholly eliminate uncertainty regarding the potential for HTRW associated with a Project area. Performance of the HTRW investigation is intended to reduce, but not eliminate, uncertainty regarding the potential for HTRW in connection with a Project area.

VII. ENVIRONMENTAL IMPACTS OF THE PREFERRED ALTERNATIVE

A. Climate

The Preferred Alternative would not directly or indirectly affect the regional climate. The rationale behind no affects is that the Preferred Alternative is confined to a specific area, and there are no aspects of the Project that would affect climate.

B. Geology

The Preferred Alternative would not directly or indirectly affect the local or regional geology. The Preferred Alternative is contained and geological features would not be altered.
C. Soils

The Preferred Alternative would involve clearing and grubbing, site grading, construct permanent road throughout entire site with curb and gutters. The soils within the Project area are previously disturbed from prior construction activity and the Preferred Alternative would not adversely affect soils.

D. Land Use

The Preferred Alternative would increase electrical ground potentials in the soil and rock in the immediate vicinity of the fish barriers due to the addition of a new barrier. There are no known impacts of barrier operation on groundwater chemistry and biochemistry. The impact of ground potential increases is being addressed by operational changes to the barriers. The Corps will continue monitoring adjacent properties for ground current both now and after addition of the new barrier to ensure the safety of the Barrier Project area and the adjacent proprieties.

E. Hydrology & Hydraulics

The Preferred Alternative would not directly or indirectly affect the current hydrology and hydraulics of the CSSC. The rationale behind the no affect determination is that hydraulic and hydrologic profiles would remain in the current condition since the operation of the canal would not change from its current status.

F. Air Quality

The Preferred Alternative would cause localized, temporary increases in exhaust emissions from equipment and vehicles during construction activities. These impacts would be limited through emissions controls during activities, in compliance with USACE, USEPA, Illinois EPA, and local laws and regulations. The action as proposed is compliant with the Clean Air Act, and will not result in significant or long-term adverse impacts to air quality.

G. Water Quality

The Preferred Alternative would have minor, short-term effects to the local water quality. No sediment dredging or filling activities would be included in the proposed work. The Preferred Alternative would not block the flow of water or the movement of vessels. The Project would not affect the Illinois pollution control board’s classification of the CSSC as a “Secondary Contact and Indigenous Aquatic Life Use Waterway.”

H. Riverine Habitat

The Preferred Alternative would not directly or indirectly affect the riverine habitat of the CSSC. The nearly perpendicular walls of the canal offer little or no littoral zone for aquatic species, and this would not change.
I. Riparian Plant Communities

The Preferred Alternative would not adversely affect the riparian plant communities of the Project area. The Project is located on highly disturbed lands that are already largely unvegetated.

J. Aquatic Communities

The Preferred Alternative would have a direct and acute affect on fish that encounter the electrical field in the Project area. This is consistent with the purpose of the action, to prevent the dispersal of fish into the Great Lakes, in particular silver carp and bighead carp.

The CSSC is a man-made system that wasn’t intended to support aquatic communities. The fish and macroinvertebrate assemblage in the Project area are transient and somewhat tolerant of poor water quality, inadequate habitat, and poor fluvial function. It is anticipated that the Preferred Alternative would have no significant adverse affects on to native fish and macroinvertebrate assemblages or individual species.

K. Other Wildlife

It is anticipated that the Preferred Alternative has no adverse or significant affects on other aquatic and non-aquatic wildlife.

L. Natural Areas

The Isle a la Cache County Forest Preserve, the Romeoville Prairie Nature Preserve, and the Centennial Bike Trail would not be affected by the Project. Any construction traffic and staging areas for equipment and materials would not disrupt nature preserve lands.

M. Threatened & Endangered Species

The critical habitat descriptions for federally-listed species and the details of the Preferred Alternative were reviewed by the USFWS who concluded that the proposed action would have “no effect” on threatened & endangered species.

N. Archaeological & Historical Properties

By applying the criteria of effect, the Corps has made a determination of “No Adverse Effect” for the construction of Permanent Barrier I, as promulgated by the NHPA, as amended and 36 CFR Part 800: “Protection of Historic Properties.” The determination is based upon the District’s opinion that the proposed upgrade of the electric fish barrier will not change the appearance of the CSSC. Thus, the Project does not meet the adverse effect criteria of CFR Part 800.5(a)(1) and is consistent with the Secretary of the Interior’s Standards for the Treatment of Historic Properties (36 CFR Part 68) and applicable guidelines.
O. Social Setting

The Preferred Alternative would temporarily disrupt navigation on the CSSC. Navigation would be halted during construction so that cranes could lower and anchor electrodes and parasitic structures in the canal. These temporary closures would occur during daylight hours and be coordinated in advance with the USCG and broadcast to navigators via marine radio. The Preferred Alternative has the potential to impact nearby structures through increased electrical ground current in the Project vicinity.

P. Recreation

The Preferred Alternative would temporarily disrupt recreational navigation during construction. The USCG has also established both a safety zone and a Regulated Navigation Area (RNA) on the CSSC at the barriers Project area. The RNA final rule places navigational, environmental and operational restrictions on all vessels transiting the navigable waters located adjacent to and over the electrical dispersal fish barrier system. Some of the RNA rules that apply to recreational navigation include; vessels must be greater than twenty feet in length; vessels must not be a personal watercraft of any kind (i.e. jet skis, wave runners, kayak, etc.); all vessels are prohibited from loitering in the RNA; vessels may enter the RNA for the sole purpose of transiting to the other side and must maintain headway throughout the transit; all vessels and persons are prohibited from dredging, laying cable, dragging, fishing, conducting salvage operations, or any other activity, which could disturb the bottom of the RNA; all personnel on vessels transiting the RNA should remain inside the cabin, or as inboard as practicable. If personnel must be on open decks, they must wear a Coast Guard approved personal flotation device; and vessels may not moor or lay up on the right or left descending banks of the RNA.

Q. Hazardous, Toxic and Radioactive Wastes

The Preferred Alternative would not directly or indirectly disturb or uncover hazardous, toxic or radioactive wastes and has little potential for encountering HTRW or non-HTRW contamination.

R. Prime Farmlands

The Preferred Alternative would not directly or indirectly affect farmland or prime farmlands, since none occur in the affected area.

VIII. 17 POINTS OF ENVIRONMENTAL QUALITY

The 17 points are defined by Section 122 of Rivers, Harbors & Flood Control Act of 1970 (P.L. 91-611) from (ER 1105-2-240 of 13 July 1978). The 17 points include noise, displacement of people, aesthetic values, community cohesion, desirable community growth, tax revenues, property values, public facilities, public services, desirable regional growth, employment, business and industrial activity, displacement of farms, man-made resources, natural resources, air and water. Impacts to air and water are discussed on page EA 15, and a discussion on the other points is as follows:

1. Noise. The Preferred Alternative would not have significant increases in noise levels.

2. Displacement of People. The Preferred Alternative would not displace any local residents within the township of the Project area.
3. **Aesthetic Values.** The Preferred Alternative would not significantly change the aesthetic values of the Project area.

4. **Community Cohesion.** The Preferred Alternative would not disrupt community cohesion.

5. **Desirable Community Growth.** The Preferred Alternative would not adversely affect community growth.

6. **Desirable Regional Growth.** The Preferred Alternative would not adversely affect regional growth.

7. **Tax Revenues.** The Preferred Alternative would not affect tax revenues.

8. **Property Values.** The Preferred Alternative would not affect property values.

9. **Public Facilities.** The Preferred Alternative would not adversely affect public facilities.

10. **Public Services.** The Preferred Alternative would not adversely affect public services.

11. **Employment.** The Preferred Alternative would not adversely affect employment. Short term employment gains would be realized with implementing the measures.

