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# **Environmental Assessment and Section 404(b)(1) Evaluation**

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## **Dredging and Disposal of Dredged Material at Island 18 Confined Disposal Facility**

**Toledo Harbor, Lucas County, Ohio**

**Operation and Maintenance**



**US Army Corps  
of Engineers**  
Buffalo District

**November 1990**

TOLEDO HARBOR  
LUCAS COUNTY, OHIO  
OPERATION AND MAINTENANCE

DREDGING AND DISPOSAL OF DREDGED MATERIAL  
AT ISLAND 18 CONFINED DISPOSAL FACILITY

FINDING OF NO SIGNIFICANT IMPACT  
AND  
ENVIRONMENTAL ASSESSMENT  
AND  
APPENDICES

DEPARTMENT OF THE ARMY  
U.S. Army Corps of Engineers  
1776 Niagara Street  
Buffalo, NY 14207-3199

November 1990

**FINDING OF NO SIGNIFICANT IMPACT  
AND  
ENVIRONMENTAL ASSESSMENT**

TOLEDO HARBOR  
LUCAS COUNTY, OHIO  
OPERATION AND MAINTENANCE

DREDGING AND DISPOSAL OF DREDGED MATERIAL  
AT ISLAND 18 CONFINED DISPOSAL FACILITY

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## FINDING OF NO SIGNIFICANT IMPACT (FONSI)

The U.S. Army Corps of Engineers, Buffalo District, has assessed the environmental impacts of the following project in accordance with the National Environmental Policy Act of 1969:

Toledo Harbor  
Lucas County, Ohio  
Operation and Maintenance

Dredging and Discharge of Dredged Material  
at Island 18 Confined Disposal Facility

The identified problem is shoaling of the Toledo Harbor Federal navigation channels, which impedes commercial navigation. Dredging of these channels requires the need to place the excavated material at an alternative site.

The proposed operation and maintenance plan involves providing routine maintenance dredging of the Federal navigation channels at Toledo Harbor and subsequent discharge of dredged material at the existing Island 18 Confined Disposal Facility (CDF). This facility was last used for dredged material discharge in 1977; material in the facility has since consolidated and resulted in an estimated 590,000 cubic yards of additional capacity.

An undetermined quantity of material determined to be of economic advantage to the maintenance operation would be dredged from Federal navigation channels and placed in the Island 18 CDF. Dredged material would be discharged into the facility until it was filled to ultimate capacity. The attached Environmental Assessment (EA) describes the project in detail and evaluates its associated environmental impacts.

All reasonable alternatives to the selected operation and maintenance plan were considered, and it was found that discharge of the dredged material at the Island 18 CDF was the preferred plan. The "No Action" alternative was also considered, but was dismissed since it would not provide a solution to the recurrent dredging and dredged material discharge needs of Toledo Harbor and would adversely impact upon commercial navigation.

Analysis has shown that, while this operation and maintenance plan is a major Federal action, it will have no significant adverse effects on the quality of the human environment. Public coordination to date has uncovered no areas of environmental controversy. No adverse comments were received during the official 30-day review period which would substantially alter the conclusion reached in this analysis. Based on these factors, I have determined that a Supplement to the Operation and Maintenance Final Environmental Impact Statement (USAED, Detroit 1976) will not be required.



DAVID P. PLANK  
Major, U.S. Army  
Acting District Commander

DATE: 2/27/91

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Operation and Maintenance

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The proposed operation and maintenance plan involves providing routine maintenance dredging of the Federal navigation channels at Toledo Harbor and subsequent disposal of dredged material at the existing Island 18 Confined Disposal Facility (CDF). This CDF was last used for dredged material disposal in 1977; material in the facility has since consolidated and resulted in an estimated 590,000 cubic yards of additional capacity.

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Analysis has shown that, while this operation and maintenance plan is a major Federal action, it will have no significant adverse effects on the quality of the human environment. Based on these factors, I have determined that a Supplement to the Operation and Maintenance Final Environmental Impact Statement (USAED, Detroit 1976) will not be required.

The attached Environmental Assessment presents the results of the environmental analysis. Those who have information which might alter this assessment and lead to a reversal of this decision should notify me within 30 days.

JOHN W. MORRIS  
Colonel, U.S. Army  
Commanding

DATE: \_\_\_\_\_

TOLEDO HARBOR  
LUCAS COUNTY, OHIO  
OPERATION AND MAINTENANCE

DREDGING AND DISPOSAL OF DREDGED MATERIAL  
AT ISLAND 18 CONFINED DISPOSAL FACILITY

ENVIRONMENTAL ASSESSMENT

1. PURPOSE, NEED, PROBLEM, AND AUTHORITY

1.1 Purpose of the Environmental Assessment (EA). The purpose of this EA is to evaluate the environmental impacts relative to Corps of Engineers' dredging of the Toledo Harbor Federal navigation channels and resumption of use of the Island 18 CDF for dredged material disposal. It supplements previous environmental documents concerning the operation and maintenance of Toledo Harbor, which include the Operation and Maintenance Final Environmental Impact Statement (O&M FEIS) (USAED, Detroit 1976); Dredging, and Open-lake and Confined Disposal of Dredged Material, Operation and Maintenance, Section 404(b)(1) Evaluation (USAED, Buffalo 1984); and Dredging and Open-lake Disposal of Dredged Material, Environmental Assessment and Section 404(b)(1) Evaluation, Operation and Maintenance (USAED, Buffalo 1988). Appendix EA-B of this EA addresses the disposal of the dredged material using Section 404(b)(1) Guidelines. This EA provides information on the potential environmental effects of dredging and disposal of dredged material to determine if disposal of the dredged material in Island 18 would result in significant impacts affecting the quality of the human environment. It facilitates compliance with the National Environmental Policy Act and the Clean Water Act, and includes discussions of the need for the action, its environmental impacts, alternatives, and a list of agencies, interested groups and individuals consulted.

1.2 The Problem and Need for Action.

1.2.1 The identified problem at Toledo Harbor is shoaling of the Federal navigation channels and subsequent disposal of the dredged material at a suitable site. Dredging is performed annually to remove shoals which develop in the channels from sediments deposited by the Maumee River as it enters Maumee Bay. Dredging restores the harbor navigation channels to their authorized project depths, which facilitates safe commercial navigation and its associated benefits.

1.2.2 As the largest tributary to Lake Erie, the Maumee River has a 6,750-square mile watershed and an average discharge of about 4,800 cubic feet per second. The river basin is relatively flat and consists primarily of farmland which requires the river to carry a high sediment load. Consequently, shoaling rates in the navigation channels at Toledo Harbor, which largely depend upon river discharge, wind direction and speed, and wave action,

are relatively high. The majority of sediment accumulations occur in the Lake Approach (Bay) Channels. Shoals in these channels develop primarily as a result of the deposition of silts and clays from the Maumee River sediment load. Shoal development in the River Channel is also attributed primarily to the deposition of river sediment load. Surface water runoff, bank and shoreline erosion processes, and industrial, urban development, and municipal and agricultural waste activities also contribute quantities of sediment to the River Channel.

1.2.4 Maintenance dredging at Toledo Harbor is conducted annually. Since 1974, over 958,000 cubic yards of sediment have been dredged annually from Toledo Harbor Federal navigation channels and deposited at various disposal sites. From 1983 through 1988, annual Federal dredging quantities from Toledo Harbor have averaged about 780,000 cubic yards. Table EA-1 summarizes annual Federally contracted dredged quantities and their disposal sites from 1978 through 1989.

1.2.5 Dredging of the Federal navigation channels at Toledo Harbor necessitates the need for suitable sites for disposal of the associated dredged material. Island 18 is an existing Federal CDF in which dredged material has consolidated and provided additional capacity. Consequently, it has been selected for the disposal of an undetermined quantity of dredged material from Toledo Harbor. Based upon a 1977 project condition survey, fill (i.e., dredged material) surface elevations range from about 16.1 - 16.6 feet above LWD<sup>1</sup> along the interior of the west dike, and slope upward to about 20.9 - 25.2 feet above LWD, the highest area near the center of the facility. From this area, elevations generally decrease eastward to about 15.2 - 16.8 feet LWD along the interior of the northeast dike.

1.3 Authority. The existing Federal navigation project at Toledo Harbor, as well as its operation and maintenance, was authorized by the River and Harbor Acts of 1899, 1910, 1950, 1955, 1954, 1958 and 1960.

## 2. AFFECTED ENVIRONMENT

### 2.1 Project Location and Description.

2.1.1 **Toledo Harbor** - Toledo Harbor is located in Lucas County, Ohio, and is situated on the southwestern shore of Lake Erie at the mouth of Maumee River, approximately 110 miles west of Cleveland, Ohio, and 40 miles south of Detroit, Michigan (Figure EA-1).

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<sup>1</sup>Low Water Datum, elevation 568.6 feet above Mean Water Level at Father Point, Quebec, Canada (International Great Lakes Datum [IGLD] 1955).

2.1.2 The completed Toledo Harbor Project includes the following navigation features:

a. A Lake Approach Channel (Maumee Bay Channel), -28 feet LWD in depth and 500 feet in width, extending from the deep water of Lake Erie to the mouth of the Maumee River (an approximate distance of 18 miles).

b. Widening 38.6 acres of the above, opposite Chesapeake and Ohio Railway and Lakefront Terminal Docks.

c. A River Channel, -27 feet LWD in depth and 400 feet in width, extending from River Mile 0 to River Mile 3; thence a channel 400 feet wide from River Mile 3 to River Mile 6.5, with depths of -27 feet LWD over a least width of 200 feet, and depths of -25 feet LWD over the remainder of the 400-foot channel width; thence a channel -25 feet LWD in depth and 200 feet wide to upper limit of Federal project at River Mile 7.

d. A Turning Basin opposite American Shipbuilding docks (River Mile 2.7), -20 feet LWD deep, 750 feet wide and 800 feet long.

e. A Turning Basin just upstream from old Fassett Street Bridge (River Mile 6.5), semicircular in shape with a radius of 730 feet and a depth of -27 feet LWD.

f. An 8.25-acre Turning Basin at the upper Federal project limit with a depth of -18 feet LWD.

g. Clearing of sailing course between the Maumee Bay Channel and East Outer Channel of the Detroit River, to a depth of -28 feet LWD, over a width of 1,200 feet.

2.1.3 Existing Island 18 CDF - The Island 18 CDF is situated in Maumee Bay near the mouth of the Maumee River, approximately 400 feet north, adjacent and parallel to the existing Toledo Harbor Federal navigation channel near Lake Mile 1 (Figure EA-2).

2.1.4 Island 18 is a 132-acre diked enclosure (150 acres total) originally constructed in stages by the U.S. Army Corps of Engineers, Detroit District, for the disposal of Toledo Harbor dredged sediment. The enclosure dike was originally constructed in 1961 through 1962 to +7 feet LWD, and was subsequently raised in 1966 to +15 feet LWD. The dike was completed in 1969 when it was raised to +23 feet LWD. The dike is constructed primarily of a clay core capped with topsoil which has been fertilized and mulched, and is comprised of three berms. The top and middle berms have side slopes of 1V:2V; crest heights are +23 and +13 feet LWD, and crest widths are 8 and 14 feet, respectively. A grade drainage ditch separates the top and middle berms. The lower berm is constructed of cover and underlayer stone over filter plastic material, has a crest height of +9 feet LWD and a crest width of approximately 13 feet, and has an outer slope of

1V:3V. A typical cross section of the confinement dike is shown in Figure EA-3. Figure EA-4 presents a project condition survey of the facility taken in 1977. Based upon this survey, an estimated 590,000 cubic yards of capacity remain. Of this total, approximately 327,000 and 261,000 cubic yards are allocated within the western and eastern halves of the facility, respectively (USAED, Buffalo 1990).

2.1.5 Island 18 was used for the disposal of material dredged from portions of the Toledo Harbor Lake Approach and River Channels closest to the facility (refer to Figure EA-1) between 1962 and 1974. During 1975 through 1977, material throughout the Toledo Harbor Federal navigation project was placed in the facility.

2.2 Harbor Facilities. General information pertaining to this section is documented in the Toledo Harbor O&M FEIS (USAED, Detroit 1976).

2.2.1 Toledo Harbor is a commercial port heavily developed for industrial, commercial and recreational uses. It is the third largest and most active port on Lake Erie. The Federal navigation channels provide an essential corridor for the flow of goods and economic well-being of the city of Toledo and adjacent areas.

2.2.2 Most of the manufacturing in the city of Toledo is directly dependent on the waterborne commerce offered at the harbor, which, in turn, is largely dependent on the automotive industry centered in Detroit. The harbor is primarily a transshipment point, its domestic waterborne commerce consisting mostly of the shipment of coal and petroleum and its products to U.S. and Canadian ports, and the receipt of iron ore from the Lake Superior region. Major commodities involved in port trade include coal, iron ore, grain, petroleum products, sand and gravel, and steel products. Thirty-seven piers, wharves and docks are in use at Toledo Harbor, seven of which are located in Maumee Bay east of the Maumee River, and the remaining of which are equally divided along the right and left banks of the lower seven miles of the Maumee River (USAED, Buffalo 1983).

2.3 Land and Other Associated Water Uses.

2.3.1 For general background information pertaining to land and other associated water uses in the vicinity of Toledo Harbor, refer to the O&M FEIS (USAED, Detroit 1976).

2.3.2 Toledo Harbor is characterized by a high density of urban waterfront development. Land along the southern shore of Maumee Bay near the river mouth provides for various commercial and recreational uses. Diked disposal areas, Toledo Edison Co., Lakefront Dock and Railroad Co., C&O Railway Co., and the Toledo Harbor-Lucas County Port Authority properties are located in this area. Land use is less commercialized opposite this side of the

river mouth. U.S Coast Guard and Army Corps of Engineers properties are situated at the mouth, and further north on the bay are Bay View Yacht Club and residential properties.

2.3.3 Acreage along the lower Maumee River is extensively developed for commercial use. Manhattan Sewage Disposal Plant, Toledo Edison Co., Sinclair Refining Co., as well as numerous oil refinery, grain, concrete, marine supply and ship building docks and properties are situated along this area of the river.

2.4 Sediment Quality. Sediment sampling and testing in Toledo Harbor Federal navigation channels was last performed in 1988 (T.P. Associates International, Inc. 1988). The sediment sampling sites for this testing program (inclusive of Lake Approach and River Channels) are shown in Figure EA-5. For a more detailed account of this sediment testing program, refer to Section 2.4 of the Section 404(b)(1) Evaluation attached to this EA (Appendix EA-B).

2.4.1 Particle size analysis of all sediment samples collected from Toledo Harbor Federal navigation channels (refer to Table EA-2) indicate that they are composed primarily of silts and clays.

2.4.2 The results of bulk inorganic analysis of the sediment samples are presented in Table EA-3. Table EA-4 presents the pollutional classifications of the inorganic parameters measured in these sediments samples, relative to U.S. Environmental Protection Agency (USEPA) Guidelines for the Pollutional Classification of Great Lakes Harbor Sediments listed in Table EA-5). The testing classified all channel material upstream of Lake Mile 2 (refer to Figure EA-1) overall as "Heavily Polluted." Sediments at a number of these sampling sites showed "Heavily Polluted" levels of Arsenic, Barium, Chemical Oxygen Demand (COD), Copper, Cyanide, Iron, Total Kjeldahl N, Ammonia and Phosphorus. Most of the other parameters tested in these sediment samples showed "Nonpolluted" to "Moderately Polluted" levels. These sediments are currently placed in the existing Toledo Harbor CDF just to the east of the Maumee River mouth (shown in Figure EA-2). All channel material lakeward of Lake Mile 2 is classified overall as "Moderately Polluted" and suitable for open-lake disposal. Sediments at some of the sampling sites within this area showed "Heavily Polluted" levels of Arsenic, Barium, Cyanide and Phosphorus; all other parameters tested were detected at "Nonpolluted" to "Moderately Polluted" levels.

2.4.3 Bulk organic analysis of the sediment samples detected the following Polynuclear Aromatic Hydrocarbons (PAH's) at most of the lake sampling sites: Phenanthrene and Pyrene. Flouranthene was detected at two lake sampling sites. The following PAH's were detected at the majority of river sampling sites: Phenanthrene, Pyrene, Flouranthene and Anthracene. Benzo(a)Anthracene, Benzo(a)Phrene, Chrysene and Naphthalene were

detected at some of the river sampling sites. Flourine and Di-n-octyl Phthalate were each detected at a single river sampling site. No Purgeable Hydrocarbons, Organochlorine Pesticides or Polycarbonated Biphenols (PCB's) were detected in any of the sediment samples.

2.4.4 Acute toxicity tests (bioassays) were performed on the Federal navigation channel sediment samples in order to evaluate the toxicological effects of the sediments on select test species. These tests showed low mortalities to minnows at all sites (Figure EA-6; for bioassay pollutional classifications, refer to Table EA-6). Daphnid bioassays also produced mostly low mortalities, but showed moderate mortalities at select sampling sites (refer to Subsection 2.4 of the Section 404(b)(1) Evaluation). Moderate mortalities of mayfly nymphs were detected at most of the sampling sites, with higher mortalities at two River Channel sampling sites.

2.5 Benthos. The benthic macroinvertebrate community of Maumee Bay is relatively diverse and is generally dominated by oligochaetes (aquatic earthworms), ostracods (small crustaceans), chironomids (midges) and dipteran (fly) larvae. Submerged aquatic plant beds (vegetated shallows) support the most diverse benthic assemblages (i.e., epiphytic macroinvertebrates) in the bay area. A general decrease in the densities of oligochaetes, which are pollutional tolerant organisms, appear to indicate that bay water quality is improving.

2.5.1 Science Applications International Corporation (1988) collected and identified six groups of benthic macroinvertebrate organisms at 15 sampling stations in Maumee Bay as a portion of the Maumee Bay Bottom Characterization Study. Tubificids (oligochaetes) and ostracods appeared to co-dominate the benthic faunal community throughout the study area with a mean respective composition of 42 percent. Nematodes (roundworms) and chironomids, which were most abundant in shallow sampling stations, were the next most abundant taxa sampled, with mean compositions of eight and four percent, respectively. Pisidiidae and Naididae (aquatic earthworms) were also collected during this sampling effort.

2.5.2 T.P. Associates (1987) collected eight benthic macroinvertebrate samples in Maumee Bay as part of an open-lake disposal site survey. This site, which is the currently used open-lake disposal site for Toledo Harbor dredged material, is shown in Figure EA-7. The survey showed a predominance of chironomids and oligochaetes in the benthic community. Chironomus spp. and Procladius spp. were the chironomids sampled at the greatest relative abundance. The tubificid Limnodrilus hoffmeisteri appeared to dominate the oligochaete fauna. The mollusc (clam) group Sphaeriidae was also collected in this survey.

2.5.3 Benthic macroinvertebrate communities within the Island 18

CDF are limited and are likely restricted to the extreme northwestern corner of the facility. This portion of the facility is seasonally inundated directly as a result of spring and early summer rainfall. As the year progresses, water in this area evaporates and leaves a moist mud-flat. Nevertheless, during the period of inundation, this area is likely inhabited by relatively sparse populations of various indigenous oligochaete and chironomid species.

## 2.6 Ecological Habitats.

2.6.1 **Maumee River and Bay** - The Maumee River and Bay area consists of relatively shallow, mud-bottom, warmwater habitat. Wetlands, vegetated shallows and shoals are relatively scarce in Maumee Bay. The Lower Maumee River, in general, is shored by a moderate coastal wetland complex (refer to paragraph 2.6.5 of this EA).