12. **Business and Industrial Activity.** The USCG would enforce a safety zone and temporarily close the CSSC at the barriers Project to all commercial and recreational vessel traffic at the barrier site during construction. Due to the short duration of the closure, this action is not expected to have significant impacts to business and industrial activity. Business and industrial activity could be impacted by greater electrical ground current. There would be an increase in ground potentials in the soil and rock in the immediate vicinity of the fish barriers due to the addition of a new barrier. The impact of this increase is being addressed by operational changes to the existing barriers and by monitoring adjacent properties both now and after the addition of the Preferred Alternative.

13. **Displacement of Farms.** The Preferred Alternative would not adversely affect farmland. There are no farms in the Project area.

14. **Man-made Resources.** The Preferred Alternative would not adversely affect man-made resources.

15. **Natural Resources.** The No Action Alternative could affect the Great Lakes basin by increasing the risk of allowing the dispersal of Asian carp. The Preferred Alternative would protect the Great Lakes basin from invasive fish species found in the Mississippi River basin.

**IX. CUMULATIVE EFFECTS**

**A. Cumulative Impacts**

The cumulative effect of implementing the construction of Permanent Barrier I is considered to be beneficial environmentally, socially and economically. The protection of the Great Lakes and its thousands of miles of confluent tributaries is the ultimate goal of this action. The most significant
cumulative effect is preventing the dispersal of an aggressive invasive species to one of the largest freshwater ecosystems on the planet.

In this environmental assessment, cumulative effect issues and assessment goals are established, the temporal boundaries and affected environment are determined, and the reasonably foreseeable future actions are identified. Cumulative effects are assessed to determine if the sustainability of any of the resources is adversely affected with the goal of determining the incremental impact to key resources that would occur should the proposal be permitted.

**Affected Environment**

- The spatial boundary for the assessment has been broadened to consider effects beyond the footprint of the Project and to include far reaching influence this action would have on the Great Lakes ecosystem.

**Temporal Boundaries Considered**

- Past (1908-2012) - this is the time that the modification of the IWW System was complete providing an aquatic connection between the Great Lakes and Mississippi River basins.
- Present (2013) - when the decision is being made on the replacement of the Demonstration Barrier with Permanent Barrier I.
- Future (2014 to 2030) - the time frame used for potentially implementing a final plan to ecologically separate the Mississippi and Great Lakes basins.

**Reasonably Foreseeable Actions**

- Continued navigation in the Illinois Waterway, CSSC and Calumet Sag Channel
- Continued operational shut downs for maintenance of the Project
- Continued improvements and upgrades of the barrier systems to improve their efficacy.
- Continued introduction of non-native species
- Continued application of environmental requirements such as those under the Clean Water Act and water quality improvement
- Implementation of various programs and projects to deal with invasive species control

**B. Cumulative Effects on Physical Resources**

The physical resources of the Project area (geology, soils, topography, land cover, hydrology) were altered from their natural condition with the creation of the CSSC. The implementation of the preferred alternative would have no bearing on the physical resources of the Project reach or the areas which it influences. Adverse effects stemming from the action upon physical resources are not incrementally apparent, thus cumulative, adverse effects are not anticipated.
C. Cumulative Effects on Ecological Resources

The ecological resources of the Project area (plants, fish, birds, prairies, streams, wetlands, etc) were altered from their natural condition with the creation of the CSSC and the increase in urbanization and commercial development in the region. The degradation of natural and native communities has allowed for invasive species to expand into areas once occupied by native species. The implementation of the preferred alternative would not restore ecological resources or degrade them, but would contribute to the protection of the present-day Great Lakes aquatic ecosystem. An incremental benefit to the ecology of the Great Lakes would be achieved by preventing the colonization of Asian carp. Cumulatively, adverse ecological effects are not anticipated through implementing the preferred alternative. In terms of the Great Lakes ecology, this aids in the effort to protect the Great Lakes, and cumulatively is a positive action.

D. Cumulative Effects on Archaeological & Cultural Resources

The implementation of the preferred alternative has no affect upon the CSSC listing to the National Register of Historic Places or other archaeological or cultural resources. Adverse effects stemming from the action upon archaeological or cultural resources are not incrementally apparent, thus cumulative, adverse effects are not anticipated.

E. Cumulative Effects on Aesthetic Values

Aesthetics are typically a matter of conjecture. Many agree that Asian carp overrunning the Mississippi and Illinois Rivers are a nuisance, and it can be assumed this would be the same case if these fish were to disperse into the Great Lakes and the confluent tributaries. The implementation of the preferred alternative would have no adverse effects on aesthetic values are not incrementally apparent, thus cumulative, adverse effects are not anticipated.

F. Cumulative Effects Summary.

<table>
<thead>
<tr>
<th></th>
<th>1908 – Present (Past Actions)</th>
<th>No Action</th>
<th>Preferred Alternative</th>
</tr>
</thead>
<tbody>
<tr>
<td>Air Quality</td>
<td>Adverse</td>
<td>No Effect</td>
<td>No Effect</td>
</tr>
<tr>
<td>Noise</td>
<td>Adverse</td>
<td>No Effect</td>
<td>No Effect</td>
</tr>
<tr>
<td>Geology &amp; Soils</td>
<td>Adverse</td>
<td>No Effect</td>
<td>No Effect</td>
</tr>
<tr>
<td>Hydrology &amp; Hydraulics</td>
<td>Beneficial</td>
<td>No Effect</td>
<td>No Effect</td>
</tr>
<tr>
<td>Land Use</td>
<td>Beneficial</td>
<td>No Effect</td>
<td>No Effect</td>
</tr>
<tr>
<td>T &amp; E Species</td>
<td>Adverse</td>
<td>Adverse</td>
<td>Beneficial</td>
</tr>
<tr>
<td>Wetlands</td>
<td>Adverse</td>
<td>No Effect</td>
<td>No Effect</td>
</tr>
<tr>
<td>Aquatic Resources</td>
<td>Adverse</td>
<td>Adverse</td>
<td>Beneficial</td>
</tr>
<tr>
<td>Terrestrial Resources</td>
<td>Adverse</td>
<td>No Effect</td>
<td>No Effect</td>
</tr>
<tr>
<td>Recreation and Aesthetics</td>
<td>Adverse</td>
<td>Minor Adverse</td>
<td>Minor Adverse</td>
</tr>
<tr>
<td>Cultural Resources</td>
<td>Beneficial</td>
<td>No Effect</td>
<td>No Effect</td>
</tr>
<tr>
<td>Economic Resources</td>
<td>Beneficial</td>
<td>Adverse</td>
<td>Beneficial</td>
</tr>
<tr>
<td><strong>Total Impacts</strong></td>
<td><strong>Adverse</strong></td>
<td><strong>Adverse</strong></td>
<td><strong>Beneficial</strong></td>
</tr>
</tbody>
</table>

1 The adverse effects are tied to Asian carp impacting Great Lakes resources
2 The adverse effects are to the immediate area of the Barriers, and the beneficial effects are to the Great Lakes by preventing Asian carp dispersal.
Along with direct and indirect effects, cumulative effects of the alternative were assessed following the guidance provided by the President's Council on Environmental Quality. There have been numerous effects to resources from past and present actions, and reasonably foreseeable future actions can also be expected to produce both beneficial and adverse affects. In this context, the increments of effects from the proposed risk reduction measures are relatively minor in terms of adverse effects, but very important in terms of the long term viability of the Great Lakes ecosystem. Assessment of cumulative effects indicates that long-term sustainability of Great Lakes as a resource may be dependent on the preferred alternative. Based on the expectation of continued sustainability of all resources, cumulative effects are not considered significantly adverse.