2.6.2 **Island 18 CDF** - A Corps of Engineers' biologist conducted a field investigation of the existing facility in November 1989. The Island 18 has developed perched wetland habitats, which is typical for these types of facilities between periods, as well as after the cessation, of dredged material disposal. In consultation with the U.S. Fish and Wildlife Service (USFWS 1990, Personal Communication), wetland habitat within the facility was classified overall as a palustrine, emergent, persistent type. The site exhibited a saturated, dredged spoil substrate, and is dike impounded. The above classification is not exclusive throughout the site, but is inclusive of various wetland types. The western approximate one-third portion of the facility, which is also one of the lowest (approximately 16.5 feet above LWD) and most saturated portions, is comprised primarily of palustrine, persistent emergent/submergent, wetland habitat. West of this area, existing elevations increase towards the center of the facility, then decrease eastward to the northeast dike. Accordingly, habitat throughout most of the remaining two-thirds of the facility has developed into primarily palustrine, scrub-shrub/forested wetland habitat.

2.6.3 No existing ponded water was observed within the facility during the November 1989 field investigation. However, the extensive cattail stand in the western approximate one-third portion, which is colonized with an extensive algal mat (probably Cladophora spp.), indicates that the site was inundated in the spring and early to mid-summer seasons, presumably as a result of rainfall and the facility's containing capabilities. An August 1984 aerial photograph of the CDF shows ponded water in this area. This ponding area, when present, provides resting and feeding habitat for local and migratory waterfowl species. No known botulism outbreaks have occurred at the facility.

2.6.4 **Wetlands** - The Maumee River and Bay is shored by a limited number of lacustrine and palustrine wetland types. Several wetland habitats, inclusive of primarily palustrine

emergent/scrub-shrub/forested types, are present along the Lake Erie shoreline just to the northwest of the Maumee River mouth (U.S. Department of the Interior [USDOI] 1983). There are wetlands to the east of the river mouth which are classified as palustrine, forested/emergent, as well as lacustrine, littoral types. The Maumee River is shored primarily by lacustrine, littoral and palustrine wetland types.

2.6.5 According to 1983 USDOI National Wetland Inventory Maps, the Island 18 CDF is classified as a lacustrine, littoral, flat, unknown spoil wetland type. However, since the cessation of dredged material discharge into the facility, perched, palustrine wetland habitat types have developed and evolved within the facility. As indicated in paragraph 2.6.2 of this EA, the perched wetland within the facility is generally classified as a palustrine, emergent, persistent habitat type, with a dike-impounded, saturated, dredged spoil substrate. The approximate western one-third of the facility is comprised primarily of palustrine, persistent emergent/subemergent wetland habitat. The remaining eastern approximate two-thirds of the facility is comprised primarily of a mixture of palustrine, scrub-shrub/forested wetland habitat type.

## 2.7 Fish and Wildlife.

2.7.1 **Fisheries** - Despite poor water quality and the loss or obstruction of traditional local fishery spawning habitat, the fish community in the Maumee River and Bay remains quite productive and diverse. A total of at least 59 species of fish have been captured in Maumee Bay since 1974. The forage fishery in the bay appears to be dominated by gizzard shad (Dorosoma cepedianum), an important forage species for walleye (Stizostedion vitreum vitreum) in the Western Basin of Lake Erie. Maumee Bay provides good spawning and nursery habitat for gizzard shad. In 1977, the average density of gizzard shad larvae in the bay was almost three times that of areas east and north (Heniken 1977). With regard to game species, walleye, white bass (Morone chrysops), yellow perch (Perca flavescens), freshwater drum (Aplodinotus grunniens) and channel catfish (Ictalurus punctatus) appear to predominate. White crappie (Pomoxis annularis) are also found in moderate numbers in Maumee Bay. The Lower Maumee River and Maumee Bay provide nursery and spawning habitat for most of these species. Walleye eggs have been collected on rocky shoals which parallel the Maumee Bay Federal navigation channel (Fraleigh et al. 1979), and the density of larval walleye found in Maumee Bay was slightly greater than that found north of the bay and considerably less than that found in eastern areas (Mizera 1981). The average density of white bass larvae collected in Maumee Bay was more than five times greater than the average density east of the bay and more than seven times greater than the average density north of the bay (Mizera 1981). Surveys for larval freshwater drum produced similar findings.

2.7.2 **Wildlife** - The Maumee Bay, and to a lesser extent, Maumee

River, provide habitat for a diverse waterfowl community. Of primary usage are shallow water areas throughout the bay within the Western Basin for feeding. Diving ducks such as lesser and greater scaup (Aythya spp.), common goldeneye (Bucephala clangula), red-breasted, American and hooded mergansers (Mergus spp.), and ruddy ducks (Oxyura jamaicensis) account for the majority of local waterfowl populations. Limited numbers of dabbling ducks, such as mallards (Anas platyrhynchos), black ducks (A. rubripes), widgeon (Mareca americana), gadwalls (Anas strepera) and teal (Anas spp.) also occupy Maumee Bay. Local waterfowl populations and diversities are dependent upon season and prevailing weather conditions. Numerous gulls, terns and sandpipers are present in Maumee Bay. The Island 18 CDF provides resting, feeding and nesting habitat for various aquatic bird and songbird species (including colonial nesting birds), including some of the aforementioned species. A list of observed or evidenced wildlife on the Island 18 CDF is provided in Table EA-7.

2.8 Vegetation. Table EA-8 lists the predominating woody and herbaceous species of vegetation identified in the Island 18 CDF in November 1988. The lacustrine, emergent, persistent wetland habitat within the western one-third of the facility is dominated by cattail (Typha spp.). The remaining two-thirds of the facility which consists of scrub-shrub/forested wetland habitat, is dominated primarily by the woody species willow (Salix spp.) and eastern cottonwood (Populus deltoides), with willow being most prominent. Purple loosestrife (Lythrum salicaria) and bittersweet nightshade (Solanum dulcamara) predominate the facility's herbaceous understory in this area, with monostands (i.e., islands) of reed grass (Phragmites spp.) occurring throughout. The facility's perimeter dike is vegetated primarily with crown vetch (Coronilla varia) and various grasses (Graminae).

2.9 Threatened and Endangered Species. The project lies within the range of the bald eagle (Haliaeetus leucocephalus), Indiana bat (Myotis sodalis), peregrine falcon (Falco peregrinus anatum), and eastern prairie fringed orchid (Platanthera leucophaea), which are Federally listed endangered species. Due to the project type, size and location, the project, as proposed, would have no effect on these species (USFWS letter, 11 January 1990).

2.10 Historical Properties and Archaeological Sites. No specific historical properties or archaeological sites listed or eligible for listing in the National Register of Historic Places would be effected by the proposed project (Ohio Historic Preservation Office [SHPO] letter, 22 December 1989; Appendix EA-A).

### 3. PROJECT ALTERNATIVES AND THE PROPOSED PLAN

#### 3.1 Project Alternatives.

3.1.1 The alternative methods of disposal of Toledo Harbor dredged sediments include the following:

a. Upland Use of Dredged Material, Including Diked Upland Landfill Disposal of "Heavily Polluted" Dredged Material or Upland Use "Moderately Polluted" Dredged Material - This dredged material disposal alternative would involve the dredging of "Heavily Polluted" or "Moderately Polluted" material and subsequent placement of the material in a suitable upland disposal site. This alternative was rejected based on several factors, among which include costs, real estate, local land-use plans, transportation of the material and the associated disruption of the local community, odor, potential or perceived impacts to ground water, potential or perceived health and safety issues, potential impacts to fish and wildlife and their associated habitats (i.e., wetlands) and resources, and potential impacts to farmlands.

b. Open-lake Disposal of "Moderately Polluted" Dredged Material - This dredged material disposal alternative would involve the dredging of "Moderately Polluted" material and subsequent disposal of the material at an approved open-lake disposal site. This alternative is currently implementable, and is addressed in the Operation and Maintenance EA and Appendices, Open-lake Disposal of Dredged Material, Toledo Harbor, Lucas County, Ohio (USAED, Buffalo 1989).

c. Open-lake Disposal of "Heavily Polluted" Dredged Material - This dredged material disposal alternative would involve the dredging of "Heavily Polluted" material and subsequent disposal of the material at an approved project open-lake disposal site. This alternative was rejected because under USEPA, Region V, sediment quality guidelines, Toledo Harbor "Heavily Polluted" sediments are not suitable for open-lake disposal, and disposal of these sediments in the open-lake would likely result in adverse environmental impacts. Therefore, they must be confined in a suitable disposal site.

d. Diked Lakeshore Disposal of "Heavily Polluted" Material - This dredged material disposal alternative would involve the dredging of "Heavily Polluted" material and subsequent placement of the material in a suitable diked lakeshore disposal site (CDF). This alternative is currently implementable, and is addressed in the Operation and Maintenance FEIS, Toledo Harbor, Lucas County, Ohio (USAED, Buffalo 1976) and Section 404(b)(1) Evaluation, Disposal of Dredged Material at the Toledo Harbor CDF, Toledo Harbor, Lucas County, Ohio (USAED, Buffalo 1984). An EIS for the expansion and use of the existing Toledo Harbor CDF has been prepared (USAED, Buffalo 1990).

e. Diked Lakeshore Disposal of "Moderately Polluted" Material - This dredged material disposal alternative would involve the dredging of "Moderately Polluted" material and subsequent placement of the material in a diked lakeshore disposal site (CDF). This alternative was rejected because the Corps of Engineers is not authorized to place "Moderately Polluted" sediments that are suitable for open-lake disposal in a CDF which was constructed for the disposal and placement of "Heavily Polluted" sediments. Moreover, these sediments are suitable for open-lake disposal.

f. Diked Island Disposal of "Heavily Polluted" and "Moderately Polluted" Dredged Material - This dredged material disposal alternative would involve the dredging of "Moderately Polluted" and "Heavily Polluted" material and subsequent placement of the material in a diked island facility. The existing Island 18 CDF in Toledo Harbor provides this disposal option. This alternative was selected since the facility is suitable for the disposal and containment of "Heavily Polluted" sediments, and Public Law 94-587 requires that the Corps of Engineers maximize the useful life of CDF's. In addition, there are no constraints regarding what dredged material (i.e., "Heavily Polluted" or "Moderately Polluted") may be placed in the facility. The facility also offers an economic advantage to the annual maintenance dredging program. Use of the facility for dredged material disposal is environmentally sound, engineeringly feasible, economically viable and socially acceptable.

g. No Action - Under the "No Action" alternative, no Federal action would occur regarding the placement of Toledo Harbor dredged material in the existing Island 18 CDF.

3.2 The Proposed Plan. The proposed operation and maintenance plan would provide for routine dredging of Toledo Harbor Federal navigation channels and subsequent discharge of the dredged material into the Island 18 CDF. The action would involve the dredging of an undetermined quantity of shoal material of which the placement into the Island 18 CDF is determined to be of economic advantage to the maintenance dredging operation. The quality of the dredged material to be placed in the facility would either be classified overall as "Moderately Polluted" (and suitable for open-lake disposal) or "Heavily Polluted" (and unsuitable for open-lake disposal) under extant USEPA sediment quality guidelines. A contracted cutterhead, clamshell or other type of dredge would be used to perform the designated work. Suspended sediment within the decanted supernatant (effluent) would be discharged through the facility's overflow weir and would be limited to concentrations of 100 parts per million (ppm), or less. Dredged material discharge would be scheduled to occur after mid-July in order to minimize, to the maximum extent practicable, significant impacts to colonial nesting birds in the facility. If required, botulism control measures relative to an existing Botulism Control Management Plan (Appendix EA-C of this EA) would be implemented during or after dredged material

disposal into the facility. Dredged material disposal operations at the facility would be completed in approximately 90 days. Disposal operations may occur over an undetermined number of years until the facility is filled to capacity. When the facility is filled to capacity, it will either be turned over to a local cooperator which will be required to maintain its structural integrity, or it will be allowed to naturally revegetate. If the latter is selected, limited vegetation plantings may be performed in order to accelerate the natural succession process.

#### 4. IMPACTS

Under the "No Action" alternative, Toledo Harbor dredged material would not be placed in the Island 18 CDF. As a result, the Island 18 environment would remain consistent with the existing conditions (refer to Section 2 of this EA). Toledo Harbor would still be maintenance dredged, and "Heavily Polluted" dredged material would be placed in the existing Toledo Harbor CDF and "Moderately Polluted" material would be placed at the existing open-lake disposal site. Impacts relative to the former action are addressed in the Operation and Maintenance FEIS and Section 404(b)(1) Evaluation, Dredging and Confined Disposal of Dredged Material, Toledo Harbor, Lucas County, Ohio (USAED, Buffalo 1976 and 1984). Impacts relative to the latter are addressed in the Operation and Maintenance EA and Appendices (USAED, Buffalo 1989). The remainder of Section 4 of this document addresses the impacts of dredging and disposal of dredged material in the Island 18 CDF.

##### 4.1 Social Impacts.

4.1.1 **Noise** - Maintenance dredging in Toledo Harbor and the disposal of dredged material in the Island 18 CDF would result in a short-term increase in local noise during project implementation. Noise generated by the action would probably exceed ambient noise levels in the harbor area until the project is complete. No sensitive noise receptors would be affected (i.e., hospitals, schools, etc.).

4.1.2 **Aesthetic Values** - The presence of dredging equipment would temporarily detract from the aesthetic quality of the Toledo Harbor area. The atmospheric exposure of organic matter which may be contained in the dredged material would result in short-term, localized malodor. The resuspension of fine-grained particles in the water column would result in a reduction in clarity and alteration in water color at the dredging sites. Some turbidity may be created as a result of minor spillages of supernatant from the dredge. These effects would be dissipated by local wind patterns and lake and river currents.

4.1.3 **Leisure Opportunities** - Maintenance dredging in Toledo Harbor and the disposal of dredged material in the Island 18 CDF

may temporarily interfere with local recreational boating and any associated activities. All dredging equipment would be sufficiently lighted and marked in order to maintain visibility for safety purposes to recreational boaters in the general vicinity of the project site.

**4.1.4 Community Growth** - The maintenance of a viable commercial harbor at Toledo would preserve the area's potential for desirable community growth.

**4.1.5 Community Cohesion** - No significant impacts would be anticipated in this regard as a result of the proposed project.

**4.1.6 Public Health and Safety** - Maintenance dredging in Toledo Harbor would provide for safe commercial navigation. The dredging and the disposal of dredged material in the Island 18 CDF would not present a threat to public health. The Corps of Engineers' contract specifications would require the maintenance of a safe, restricted work area during maintenance dredging and dredged material disposal operations. The contractor would be required to comply with Occupational Safety and Health Administration Standards.

**4.1.7 Cultural Resources** - The project, as proposed, will have no effect on any properties either listed on or eligible for the National Register of Historic Places (Ohio Historic Preservation Office [SHPO] letter, 22 December 1989; Appendix EA-A).

**4.1.8 Land Use** - No significant impacts would be anticipated in this regard as a result of the proposed project.

**4.1.9 Transportation** - Maintenance dredging in Toledo Harbor and the disposal of dredged material in the Island 18 CDF would result in minor, short-term interruptions in commercial and recreational navigation. Maintenance dredging would improve the navigability of Toledo Harbor for commercial vessels.

#### **4.2 Economic Impacts.**

**4.2.1 Employment/Labor Force** - Maintenance dredging in Toledo Harbor and the disposal of dredged material in the Island 18 CDF would result in a short-term increase in employment opportunities, specifically in the marine trades. The maintenance of the harbor would help preserve existing employment opportunities associated with commercial shipping and cargo handling in the Toledo Harbor vicinity.

**4.2.2 Business and Industrial Activity** - The maintenance of Toledo Harbor would assure the economic viability of its dependent commercial activities.

**4.2.3 Properties and Tax Revenues** - No significant impact would be anticipated in this regard as a result of the proposed project.

4.2.4 **Public Services and Facilities** - The maintenance of Toledo Harbor would assure access to its dependent public services and facilities.

4.2.5 **Regional Growth** - The maintenance of Toledo Harbor would preserve its importance as an inducement for regional growth.

#### 4.3 Environmental Impacts.

4.3.1 **Man-Made Resources** - Maintenance dredging in Toledo Harbor would restore harbor channels to their authorized project depth. The placement of an undetermined quantity of dredged material in the Island 18 CDF would raise the current elevation of fill within the facility.

4.3.2 **Natural Resources** - Maintenance dredging and the disposal of dredged material in the Island 18 CDF would result in the consumption of an undetermined quantity of fuel.

4.3.3 **Air Quality** - The operation of dredging equipment would result in a temporary localized increase in the output of pollutants (suspended particulates, nitrogen dioxide, carbon monoxide, lead, etc.) into the local atmosphere. This increased output would be short-term and is not expected to result in significant adverse impacts on air quality.

4.3.4 **Water Quality** - Some temporary degradation of local water quality would be anticipated as a result of the turbidity created by maintenance dredging in Toledo Harbor. These short-term degradations would not be expected to be significant. Turbidity plumes would be influenced by wave action and existing wind patterns and currents at the dredging sites. No significant release of pollutants would be anticipated. Suspended sediment in the effluent discharged over the facility's overflow weir may temporarily decrease water quality, but would be limited to concentrations of 100 ppm, or less. For information pertaining to the sediment quality within the Toledo Harbor project area, refer to Section 2.4 of the Section 404(b)(1) Evaluation attached to this EA (Appendix EA-B).

4.3.5 **Vegetation and Plankton** - Temporary increases in turbidity and suspended solids generated during maintenance dredging in Toledo Harbor and discharge of the dredged material into the Island 18 CDF may cause minor, temporary decreases in algal and aquatic macrophyte primary production and photosynthesis. Minor amounts of turbidity created as a result of effluent discharge over the facility's overflow weir may temporarily decrease local primary production and photosynthesis.

4.3.6 **Benthos** - Maintenance dredging of the Toledo Harbor Federal navigation channels would directly result in the excavation of benthic organisms residing in the sediments. The clogging of gill filaments by suspended sediment particles may

also account for some benthic mortality in dredging areas. Subsection 2.5 (paragraphs 2.5.1 through 2.5.2) of this EA discusses the benthic macroinvertebrate community in the Maumee Bay area. The disposal of dredged material in the Island 18 CDF would directly result in the smothering of some benthic organisms inhabiting dredged material within the facility. The clogging of gill filaments may also account for some benthic mortality during disposal operations. Paragraph 2.5.3 of this EA discusses the limited species of benthos likely inhabiting the Island 18 CDF. After disposal operations, some upward migration of surviving benthic organisms, as well as lateral migrations from surrounding areas, would help recolonize the impacted areas within the facility. Some benthic organisms inhabiting the dredged material may also contribute to the recolonization of these areas.

**4.3.7 Fish and Wildlife** - Maintenance dredging of the Toledo Harbor Federal navigation channels, as well as the disposal of dredged material in the Island 18 CDF, would result in a short-term, localized avoidance of these areas by fish and bird species. In order to minimize impacts to colonial nesting birds in the facility, to the maximum extent practicable, dredged material disposal would be scheduled to occur after mid-July. Some wildlife habitat (i.e., wetlands) within the Island 18 CDF would be inundated by dredged material during disposal operations. This impact would only be temporary in nature; the newly placed dredged material would eventually become recolonized by indigenous wetland plant species similar to those which currently inhabit the facility. Paragraph 2.7.1 of this EA describes the existing fish community in Maumee Bay and the Maumee River. Paragraph 2.7.2 of the EA describes the wildlife species which utilize areas in Maumee Bay, the Maumee River and Island 18 CDF.