X. COMPLIANCE WITH ENVIRONMENTAL QUALITY STATUTES

This feasibility study complies with applicable environmental laws, regulations, and Executive Orders (EO) for the current stage of the study. Table EA-4 provides a summary of the compliance status for the primary environmental requirements associated with the study.

<table>
<thead>
<tr>
<th>Reference</th>
<th>Environmental Regulation</th>
<th>Compliance Status*</th>
</tr>
</thead>
<tbody>
<tr>
<td>16 USC 1531, et seq.</td>
<td>Endangered Species Act, as amended</td>
<td>C</td>
</tr>
<tr>
<td>16 USC 460 (L),(12)</td>
<td>Federal Water Project Recreation Act, as amended</td>
<td>C</td>
</tr>
<tr>
<td>16 USC 4601-4, et seq.</td>
<td>Land and Water Conservation Fund Act, as amended</td>
<td>C</td>
</tr>
<tr>
<td>16 USC 470a, et seq.</td>
<td>National Historic Preservation Act (NHPA), as amended</td>
<td>C</td>
</tr>
<tr>
<td>16 USC 661</td>
<td>Fish and Wildlife Coordination Act, as amended</td>
<td>C</td>
</tr>
<tr>
<td>16 USC 703 et seq.</td>
<td>Migratory Bird Treaty Act of 1918, as amended</td>
<td>C</td>
</tr>
<tr>
<td>16 USC489, et seq.</td>
<td>Archaeological and Historical Preservation Act as amended</td>
<td>C</td>
</tr>
<tr>
<td>25 USC 3001, et seq.</td>
<td>Native American Graves Protection and Repatriation Act</td>
<td>C</td>
</tr>
<tr>
<td>33 USC. 1251 et seq.</td>
<td>Clean Water Act, of 1977, as amended</td>
<td>C</td>
</tr>
<tr>
<td>42 USC 1962</td>
<td>Water Resources Planning Act of 1965</td>
<td>C</td>
</tr>
<tr>
<td>42 USC 201</td>
<td>Safe Drinking Water Act of 1986 as amended</td>
<td>C</td>
</tr>
<tr>
<td>42 USC 4321, et seq.</td>
<td>National Environmental Policy Act (NEPA), as amended</td>
<td>C</td>
</tr>
<tr>
<td>42 USC 4901, et seq.</td>
<td>Quiet Communities Act of 1978</td>
<td>C</td>
</tr>
<tr>
<td>42 USC 7401</td>
<td>Clean Air Act (CAA) of 1970 as amended</td>
<td>C</td>
</tr>
<tr>
<td>42 USC 9601</td>
<td>CERCLA of 1980</td>
<td>C</td>
</tr>
<tr>
<td>7 USC 4201, et seq.</td>
<td>Farmland Protection Policy Act</td>
<td>C</td>
</tr>
<tr>
<td>CEQ Memo Aug 11,1980</td>
<td>Prime or Unique Agricultural Lands NEPA</td>
<td>C</td>
</tr>
<tr>
<td>E.O. 11514</td>
<td>Protection and Enhancement of Environmental Quality</td>
<td>C</td>
</tr>
<tr>
<td>E.O. 11593</td>
<td>Protection and Enhancement of the Cultural Environment</td>
<td>C</td>
</tr>
<tr>
<td>E.O. 11988 (1977)</td>
<td>Floodplain Management</td>
<td>C</td>
</tr>
<tr>
<td>E.O. 11990 (1977)</td>
<td>Protection of Wetlands</td>
<td>C</td>
</tr>
<tr>
<td>E.O. 12088 (1978)</td>
<td>Federal Compliance with Pollution Control Standards</td>
<td>C</td>
</tr>
<tr>
<td>E.O. 12898 (1994)</td>
<td>Federal Actions to Address EJ in Minority and Low-Income Populations</td>
<td>C</td>
</tr>
<tr>
<td>E.O. 13007 (1996)</td>
<td>Indian Sacred Sites</td>
<td>C</td>
</tr>
<tr>
<td>E.O. 13606 (1997)</td>
<td>Protection of Children from Environmental Health Risks and Safety Risks</td>
<td>C</td>
</tr>
<tr>
<td>E.O. 13190</td>
<td>Responsibilities of Federal Agencies to Protect Migratory Birds</td>
<td>C</td>
</tr>
<tr>
<td>E.O. 13340</td>
<td>Great Lakes Designation of National Significance to Promote Protection</td>
<td>C</td>
</tr>
<tr>
<td>PL 79-525, 60 Stat 634</td>
<td>Rivers and Harbors Act of 1946</td>
<td>C</td>
</tr>
</tbody>
</table>

*pending agency and public review

**Endangered Species Act of 1973**, as amended. The proposed action has been coordinated with the U.S. Fish and Wildlife Service (USFWS). The Preferred Alternative would be in full compliance.
National Historic Preservation Act of 1966, as amended. By applying the criteria of effect, the Corps has made a determination of “No Adverse Effect” for the construction of Permanent Barrier I, as promulgated by the NHPA, as amended and 36 CFR Part 800: “Protection of Historic Properties.” The determination is based upon the District’s opinion that the proposed upgrade of the electric fish barrier will not change the appearance of the CSSC. Thus, the Project does not meet the adverse effect criteria of CFR Part 800.5(a)(1) and is consistent with the Secretary of the Interior’s Standards for the Treatment of Historic Properties (36 CFR Part 68) and applicable guidelines.

Federal Water Project Recreation Act. No increases or decreases in current public recreational opportunities would be realized if this Project were implemented. The Preferred Alternative would be in full compliance.

Fish and Wildlife Coordination Act. Project plans have been coordinated with the USFWS. Coordination responses can be found in Appendix EA-A. This Preferred Alternative is in full compliance.

Wild and Scenic Rivers Act of 1968, as amended. The Project area is not listed on the National Rivers Inventory used to identify rivers or sections of rivers that may be designated by Congress to be component rivers in the National Wild and Scenic Rivers Systems. This Preferred Alternative is in full compliance.

EO 11988 (Floodplain Management). Implementation of the Preferred Alternative would avoid, to the extent possible, long- and short-term adverse impacts associated with the occupancy and modification of the base floodplain, and avoids direct and indirect support of development or growth (construction of structures and/or facilities, habitable or otherwise) in the base floodplain wherever there is a practicable alternative. Therefore, the Preferred Alternative is in full compliance.

EO 11990 (Protection of Wetlands). The Preferred Alternative would not impact wetlands.

Clean Water Act (Sections 401 and 404), as amended. No sediment dredging or filling activities are included in the proposed work. Sediment or debris located in the electrode placement area may be pushed aside during installation, but significant sediment accumulations in the area are not expected. The Corps has determined that Section 404 of the Clean Water Act does not apply to the proposed installation, since the Project will not include any direct return to waters of the United States and since there is no dredge or fill activity included in the Project. The Preferred Alternative would be in full compliance.

Clean Air Act, as amended. No aspect of the proposed Project has been identified that would result in violations to air quality standards. The outdoor atmosphere would not be exposed to contaminants/pollutants in such quantities and of such duration as may be or may tend to be injurious to human, plant, or property, or which unreasonably interferes with the comfortable enjoyment of life, property, or the conduct of business. If implemented, this Preferred Alternative would be in full compliance.

Farmland Protection Policy Act of 1981. The proposed Project would not result in the conversion of any prime, unique, or state or locally important farmland to nonagricultural uses. The Preferred Alternative would be in full compliance.

EO 12898 (Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations). This EO requires 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. Fair treatment means that no group of people, including a racial, ethnic, or a socioeconomic group should bear a disproportionate share of the negative environmental consequences resulting from industrial, municipal, and commercial operations or the execution of Federal, state, local, and tribal programs and policies. Meaningful involvement means that:

- potentially affected community residents have an appropriate opportunity to participate in decision making about a proposed activity that could affect their environment and/or health;
- the public’s contribution can influence the regulatory agency’s decision;
- the concerns of all participants will be considered in the decision making process; and
- the decision makers seek out and facilitate the involvement of those potentially affected.