**4.3.8 Ecological Habitats** - Maintenance dredging in Maumee Bay and the Maumee River would result in the excavation of some moderately shallow, warmwater, mud-bottom habitat. The disposal of dredged material in the Island 18 CDF would result in the inundation of wetlands within the facility. The impacts to these wetlands would only be temporary in nature. Indigenous wetland vegetation would recolonize the dredged material after the completion of disposal operations.

**4.3.9 Wetlands** - The existing wetlands on the Island 18 CDF (which have developed directly as a result of dredged material disposal; refer to paragraphs 2.6.4 through 2.6.5 of this EA) would be inundated during dredged material disposal operations. However, impacts to these wetlands would be temporary in nature. Indigenous wetland vegetation would recolonize the dredged material after the completion of dredged material disposal in the facility.

## 5. COMPLIANCE WITH ENVIRONMENTAL PROTECTION STATUTES

5.1 Archaeological and Historic Preservation Act, as Amended; National Historic Preservation Act of 1966, as Amended, 16 USC 470 et seq.; Executive Order 11593 (Protection and Enhancement of the Cultural Environment, 13 May 1971). In a letter dated 8 December 1989, (Appendix EA-A), SHPO indicated that the proposed project would have no effect upon structures, districts, sites, buildings, objects, or archaeological resources included in or eligible for inclusion in the National Register of Historic Places. This EA/FONSI has been submitted to the Advisory Council on Historic Preservation, National Park Service, and SHPO for review and comment on this determination.

5.2 Clean Air Act, as Amended, 42 USC 7401 et seq. Copies of this EA/FONSI have been sent to the Regional Administrator of the USEPA requesting comments in compliance with this Act.

5.3 Clean Water Act of 1977, 33 USC 1251 et seq. A Section 404(a) Public Notice and Section 404 (b)(1) Evaluation (Appendix EA-B) have been prepared for the project pursuant to Section 404 of the Clean Water Act. Copies of these documents are being circulated for public review and comment along with this EA/FONSI. In accordance with Section 401 of the Act, State Water Quality Certification, or a waiver thereof, as requested in the Section 404(a) Public Notice, will be obtained from Ohio EPA upon their favorable review of the Section 404(b)(1) Evaluation.

5.4 Coastal Zone Management Act of 1972, as Amended, 16 USC 1451 et seq. Not Applicable.

5.5 Endangered Species Act of 1973, as Amended, 16 USC 1531 et seq. This EA/FONSI has been coordinated with both USFWS and ODNR for concurrence with its conclusions regarding any Federal or State, threatened or endangered species. In a letter dated 11 January 1990, USFWS indicated that the proposed project lies within the range of the bald eagle (Haliaeetus leucocephalus), Indiana bat (Myotis sodalis), peregrine falcon (Falco peregrinus anatum), and eastern prairie fringed orchid (Platanthera leucophaea), which are Federally listed endangered species. Due to the project type, size and location, the project, as proposed, would have no effect on these species (USFWS letter, 11 January 1990).

5.6 Federal Water Project Recreation Act, as Amended, 16 USC 460-1(12) et seq., and Land and Water Conservation Fund Act, 16 USC et seq. In planning the proposed project, full consideration has been given to opportunities afforded by the project for outdoor recreation and fish and wildlife enhancement. Review copies of this EA/FONSI have been provided to the Department of the Interior in regard to recreation and fish and wildlife activities for conformance with the comprehensive nationwide outdoor recreation plan formulated by the Secretary of the Interior.

5.7 Fish and Wildlife Coordination Act, 16 USC 661 et seq. This EA/FONSI has been coordinated with USFWS and ODNR to assure compliance with this Act. In Buffalo District letter dated 8 December 1989 to USFWS and ODNR, views relative to the proposed project's affect on fish and wildlife resources were requested. In letter dated 11 January 1990, the USFWS provided several comments relative to the proposed resumption of use of the Island 18 CDF, in response to the 8 December 1989 letter. The Buffalo District responded to these comments in letter dated 8 March 1990. The USFWS comments, and the respective Buffalo District Responses, are summarized as follows:

a. COMMENT #1 - Revise the proposed "reuse" schedule to one which the total quantity of "cleaner" dredged material to be confined in any year in the CDF's, including Island 18, does not exceed the quantity of "polluted" dredged material reused in the preceding year.

RESPONSE - Section 148 of Public Law 94-587 requires that the Corps of Engineers maximize the useful life of CDF's. The Island 18 CDF is not an item associated with the existing Memorandum of Agreement (MOA) for the Toledo Harbor Maintenance Dredging Program. Therefore, adjustments (i.e., whether the material is classified as "Heavily Polluted" or "Moderately Polluted") will need to be independently evaluated with regard to the possible advantages to the Federal government.

b. COMMENT #2 - The island should be surveyed for colonial nesting birds prior to disposal operations. Steps should be taken to avoid or mitigate any interference with nesting birds.

RESPONSE - A biological survey (including a colonial nesting bird inventory) would be conducted prior to dredged material disposal operations. It is anticipated that disposal operations would not occur until mid to late July, which would minimize any adverse impacts to colonial nesting birds. If disposal operations are implemented before mid to late July and it is determined that the operations would significantly affect any resident colonial nesting birds, appropriate measures would be taken.

c. COMMENT #3 - A botulism control plan should be in place prior to disposal operations.

RESPONSE - Concur. A Botulism Control Management Plan relative to the use of the Island 18 CDF for dredged material disposal is included as Appendix EA-C. It is the Buffalo District's experience that CDF's being filled to a level near existing lake levels (i.e., just above or just below) are more conducive to botulism outbreaks. The lowest point on the Island 18 CDF is about 12 feet above existing lake levels.

d. COMMENT #4 - The Corps should retain ownership and control the final use of Island 18 after it has been filled. We

hope that wildlife habitat (migratory birds) is one of the final uses of the island. Perhaps the creation of nesting habitat for common terns, the erection of artificial structures for cormorant nesting, and the planting of trees for colonial nesting birds might also be considered.

RESPONSE - It is the Buffalo District's objective to transfer operation and maintenance of the facility to a local cooperator who will agree to maintain its structural integrity in accordance with sound engineering practices. If USFWS is interested in managing the facility as a wildlife refuge, we will be willing to explore the transfer of the facility to USFWS for such purposes. The Buffalo District recognizes wildlife habitat as a possible ultimate, viable use of the Island 18 CDF.

e. COMMENT #5 - Perhaps the Waterways Experiment Station (WES) at Vicksburg, Mississippi, could become involved with the revegetation of Island 18 when it is full.

RESPONSE - The Buffalo District's current plan is to allow the island to naturally revegetate after it has been filled. However, in consultation with WES, the Buffalo District may initially employ some vegetative "priming" practices on the island in order to accelerate the natural succession process. However, it is the Buffalo District's experience that newly placed dredged material in CDF's that have fill levels near existing lake levels (i.e., just below or above), or those with clay dikes that have fill levels well above existing lake levels, normally become colonized with indigenous plant species in the year following disposal operations.

5.8 National Environmental Policy Act of 1969, as Amended, 42 USC 4321, et seq. With the circulation of this EA/FONSI, the proposed project is in partial compliance with this Act for the current stage of study. If, after the official 30-day review period, no significant objections to the project are presented, the FONSI will be signed by the District Commander and filed at the Buffalo District Office. At that time, the project would be in full compliance with this Act.

5.9 River and Harbor Act, 33 USC 401 et seq. The requirements of this Act have been fulfilled by Corps of Engineers planning authorities and actions. Significant environmental parameters identified in Section 122 of this Act (PL 91-611) have been evaluated in this EA/FONSI.

5.10 Wild and Scenic Rivers Act, 16 USC 1271 et seq. Not applicable.

5.11 Farmland Protection Policy Act (PL 97-98 and CEQ Memorandum, 30 August 1976, Impacts on Prime and Unique Farmlands. Not applicable.

5.12 Executive Order 11988, Flood Plain Management, 24 May 1977.

The U.S. Army Corps of Engineers, Buffalo District, has concluded that there is no practicable alternative to the proposed action, which would occur in the base floodplain of Lake Erie, and that the recommended plan would be in compliance with the Order.

5.13 Executive Order 11990, Protection of Wetlands, 24 May 1977. The U.S. Army Corps of Engineers, Buffalo District, has concluded that there are no practical alternatives to the intended action of the base protection plan. The provision of Section 8 of the Executive Order is applicable and funding for the project was appropriated prior to Fiscal Year 1977. The concept is to fully utilize an already constructed facility for the purpose of providing a disposal site for Toledo Harbor dredged material that has been determined to be unsuitable for open-lake disposal.

## 6. COORDINATION

6.1 This EA/FONSI has been coordinated with appropriate Federal and State Agencies and local interests\*:

### Federal

Advisory Council on Historic Preservation  
Federal Emergency Management Administration  
Federal Maritime Commission  
U.S. Department of Agriculture - Forest Service  
U.S. Department of Agriculture - Soil Conservation Service  
U.S. Department of Commerce - National Oceanic and  
Atmospheric Administration  
U.S. Department of Energy  
U.S. Department of Health and Human Services  
U.S. Department of Housing and Urban Development  
U.S. Department of the Interior  
U.S. Department of the Interior - Fish and Wildlife Service  
U.S. Department of the Interior - National Park Service  
U.S. Department of Transportation  
U.S. Department of Transportation - Coast Guard  
U.S. Environmental Protection Agency

### State

Honorable Richard F. Celeste  
Ohio Department of Environmental Resources  
Ohio Environmental Protection Agency  
Ohio Historic Preservation Office  
Ohio State University  
State Clearinghouse

Local

Honorable Donna Owens  
City of Toledo  
Toledo-Lucas County Port Authority  
Toledo-Lucas County Plan Commissions  
Toledo Metropolitan Area Council of Governments  
University of Toledo

Organizations

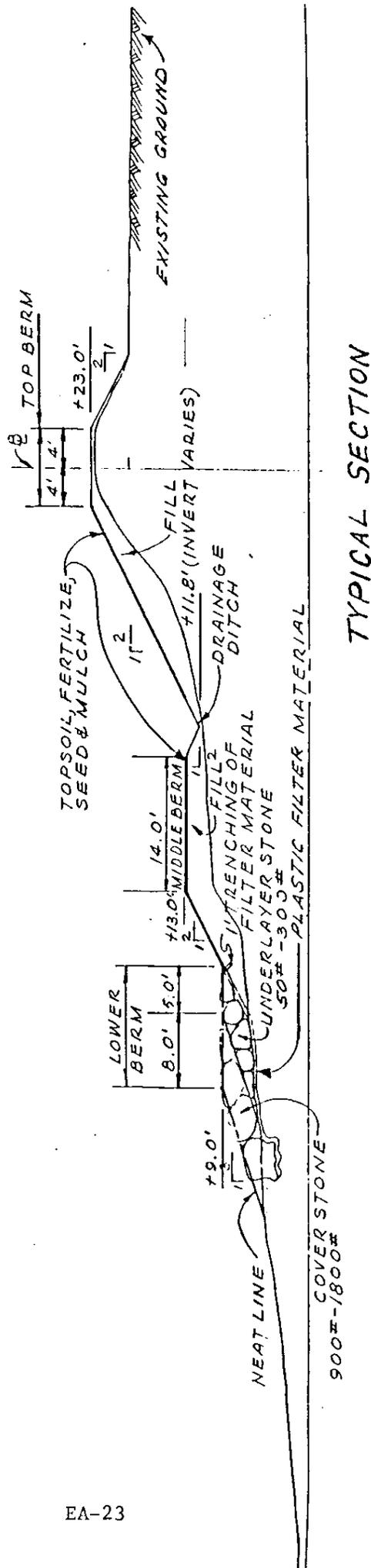
The Center for the Great Lakes  
Ducks Unlimited  
Great Lakes Commission  
Great Lakes Tomorrow  
Great Lakes United  
Hull Consulting  
Lake Carriers Association  
League of Women Voters  
Maumee Bay Audubon Society  
National Wildlife Federation  
Northwest Ohio Natural Resources Council  
Ohio Environmental Council  
Sierra Club  
Trout Unlimited

\*Individuals not listed.



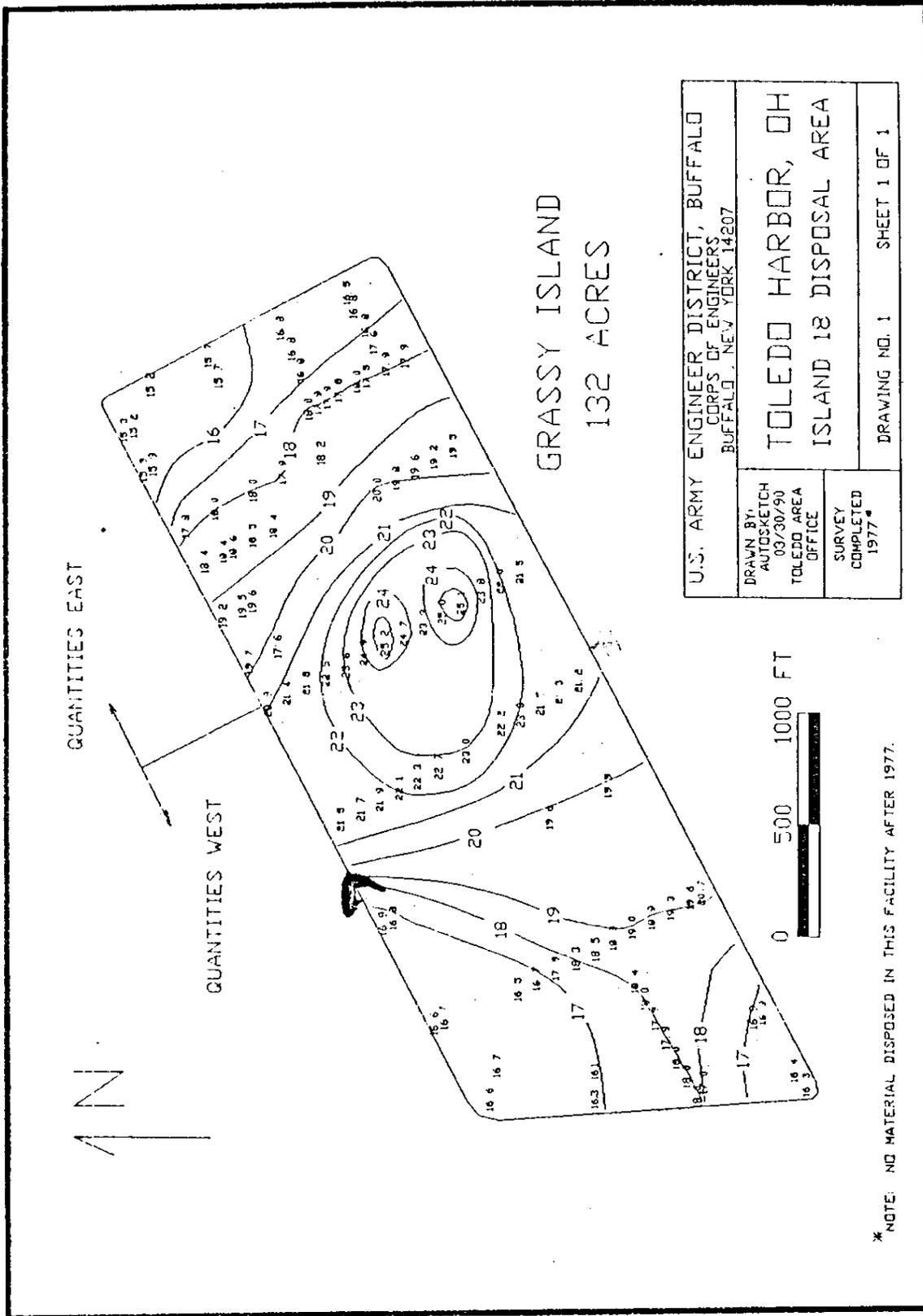


FIGURE EA-3. Island 18 Confined Disposal Facility, Toledo Harbor, Ohio - Typical Cross-Section of Confinement Dike.



TYPICAL SECTION

FIGURE EA-4. Island 18 Confined Disposal Facility, Toledo Harbor, Ohio - 1977 Project Condition Survey.



U.S. ARMY ENGINEER DISTRICT, BUFFALO CORPS OF ENGINEERS BUFFALO, NEW YORK 14207	
DRAWN BY: AUTOSKETCH 03/30/90 TOLEDO AREA OFFICE	TOLEDO HARBOR, OH ISLAND 18 DISPOSAL AREA
SURVEY COMPLETED 1977*	
DRAWING NO. 1	SHEET 1 OF 1

\*NOTE: NO MATERIAL DISPOSED IN THIS FACILITY AFTER 1977.



FIGURE EA-6.