The District has complied with the provisions of the EO through the coordination and the NEPA review process. No concerns regarding this EO surfaced during this process.

EO 13112 Invasive Species. This Project does not authorize or carry out any actions that are likely to promote invasive species proliferation. Implementation of the Preferred Alternative will help contain invasive species. This Preferred Alternative is in full compliance.

Migratory Bird Treaty Act of 1918, as amended. The Migratory Bird Treaty Act makes it illegal for people to “take” migratory birds, their eggs, feathers or nests. Take is defined to include by any means or in any manner, any attempt at hunting, pursuing, wounding, killing, possessing or transporting any migratory bird, nest, egg, or part thereof. No impacts to migratory birds are anticipated as a result of implementing preferred alternative.

XI. ENVIRONMENTAL IMPACTS OF NO ACTION ALTERNATIVE

No Action. Under the No Action alternative, periodic shut downs of the Barriers IIA and IIB for maintenance would increase the risk the small Asian carp would pass the Demonstration Barrier. Small fish would eventually grow to adults and could establish a breeding population on the upstream side of the barrier, leading to colonization of Lake Michigan and the rest of the Great Lakes. The presence of Asian carp in the Great Lakes could cause declines in abundances of native fish species because Asian carp would compete with native fish for food. The Great Lakes are home to federally- and/or state-listed threatened or endangered fish, mollusks, plants, mammals, insects, and reptiles. Other Great Lakes invasive species have been implicated in adverse effects upon up to 46 percent of the local federally-listed endangered plant and animal species. The introduction of Asian carp to the region could further harm these organisms and threaten their existence in the Great Lakes. An
established Asian carp population also could threaten Great Lakes recreation, as silver carp are known for leaping out of the water at the sound of boat or jet-ski motors, causing physical harm to people and property.

XII. PROBABLE ADVERSE ENVIRONMENTAL EFFECTS WHICH CANNOT BE AVOIDED

Due to the machinery and construction required for the Project, there would be a temporary increase in noise and a slight decrease in the air and water quality during construction. Also, minor disturbance to some ground vegetation, including some grasses and shrubs, would occur so the equipment could access the banklines and maneuver to place electrodes and construct buildings. The potential for contamination of the river from gas, oil, or grease from heavy machinery is minor. Best management practices would be followed to protect water quality during and after construction.

XIII. RELATIONSHIP BETWEEN SHORT-TERM USE AND LONG-TERM PRODUCTIVITY

The CSSC is a vital component of the national transportation infrastructure. With timely and appropriate maintenance, the Project can deter the inter-basin transfer of Asian carp and other fish species from the Mississippi River to the Great Lakes Basin via the CSSC while preserving the existing uses of the system.

The Preferred Alternative will contribute to long-term ecological health by reducing the risk of Asian carp populations establishing in the Great Lakes.

XIV. ANY IRREVERSIBLE OR IRRETRIEVABLE COMMITMENTS OF RESOURCES IF THE PROPOSED ACTION SHOULD BE IMPLEMENTED

The fuel used by construction machinery and construction materials would be irretrievable commitments of resources associated with the preferred alternative. The electricity used to operate the Preferred Alternative would be lost and is considered irretrievable.

XV. RELATIONSHIP OF THE PROPOSED PROJECT TO LAND-USE PLANS

The proposed action is consistent with known land-use plans for this area.

XVI. CONCLUSIONS

A review of the proposed action indicates that there would be no significant adverse impacts on the environment, with any adverse effects being short-term and minor. The proposed action the construction of Permanent Barrier I as a replacement for the Demonstration Barrier would satisfy the Congressional directive in WRDA 2007 SEC. 3061(b)(1)(A).
XVII. COORDINATION

During the preparation of this EA, this action was coordinated with the USFWS, USCG, USEPA, USDA, MWRDGC, Illinois DNR, and the Illinois EPA. Appendix EA-A includes copies of the District’s coordination letter and the responses received. The USFWS concurred with the District’s determinations regarding federally-threatened and endangered species and the Illinois DNR concurred with the District’s determination regarding aquatic species. The Draft EA was sent to individuals and organizations on the Distribution List in Appendix EA-D for public review and comment.

XVIII. CITATIONS


PERMANENT BARRIER I

LOCKPORT POOL
CHICAGO SANITARY AND SHIP CANAL

WILL COUNTY, ILLINOIS

ENVIRONMENTAL ASSESSMENT

APPENDIX EA-A

PERTINENT CORRESPONDENCE
SEE DISTRIBUTION LIST,

The Chicago District is preparing a National Environmental Policy Act (NEPA) document on the impacts from the proposed construction of Permanent Barrier 1, an upgrade of the Aquatic Nuisance Species Electric Dispersal Barriers, located near Romeoville, IL in the Chicago Sanitary and Ship Canal (CSSC). Currently there are three electrical barriers: Demonstration Barrier, Barrier IIA and Barrier IIB. The Demonstration Barrier has been operational since 2002 but due to its original demonstration status, it was designed and built with materials that were not intended for long-term use. In 2013, the District proposes replacing the Demonstration Barrier with the construction of Permanent Barrier 1 (see Enclosure I).

The Electric Dispersal Barriers deter the inter-basin establishment of Asian carp and other aquatic nuisance species via the CSSC. The barriers are formed of steel electrodes that are secured to the bottom of the CSSC. The electrodes are connected to a raceway, consisting of electrical connections to a control building. Equipment in the control building generates a direct current pulse through the electrodes, creating an electric field in the water that discourages fish from crossing. Multiple barriers are needed to provide redundancy and so that at least one barrier can be active when another barrier, or barriers, is offline for maintenance. See Enclosure 2 for additional detail.

There are eight federally listed and proposed to be listed species for Will County, Illinois (Table I). As this area is highly disturbed the proposed action would have no effect on the eastern massasauga, sheenpse mussel, snuffbox, eastern prairie fringed orchid, lakeside daisy, leafy-prairie clover, or Mead’s milkweed. Although the proposed action is not within the listed critical habitat zones for the endangered Hine’s emerald dragonfly, critical habitat has been designated along the west side of the Des Plaines River. The proposed action may affect but is not likely to adversely affect the Hine’s emerald dragonfly.
Permanent Barrier I  
Lockport Pool, CSSC  
Will County, Illinois  

Draft Environmental Assessment

Table 1. Federally listed and proposed to be listed species for Will County, Illinois.

<table>
<thead>
<tr>
<th>Species</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hine's emerald dragonfly (Somatochlora kineana)</td>
<td>Endangered</td>
</tr>
<tr>
<td>Eastern massasauga (Sistrurus catenatus)</td>
<td>Candidate</td>
</tr>
<tr>
<td>Sheepnose mussel (Plethobasus cyphus)</td>
<td>Proposed as Endangered</td>
</tr>
<tr>
<td>Snuffbox (Lipioblasma triquetra)</td>
<td>Proposed as Endangered</td>
</tr>
<tr>
<td>Eastern prairie fringed orchid (Platantha leucophaea)</td>
<td>Threatened</td>
</tr>
<tr>
<td>Lakeside daisy (Hymenopsis herbacea)</td>
<td>Threatened</td>
</tr>
<tr>
<td>Leafy-prairie clover (Dalea foliosa)</td>
<td>Endangered</td>
</tr>
<tr>
<td>Mead's milkweed (Asclepias meadii)</td>
<td>Threatened</td>
</tr>
</tbody>
</table>

The Chicago District is coordinating under Section 7 of the Endangered Species Act and the Fish and Wildlife Coordination Act and would appreciate your comments or concurrence as part of the scoping process. I am particularly interested in your comments regarding impacts to aquatic habitat and threatened or endangered species. Please provide comments or concurrence by 22 February 2013. If you have any questions or wish to request additional information, please call Mr. Mark Cornish, telephone (309) 794-5385, fax (309) 794-5171, email Mark.A.Cornish@usace.army.mil, or write to our address, U.S. Army Corps of Engineers, 111 North Canal Street, Suite 600, Chicago Illinois 60606; ATTN: Planning Branch (Gene Fleming).