# SEDIMENT BIOASSAY RESULTS TOLEDO HARBOR - OHIO

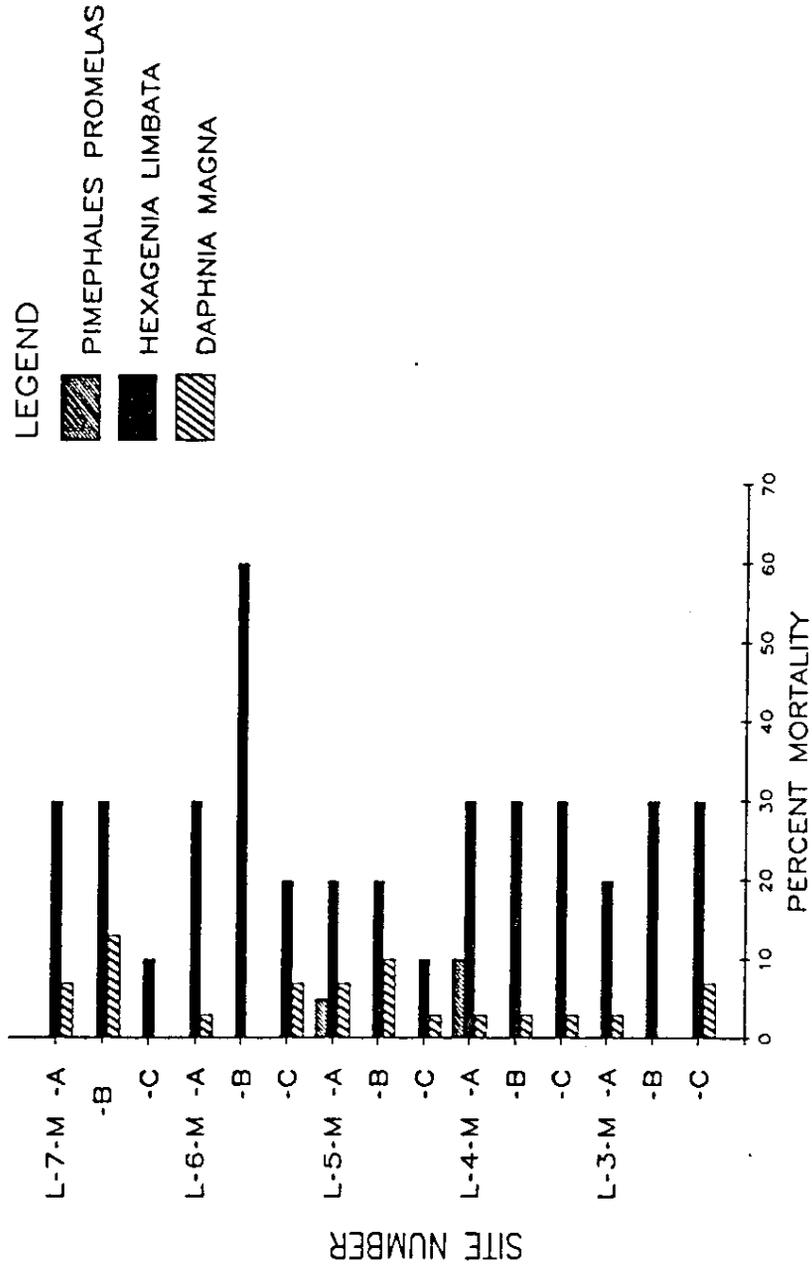


FIGURE EA-6. (Con't)

# SEDIMENT BIOASSAY RESULTS TOLEDO HARBOR - OHIO

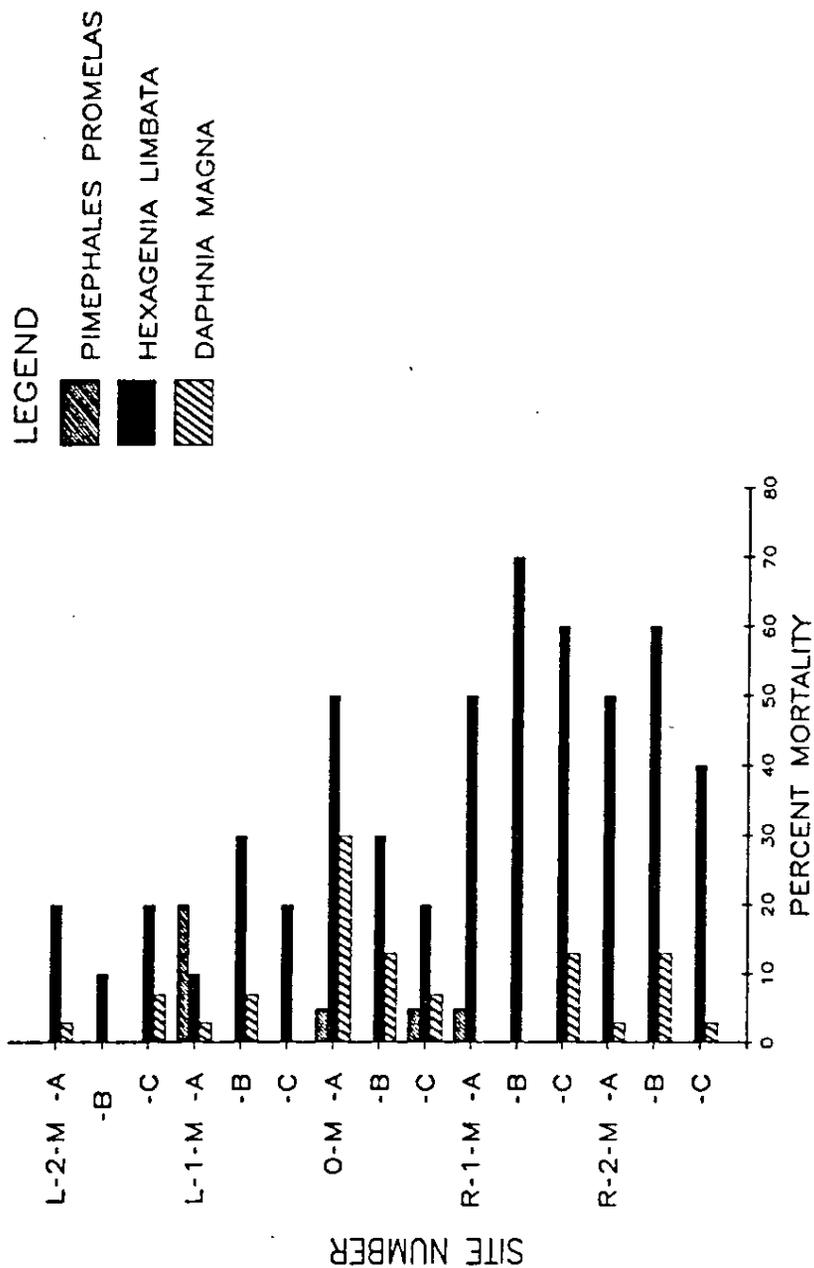


FIGURE EA-6. (Con't)

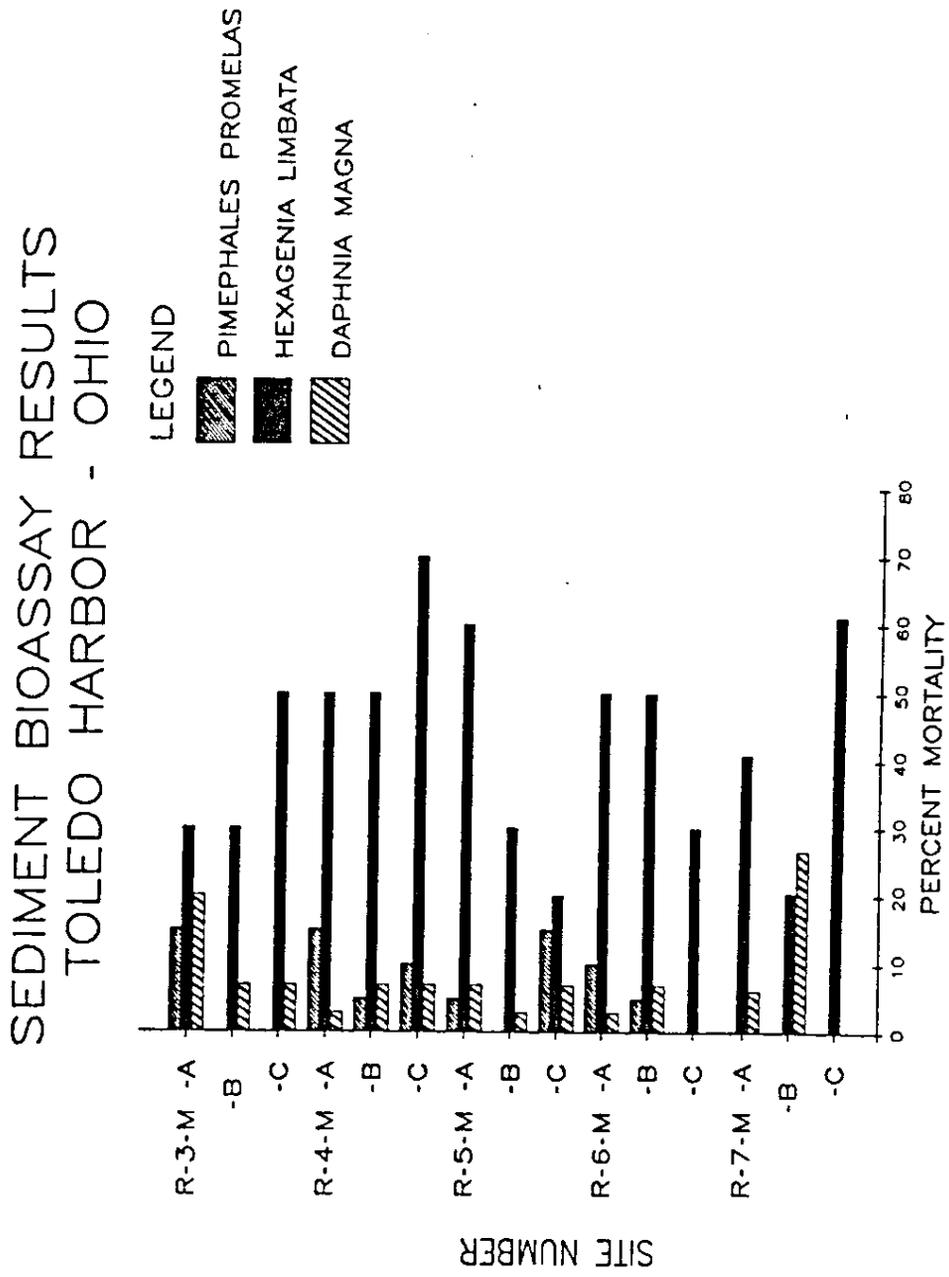


FIGURE EA-7. Toledo Harbor, Ohio, Open-lake Disposal Site (Reference Site is for Comparison Purposes).

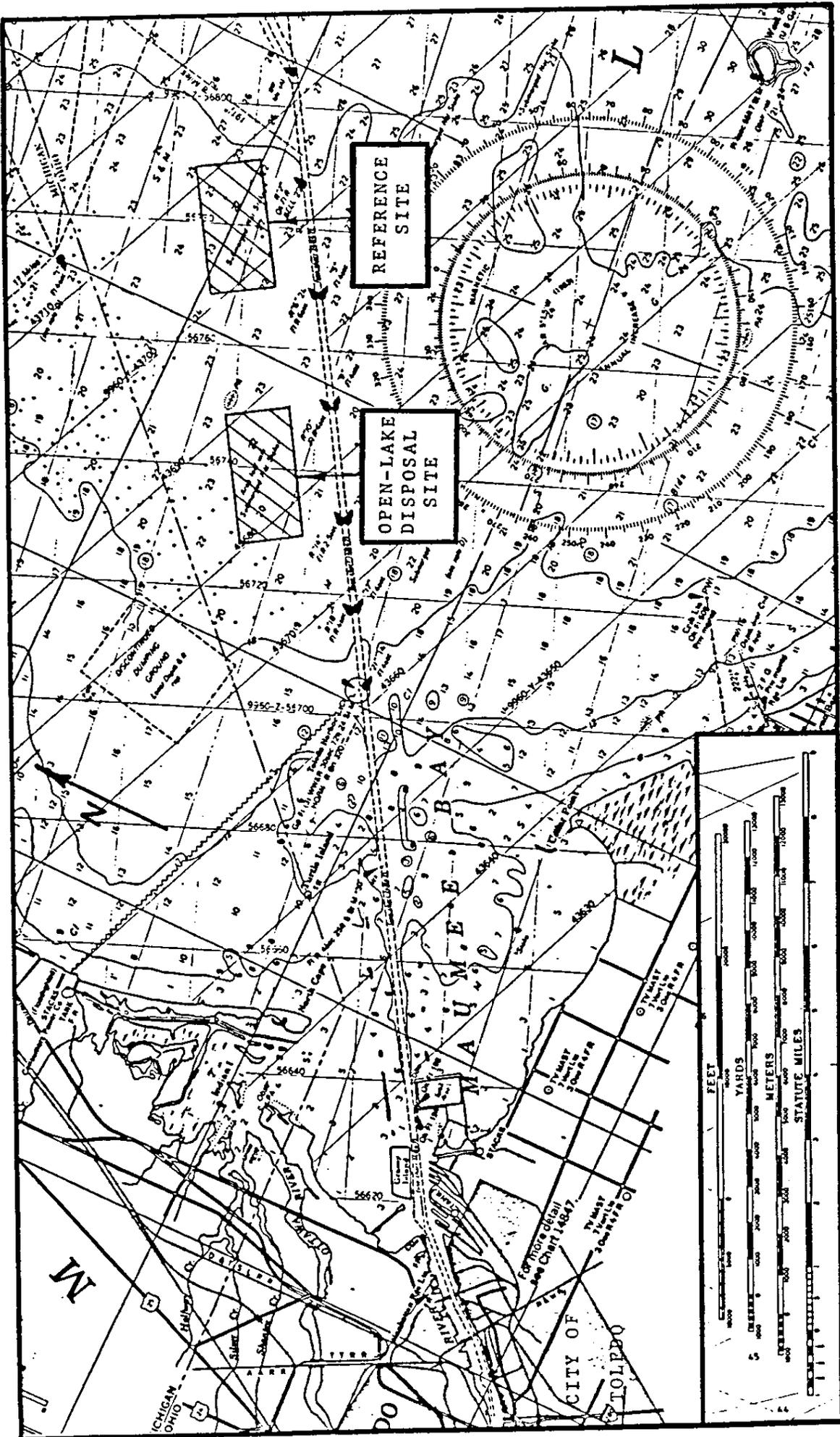


TABLE EA-1. Quantities of Material Dredged from Toledo Harbor Federal Navigation Channels Between 1978 and 1989, and Respective Dredged Material Disposal Sites. Quantities in parentheses are estimated.

Year Dredged	Area(s) Dredged	Quantity (Cubic Yards)	Disposal Site
1978	Harbor	5,418	Toledo Harbor CDF
	Harbor	63,481	"
	Harbor	208,588	"
1979	Harbor	94,950	"
	Harbor	292,000	"
	Harbor	25,050	"
	Harbor	142,000	"
1980	Harbor	50,085	"
	Harbor	649,724	"
	Harbor	119,565	"
	Harbor	38,519	"
	Harbor	2,000	"
1981	Harbor	43,930	"
	Harbor	171,927	"
	Harbor	221,382	"
	Harbor	562,353	"
1982	Outer Harbor	113,194	"
	Outer Harbor	169,858	"
	Harbor	854,949	"
	Harbor	60,285	"
1983	Outer Harbor	268,673	"
	Harbor	631,266	"
1984	Outer Harbor	275,209	"
	Outer Harbor	189,619	"
	Harbor	451,416	"
1985	Inner Harbor	308,663	"
	Outer Harbor	567,487	Open-lake
1986	Outer Harbor	862,368	Open-lake
	Inner Harbor	375,244	Toledo Harbor CDF
1987	Outer Harbor	689,646	Open-lake
	Inner Harbor	(500,000)	Toledo Harbor CDF
1988	Outer Harbor	503,000	Open-lake
	Inner Harbor	274,039	Toledo Harbor CDF
1989	Outer Harbor	298,066	Open-lake
	Inner Harbor	183,206	Toledo Harbor CDF

Table EA-2 - Particle Size Analysis of Sediments Sampled from Toledo Harbor, Lucas County, Ohio (T.P. Associates International Inc. 1988). Sediment Sampling Sites are Shown in Figure EA-5.

Sediment Sampling Site	Percent Retained						
	Retained No. 8	Retained No. 16	Retained No. 30	Retained No. 50	Retained No. 100	Retained No. 200	Passed No. 200
L-7-M	0.2	<0.1	<0.1	0.7	1.5	6.9	90.7
L-6-M	0.1	0.3	0.3	0.7	1.1	3.5	94.0
L-5-M	0.8	0.3	0.5	0.8	1.9	6.7	89.0
L-4-M	<0.1	0.2	<0.1	0.5	0.5	1.9	96.9
L-3-M	<0.1	<0.1	<0.1	0.4	0.9	6.1	92.6
L-2-M	<0.1	<0.1	<0.1	0.3	0.6	2.7	96.4
L-1-M	<0.1	0.2	<0.1	0.2	0.6	1.1	97.9
O-M	<0.1	<0.1	<0.1	0.5	1.2	1.4	96.9
R-1-M	0.2	0.2	0.2	0.5	4.6	11.5	82.8
R-2-M	<0.1	<0.1	<0.1	0.4	1.7	1.4	96.5
R-3-M	<0.1	<0.1	<0.1	0.6	1.0	0.4	98.0
R-3-M Replicate	<0.1	0.2	<0.1	1.1	1.3	0.5	96.9
R-4-M	1.0	0.7	1.5	6.2	7.1	2.9	80.6
R-5-M	7.3	2.6	2.9	5.8	4.8	3.1	73.5
R-6-M	7.2	2.7	2.3	2.8	9.0	8.3	67.7
R-7-M	<0.1	1.3	0.6	2.3	9.1	5.7	81.0

EA-30

Table EA-3 - Bulk Inorganic Analysis of Sediments Sampled From Toledo Harbor, Lucas County, Ohio (T.P. Associates International, Inc. 1988). All Parameter Concentrations are in mg/kg, Unless Otherwise Indicated. Sediment Sampling Sites are Shown in Figure EA-5.

Inorganic Parameter	Sediment Sampling Site														
	L-7-M	L-6-M	L-5-M	L-4-M	L-3-M	L-2-M	L-1-M	O-M	R-1-M	R-2-M	R-3-M	R-4-M	R-5-M	R-6-M	R-7-M
Arsenic, Total	16	16	15	20	18	20	22	20	21	22	23	12	22	18	16
Barium, Total	74	76	72	90	82	92	110	100	120	120	120	70	110	82	65
Cadmium, Total	0.9	1	1	1	1	2	2	2	2	2	2	2	1	0.9	2
Chromium, Total	18	19	18	20	17	23	24	31	57	39	24	14	20	16	13
COD	76000	76000	72000	82000	74000	86000	97000	83000	120000	84000	87000	46000	82000	58000	61000
Copper, Total	28	27	29	32	29	33	37	38	52	39	36	27	40	26	23
Cyanide, Total	0.52	0.6	0.56	0.48	0.47	0.7	1.5	0.52	1.58	0.67	0.98	<0.3	0.5	<0.6	<0.3
Iron, Total	20300	18900	14400	23100	16000	22900	24900	27200	31500	29000	30600	13900	24500	19900	13200
Lead, Total	25	24	24	23	23	29	26	34	52	29	32	23	41	19	16
Manganese, Total	440	360	370	400	355	470	460	390	420	530	470	320	440	340	335
Mercury, Total	0.1	0.3	0.1	0.1	0.3	0.1	0.1	0.2	0.4	0.2	0.1	0.2	0.2	0.1	0.2
Nickel, Total	29	25	23	27	24	30	32	33	46	33	31	19	27	23	23
Nitrate N	<10	<9	<8	<10	<9	<10	<9	<9	<10	<10	<10	<6	<9	<7	<8
Nitrogen, Ammonia	120	160	140	110	160	200	180	270	870	210	150	88	150	91	89
Oil/Grease	420	330	30	340	380	680	900	1300	3900	1100	710	340	980	270	430
Phenols, 4-AAP	0.19	0.23	0.13	0.20	<0.10	0.39	0.23	0.21	0.69	0.29	0.16	0.13	0.17	0.13	0.12
Phosphorus, Total	750	770	830	840	900	980	1100	1200	3500	1400	1100	840	1100	820	735
Residue, T, Volatile (%)	5.52	5.58	6.11	5.98	4.83	7.16	7.58	6.63	8.84	7.45	7.29	4.29	10.0	4.25	7.47
Residue, Total (%)	39.3	44.4	46.2	38.9	43.3	36.9	37.6	42.3	36.8	37.0	37.6	54.7	41.5	46.6	47.6
Total Kjeldahl N	1270	1460	1450	1500	1810	1420	1870	1700	2620	1630	2860	1630	2750	1690	1980
Zinc, Total	100	95	100	110	98	120	150	140	330	170	160	93	150	97	82

Table EA-4 - Pollutational Classifications of Inorganic Parameters in Sediments Sampled from Toledo Harbor, Lucas County, Ohio. Classifications are Based Upon USEPA, Region V, Guidelines Shown in Table EA-5 and are Relative to Bulk Inorganics Data Presented in Table EA-3. Classifications are Represented by the Following Letters: U = Unpolluted; M = Moderately Polluted; H = Heavily Polluted. Sediment Sampling Sites are Shown in Figure EA-5.

Inorganic Parameter	Sediment Sampling Site														
	L-7-M	L-6-M	L-5-M	L-4-M	L-3-M	L-2-M	L-1-M	O-M	R-1-M	R-2-M	R-3-M	R-4-M	R-5-M	R-6-M	R-7-M
Arsenic	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H
Barium	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H
Cadmium	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
Chromium	U	U	U	U	U	U	U	M	M	M	U	U	U	U	U
COD	M	M	M	H	M	H	H	H	H	H	H	M	H	M	M
Copper	M	M	M	M	M	M	M	M	H	M	M	M	M	M	U
Cyanide	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H
Iron	M	M	U	M	U	H	H	H	H	H	H	U	M	M	U
Lead	U	U	U	U	U	U	U	U	M	U	U	U	M	U	U
Manganese	M	M	M	M	M	M	M	M	M	H	M	M	M	M	M
Mercury	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
Nickel	M	M	M	M	M	M	M	M	M	M	M	U	M	M	M
Ammonia-N	M	M	M	M	M	M	M	H	H	H	M	M	M	M	M
Oil/Grease	U	U	U	U	U	U	U	M	H	M	U	U	U	U	U
Total Phosphorus	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H
Total Volatile Solids	M	M	M	M	U	M	M	M	H	M	M	U	H	U	M
TKN	M	M	M	M	M	M	M	M	H	M	H	M	H	M	M
Zinc	M	M	M	M	M	M	M	M	H	M	M	M	M	M	U
<b>Classification Totals</b>															
<b>Per Sampling Site</b>															
Unpolluted	5	5	6	5	7	5	5	3	2	3	5	8	4	6	8
Moderately Polluted	9	9	8	8	7	7	7	8	4	7	6	6	7	8	6
Heavily Polluted	4	4	4	5	4	6	6	7	12	8	7	4	7	4	4

TABLE EA-5. USEPA, Region V Guidelines for the Pollutational Classification of Great Lakes Harbor Sediments (from USEPA 1977).

Parameter	USEPA Criteria		
	Unpolluted	Moderately Polluted	Heavily Polluted
T. Solids (%)	NC	NC	NC
T. Volatile Solids (%)	<5	5-8	>8
T. Ammonia, N	<75	75-200	>200
T. Kjeldahl, N	<1,000	1,000-2,000	>2,000
T. Phosphorus	<420	420-650	>650
COD	<40,000	40,000-80,000	>80,000
T. Cyanide	<0.10	0.10-0.25	>0.25
T. Phenols	NC	NC	NC
T. Arsenic	<3	3-8	>8
T. Barium	<20	20-60	>60
T. Cadmium	*	*	>6
T. Chromium	<25	25-75	>75
T. Copper	<25	25-50	>50
T. Iron	<17,000	17,000-25,000	>25,000
T. Lead	<40	40-60	>60
T. Manganese	<300	300-500	>500
T. Mercury	*	*	≥1.0
T. Nickel	<20	20-50	>50
T. Zinc	<90	90-200	>200
T. Oil/Grease	<1,000	1,000-2,000	>2,000

All units are in mg/kg, unless otherwise indicated.

NC = No criteria.

EA-33

\* = No criteria for this  
pollutational classification.

TABLE EA-6. Suggested Percent Mortality Ranges from a 96-hour Sediment Bioassay for Hexagenia limbata, Daphnia magna, and Pimephales promelas used in the Sediment Classifications (Prater 1976).

Species	Pollution Range		
	Nonpolluted	Moderately Polluted	Heavily Polluted
<u>H. limbata</u>	<10	10-50	>50
<u>D. magna</u>	<10	10-50	>50
<u>P. promelas</u>	<10	10-50	>50

TABLE EA-7. Vertebrate Resident or Transient Species Observed or Evidenced on the Island 18 Confined Disposal Facility, Toledo Harbor, Lucas County, Ohio, in November 1989.

Common Name	Scientific Name	Relative Abundance
Groundhog	<u>Marmota</u> spp.	Common
Muskrat	<u>Ondatra zibethicus</u>	Common
Pheasant	<u>Phasianus colchicus</u>	Some
Various songbirds	-	Common

TABLE EA-8. Dominant vegetation identified on the Island 18  
 Confined Disposal Facility, Toledo Harbor, Lucas  
 County, Ohio, in November 1989.

Vegetation Type	Common Name	Scientific Name	Relative Abundance
Woody	Black willow	<u>Salix nigra</u>	Some
	Eastern cottonwood	<u>Populus deltoides</u>	Some-Common
	Willow	<u>Salix spp.</u>	Common
Herbaceous	Bittersweet		Some-
	nightshade	<u>Solanum dulcamara</u>	Common
	Catnip	<u>Nepeta cataria</u>	Some
	Cattail	<u>Typha latifolia</u>	Common
	Common burdock	<u>Arctium minus</u>	Some
	Crown vetch	<u>Coronilla varia</u>	Common
	Curled dock	<u>Rumex crispus</u>	Some
	Various grasses	Graminae	Some
	Jewelweed	<u>Impatiens pallida</u>	Some
	Reed grass	<u>Phragmites spp.</u>	Common
	Purple loosestrife	<u>Lythrum salicaria</u>	Common
	Teasel	<u>Dipsacus laciniatus</u>	Some
	Thistle	-	Some
	Wild Mint	<u>Mentha arvensis</u>	Common

## LITERATURE CITED

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- . 1984. Toledo Harbor, Lucas County, Ohio, Dredging, Open-lake and Confined Disposal of Dredged Material, Operation and Maintenance. Section 404(b)(1) Evaluation.

APPENDIX EA-A  
COORDINATION

DEC 6 1989

HAZARDOUS WASTE

DEC 83 13 46

Environmental Analysis Branch

SUBJECT: Toledo Harbor, Lucas County, Ohio - Proposed Reuse of Island 18 for the Placement of Dredged Material - Fish and Wildlife Resources

The U.S. Army Corps of Engineers, Buffalo District, is currently investigating reuse of the Federal Confined Disposal Facility (CDF) island (Island 18) for the placement and containment of material dredged from Toledo Harbor. The reuse is being investigated as an economical alternative for the dredging contractor. Island 18 is located about one mile east-northeast of the Maumee River mouth, and about 400 feet north of, and parallel to, the northern side of the existing Federal navigation channel (Enclosure 1). This facility was used for the placement and containment of material dredged from Toledo Harbor prior to 1979.

Island 18 is a roughly rectangular, 3,800 by 1,600 foot diked inclosure, with a total area of 150 acres. It had an original projected capacity of 5,000,000 cubic yards of dredged material. Since its last use in 1978, consolidation of dredged material within the facility has resulted in an estimated 500,000 to 600,000 cubic yards of remaining capacity.

The material proposed to be placed on Island 18 would be dredged from areas of the Federal navigation channel near the facility (inclusive of the Maumee River and Toledo Outer Harbor) which would economically benefit the dredging, and dredged material disposal and containment operation. Sediment sampling and testing of Toledo Harbor sediments was last performed by the Buffalo District in 1968. Particle size analysis performed on sediment samples showed the channel sediments to be composed primarily of a mixture of silts and clays. Bulk inorganic and organic analysis of channel sediments upstream of Lake Station 2 classified them overall as "heavily polluted," and classified those downstream of Lake Mile 2 as "moderately polluted," under United States Environmental Protection Agency, Region V Guidelines (1977).

SFB's  
L-1/4/77  
D-11/1/78  
E-1/1/78  
R-11/28/78  
R-12/5/78

Environmental Analysis Branch

SUBJECT: Toledo Harbor, Lucas County Ohio - Proposed Reuse of Island 18 for the Placement of Dredged Material - Fish and Wildlife Resources

Implementation of the National Environment Policy Act of 1969, as amended, requires that Federal agencies initiate "an early and open process for determining the scope of issues to be addressed and for identifying the significant issues related to the proposed action." As part of this early "scoping" process, I wish to invite your participation in this evaluation.

In order to fully assess the range of environmental impacts of the proposed dredging and containment of the associated dredged material, I would appreciate any information or comments you may have, especially with respect to the proposed activities, water quality, sediment quality, fish and wildlife resources, threatened and endangered species, critical habitats, unique ecological sites, or any other resources you may be able to identify. The proposed project will be planned to avoid potential conflict with any recommendations you may have or concerns you may identify, to the greatest extent practicable.

Thank you for your cooperation. Please respond within 30 days of your receipt of this letter.

My point of contact pertaining to this matter is Mr. Scott Pickard of the Environmental Analysis Branch, who can be contacted by calling 716-879-4171, or by writing to the above address.

Sincerely,

MFR: NOT PROCESSED IN MAIL ROOM

Mark F. Boyd III  
Colonel, U.S. Army  
Commander

Enclosure

The attached letter has been sent to the following:

Mr. Kent Krooneneyer  
Field Supervisor  
Reynoldsburg Field Office  
U.S. Fish and Wildlife Service  
6950-H Americana Parkway  
Reynoldsburg, Ohio 43086

Mr. Michael Colvin  
Environmental Review Coordinator  
Ohio Department of Natural Resources  
Fountain Square, Building A-3  
Columbus, Ohio 43224

Mr. Robert Lucas  
Corps of Engineers Liaison  
Ohio Department of Natural Resources  
Fountain Square, Building D-2  
Columbus, Ohio 43224

Maumee Valley Audubon Society  
5300 Dubois Street  
Toledo, Ohio 43615

Sierra Club  
Crosby Gardens  
3403 Elmer Drive  
Toledo, Ohio 43615

Ms. Connie Stevens  
Resource Specialist  
National Wildlife Federation  
Resources Defense Division  
1412 Sixteenth Street, NW  
Washington, DC 20036

Environmental Analysis Branch

HAZARDOUS WASTE

SUBJECT: Toledo Harbor, Lucas County, Ohio - Proposed Reuse of Island 18 for the Placement of Dredged Material - Water and Associated Land Use, and Environment

The U.S. Army Corps of Engineers, Buffalo District, is currently investigating reuse of the Federal Confined Disposal Facility (CDF) island (Island 18) for the placement and containment of material dredged from Toledo Harbor. The reuse is being investigated as an economical alternative for the dredging contractor. Island 18 is located about one mile east-northeast of the Maumee River mouth, and about 400 feet north of, and parallel to, the northern side of the existing Federal navigation channel (Enclosure 1). This facility was used for the placement and containment of material dredged from Toledo Harbor prior to 1979.

Island 18 is a roughly rectangular, 3,800 by 1,600 foot diked inclosure, with a total area of 150 acres. It had an original projected capacity of 5,000,000 cubic yards of dredged material. Since its last use in 1978, consolidation of dredged material within the facility has resulted in an estimated 500,000 to 600,000 cubic yards of remaining capacity.

The material proposed to be placed on Island 18 would be dredged from areas of the Federal navigation channel near the facility (inclusive of the Maumee River and Toledo Outer Harbor) which would economically benefit the dredging, and dredged material disposal and containment operation. Sediment sampling and testing of Toledo Harbor sediments was last performed by the Buffalo District in 1988. Particle size analysis performed on sediment samples showed the channel sediments to be composed primarily of a mixture of silts and clays. Bulk inorganic and organic analysis of channel sediments upstream of Lake Mile 2 classified them overall as "heavily polluted," and classified those downstream of Lake Mile 2 as "moderately polluted," under United States Environmental Protection Agency, Region V Guidelines (1977).

SP364.1  
L/4171  
D-11/14/89  
F-11/21/89  
R-11/25/89  
R-12/5/89

Environmental Analysis Branch

SUBJECT: Toledo Harbor, Lucas County Ohio - Proposed Reuse of Island 18 for the Placement of Dredged Material - Water and Associated Land Use, and Environment

Implementation of the National Environment Policy Act of 1969, as amended, requires that Federal agencies initiate "an early and open process for determining the scope of issues to be addressed and for identifying the significant issues related to the proposed action." As part of this early "scoping" process, I wish to invite your participation in this evaluation.

In order to fully assess the range of environmental impacts of the proposed dredging and containment of the associated dredged material, I would appreciate any information or comments you may have, especially with respect to the proposed activities, water quality, sediment quality, environmental planning, recreation, water and associated land use and development plans and policies, or any other resources you may be able to identify. The proposed project will be planned to avoid potential conflict with any recommendations you may have or concerns you may identify, to the greatest extent practicable.

Thank you for your cooperation. Please respond within 30 days of your receipt of this letter.

My point of contact pertaining to this matter is Mr. Scott Fickard of my Environmental Analysis Branch, who can be contacted by calling 716-879-6171, or by writing to the above address.

Sincerely,

MFR: NOT PROCESSED IN MAIL ROOM

Hugh F. Boyd III  
Colonel, U.S. Army  
Commanding

Enclosure

The attached letter has been sent to the following:

Mr. Valdas Adauskas  
Regional Administrator  
U.S. Environmental Protection Agency  
Region V  
230 South Dearborn Street  
Chicago, Illinois 60604

Mr. Harry W. Omata  
State Conservationist  
U.S. Soil Conservation Service  
200 North High Street  
Columbus, Ohio 43215

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Environmental Clearance Officer  
U.S. Department of Housing and  
Urban Development  
200 N. High Street, 7th Floor  
Columbus, Ohio 43215

Mr. Bruce Blanchard  
Director  
Office of Environmental Project Review  
U.S. Department of the Interior  
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Washington, DC 20240

Dr. Richard Shank  
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Ohio Environmental Protection Agency  
Box 1049  
361 East Broad Street  
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Commander  
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Hull Consulting  
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Washington, DC 20472

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National Oceanic and Atmospheric  
Administration  
U.S. Department of Commerce  
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Areside Review Officer  
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123 Michigan Street  
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Mr. Donald M. Moline, P.E.  
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26 Main Street  
Toledo, Ohio 43605

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Commissioner  
Division of Water Reclamation  
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Toledo, Ohio 43611

Mr. Gary Jailer  
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Toledo-Lucas County Port Authority  
One Maritime Plaza  
Toledo, Ohio 43604-1066

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123 Michigan Street  
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Honorable Donna Owens  
Mayor, City of Toledo  
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Toledo, Ohio 43624

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Director  
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Dr. David Dillmore, Ph.D.  
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Mr. Leonard E. Roberts  
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Office of Budget and Management  
State Clearinghouse  
30 E. Broad Street  
Columbus, Ohio 43215

Mr. Walter T. Edelen  
Executive Director  
Toledo-Lucas County Plan Commission  
One Government Center, Suite 1620  
Toledo, Ohio 43604

*U.S. Environmental Protection Agency  
Region V*

*Attn: Mr. W. Frank  
230 South Dearborn Street  
Chicago Illinois 60604*

DEC 8 1989

MARCHON NOBIM-S

Environmental Analysis Branch

SUBJECT: Toledo Harbor, Lucas County, Ohio - Proposed Reuse of Island 18 for the Placement of Dredged Material - Cultural Resources

Mr. W. Ray Luce  
State Historic Preservation Officer  
Ohio Historic Preservation Office  
Ohio Historical Society  
1985 Velma Avenue  
Columbus, Ohio 43211

Dear Mr. Luce:

The U.S. Army Corps of Engineers, Buffalo District, is currently investigating reuse of the Federal Confined Disposal Facility (CDF) island (Island 18) for the placement and containment of material dredged from Toledo Harbor. The reuse is being investigated as an economical alternative for the dredging contractor. Island 18 is located about one mile east-northeast of the Maumee River mouth, and about 400 feet north of, and parallel to, the northern side of the existing Federal navigation channel (Enclosure 1). This facility was used for the placement and containment of material dredged from Toledo Harbor prior to 1979.

Island 18 is a roughly rectangular, 3,800 by 1,600 foot diked inclosure, with a total area of 150 acres. It had an original projected capacity of 5,000,000 cubic yards of dredged material. Since its last use in 1978, consolidation of dredged material within the facility has resulted in an estimated 500,000 to 600,000 cubic yards of remaining capacity. The material proposed to be placed in Island 18 would be dredged from areas of the Federal navigation channel near the facility (inclusive of the Maumee River and Toledo Outer Harbor) which would economically benefit the dredging, and dredged material disposal and containment operation.

Implementation of the National Environment Policy Act of 1969, as amended, requires that Federal agencies initiate "an early and open process for determining the scope of issues to be addressed and for identifying the significant issues related to the proposed action." As part of this early "scoping" process, I wish to invite your participation in this evaluation.

In order to fully assess the range of environmental impacts of the proposed dredging and containment of the associated dredged material, I would appreciate any information or comments you may have, especially with respect to the

Environmental Analysis Branch

SUBJECT: Toledo Harbor, Lucas County Ohio - Proposed Reuse of Island 12 for  
the Placement of Dredged Material - Cultural Resources

SP302  
10/2/77  
D-11/11/8  
F-11/21/8  
R-11/29/8  
R-12/5/8

proposed activities, archaeological sites, historic properties, or any other resources you may be able to identify. The proposed project will be planned to avoid potential conflict with any recommendations you may have or concerns you may identify, to the greatest extent practicable.

Thank you for your cooperation. Please respond within 30 days of your receipt of this letter.

My point of contact pertaining to this matter is Mr. Scott Pickard of my Environmental Analysis Branch, who can be contacted by calling 716-873-4171, or by writing to the above address.

Sincerely,

MFR: NOT PROCESSED IN MAIL ROOM

Hugh F. Boyd III  
Colonel, U.S. Army  
Commanding

Enclosure



# STATE CLEARINGHOUSE

## State of Ohio - Office of Budget and Management

30 EAST BROAD STREET • 34TH FLOOR • COLUMBUS, OHIO 43266-0411 • (614) 466-0697 / 0698

U.S. DEPT OF THE ARMY, CORPS OF ENGINEERS  
1776 NIAGARA STREET, ENVIRONMENTAL ANALYSIS  
BUFFALO NY 14207-3199

Attention: SCOTT PICKARD PHONE: (716)879-4171

RE: State Clearinghouse Intergovernmental Review-Application Receipt Letter

Project Title: EARLY ENVIRONMENTAL ANALYSIS  
Project Description: TOLEDO HARBOR, LUCAS COUNTY, OHIO, PROPOSED REUSE OF  
ISLAND 18, PLACEMENT OF DREDGED MATERIAL - WATER &  
ASSOCIATED LAND USE & ENVIRONMENT, DECEMBER 1989

State Application Identification (SAI) Number: OH891218-M939-36422  
Proposed Federal Funding: \$00

Dear Applicant:

The State Clearinghouse has received your notification for either a direct federal development project, environmental assessment/impact statement, or, an application for federal funds. The review process has begun at the State level and will be completed on 90-01-15.

A State Application Identification (SAI) number has been assigned to your project. Please refer to this number in all future contacts with the State Clearinghouse and the Area Clearinghouse(s). This number should also be forwarded to the funding agency, to become part of your application.

A copy of your application should have been submitted simultaneously to your Area Clearinghouse(s), which is(are):

CLEARINGHOUSE:  
TOLEDO METROPOLITAN AREA COUNCIL OF GOVERNMENTS (TMACOG)

Failure to do so could result in a negative review of your application.

Sincerely,

*Paula Wise*  
Project Coordinator

210 03 08 55

GEORGE J. RYAN, *President*  
GORDON D. HALL, *Vice President / Treasurer*  
CAROL ANN LANE, *Secretary*

THOMAS O. MURPHY, *General Counsel*  
GLEN G. NEKVASIL, *Communications Director*

# LAKE CARRIERS' ASSOCIATION

614 Superior Avenue, N.W.  
915 Rockefeller Building  
Cleveland, Ohio 44113-1306  
(216) 621-1107

December 12, 1989

150-09 09 47  
MAIL ROOM-RCB:M-S

Colonel Hugh F. Boyd III  
District Engineer  
Buffalo District  
U.S. Army Corps of Engineers  
1776 Niagara Street  
Buffalo, NY 14207-3199

Dear Colonel Boyd:

Reference is made to your December 8, 1989, letter regarding proposed reuse of Island 18 as a confined disposal facility to receive dredged materials from the Maumee River and Toledo Harbor.