Sincerely,

Susanne J. Davis, P.E.  
Chief of Planning Branch

Enclosures
Permanent Barrier I
Lockport Pool, CSSC
Will County, Illinois

Draft Environmental Assessment

Enclosure 1. Permanent Barrier I Project Area
Permanent Barrier I
Lockport Pool, CSSC
Will County, Illinois

Location

The Chicago Area Waterway System (CAWS) is the only known continuous connection between the Great Lakes and Mississippi River basins and plays the greatest potential role for the transfer of aquatic nuisance species.

About the U.S. Army Corps of Engineers

The U.S. Army Corps of Engineers is to provide valued, cost-effective, innovative, engineering services, and management capabilities to diverse stakeholders and partners within the greater Chicago metropolitan area and the nation.

The Chicago District is responsible for water resources development in the Chicago metropolitan area, an area of about 5,000 square miles with a population of about nine million. The district is involved in a variety of projects including flood risk management, coastal storm damage reduction, navigation, ecosystem restoration, emergency management and infrastructure support.

The Electric Dispersal Barriers

The Electric Dispersal Barriers are located near Naperville, IL in the Chicago Sanitary and Ship Canal (CSSC) within the CAWS. The CSSC is a man-made hydrologic connection between the Great Lakes and Mississippi River basins that was completed in the early 20th century to address sanitation and flooding. Construction of the CSSC allowed the reversal of the flow direction in the Chicago River and accommodated increased shipping.

For more information about the Chicago District, please visit www.usace.army.mil or call the public affairs office at 312-844-3200.

Enclosure 2. Brochure on the Electrical Dispersal Barriers
IN REPLY REFER TO:
FWS/AES-CIFO/2013-I-0007

February 13, 2013

Ms. Susanne J. Davis
Department of the Army
Chicago District, U.S. Army Corps of Engineers
111 North Canal Street, Suite 600
Chicago, Illinois 60606

Attention: Planning Branch

Dear Ms. Davis:

This responds to your letter dated February 7, 2013, requesting comments and concurrence with your determinations regarding the potential effects of the proposed construction of Permanent Barrier 1, an upgrade of the Aquatic Nuisance Species Electric Dispersal Barriers, to species listed as threatened or endangered under the Endangered Species Act. In your letter you note that the project is in proximity to listed critical habitat for the Hine’s emerald dragonfly (Somatochlora hineana), and you determined that the proposed construction may affect but is not likely to adversely affect the Hine’s emerald dragonfly. In addition, you have made a no effect determination for eight other Federally listed species including the eastern massasauga (Sistrurus catenatus), eastern prairie fringed orchid (Platanthera leucophaea), lakeside daisy (Hyemexys acaulis), leafy prairie clover (Dalea foliosa), Mead’s milkweed (Asclepias meadii), and the sheepnose (Plathobasus cyphus) and snubbox (Epioblasma triquutra) mussels. This proposed project is located near Romeoville, Will County, Illinois in the Chicago Sanitary and Ship Canal.

We have reviewed the information regarding this project that you have submitted. Based on our review, we would not anticipate impacts from this project to any of the listed species. Though designated critical habitat for the Hine’s emerald dragonfly does occur in the vicinity of the project, as you note, the proposed construction occurs outside the critical habitat for the endangered dragonfly. Therefore, “no effect” would also be an appropriate determination for that species.

et seq.), and the Migratory Bird Treaty Act (40 Stat. 775, as amended; 16 U.S.C. 703 et seq.).

If you have any questions, please contact Ms. Cathy Pollack at 847-381-2253, ext. 28.

Sincerely,

[Signature]

Louise Clemency
Field Supervisor
United States Environmental Protection Agency
Region 5
77 West Jackson Boulevard
Chicago, IL 60604-3590

FEB 26 2013

Susanne J. Davis, P.E.
Chief of Planning Branch
Department of the Army
U.S. Army Corps of Engineers - Chicago District
111 North Canal Street
Chicago, Illinois 60606

Re: USEPA Response to Study Planning Process – Proposed Construction of Permanent Barrier 1, an Upgrade of the Aquatic Nuisance Species (ANS) Electric Dispersal Barriers, Romeoville, Illinois

Dear Ms. Davis:

The U.S. Environmental Protection Agency (EPA) has reviewed the U.S. Army Corps of Engineers’ (USACE) request for information dated February 7, 2013, concerning the abovementioned project. Our comments in this letter are provided in accordance with our responsibilities under the National Environmental Policy Act (NEPA), the Council on Environmental Quality’s NEPA Implementing Regulations (40 CFR 1500-1508), and Section 309 of the Clean Air Act.

As Asian carp have migrated northward up the Mississippi and Illinois Rivers, the threat posed by the possibility of ANS gaining access to Lake Michigan and the rest of the Great Lakes is clear. The Demonstration Barrier was built in 2002 to deter the inter-basin transfer of Asian carp and other ANS via the Chicago Sanitary and Ship Canal (CAWS) to the Great Lakes. The Demonstration Barrier, however, was not built with long-term use in mind, and USACE is planning to replace the Demonstration Barrier with the construction of Permanent Barrier 1. The proposed project is one part of a series of studies, reports, and actions USACE is conducting to examine a range of options to further reduce the possibility of ANS transfer.

Based on the information provided in the scoping request, EPA offers the following comments to aid in the development of future NEPA documentation.

Project Design:
- Given that the bottom of the CAWS is bedrock, we do not anticipate an accumulation of sediment and nor any disturbance of sediment as a result of this project. If this assumption is incorrect, future NEPA documentation should discuss the results of sediment testing to determine the nature of sediment accumulated at the construction site as well as USACE plans to deal with contaminated sediment, if any.
EPA anticipates the NEPA documentation will include a discussion of required permits to implement the project. Please provide information regarding the status of relevant permit applications.

Please include information pertaining to construction access and how work will be done (i.e., construction staging from the river bank vs. in-stream river work). If cofferdams or other temporary dewatering measures are proposed, those measures, and the lengths of time they will be installed, should be discussed.

Please include information specifying expected effects (both positive and negative) on water quality in the CAWS.

**Threatened and Endangered (T&E) Species:**
- We understand USACE is coordinating on an ongoing basis with U.S. Fish and Wildlife Service (USFWS) for Asian carp monitoring and rapid response activities. EPA anticipates the NEPA documentation will discuss coordination with the USFWS and the Illinois Department of Natural Resources regarding T&E species and suitable habitat, if any, that could be affected (both positively and negatively) by the proposed project.

We appreciate the opportunity to comment early in the process. Please send one copy of the draft EA when it is available. If we can be of service to the USACE during the preparation of appropriate NEPA documents, please do not hesitate to contact me at (312) 886-2910 or via email at westlake.kenneth@epa.gov or Kathleen Kowal of my staff at (312) 353-5206 or via email at kowal.kathleen@epa.gov.