Lake Carriers' Association represents 14 United States-flag Great Lakes fleets. The 14 member fleets have a combined total of 65 vessels with a per-trip capacity of 1,832,895 gross tons of bulk cargo. These vessels comprise more than 98 percent of the tonnage of United States Great Lakes vessels and approximately 18 percent of all United States self-propelled vessels of 1,000 gross registered tons or larger engaged in the domestic trade.

The proposal is a cost effective and environmentally sound means of containing polluted dredged materials to be removed from areas of the Federal navigation channel. It is extremely important to our member companies that channels be dredged to their project depth, for every inch of siltation removes the ability of our largest vessels to carry 238 tons of cargo because of the surrender of one inch of draft. For shipping to remain competitive with other means of transportation, and for its customers to remain competitive with other world suppliers and manufacturers it is imperative that channel maintenance to project depth be accomplished without interruption.

The Association is appreciative of the opportunity to comment.

Sincerely yours,

*Gordon D. Hall*

Gordon D. Hall  
Vice President/Treasurer

GDH:emh

# CITY OF TOLEDO OHIO



PHILIP A. HAWKEY  
CITY MANAGER

Michael J. White  
DIRECTOR

DEPARTMENT OF PUBLIC UTILITIES  
DIVISION OF WATER  
WATER SERVICE BUILDING  
401 SOUTH ERIE  
TOLEDO, OHIO 43602

WHITFIELD VAN COTT  
COMMISSIONER

Robert R. Williams, Acting  
Manager-Water Distribution  
TELEPHONE (419) 242-1138

December 18, 1989

Mr. Scott Pickard  
Environmental Analysis Branch  
DEPARTMENT OF THE ARMY  
Buffalo District, Corps of Engineers  
1776 Niagara Street  
Buffalo, New York 14207-3199

Dear Mr. Pickard:

I recently received a letter from Colonel Boyd, indicating the Corps of Engineers' interest in utilizing Island 18. The City of Toledo has had previous discussions with the Toledo Lucas-County Port Authority and the Corps of Engineers about participating in a recycling program on Island 18. Experimentation has occurred over the course of the last three years by the Port Authority, through an independent contractor, to develop a recycled soil. This product is made up primarily of wastewater treatment sludge, spent lime and dredged material.

Discussions have been held to consider the reuse of Island 18 as a long-range solution to the dredged material disposal program. Any work to modify or improve Island 18 should be discussed with the City of Toledo and the Port Authority in order to provide for the utilization of this Island as a recycling facility.

Attached is previous correspondence and additional information on NU-SOIL. This product has been endorsed by OEPA and is currently being used in a Pilot Program as a top soil for sanitary landfill cover. I believe that by our working together on the future use of this Island, a number of disposal problems would be solved by the creation of a beneficial product, such as NU-SOIL.

Sincerely,

Michael J. White  
Director of Public Utilities

MJW/ps

cc: Col. Hugh F. Boyd, III, U.S. Army  
Philip A. Hawkey, City Manager  
Whit Van Cott, Commissioner of Water  
John Loftus, Port Authority

attach:



State of Ohio Environmental Protection Agency  
Northwest District Office  
1035 Devlac Grove Drive  
Bowling Green, Ohio 43402-4598  
(419) 352-8461

OPEN  
make  
file

Richard F. Celeste  
Governor

May 5, 1989

Mr. Thomas R. Hoover  
Service Director  
City of Toledo  
One Government Center  
Toledo, Ohio 43604

Dear Mr. Hoover:

I attended a meeting on April 24 with John Loftus and Jeff Busch of the Toledo-Lucas County Port Authority, Jim and Stan Perry of S & L Fertilizer Co., and Whit Van Cott of the Toledo Department of Public Utilities. The discussion involved a new plan for the demonstration use of NU-Soil. The bottom line would be that the Hoffman Road Landfill would receive a minimum of 5,000 cubic yards of NU-Soil at no direct cost to the Toledo Service Department.

I was asked to provide you with an assurance from Ohio EPA concerning the acceptability of the use of NU-Soil at the Hoffman Road Landfill. I have enclosed my letter of May 12, 1988 which provides these assurances and responds to several questions about the use of NU-Soil.

We encourage you to participate in this demonstration of NU-Soil which represents a solution to several waste disposal and environmental problems.

If you have questions, please contact me.

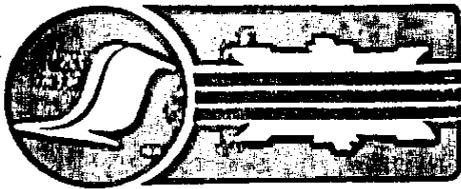
Sincerely,

Edwin J. Hammett  
District Chief

/ca

cc: Robert Reinbolt, Toledo Dept. of Public Utilities  
Whit Van Cott, Toledo Dept. of Public Utilities  
John Loftus, Toledo-Lucas County Port Authority  
NWDO File

MAY 17 89



August 19, 1987

Colonel Daniel Clark  
Commander  
Army Corps of Engineers  
1776 Niagara Street  
Buffalo, NY 14207

Dear Colonel Clark:

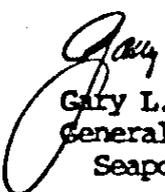
I would like to thank you for your letter of July 20, 1987, regarding the Toledo-Lucas County Port Authority's proposal for Island 18 re-use. I must admit that I was somewhat concerned by your reactions to the projected need and the value of the space created. In light of recent events, I believe these items should be reconsidered.

The recent developments that I referred to pertain to the U.S. Environmental Protection Agency's response to your earlier letter regarding dredge disposal options for Maumee Bay. Region Five's response clearly places new requirements on the open-lake disposal program. Requirements for moving the open-lake disposal site further out into the bay and the use of submerged diffusers will obviously escalate the cost of the current open-lake disposal program. In light of these recent modifications, I believe your office may wish to reconsider the possibility of Island 18 as a cost-effective alternative to open-lake disposal.

As I mentioned in my earlier letter, the Port Authority is interested in pursuing the excavation of Island 18 in order to supply additional disposal capacity. In order to achieve this goal, the City of Toledo, the Army Corps of Engineers and the Port Authority must establish a cooperative framework to develop a cost-effective plan. In order to truly cost-competitive, the Port Authority realizes that the plan must take into account not only the additional operating costs of discharging into a confined disposal facility, but the actual purchase of the space that has been made available. We believe that the Island 18 project is, in fact, competitive with the open-lake disposal lake program as defined by the U.S. Environmental Protection Agency. I look forward to hearing your views on this issue. If you have any questions, please feel free to call.

Sincerely,

TOLEDO-LUCAS COUNTY PORT AUTHORITY

  
Gary L. Failor  
General Manager and  
Seaport Director

GLF/cmy

THE CREATION OF NU-SOIL<sup>TM</sup>

REC'D

APR 25 88

DIVISION OF  
WATER

S. AND L. FERTILIZER CO.  
8636 YAWBERG RD.  
WHITEHOUSE, OHIO 43571  
(419) 875-6162

## THE CREATION OF NU-SOIL™

NU-SOIL is a product that sustains lush vegetation, but it is created from three waste products. Its development took commitment and cooperation from federal, state and local government agencies, as well as private industry. The creation of NU-SOIL is an example of beneficial reuse of products formally considered a waste disposal problem.

NU-SOIL, basically is river/bay dredgings, dewatered and recycled, to be used as a topsoil. It consists of drained alluvial sediments, wastewater treatment sludge, and water treatment spent lime sludge. The constituents are mixed in a confined disposal facility (CDF) from which NU-SOIL would be removed and transported to users. The final product is suitable for topsoil or for topsoil base.

NU-SOIL is the result of a three year pilot study coordinated by the Toledo Metropolitan Area Council of Governments (TMACOG). The study, funded by; S. and L. Fertilizer, the Toledo-Lucas County Port Authority, TMACOG, and O.E.P.A., was directed toward finding a beneficial use for a portion of the dewatered sediments stored in Toledo area CDF's. Attachment A identifies individuals and agencies instrumental in the NU-SOIL effort.

The NU-SOIL story begins with channel dredging and dredge disposal, continues with TMACOG's pilot study, and concludes with the NU-SOIL production and use.

## BACKGROUND

The port of Toledo is the third most active port on the Great Lakes and the 25th busiest port in North America. The port is connected with Lake Erie by a 23-mile shipping channel, seven miles of which is within the Maumee River.

The channel routinely clogs with silt from the Maumee River Basin. This basin is 75% agricultural, with moderately erodable loam and silt loam soils. The Maumee River transports the silt, augmented by sediment from construction sites and from bank erosion downstream. A portion of the silt settles out into the Toledo shipping channel, becoming alluvial deposits.

The U.S. Army Corps of Engineers dredges the Toledo channel, removing an average of 1,000,000 cubic yards of sediment each year. Were the Army Corps of Engineers to stop dredging operations, they estimate the channel would be closed to large lake freighters within two years. As Toledo is the transportation center for the surrounding industrial and agricultural region, obviously this is not practical.

The disposal of dredgings is a necessity in any community with a port sustained by dredge activity. For the Toledo operation, the Army Corps of Engineers annually disposes of 600,000 cubic yards of sediment in Lake Erie. Another 400,000 cubic yards of sediment is disposed into CDF's. The sediment disposed of in the CDF's contain the by-products associated with industrial and agricultural production in the river drainage basin.

Dredge material has been used for many years for beach nourishment, construction fill, landfill cover, strip-mine reclamation, and habitat creations in communities throughout the United States and Canada. None of these activities have been implemented in Toledo, although several studies have signaled potential uses and outlined means for beneficial reuse of dredge materials.

The emphasis on beneficial reuse in Toledo arises from commitments to eliminate open lake dumping by 1991 and by the expense and difficulty in siting additional CDF's. NU-SOIL is just one of a number of beneficial use options under review for mining CDF's or for using freshly dredged deposits.

As part of the reuse studies, researchers have investigated the characteristics of the Toledo channel sediment. The most extensive effort, a seven year study undertaken by the Corps, concluded that material taken from the CDF was within the established guidelines for safe upland use. Subsequent studies undertaken for TMACOG have confirmed these results. The characteristics of this sediment is identified in Attachment B. The Corps report also clearly demonstrated that material from a confined disposal facility, can benefit plant growth, as illustrated by the CDF's lush volunteer vegetation, providing a habitat for many wild fowl.

#### PILOT STUDY

A three year study coordinated by TMACOG and conducted by S. and L. Fertilizer demonstrated a specific technique for using material in the confined disposal area for beneficial reuse. The technique requires amending the dredge spoils for use as a soil.

Dried dredge material alone is not readily suited for use as soil. It lacks sufficient phosphorous and organic material. The material is relatively difficult to work, due to its tilth. Indeed, the consistency of dewatered CDF material is somewhat like subsoil.

During the pilot project, researchers investigated means of overcoming these deficiencies, thereby making the spoils more immediately useful. The mixing of the sediment with wastewater sludge and water treatment lined sludge, produced an excellent soil.

A demonstration site has been used for growing seeded grass for more than two years. The preliminary results and soil/bioassay tests are attached.

#### NU-SOIL PREPARATION

NU-SOIL is mixed in the top layer of the CDF where the dredge material has drained thoroughly. The mixture consists of dredge spoil, wastewater sludge, and water treatment sludge. The mixture is prepared by applying the amendments in the order listed. Then, they are tilled into the CDF surface.

Wastewater sludge adds needed organic matter to the mixture. It also supplies valuable nitrogen, phosphorous and other nutrients, as well as minor amounts of calcium, magnesium, and potassium.

The spent lime sludge is a by-product of the drinking water treatment process. The 70,000 cubic yards produced annually at the water plant are currently disposed of in lagoons. The recycling of this material has been strongly urged by both the Ohio Environmental Protection Agency (OEPA) and The City of Toledo's Department of Public Utilities.

Adding spent lime sludge to the NU-SOIL medium helps the soil in many ways.

These ways include:

- Setting the medium pH to 7-8
- Improving soil structure and tilth

Potassium, a necessary soil nutrient, is not adequately available in the NU-SOIL elements. Dry fertilizer, 0-0-62, or complete potassium, can be directly applied to the NU-SOIL. The feasibility of using wood ash or fly ash in place of the commercial fertilizer is under investigation. When the soil is harvested, a soils testing laboratory conducts a complete analysis, including nutrient levels as well as trace metals concentrations.

#### NU-SOIL APPLICATIONS

NU-SOIL has a number of potential applications. Based on the initial soil tests and site plantings, NU-SOIL representatives anticipate two different initial application patterns. These are as a topsoil and as a topsoil base.

As a topsoil, NU-SOIL will be used as a planting medium. This method is recommended for development projects. As a base, NU-SOIL will be applied as a 2-3" layer and then covered with standard topsoil. This method is recommended for landscaping and other areas with initially exposed soils. The commercial availability of NU-SOIL is planned for the end of 1988. Selected nurseries will have the opportunity to use the medium late in 1987.

NU-SOIL will be sold wholesale to topsoil distributors within a 50-mile radius to Toledo. It provides an excellent growth medium and will not require further fertilizing for approximately eight years to sustain grass or similar vegetation.

## CONCLUSION

NU-SOIL is an example of beneficial reuse of dredge spoil. It's development required extensive inter-agency cooperation and commitment resulting in a creative reuse of several urban wasted residuals. The full-scale application will require continued commitment to reclaim an unprized resource.

NU-SOIL will probably not use 1,000,000 cubic yards of dredge spoil in the foreseeable future, yet it will use a portion that would otherwise require just disposal. This project will hopefully alert people to the intelligent opportunity for creative reuse. It also signals a community commitment to reuse what would otherwise be wasted.

ATTACHMENT A  
ACKNOWLEDGMENTS

NU-SOIL exists due to the commitment of many individuals, consultants, and government agencies. While all efforts have been needed, particular recognition is due five individuals without whose cooperation and sustained interest in the beneficial reuse of waste by-products, the years of study would not have been possible. These individuals are:

Edwin Hammett - TMACOG

John Loftus - Toledo-Lucas County Port Authority

Robert Manson - Ohio EPA

Whit Van Cott - City of Toledo

Special recognition to Mr. Thomas Kovacik, Director of Public Utilities, for the original concept of multiple product reuse and recycling.

# S. and L. Fertilizer Co.

8836 YAWBERG ROAD  
WHITEHOUSE, OHIO 43571  
PHONE: (419) 878-6102

## ATTACHMENT B

### NU-SOIL ANALYSIS

	<u>Dredgings</u>	<u>Nu-Soil</u>
Organic Matter	3%	10%
Nitrogen	82 lbs./ton	110 lbs./ton
Phosphorus	192 lbs./ton	680 lbs./ton
Potassium	270 lbs./ton	527 lbs./ton
Zinc	184 mg/kg	206 mg/kg
Copper	N/A	31 mg/kg
Chromium	N/A	63 mg/kg
Lead	57 mg/kg	81 mg/kg
Nickel	38 mg/kg	66 mg/kg
Cadmium	3.55 mg/kg	2.76 mg/kg

The above results are averages obtained from 14 separate tests performed by the following laboratories: The Ohio State University (sponsored by OEPA), Brookside Labs and Jones & Henry Laboratories

**DORSIDE FARMS LABORATORY ASSOCIATES, INC.**  
SOIL AUDIT AND INVENTORY REPORT

Account of S & L Fertilizer City Whitehouse State OH

Independent Consultant Soil Tech. Inc. Date 08/12/87

Field	1-587-1		M-687-2	
Sample				
Lab No.	SE73058		SE73057	
Total Exchange Capacity (M.E.)	72.37		74.75	
pH	<sup>A</sup> 8.00		<sup>A</sup> 8.00	
Organic Matter (humus) %	10.60		11.40	
ANIONS	Estimated Nitrogen Release lbs/acre	104	108	
	SULFATE--S p.p.m.	1247	1252	
	EASILY EXTRACTABLE	955	965	
	OLSEN			
	PHOSPHATES: Desired Value lbs/acre	375	375	
Value Found	670	715		
Deficit				
EXCHANGEABLE CATIONS	CALCIUM: *Desired Value lbs/acre	17685	20332	
	Value Found	26167	27082	
	Deficit			
	MAGNESIUM: Desired Value lbs/acre	2084	2153	
	Value Found	856	858	
	Deficit	-1228	-1295	
	POTASSIUM: *Desired Value lbs/acre	1129	1166	
	Value Found	508	516	
	Deficit	-621	-650	
	SODIUM: lbs/acre	122	124	
<b>BASE SATURATION PERCENT</b>				
Calcium (60 to 70%)*	90.40		90.50	
Magnesium (10 to 20%)	4.93		4.78	
Potassium (2 to 5%)	0.90		0.87	
Sodium (.5 to 3%)	0.37		0.36	
Other Bases (Variable)	3.40		3.40	
<b>EXCHANGEABLE HYDROGEN (10 to 15%)*</b>	<b>0.00</b>		<b>0.00</b>	
Soluble Salts (p.p.m.)				
Chloride (p.p.m.)				
Extractable	Boron (p.p.m.)	1.18	1.18	
	Iron (p.p.m.)	283	306	
	Manganese (p.p.m.)	77	75	
	Copper (p.p.m.)	10.29	10.07	
	Zinc (p.p.m.)	236.40	241.60	
	Aluminum (p.p.m.)	290	282	
	Molybdenum (p.p.m.)			

a - alkaline soil

**LOOKSIDE FARMS LABORATORY AND ASSOCIATES, INC.**  
SOIL AUDIT AND INVENTORY REPORT

601247-2

Account of S & L Fertilizer City Whitehouse State OH

Independent Consultant Soil Tech. Inc. Date 08/12/87

Field	T-587-1	T-687-2		
Sample				
Lab No.	SE73060	SE73061		
Total Exchange Capacity (M.E.)	74.58	72.16		
pH	<sup>a</sup> 8.00	<sup>a</sup> 8.10		
Organic Matter (humus) %	13.70	11.70		
ANIONS	Estimated Nitrogen Release lbs/acre	119	109	
	SULFATE—S p.p.m.	1316	1188	
	EASILY EXTRACTABLE	759	671	
	OLSEN			
EXCHANGEABLE CATIONS	PHOSPHATES: Desired Value as (P <sub>2</sub> O <sub>5</sub> ) lbs/acre	375	375	
	Value Found	630	736	
	Deficit			
	BRAY II			
CALCIUM: lbs/acre	*Desired Value 20286	19628		
Value Found	26878	26000		
Deficit				
MAGNESIUM: lbs/acre	Desired Value 2148	2078		
Value Found	908	906		
Deficit	-1240	-1172		
POTASSIUM: lbs/acre	*Desired Value 1163	1126		
Value Found	620	552		
Deficit	-543	-574		
SODIUM: lbs/acre	124	134		
<b>BASE SATURATION PERCENT</b>				
Calcium (80 to 70%)*	90.10	90.08		
Magnesium (10 to 20%)	5.07	5.23		
Potassium (2 to 5%)	1.07	0.98		
Sodium (5 to 3%)	0.36	0.40		
Other Bases (Variable)	3.40	3.30		
EXCHANGEABLE HYDROGEN (10 to 15%)*	0.00	0.00		
Soluble Salts (p.p.m.)				
Chloride (p.p.m.)				
Extractable	Boron (p.p.m.)	1.18	1.18	
	Iron (p.p.m.)	281	372	
	Manganese (p.p.m.)	72	79	
	Copper (p.p.m.)	12.33	7.15	
	Zinc (p.p.m.)	247.90	204.20	
	Aluminum (p.p.m.)	330	330	
	Molybdenum (p.p.m.)			

a - alkaline soil

**BIRKSIDE FARMS LABORATORY ASS'N INC.**  
**SOIL AUDIT AND INVENTORY REPORT**

60127

Account of SOIL FERTILIZER City WHITEHOUSE State OH

Service Representative WILLIAM MC KEEEN Date 03-22-56

Field	H.H. P.A.				
Sample	3				
Lab No.	SE60562				
Total Exchange Capacity (M. E.)	31.27				
pH of Soil Sample	7.10				
Organic Matter, Percent	5.30				
ANIONS	NITROGEN: lbs/acre	102			
	SULFATE—S p.p.m.	53			
	PHOSPHATES: Desired Value as (P <sub>2</sub> O <sub>5</sub> ) Value Found lbs/acre Deficit	281 76 -205			
EXCHANGEABLE CATIONS	CALCIUM: Desired Value lbs/acre Value Found Deficit	8311 10948			
	MAGNESIUM: Desired Value lbs/acre Value Found Deficit	701 591 -310			
	POTASSIUM: Desired Value lbs/acre Value Found Deficit	638 442 -176			
	SODIUM: lbs/acre	20			
BASE SATURATION PERCENT					
Calcium (60 to 70%)	} 80%	87.47			
Magnesium (10 to 20%)		7.87			
Potassium (2 to 8%)		1.81			
Sodium (.5 to 3%)		0.56			
Other Bases (Variable)		2.30			
EXCHANGEABLE HYDROGEN (10 to 15%)		0.00			
Salt Concentration (p.p.m.)					
Chlorides (p.p.m.)					
Boron					
Iron (p.p.m.)					
Manganese (p.p.m.)					
Copper (p.p.m.)					
Zinc (p.p.m.)					

BROOKSIDE FARMS LABORATORY ASSOCIATION, INC.  
ENVIRONMENTAL & INDUSTRIAL DIVISION  
NEW KNOXVILLE, OHIO 45871  
Tel: (419) 753-2448

\*\* ANALYSIS REPORT \*\*

REPORT TO:  
S & L Fertilizer  
8636 Yawberg Road  
Whitehouse, OH 43571

FILE NO. : 60129  
DATE RECEIVED: 03/13/86  
DATE REPORTED: 03/21/86  
EID REP: William McKibben

ATTENTION: Stanley Perry

Sample Description	P.A.5	M.P.A.5
Laboratory No.	SE60561	SE60562
CADMIUM - TOTAL	mg/kg 3.55	3.19
LEAD - TOTAL	mg/kg 57	51.5
NICKEL - TOTAL	mg/kg 38	32
ZINC - TOTAL	mg/kg 184	193

Top Soil (Sludge/Silt)  
Soil Sample

BROOKSIDE FARMS LABORATORY ASSN. INC.  
 Environmental & Industrial Division  
 New Knoxville, Ohio 45871  
 (419) 753-2448  
 \*\* ANALYSIS REPORT \*\*

S & L Fertilizer  
 8636 Yawberg Road  
 Whitehouse, OH 43571

File Number: 60129  
 Date recv'd: 08/07/87  
 Date rept'd: 08/20/87

EID Rep: Soil Tech, Inc.  
 Attention: Stanley Perry  
 Submitted By: S & L Fertilizer

Lab Number	SE73050	SE73059	SE73060
Sample Description	SOIL M-587-1	SOIL M-687-2	SOIL T-587-1
DMIUM - TOTAL	mg/kg 3.1	3.1	3.5
AD - TOTAL	mg/kg 87	96	89
NICKEL - TOTAL	mg/kg 87	81	76

*Peter A. Conidaris*  
 Peter A. Conidaris  
 Laboratory Manager

BROOKSIDE FARMS LABORATORY ASSN. INC.  
Environmental & Industrial Division  
New Knoxville, Ohio 45071  
(419) 753-2448  
\*\* ANALYSIS REPORT \*\*

S & L Fertilizer  
8636 Yawberg Road  
Whitehouse, OH 43571

File Number: 60129  
Date recv'd: 08/07/87  
Date rept'd: 08/20/87

EID Rep: Soil Tech, Inc.  
Attention: Stanley Perry  
Submitted By: S & L Fertilizer

Lab Number SE73061  
Sample Description BROOKSIDE FARMS SOIL T-687-2

CADMIUM - TOTAL	ng/kg	2.9
LEAD - TOTAL	mg/kg	85
NICKEL - TOTAL	mg/kg	78

NEW KNOXVILLE, OHIO

08/21

*Peter A. Conidaris*

Peter A. Conidaris  
Laboratory Manager

WITH PERRY  
 LAB NUMBER 21054  
 REFER TO LAB NUMBER TO IDENTIFY  
 SAMPLE IN FUTURE CORRESPONDENCE.  
 SOIL BAG NUMBER W005252

The Ohio State University  
 Research-Extension Analytical Lab  
 The Ohio Agricultural Research and Development Center  
 Wooster, Ohio 44691

## LIME AND FERTILIZER RECOMMENDATIONS

### ANNUAL RECOMMENDATION

YOUR SAMPLE ID	1	YIELD	LIME	NITROGEN	PHOSPHATE	POTASH	COMMENTS
ACRES REPRESENTED	5	GOAL	T/A	N LB/A	P2O5 LB/A	K2O LB/A	SEE BELOW
YEAR CROP							
LAST NO CROP GIVEN							
1997 NO CROP GIVEN							

M MG/K RATIO OF 1.72/1 IS TOO LOW & SHOULD BE CORRECTED BY APPLYING 35 LB MG/A  
 Y SINCE THE CROP FOR THIS YEAR WAS NOT GIVEN, A FERTILIZER RECOMMENDATION CAN NOT BE MADE.

NO LIME IS NEEDED NOW.

TOTAL ZINC	153
TOTAL COPPER	43
TOTAL CHROMIUM	37
TOTAL LEAD	109
TOTAL NICKEL	25
TOTAL CADMIUM	1.34

*Sludge / silt Soil Sample*

IN W PERRY 8636 YAMBERG WHITEHOUSE OH 43571 COUNTY LUCAS RECEIVED SAMPLE 8/7/86				OHIO EPA 1035 DEVLOC DR BOWLING GREEN OH 43402 DATE PRINTED MON AUG 18 1986															
SAMPLE INFORMATION		STANDARD TEST RESULTS							SPECIAL TEST RESULTS										
FLOW DEPTH INCHES	LIME APPLIED IN LAST 2 YRS T/A	pH	LIME TEST INDEX	PHOSPHORUS P lb/A	POTASSIUM K lb/A	CALCIUM Ca lb/A	MAGNESIUM Mg lb/A	CATION EXCHANGE CAPACITY meq/100g	BASE SATURATION			MANGANESE Mn lb/A	IRON Fe lb/A	ZINC Zn lb/A	COPPER Cu lb/A	BORON B lb/A	NITRATES NO <sub>3</sub> -N lb/A	ORGANIC MATTER %	SOLUBILITY Mhc X10
									% Ca	% Mg	% K								
9	0	7.8	70	32	464	9310	214	15	94	4	2.1							5.7	

THIS FINAL REPORT INCLUDES RESULTS FOR ALL STANDARD AND REQUESTED SPECIAL TESTS.

# LIME AND FERTILIZER RECOMMENDATIONS

## MINERAL RECOMMENDATION

LIME NITROGEN PHOSPHATE POTASSIUM  
 T/A N LEV. P2O5 LB/A P2O5 LB/A K2O LB/A  
 YIELD GOAL  
 1987 NO CROP GIVEN  
 1987 NO CROP GIVEN

N MGN RATIO OF 1.44/1 IS TOO LOW & SHOULD BE CORRECTED BY APPLYING 92 LB MG/A  
 Y SINCE THE CROP FOR THIS YEAR WAS NOT GIVEN, A FERTILIZER RECOMMENDATION CAN NOT BE MADE.

NO LIME IS NEEDED NOW.

TOTAL ZINC 222  
 TOTAL COPPER 65  
 TOTAL CHROMIUM 43  
 TOTAL LEAD 31  
 TOTAL NICKEL 54  
 TOTAL CADMIUM 1.94

ANALYZED  
 AUG 20 1986  
 CHIO EEA  
 W.V.D.O.

LAB NUMBER 21059  
 REFER TO LAB NUMBER TO IDENTIFY  
 SAMPLE IN FUTURE CORRESPONDENCE.  
 SOIL BAG NUMBER W005413

YOUR SAMPLE ID 2

ACRES REPRESENTED 5

YEAR CROP

LAST NO CROP GIVEN

1987 NO CROP GIVEN

*Sludae / Sift Soil Sample*

M W PERRY  
 36 YANBERG  
 WHITEHOUSE OH 4371  
 COUNTY LUCAS

OHIO EXP. R. 1035 DEVLCC DR  
 BOWLING GRN OH 43402  
 DATE PRINTED MON. AUG 12, 1986

RECEIVED SAMPLE 8/7/86

SAMPLE INFORMATION		STANDARD TEST RESULTS						SPECIAL TEST RESULTS										
PLOW DEPTH INCHES	LIME APPLIED IN LAST 2 YRS. T/A	PH	LIME TEST INDEX	PHOSPHORUS P lb/A	POTASSIUM K lb/A	CALCIUM Ca lb/A	MAGNESIUM Mg lb/A	BASE SATURATION % Ca	% Mg	% K	MANGANESE Mn lb/A	IRON Fe lb/A	ZINC Zn lb/A	COPPER Cu lb/A	BORON B lb/A	NITRATES NO3-N lb/A	ORGANIC MATTER %	SOLUBLE SALTS lb/100
2	.0	7.8	70	42	509	10000	234	94	3	2.4								7.9

THIS FINAL REPORT INCLUDES RESULTS FOR ALL STANDARDS AND REQUESTED SPECIAL TESTS.



JONES & HENRY LABORATORIES, INC. / 2587 TRACY ROAD, NORTHWOOD, OHIO 43619 / (419) 866-0411

October 26, 1987

S & L Fertilizer  
8636 Yawberg Road  
Whitehouse, Ohio 43571  
ATTN: Mr. Jim Perry

Dear Mr. Perry:

Below are results of analysis of the sample received for examination on October 13, 1987:

Sample: S&L FERT Description: Sample No T-1087  
JHL I.D. AA00255 Client Project No. 107

TEST PARAMETER	UNITS	TEST RESULT	DETECTION LIMIT
CADMIUM	mg/kg	3	2
CHROMIUM	mg/kg	110	5
LEAD	mg/kg	74.7	5
NICKEL	mg/kg	64	
ZINC	mg/kg	620	
SOLIDS, DRY, 104 DEG C	%	93.2	
PHOSPHORUS	mg/kg	3410	1

Please advise should you have questions concerning these data.

Respectfully submitted,

JONES & HENRY LABORATORIES, INC.

*Fred W. Doering*

Fred W. Doering  
President

*NUSOIL*

To: \_\_\_\_\_

LP-2

Water Analysis Report #1454  
ENVIRONMENTAL SERVICES DIVISION - CITY OF TOLEDO

Requested by: Lee Pfouts  
Date: 2/19/88  
Sampled by: Lee Pfouts  
Date: 2/11/88  
Received By: C. Lisciandro  
Date: 2/19/88, 2:10 p.m.  
Tested by: R. Davis and C. Lisciandro  
Date: 2/29/88  
Location Sampled: 1. Toledo Nu-Soil  
2. Monroe Nu-Soil

DATA

<u>Metal</u>	<u>No. 1</u>	<u>No. 2</u>	<u>Minimum Detection Limit</u>	<u>Maximum Concentration (mg/l or ppm)</u>
Arsenic	4.0 ppb	1.0 ppb		5.0
Barium	ND	ND	1.0 ppm	100.0
Cadmium	62 ppb	52 ppb		1.0
Chromium	5 ppb	ND	1.0 ppb	5.0
Lead	1.0 ppb	ND	1.0 ppb	5.0
Mercury	0.5 ppb	ND	0.1 ppb	0.2
Selenium	ND	ND	1.0 ppb	1.0
Silver	ND	ND	1.0 ppb	5.0

Remarks: An extraction procedure toxicity test was performed on each of the samples, and the metals were analyzed by AA.

Date March 2, 1988

Signed Carol Lisciandro  
Carol Lisciandro, Chemist

< = less than  
> = greater than

JAN 05 1990

Environmental Analysis Branch

SUBJECT: Toledo Harbor, Lucas County, Ohio - Proposed Reuse of  
Island 18 Confined Disposal Facility (CDF)

Mr. Michael J. White  
Director of Public Utilities  
Department of Public Utilities  
Division of Water  
City of Toledo  
Water Service Building  
401 South Erie  
Toledo, Ohio 43602

5 JAN 90 08 27

1441 ROOF-NCBM-5

Dear Mr. White:

This pertains to your December 18, 1989 letter regarding our proposed resumption of use of the Island 18 CDF at Toledo Harbor.

Island 18 CDF is a Federal facility which was constructed specifically for the disposal and containment of Toledo Harbor dredged material. As such, its operation and maintenance is the responsibility of the U.S. Army Corps of Engineers, Buffalo District.

The purpose of my December 8, 1989 letter was to solicit, from interested agencies and organizations, environmental concerns regarding the proposed reuse of the facility for dredged material disposal and containment. Any concerns which may surface during the process will be evaluated in an Environmental Assessment, which will address the question of further use of the facility for the disposal and containment of dredged material.

With reference to your research efforts on recycling soil from dredged material contained in the CDF, the Buffalo District is completely amenable to such a program. However, we are not proposing to alter or improve the facility. Rather, we propose to furnish the facility, as is, to Corps of Engineers' contractors, as one alternative for a disposal and containment site for dredged material. I envision that the site will prove to be of economic advantage to a limited group of contractors and then only the required work relatively close to the site. If the city of Toledo is willing to maintain the CDF in accordance with U.S. Army Corps of Engineers standards, I will be willing to convey the Buffalo District's interest to the city of Toledo at

Environmental Analysis Branch

SUBJECT: Toledo Harbor, Lucas County, Ohio - Proposed Reuse of  
Island 18 Confined Disposal Facility (CDF)

no cost. This would allow the city of Toledo to develop and implement a soil recycling program at the facility without regard to possible impacts from Corps of Engineers' activities.

Your comments and concerns are well appreciated.

If you have any comments regarding environmental concerns for the subject project, please contact Mr. Scott Pickard of my Environmental Analysis Branch at (716) 879-4171. Questions or comments pertaining to the proposed reuse of the facility should be directed to Mr. Donald Borkowski, P.E., of my Maintenance and Operations Branch at (716) 879-4284.

Sincerely,  
**BRUCE W. HAIGH**  
**LTC, U.S. ARMY**  
**DEPUTY COMMANDER**

Hugh F. Boyd  
Colonel, U.S. Army  
Commanding

# CITY OF TOLEDO OHIO



PHILIP A. HAWKEY  
CITY MANAGER

**Michael J. White**  
DIRECTOR

DEPARTMENT OF PUBLIC UTILITIES  
DIVISION OF WATER  
WATER SERVICE BUILDING  
401 SOUTH ERIE  
TOLEDO, OHIO 43602

WHITFIELD VAN COTT  
COMMISSIONER

**Robert R. Williams, Acting  
Manager-Water Distribution**  
TELEPHONE (419) 242-1138

December 18, 1989

Hugh F. Boyd III  
Colonel, U.S. Army  
Commanding  
DEPARTMENT OF THE ARMY  
Buffalo District, Corps of Engineers  
1776 Niagara Street  
Buffalo, New York 14207-3199

RE: Proposed Resue of Island 18 for  
the Placement of Dredged Material

Dear Colonel Boyd:

I recently received correspondence from you about future dredging activities in the Toledo Harbor. This correspondence was addressed to Thomas L. Kovacik, who has since left the Utilities Department to work in private industry. As the new Director of Public Utilities, I am also very interested in the Dredging Disposal Program. I have recently sent correspondence to Scott Pickard about the future use of Island 18.

Please address any further correspondence involving the City of Toledo to my address.

Michael J. White, Director  
Department of Public Utilities  
One Government Center, Suite 1500  
Toledo, OH 43604  
(419) 245-1844

Sincerely,

*Michael J. White*  
Michael J. White  
Director of Public Utilities

MJW/ps

JG 01 01 1990

8-NIC... 1989



State of Ohio Environmental Protection Agency

P.O. Box 1049, 1800 WaterMark Dr.  
Columbus, Ohio 43268-0149  
(614) 644-3020 Fax (614) 644-2329

Richard F. Celeste  
Governor

January 22, 1990

Col. Hugh F. Boyd III  
U.S. Army Corps of Engineers  
Buffalo District  
177E Niagara St.  
Buffalo, N.Y. 14207-3199

Dear Col. Boyd:

The Ohio EPA has reviewed the proposal to place dredged material from Toledo Harbor on Island 18. The reuse of this site would be a viable and acceptable alternative to open lake disposal. In spite of the limited capacity, this CDR would provide a temporary solution to a long-term problem. We encourage all efforts to identify alternatives to open lake disposal at Toledo Harbor so that by 1992 all dredged material may be reused or placed upland.

Water quality in ponded areas on Island 18 should be carefully monitored for Clostridium botulinum toxin, and mobility of metals and other contaminants. Steps should be taken to minimize the availability of these toxic contaminants to transient and endemic bird populations.

Much of the material to be dredged is reported to be silt. Therefore, extra care is necessary to prevent erosion.

Provided these precautions are taken, I have no objection to the Island 18 reuse proposal. I appreciate the opportunity to comment on this matter.

Sincerely,

A handwritten signature in cursive script that reads "Richard L. Shank". The signature is written in dark ink and is positioned above the typed name and title.

Richard L. Shank, Ph.D  
Director

2206e



**STATE CLEARINGHOUSE**  
**State of Ohio - Office of Budget and Management**

30 EAST BROAD STREET • 34TH FLOOR • COLUMBUS, OHIO 43266-0411 • (614) 466-0697 / 0698

Date: 90-01-15

U.S. DEPT OF THE ARMY, CORPS OF ENGINEERS  
 1776 NIAGARA STREET, ENVIRONMENTAL ANALYSIS  
 BUFFALO NY 14207-3199

Attention: SCOTT PICKARD

Phone: (716)879-4171

RE: Intergovernmental Review, Environmental Assessment/Impact Statement Completion Letter  
 Project Description: TOLEDO HARBOR, LUCAS COUNTY, OHIO, PROPOSED REUSE OF  
 ISLAND 18, PLACEMENT OF DREDGED MATERIAL - WATER &  
 ASSOCIATED LAND USE & ENVIRONMENT, DECEMBER 1989  
 State Application Identification (SAI) Number: OH891218-~~M939~~-36422

22 JAN 30 10 5

MAIL ROOM RECEIVED

The State Clearinghouse (Single Point of Contact) has reviewed the Environmental Assessment/Impact Statement for the above identified project that is covered by the National Environmental Policy Act of 1969, and any amendments; Intergovernmental Review Process (Presidential Executive Order 12372); Gubernatorial Executive Order authorized under Ohio Revised Code, Section 107.18(A); and/or other pertinent regulations and guidelines.

This document has been simultaneously reviewed by interested state agencies, with a notice to the impacted area clearinghouse(s). Our office may have attached comments for your consideration and/or response.

You should be advised that some of the reviewing state agencies may respond directly to you without submitting their comments through the State Single Point of Contact. We encourage our reviewing agencies to keep in direct contact with issuing agencies on all environmental assessment/impact statement reviews. Therefore, consider their directly generated comments as valid responses.