Sincerely,

[Signature]

Kenneth A. Westlake
Chief, NEPA Implementation Section
Office of Enforcement and Compliance Assurance

cc: Mark Cornish, USACE
    Cathy Pollack, USFWS
Cornish, Mark A MVR

From: Miller, Rob [Rob.Miller@illinois.gov]
Sent: Thursday, February 14, 2013 4:16 PM
To: Cornish, Mark A MVR
Cc: Sailee Dan; Kirk, Dan; Ragus, Joe; Bruce, Debbie
Subject: NEPA for Electric Barrier Construction

Mark:

This email reply concerning the construction of Permanent Barrier 1 is at the request of a mailing I received from P.E. Susanne J. Davis.

Upon review of the information which was contained in this mailing, I feel confident that the proposed scope of work will have no impact to any of the listed aquatic organisms in Table 1 (two mussel species). As Ms. Davis states in her cover letter, the area in question is “highly disturbed” and the construction of the Permanent Barrier should have no impact on either of those mussel species. I cannot, however, speak to any potential impacts to the terrestrial species. Those concerns would be better addressed by either our wildlife and/or natural heritage biologist.

Thank you for the opportunity to comment.

Rob Miller
District 9 Fisheries Biologist
13608 Fox Road
Yorkville, Illinois 60560
630.553.6680
rob.miller@illinois.gov
**CONVERSATION RECORD**

<table>
<thead>
<tr>
<th>TYPE</th>
<th>VISIT</th>
<th>CONFERENCE</th>
<th>TELEPHONE</th>
</tr>
</thead>
<tbody>
<tr>
<td>TIME</td>
<td>12:40</td>
<td></td>
<td></td>
</tr>
<tr>
<td>DATE</td>
<td></td>
<td>26 February 2013</td>
<td></td>
</tr>
</tbody>
</table>

**ROUTINE**

<table>
<thead>
<tr>
<th>NAME/SYMBOL</th>
<th>IN</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**LOCATION OF VISIT/CONFERENCE:**

- **NAME OF PERSON(S) CONTACTED OR IN CONTACT WITH YOU:**
  - Lt. Michael Collet
- **ORGANIZATION (office, dept., bureau, etc.):**
  - Ninth District
- **U.S. Coast Guard, Cleveland, OH**
- **TELEPHONE NO.:**
  - 216-902-6051

**SUBJECT:** Permanent Barrier I Coordination

**SUMMARY**

Lt. Michael Collet reported that he had reviewed the Corps of Engineers’ coordination letter for the proposed Permanent Barrier I project dated 7 February 2013. He stated that the USCG 9th District had no comments at this time. The USCG will review the forthcoming Environmental Assessment and may provide comments pertaining to navigation in the barriers project area of Chicago Sanitary and Ship Canal near Romeoville, IL.

**ACTION REQUIRED**

Send Draft Environmental Assessment to the Attention of Lt. Collet.

**NAME OF PERSON DOCUMENTING CONVERSATION**

Mark A. Cornish

**SIGNATURE**

[Signature]

**DATE**

2/27/2013

**ACTION TAKEN**

Lt. Collet was added to the EA Distribution List

---

EA-A-12
Permanent Barrier I  
Lockport Pool, CSSC  
Will County, Illinois  

Draft Environmental Assessment

Cornish, Mark A MVR
From: Fleming, Eugene J LRC  
Sent: Thursday, January 24, 2013 8:53 AM  
To: Cornish, Mark A MVR  
Cc: Davis, Susanne J LRC; Bullock, Peter Y LRC  
Subject: FW: Here's a fish barrier question for you (UNCLASSIFIED)

Classification: UNCLASSIFIED  
Caveats: NONE

Mark,

A response from Anne Haaker, Deputy State Historic Preservation Officer for Illinois on the Barrier. Coordination is done per Pete

Gene

Gene Fleming  
Chief, Environmental Formulation and Analysis Section  
US Army Corps of Engineers, Chicago District  
111 W. Canal  
Chicago, IL 60606  
Phone (312) 846-5585  
BB (312) 500-2336  
Fax (312) 886-2891

-----Original Message-----
From: Bullock, Peter Y LRC  
Sent: Wednesday, January 23, 2013 9:48 AM  
To: Fleming, Eugene J LRC  
Cc: Davis, Susanne J LRC  
Subject: FW: Here's a fish barrier question for you (UNCLASSIFIED)

Classification: UNCLASSIFIED  
Caveats: NONE

A response from IHPA regarding upgrades to the barrier.

Peter Y. Bullock  
Archaeologist  
USACE  
CELR-CPL-PL-E  
312-846-5587  
FAX 312-886-2891

-----Original Message-----
From: Haaker, Anne [mailto:Anne.Haaker@Illinois.gov]  
Sent: Wednesday, January 23, 2013 9:46 AM  
To: Bullock, Peter Y LRC  
Subject: RE: Here's a fish barrier question for you (UNCLASSIFIED)

If the project cannot affect historic resources then it is not an undertaking pursuant to part 806. So, no, it does not have to come down here. Thanks.
-----Original Message-----
From: Bullock, Peter Y LRC [mailto:Peter.Y.Bullock@usace.army.mil]
Sent: Wednesday, January 23, 2013 9:13 AM
To: Haaker, Anne
Subject: Here's a fish barrier question for you (UNCLASSIFIED)

Classification: UNCLASSIFIED
Caveats: NONE

Anne, I've got a question for you about agency coordination concerning the electric fish barrier. I'm afraid I don't have the INPA log number for this project. Here's the issue. The Chicago District of the Corps is planning an upgrade of the electric fish barrier to allow them to up the voltage. The appearance of the barrier won't change. Is it necessary for us to send you a coordination letter for this, or is INPAs earlier concurrence letter (possibly of October 27, 2009 since we can't find it) adequate since the appearance of the barrier won't change?

Peter Y. Bullock
Archaeologist
USACE
CERCE-PH-PL-E
312-846-5587
FAX 312-886-2891

Classification: UNCLASSIFIED
Caveats: NONE

Classification: UNCLASSIFIED
Caveats: NONE

Classification: UNCLASSIFIED
Caveats: NONE
PERMANENT BARRIER I
LOCKPORT POOL
CHICAGO SANITARY AND SHIP CANAL
WILL COUNTY, ILLINOIS

ENVIRONMENTAL ASSESSMENT

APPENDIX EA-B

ILLINOIS ENDANGERED AND THREATENED SPECIES
<table>
<thead>
<tr>
<th>Common Name</th>
<th>Scientific Name</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Redveined Prairie Leafhopper</td>
<td><em>Aflexia rubranura</em></td>
<td>Threatened</td>
</tr>
<tr>
<td>Slippershell</td>
<td><em>Alasmidonta viridis</em></td>
<td>Threatened</td>
</tr>
<tr>
<td>Western Sand Darter</td>
<td><em>Ammocrypta clarum</em></td>
<td>Endangered</td>
</tr>
<tr>
<td>Mead's Milkweed</td>
<td><em>Asclepias meadii</em></td>
<td>Endangered</td>
</tr>
<tr>
<td>Forked Aster</td>
<td><em>Aster furcatus</em></td>
<td>Threatened</td>
</tr>
<tr>
<td>Upland Sandpiper</td>
<td><em>Bartramia longicauda</em></td>
<td>Endangered</td>
</tr>
<tr>
<td>American Slough Grass</td>
<td><em>Beckmannia syzigachne</em></td>
<td>Endangered</td>
</tr>
<tr>
<td>Oklahoma grass pink orchid</td>
<td><em>Calopogon oklahomensis</em></td>
<td>Endangered</td>
</tr>
<tr>
<td>Grass Pink Orchid</td>
<td><em>Calopogon tuberosus</em></td>
<td>Endangered</td>
</tr>
<tr>
<td>Little Green Sedge</td>
<td><em>Carex viridula</em></td>
<td>Threatened</td>
</tr>
<tr>
<td>Pretty Sedge</td>
<td><em>Carex woodii</em></td>
<td>Threatened</td>
</tr>
<tr>
<td>Northern Harrier</td>
<td><em>Circus cyanus</em></td>
<td>Endangered</td>
</tr>
<tr>
<td>Spotted Turtle</td>
<td><em>Clemmys guttata</em></td>
<td>Endangered</td>
</tr>
<tr>
<td>Kirtland's Snake</td>
<td><em>Clonophis kirtlandi</em></td>
<td>Threatened</td>
</tr>
<tr>
<td>Spotted Coral-root Orchid</td>
<td><em>Corallorhiza maculata</em></td>
<td>Threatened</td>
</tr>
<tr>
<td>Purple Wartyback</td>
<td><em>Cyclonaias tuberculata</em></td>
<td>Threatened</td>
</tr>
<tr>
<td>White Lady's Slipper</td>
<td><em>Cypripedium candidum</em></td>
<td>Threatened</td>
</tr>
<tr>
<td>Leafy Prairie Clover</td>
<td><em>Dalea foliosa</em></td>
<td>Endangered</td>
</tr>
<tr>
<td>Narrow-leaved Sundew</td>
<td><em>Drosera intermedia</em></td>
<td>Threatened</td>
</tr>
<tr>
<td>Spike Rush</td>
<td><em>Eleocharis rostellata</em></td>
<td>Threatened</td>
</tr>
<tr>
<td>Spike</td>
<td><em>Elliptio dilatata</em></td>
<td>Threatened</td>
</tr>
<tr>
<td>Blanding's Turtle</td>
<td><em>Emydoidea blandingii</em></td>
<td>Endangered</td>
</tr>
<tr>
<td>Iowa Darter</td>
<td><em>Etheostoma exile</em></td>
<td>Threatened</td>
</tr>
<tr>
<td>Starhead topminnow</td>
<td><em>Fundulus dispar</em></td>
<td>Threatened</td>
</tr>
<tr>
<td>Common Moorhen</td>
<td><em>Gallinula chloropus</em></td>
<td>Endangered</td>
</tr>
<tr>
<td>Hedge Hyssop</td>
<td><em>Gratiola quatermaniae</em></td>
<td>Endangered</td>
</tr>
<tr>
<td>Four-toed Salamander</td>
<td><em>Hemidactylium scutatum</em></td>
<td>Threatened</td>
</tr>
<tr>
<td>Pallid Shiner</td>
<td><em>Hybopsis amnis</em></td>
<td>Endangered</td>
</tr>
<tr>
<td>Shore St. John's Wort</td>
<td><em>Hypericum adpressum</em></td>
<td>Endangered</td>
</tr>
<tr>
<td>Quillwort</td>
<td><em>Isoetes butleri</em></td>
<td>Endangered</td>
</tr>
<tr>
<td>Least Bittern</td>
<td><em>Isobrychus exilis</em></td>
<td>Threatened</td>
</tr>
<tr>
<td>Loggerhead Shrike</td>
<td><em>Lanius ludovicianus</em></td>
<td>Endangered</td>
</tr>
<tr>
<td>Blazing Star</td>
<td><em>Liatris scariosa var.</em></td>
<td>Threatened</td>
</tr>
<tr>
<td>Black Sandshell</td>
<td><em>Ligumia recta</em></td>
<td>Threatened</td>
</tr>
<tr>
<td>Running Pine</td>
<td><em>Lycopodium clavatum</em></td>
<td>Endangered</td>
</tr>
<tr>
<td>False Mallow</td>
<td><em>Malvastrum hispidum</em></td>
<td>Endangered</td>
</tr>
<tr>
<td>Slender Sandwort</td>
<td><em>Mimuartia patula</em></td>
<td>Threatened</td>
</tr>
<tr>
<td>River Redhorse</td>
<td><em>Moxostoma carinatum</em></td>
<td>Threatened</td>
</tr>
<tr>
<td>Mudpuppy</td>
<td><em>Necturus maculosus</em></td>
<td>Threatened</td>
</tr>
<tr>
<td>Black-crowned Night-Heron</td>
<td><em>Nycticorax nycticorax</em></td>
<td>Endangered</td>
</tr>
<tr>
<td>Small Sundrops</td>
<td><em>Oenothera perennis</em></td>
<td>Threatened</td>
</tr>
<tr>
<td>Eryngium Stem Borer</td>
<td><em>Papaipema eryngii</em></td>
<td>Endangered</td>
</tr>
<tr>
<td>Tubercled Orchid</td>
<td><em>Platanthera flava var.</em></td>
<td>Threatened</td>
</tr>
<tr>
<td>Eastern Prairie Fringed Orchid</td>
<td><em>Platanthera leucophea</em></td>
<td>Endangered</td>
</tr>
<tr>
<td>Sheepnose</td>
<td><em>Plethobasus cyphyus</em></td>
<td>Endangered</td>
</tr>
<tr>
<td>Common Name</td>
<td>Scientific Name</td>
<td>Status</td>
</tr>
<tr>
<td>--------------------------</td>
<td>-------------------------------</td>
<td>--------------</td>
</tr>
<tr>
<td>King Rail</td>
<td>Rallus elegans</td>
<td>Endangered</td>
</tr>
<tr>
<td>Bristly Blackberry</td>
<td>Rubus schneideri</td>
<td>Threatened</td>
</tr>
<tr>
<td>Blue Sage</td>
<td>Salvia azurea ssp. pitcheri</td>
<td>Threatened</td>
</tr>
<tr>
<td>American Burnet</td>
<td>Sanguisorba canadensis</td>
<td>Endangered</td>
</tr>
<tr>
<td>Salamander Mussel</td>
<td>Simpsonaias ambigua</td>
<td>Endangered</td>
</tr>
<tr>
<td>Eastern Massasauga</td>
<td>Sistrurus catenatus catenatus</td>
<td>Endangered</td>
</tr>
<tr>
<td>Hine's Emerald Dragonfly</td>
<td>Somatochlora hineana</td>
<td>Endangered</td>
</tr>
<tr>
<td>Franklin's Ground Squirrel</td>
<td>Spermophilus franklinii</td>
<td>Threatened</td>
</tr>
<tr>
<td>Ornate Box Turtle</td>
<td>Terrapene ornata</td>
<td>Threatened</td>
</tr>
<tr>
<td>Lakeside Daisy</td>
<td>Tetraneuris herbacea</td>
<td>Endangered</td>
</tr>
<tr>
<td>Ear-leafed Foxglove</td>
<td>Tomanthera auriculata</td>
<td>Threatened</td>
</tr>
<tr>
<td>Buffalo Clover</td>
<td>Trifolium reflexum</td>
<td>Threatened</td>
</tr>
<tr>
<td>Slender Bog Arrow Grass</td>
<td>Triglochin palustris</td>
<td>Threatened</td>
</tr>
<tr>
<td>Barn Owl</td>
<td>Tyto alba</td>
<td>Endangered</td>
</tr>
<tr>
<td>Large Cranberry</td>
<td>Vaccinium macrocarpon</td>
<td>Endangered</td>
</tr>
<tr>
<td>Corn Salad</td>
<td>Valerianella chenopodifolia</td>
<td>Endangered</td>
</tr>
<tr>
<td>Marsh Speedwell</td>
<td>Veronica scutellata</td>
<td>Threatened</td>
</tr>
<tr>
<td>Canada Violet</td>
<td>Viola canadensis</td>
<td>Endangered</td>
</tr>
<tr>
<td>Yellow-headed Blackbird</td>
<td>Xanthocephalus</td>
<td>Endangered</td>
</tr>
</tbody>
</table>
PERMANENT BARRIER I
LOCKPORT POOL
CHICAGO SANITARY AND SHIP CANAL
WILL COUNTY, ILLINOIS

ENVIRONMENTAL ASSESSMENT

APPENDIX EA-C
DRAFT FINDING OF NO SIGNIFICANT IMPACTS
PERMANENT BARRIER I
LOCKPORT POOL
CHICAGO SANITARY AND SHIP CANAL
WILL COUNTY, ILLINOIS

ENVIRONMENTAL ASSESSMENT

APPENDIX EA-C
DRAFT FINDING OF NO SIGNIFICANT IMPACTS

I. BACKGROUND

The U.S. Army Corps of Engineers (Corps), Chicago District, operates the Aquatic Nuisance Species Dispersal Barriers Project (Project) which is comprised of three electrical barriers: Demonstration Barrier, Barrier IIA and Barrier IIB. The barriers consist of steel electrodes mounted across the bed of the canal and on-land power generation and distribution equipment. The on-land equipment sends a pulsing DC current through the electrodes, creating an electric field in the water that repels and potentially stuns fish. The Demonstration Barrier has been operational since 2002 and was rehabilitated in 2008, but it was designed and built with materials that were not intended for long-term use due to its demonstration status. The environmental assessment evaluated the potential impacts of replacing the Demonstration Barrier with Permanent Barrier I. Permanent Barrier I would incorporate the lessons learned from the operation of the Demonstration Barrier, Barrier IIA, and Barrier IIB in its design to improve durability and effectiveness. It would be capable of generating higher voltages and work in concert with Barriers IIA and IIB to prevent the movements of fish upstream of the barrier Project area.

II. IMPLEMENTING AUTHORITY

The National Invasive Species Act of 1990, as amended in 1996, authorized the Corps to examine potential methods to create an aquatic nuisance species barrier in the CSSC and construct the Demonstration Barrier. The Corps received additional authorization in Section 3061(b) of the Water Resources Development Act of 2007 to construct and operate Barriers IIA and IIB, and to upgrade and make permanent Barrier I.


(a) TREATMENT AS SINGLE PROJECT.—The Chicago Sanitary and Ship Canal Dispersal Barrier Project (in this section referred to as “Barrier I”), as in existence on the date of enactment of this Act and constructed as a demonstration project under section 1202(i)(3) of the Nonindigenous Aquatic Nuisance Prevention and Control Act of 1990 (16 U.S.C. 4722(i)(3)), and the project relating to the Chicago Sanitary and Ship Canal Dispersal Barrier, authorized by section 345 of the District of (A) upgrade and make permanent Barrier I;
(B) construct Barrier II, notwithstanding the project cooperation agreement with the State of Illinois dated June14, 2005;
(C) operate and maintain Barrier I and Barrier II as a system to optimize effectiveness; Columbia Appropriations Act, 2005 (Public Law 108–335; 118 Stat. 1352) (in this section referred to as “Barrier II”) shall be considered to constitute a single project.

(b) AUTHORIZATION.—
(1) IN GENERAL.—The Secretary, at Federal expense, shall—

(D) conduct, in consultation with appropriate Federal, State, local, and nongovernmental entities, a study of a range of options and technologies for reducing impacts of hazards that may reduce the efficacy of the Barriers; and

(E) provide to each State a credit in an amount equal to the amount of funds contributed by the State toward Barrier II.

The Aquatic Nuisance Species Dispersal Barriers Project (Project) is 100 percent Federal and there are no non-Federal sponsors.

III. ALTERNATIVES CONSIDERED

The following are the alternatives considered in detail:

A. No Action

Under the No Action alternative the three electrical barriers: Demonstration Barrier, Barrier IIA and Barrier IIB would continue to operate and be maintained. Each individual barrier in the barrier system will at times need to be shut down for maintenance. When the Barriers IIA and IIB are turned off, the barriers Project will remain vulnerable to the passage of small fish at the Demonstration Barrier. Other actions to prevent the transfer of aquatic nuisance species may occur in the Chicago Area Waterways System (CAWS) through the implementation of the measures identified in the Corps’ Efficacy Study or the Great Lakes and Mississippi River Interbasin Study; however these studies do not authorize construction. The activities of the interagency Asian Carp Regional Coordination Committee and the Monitoring and Rapid Response Working Group including overharvest and potential periodic rotenone applications in the CAWS, would also continue.

B. Replacement of the Demonstration Barrier with Permanent Barrier I

This alternative involves the construction of Permanent Barrier I as a replacement for the Demonstration Barrier. It would be capable of generating higher voltages and work in concert with Barriers IIA and IIB to prevent the movements of fish past the barrier Project area. The Corps determined the replacement of the Demonstration Barrier with Permanent Barrier I to be the preferred alternative.

IV. DISCUSSION OF MAJOR ENVIRONMENTAL COMPLIANCE

A. Clean Air Act

No aspect of the proposed Project has been identified that would result in violations to air quality standards. The Project is considered below the de minimis level of particulate matter of 100 tons per year.
B. Clean Water Act (Sections 401 and 404)

No sediment dredging or filling activities are included in the proposed work. Sediment or debris located in the electrode placement area may be pushed aside during installation, but significant sediment accumulations in the area are not expected. The Corps has determined that Section 404 of the Clean Water Act does not apply to the proposed installation, since the Project will not include any direct return to waters of the United States and since there is no dredge or fill activity included in the Project. The Preferred Alternative would be in full compliance. Coordination with the Illinois EPA is in progress and they are expected to concur.

C. USFWS Coordination

Consultation with the USFWS under Section 7 is completed and documented via a letter dated 13 February 2013. Concurrence was reached that the action would not affect T&E species.

D. SHPO Coordination

There are no affects to cultural, historical or archaeological resources associated with the preferred alternative.

E. Cumulative Impacts Analysis

Along with direct and indirect effects, cumulative effects of the alternative were assessed following the guidance provided by the President's Council on Environmental Quality. There have been numerous effects to resources from past and present actions, and reasonably foreseeable future actions can also be expected to produce both beneficial and adverse affects. In this context, the increments of effects from the proposed risk reduction measures are relatively minor in terms of adverse effects, but very important in terms of the long term viability of the Great Lakes ecosystem. Assessment of cumulative effects indicates that long-term sustainability of the Great Lakes as a resource may be dependent on the preferred alternative. Based on the expectation of continued sustainability of all resources, cumulative effects are not considered significantly adverse.

F. Public Interest

An Environmental Assessment was completed for the proposed measures. A Public Review period was held from __ March to __ April 2013 for the Environmental Assessment. The proposed Project has been determined to be in full compliance with the National Environmental Policy Act, the Endangered Species Act, the Fish and Wildlife Coordination Act, the National Historic Preservation Act, the Clean Air Act, Sections 401 and 404 of the Clean Water Act, and the Corps of Engineer’s regulations.
IV. CONCLUSION

In accordance with the National Environmental Policy Act of 1969 and Section 122 of the River and Harbor and Flood Control Act of 1970, the U.S. Army Corps of Engineers (Chicago District) has assessed the environmental impacts associated with this Project. It was concluded construction of Permanent Barrier I as a replacement for the Demonstration Barrier in the CSSC would not cause significant effects on the quality of the human environment. The assessment process indicates that this Project would have only beneficial impacts upon the ecological, biological, social, cultural, or physical resources of the CSSC and would provide protection to the Great Lakes watershed. The findings indicate that the proposed action is not a major Federal action significantly affecting the quality of the human environment. Therefore, it was determined that an Environmental Impact Statement is not required.

Fredrick A. Drummond, Jr. Date: ____________
Colonel, U.S. Army
District Commander
PERMANENT BARRIER I

LOCKPORT POOL
CHICAGO SANITARY AND SHIP CANAL

WILL COUNTY, ILLINOIS

ENVIRONMENTAL ASSESSMENT

APPENDIX EA-D

DISTRIBUTION LIST