It is recommended that contact be made with all the commenting agencies. Addresses and phone are available on individual Transmittal Forms and/or contained in a letter received by our agency. The comments which have been generated should become part of the proposal and responded to before a final decision is made regarding this assessment/impact statement.

Should this be a draft proposal, please provide our office with fourteen (14) copies of the final product.

Sincerely,

Larry W. Weaver, State Federal Funds Coordinator  
 Office of Budget & Management

# The University of Toledo



2801 W. Bancroft Street  
Toledo, Ohio 43606

College of Arts and Sciences  
Department of Biology  
(419) 537-2065

RECEIVED  
JAN 10 1990

January 4, 1990

Mr. Scott Pickard  
Department of the Army  
Buffalo District, Corps of Engineers  
1776 Niagara Street  
Buffalo, NY 14207-3199

Re: Proposed reuse of Island 18 for the placement of dredged material.

Dear Mr. Pickard:

Thank you for your letter of December 8th and the request for concerns regarding the reuse of Island 18 for the disposal of dredged material. The proposed project seems excellent. I know of no adverse environmental effects that would result from the disposal of additional dredged material at Island 18. Furthermore, reuse of Island 18 could have positive environmental effects: 1) if such reuse reduced the need for open lake disposal; 2) if such reuse resulted in the situation where the planned confined disposal area, currently proposed for construction adjacent to facility 3, was not needed; and/or 3) if reuse of Island 18 contributed to the implementation of a program for using the dredged material for productive or constructive purposes such as restoration of Woodtick Peninsula and/or a development of a recreational facility such as a water-theme park.

I understand that the Corps has been working actively towards developing reuse alternatives for the dredged material. I would like to thank you for your efforts in these directions. They are needed and are much appreciated.

Sincerely,

A handwritten signature in cursive script that reads "Peter C. Fraleigh".

Peter C. Fraleigh, Ph.D.  
Associate Professor of Biology



U.S. Department of Housing and Urban Development

Columbus Office, Region V  
200 North High Street  
Columbus, Ohio 43215-2499

January 3, 1990

Colonel Hugh F. Boyd III  
Attention: Scott Pickard  
Buffalo District, Corps of Engineers  
Department of the Army  
1776 Niagara Street  
Buffalo, New York 14207-3199

Dear Colonel Boyd:

This is in response to your letter of December 8, 1989, regarding the Corp of Engineers investigation of the reuse of the Federal Confined Disposal Facility (CDF) island (Island 18) for the placement and containment of material dredged from the Toledo Harbor.

The U.S. Department of Housing and Urban Development does not have any information or comments on the proposed dredging and containment of the associated dredged material relative to water quality, sediment quality, environmental planning, recreation, water and associated land use and development plans and policies. We have concluded that the proposed activities do not present any special interests and/or concerns to HUD.

Thank you for the opportunity to participate in the evaluation. If you should require any further input from HUD, I may be reached at FTS 943-5617.

Sincerely,

A handwritten signature in cursive script that reads "Ross S. Carlson".

Ross S. Carlson  
Environmental Officer

RECEIVED  
JAN 5 11 18

U.S. DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT

Ohio Historic Preservation Office

1982 Velma Avenue  
Columbus, Ohio 43211  
614/297-2470

HISTORIC NOBIM-S

29 Dec 89 10 05



OHIO  
HISTORICAL  
SOCIETY  
SINCE 1885

December 22, 1989

Scott Pickard  
Environmental Analysis Branch  
Department of the Army  
Buffalo District, Corps of Engineers  
1776 Niagara Street  
Buffalo, NY 14207-3199

Dear Mr. Pickard:

Re: Proposed Reuse of Islan 18 for the Placement of Dredged Material  
Toledo Harbor, Lucas County, Ohio

This is in response to your correspondence received December 12, 1989 concerning the project noted above. My staff has reviewed the information provided. Based on their recommendation, it is my opinion that the proposed undertaking will have no effect on any properties either listed on or eligible for the National Register of Historic Places. No further coordination on this project is necessary unless the scope of the undertaking changes.

Any questions concerning this matter should be addressed to Catherine Stroup at (614) 297-2470. Thank you for your cooperation.

Sincerely,

W. Ray Luce  
State Historic Preservation Officer

WRL/JGT:jt

# ODNR

OHIO DEPARTMENT OF  
NATURAL RESOURCES

Fountain Square  
Columbus, Ohio 43224

January 19, 1990

Colonel Hugh F. Boyd III  
District Engineer  
Buffalo District, Corps of Engineers  
U.S. Department of the Army  
1776 Niagara Street  
Buffalo, New York 14207-3199

ATTN: Mr. Scott Pickard

RE: Toledo Harbor, Lucas County, Ohio  
Proposed Reuse of Island 18 for the Placement  
of Dredged Material - Water and Associated  
Land Use and Environment

Dear Colonel Boyd:

The Ohio Department of Natural Resources (ODNR) has completed its review of the referenced proposed project to reuse Island 18 for the placement of material dredged from the Toledo Harbor and offer the following comments/concerns as part of the scoping process.

These comments were generated by an inter-disciplinary review in consultation with the Divisions of Wildlife, Geological Survey, Water and other Divisions of the Department. These comments have been prepared under the authority of the Fish and Wildlife Coordination Act (16 U.S.C. 661 et seq.), the National Environmental Policy Act and other applicable laws and regulations.

The project proposes to place material dredged from areas of the Federal navigation channel near the facility (inclusive of the Maumee River and Toledo Outer Harbor) which would economically benefit the dredging, and dredged material disposal and containment operation. Island 18 had an originally projected capacity of 5,000,000 cubic yards of dredged material. It is estimated there is a remaining capacity of 500,000 to 600,000 cubic yards.

It is stated in the opening paragraph that "the reuse is being investigated as an economical alternative of the dredging contractor," but does not relate to the Memorandum of Understanding (MOU) to phase-out open-lake disposal at Toledo. How does this project relate to the MOU and what effect will this have on future harbor dredging?

The sediments upstream of Lake Mile 2 are described as "heavily polluted" and those downstream of that point as "moderately polluted". It is not stated whether the sediments to be dredged are suitable for open-lake disposal. If the sediments are suitable for open-lake disposal, then they should not go to the Island 18 facility or any other CDF in the Toledo Harbor unless an equal amount of material has been removed from the Island 18 and/or other CDFs prior to the placement of dredged material into Island 18.

Richard F. Celeste, Governor

Colonel Hugh F. Boyd III  
January 19, 1990  
Page -2-

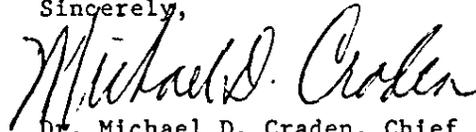
A concern is that botulism problems in Toledo, Cleveland, Huron and other areas have been traced to standing water and silts. If standing water is left on Island 18 from the dredging operation there could be problems with botulism. The Corps should insure that proper management of the facility will take place that will prevent the occurrence of the botulism problem.

Also, this proposal should be analyzed in light of the research by TMACOG and the Toledo-Lucas County Port Authority on the viability of mining the material on Island 18 and combining it with sewage sludge for marketing as a soil conditioner.

We recommend that some thought be given to what is going to be the end use of Island 18 once the placement of dredged material ceases. Will it be managed as a wetland, a recreational area, a by-product site, etc.?

We appreciate the opportunity to provide our concerns/comments as part of the scoping process on this proposed project. If you have any questions or need additional information, please call Mr. Dave Bergman at (614) 265-6410.

Sincerely,



Dr. Michael D. Craden, Chief  
Office of Outdoor Recreation Services

MDC/DMB/cag

cc: Linda Wise, State Clearinghouse  
(Reference SAI NO: OH891218-M939-36422)  
Kent Kroonemeyer, USFWS  
Linda Merchant, Ohio EPA  
Rod Walton, USEPA  
Bill Mattox, Division of Water  
Don Guy, Division of Geological Survey  
Lake Erie Section  
Wildlife Environmental Section  
Bob Lucas, Office of Chief Engineer

Environmental Analysis Branch

SUBJECT: Toledo Harbor, Lucas County, Ohio - Resumption of Use  
of Island 18 Confined Disposal Facility (CDF)

Dr. Michael D. Craden, Chief  
Office of Outdoor Recreation Services  
ATTN: Mr. David Bergman  
Ohio Department of Natural Resources  
Fountain Square  
Columbus, Ohio 43224

12 MAR 90 08 22

MAILROOM-NC51H-5

Dear Dr. Craden:

This responds to your January 19, 1990 letter regarding our proposed reuse of the Toledo Harbor Island 18 CDF.

Relative to your comments on the placement of specific qualities and quantities of dredged material in the CDF, Island 18 was constructed for the disposal of Toledo Harbor dredged material; there are no constraints regarding what dredged material (i.e., sediments classified as "moderately polluted" or "heavily polluted" under Region V USEPA guidelines) may be placed in the CDF. However, Section 148 of Public Law 94-587 requires that the Corps of Engineers maximize the useful life of CDF's. Thus, the Corps of Engineers is authorized to place any Toledo Harbor dredged material into the Island 18 CDF. Sediments lakeward of Lake Mile 2 in Maumee Bay, which are currently classified as "moderately polluted," are suitable for open-lake disposal. We envision that some of these sediments may be placed into the Island 18 CDF (i.e., those which would economically benefit the dredging operation), as well as sediments upstream of Lake Mile 2, which are currently determined to be unsuitable for

Environmental Analysis Branch

SUBJECT: Toledo Harbor, Lucas County, Ohio - Resumption of Use of Island 18 Confined Disposal Facility (CDF)

open-lake disposal. The Island 18 CDF is not an item associated with the existing Memorandum of Agreement (MOA) (Enclosure 1) for the Toledo Harbor Maintenance Dredging Program. Therefore, adjustments to the quantity of dredged material placed in the facility (i.e., whether the material is "heavily polluted" or "moderately polluted") will need to be independently evaluated with regard to the possible advantages to the Federal government.

Regarding your botulism concerns, it has been our experience that CDF's being filled to a level near existing lake levels (just above or below) are more conducive to botulism outbreaks. The lowest point on the Island 18 CDF is approximately 12 feet above existing lake levels. Nevertheless, we are working on a botulism control plan for the facility, which will be implemented during and after dredged material disposal, if necessary. This botulism control plan will be coordinated with USFWS.

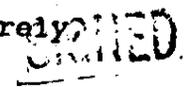
Regarding your concerns about our proposed project's impact on TMACOG's and the Toledo-Lucas County Port Authority's combined research efforts, it should be pointed out that the Island 18 CDF is a Federal facility. As such, the facility's present operation and maintenance is the responsibility of the U.S. Army Corps of Engineers, Buffalo District, until it is turned over to a local cooperator. Although we are amenable to such research efforts, we must recognize that the facility's primary purpose to serve for the disposal and containment of Toledo Harbor dredged material still remains. We have and will continue to cooperate in promoting endeavors leading to the possible reuse of dredged material.

Finally, regarding your inquiries as to the ultimate use of Island 18 CDF, our long-term objective is to transfer operation and maintenance of the facility to a local cooperator who will agree to maintain its integrity in accordance with sound engineering practices. Thus, its ultimate use would be the decision of a local cooperator. If ODNR is interested in managing the facility as a wildlife refuge, we will be willing to explore the transfer of the facility to your agency.

Environmental Analysis Branch

SUBJECT: Toledo Harbor, Lucas County, Ohio - Resumption of Use  
of Island 18 Confined Disposal Facility (CDF)

Your comments are appreciated. If you have any further comments or questions regarding environmental concerns for the subject project, please contact Mr. Scott Pickard of my Environmental Analysis Branch at (716) 879-4171. Questions or comments pertaining to the proposed reuse of the facility should be directed to Mr. Donald Borkowski, P.E., of my Maintenance and Operations Branch at (716) 879-4284.

Sincerely,  


Hugh F. Boyd III  
Colonel, U.S. Army  
Commanding

Enclosure



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION 5

230 SOUTH DEARBORN ST.

CHICAGO, ILLINOIS 60604

22 JAN 1990

REPLY TO THE ATTENTION OF:

Mr. Scott Pickard  
Environmental Analysis Branch  
Department of the Army  
Buffalo District, Corps of Engineers  
1776 Niagara Street  
Buffalo, New York 14207-3199

Dear Mr. Pickard:

We have reviewed your scoping letter regarding the reuse of the Island 18 Confined Disposal Facility (CDF) for the containment of Toledo Harbor sediments. Island 18 was last used in 1978; since that time the dredged material within the facility has consolidated and there is now an estimated 500,000 to 600,000 cubic yards of additional capacity. According to your scoping letter, the material proposed to be placed on Island 18 would be dredged from areas of the Federal navigation channel near the facility, inclusive of the Maumee River and Toledo Outer Harbor.

We have a number of questions about your proposal. These questions need to be addressed as you assess the impacts of the proposal. What would be the specific location(s) of the material to be disposed in the facility? While a portion of the Toledo Harbor sediments are currently being open-lake disposed, Ohio EPA has through the 401 Water Quality Certification process called for the cessation of open lake disposal by 1992. We have supported the state in this call. Will Island 18 be used in order to comply with the conditional 401 Water Quality Certification (i.e. for sediments that are currently open lake disposed) or as a disposal site for sediments that have traditionally been confined?

We would also like a detailed description of the current condition of the Island 18 CDF. Is the CDF fully operational or does it need rehabilitation before additional disposal? What are the conditions on the surface of the CDF? Have, for example, wetlands/wildlife habitat been created at the CDF?

The location within Island 18 where dredge material will be placed should be identified. A map or design plan of the CDF would be helpful. This map or plan could show the depth available for disposal.

In reviewing our files on the Island 18 CDF, it appears that hopper dredges have been utilized traditionally in the filling of the CDF.

Environmental Analysis Branch

SUBJECT: Toledo Harbor, Lucas County, Ohio - Resumption of Use of Island 18 Confined Disposal Facility (CDF)

Regarding existing conditions of the Island 18 CDF, the facility has been maintained and is currently operational. I may require a Contractor to excavate some clay-type material within the facility in order to line the inner perimeter of the confinement dike and ensure dredged material containment. In November 1989, a staff biologist conducted a field survey of the Island 18 CDF. As with all other Buffalo District CDF's, upland as well as wetland-like habitats have developed and evolved within the facility as a result of dredged material disposal. A more detailed description of the facility's environment will be described in the Environmental Assessment for the subject project.

Regarding the facility's distribution of remaining capacity, the western portion of the facility has consolidated more than the eastern portion and, therefore, will accommodate more dredged material. I have enclosed a rough topographic survey to provide an indication of the facility's remaining capacity (Enclosure 1).

A hopper dredge may be used to place material into the facility and during the maintenance dredging operation, overflow would be employed.

Finally, regarding your concerns about the movement of contaminants from the facility, leaching through the confinement dike wall is virtually non-existent, for two reasons. First, the dike core is constructed of clay; no pollutants move through the dike because of its low permeability (in the order of  $10^{-7}$  cm/second). Second, the strong adherence of metals and organics to silt and clay particles in the sediment prevents any significant movement of contaminants from the dredged material. Since water will not move through the dike, discharge of supernatant (effluent) through an overflow weir would take place in a similar fashion found in existing Toledo Harbor CDF. Discharge of suspended sediment in weir overflow would be limited to 100 ppm, or less.

After the Island 18 CDF is filled to capacity and sediments have further consolidated, our long-term objective is to transfer operation and maintenance of the facility to a local cooperator. The local cooperator must agree to maintain the dike's integrity in accordance with sound engineering practices. If it is found to be advantageous, "moderately polluted" dredged material may be placed over "heavily polluted" dredged material in the facility.

Environmental Analysis Branch

SUBJECT: Toledo Harbor, Lucas County, Ohio - Resumption of Use  
of Island 18 Confined Disposal Facility (CDF)

Your comments are appreciated. If you have any further comments or questions regarding environmental concerns for the subject project, please contact Mr. Scott Pickard of my Environmental Analysis Branch at (716) 879-4171. Questions or comments pertaining to the proposed reuse of the facility should be directed to Mr. Donald Borkowski, P.E., of my Maintenance and Operations Branch at (716) 879-4284.

Sincerely,

Hugh F. Boyd III  
Colonel, U.S. Army  
Commanding

Enclosure



# United States Department of the Interior



FISH AND WILDLIFE SERVICE  
Reynoldsburg Field Office  
6950-H Americana Parkway  
Reynoldsburg, Ohio 43068-4115  
(614) 469-6923

IN REPLY REFER TO:

January 11, 1990

Colonel Hugh F. Boyd, III  
District Engineer  
Buffalo District, Corps of Engineers  
1776 Niagara Street  
Buffalo, New York 14207

Attention: Scott Pichard, Environmental Analysis Branch

Dear Colonel Boyd:

This responds to your letter of 12/11/89 requesting our comments on environmental issues associated with the proposed reuse of Island 18 for the placement of dredged material from Toledo Harbor, Ohio.

We would like to offer the following comments on the proposed project:

1. We understand that Island 18 would be reused for the disposal of "heavily polluted" materials from upstream of Lake Mile 2 that are presently considered unsuitable for open-lake disposal, and also for "cleaner" materials from downstream of Lake Mile 2 that are presently considered suitable for open-lake disposal. In 1987, the Ohio Environmental Protection Agency proposed a schedule for the elimination of open-lake disposal by the end of 1991, contingent upon the Toledo-Lucas County Port Authority and the City of Toledo finding reuse alternatives for quantities of dredged materials equivalent to those of the "cleaner" dredged materials that would no longer be open-lake dumped. The Service supports efforts to find appropriate reuse alternatives for dredged materials. However, none of the relatively limited disposal capacity of the existing and/or proposed confined disposal facilities (CDF's) should be used for the disposal of "cleaner" dredged material without absolute assurance that an equivalent amount of "polluted" dredged material will be reused either directly or from one of the CDF's. Perhaps the easiest way to insure that this goal is met is to revise the proposed "reuse" schedule to one in which the total quantity of "cleaner" dredged material to be confined in any year in the CDF's, including Island 18, does not exceed the quantity of "polluted" dredged material reused in the preceding year.
2. The island should be surveyed for colonial nesting birds prior to disposal operations. Steps should be taken to avoid or mitigate any interference with nesting birds.

3. A botulism control plan should be in place prior to disposal operations.
4. The Corps should retain ownership and control the final use of Island 18 after it has been filled. We hope that wildlife habitat (migratory birds) is one of the final uses of the island. Perhaps the creation of nesting habitat for common terns, the erection of artificial structures for cormorant nesting, and the planting of trees for colonial nesting birds might also be considered.
5. Perhaps the Waterways Experiment Station at Vicksburg, Mississippi could become involved with the revegetation of Island 18 when it is full.

These comments have been prepared under the authority of the Fish and Wildlife Coordination Act (48 Stat. 401, as amended; 16 U.S.C. 661 et seq.), the Endangered Species Act of 1973, as amended, and are consistent with the intent of the National Environmental Policy Act of 1969 and the U. S. Fish and Wildlife Service's Mitigation Policy.

ENDANGERED SPECIES COMMENTS: The proposed project lies within the range of the bald eagle, Indiana bat, peregrine falcon, and eastern prairie fringed orchid, Federally listed endangered species. Due to the project type, size, and location, the project, as proposed, will have no effect on these species. This precludes the need for further action on this project as required by the 1973 Endangered Species Act, as amended. Should the project be modified or new information become available that indicates listed or proposed species may be affected, consultation should be initiated.

If you have any questions or we may be of further assistance please contact Mr. Lynn MacLean or Mr. Bill Kurey of this office at 614/469-6923. Thank you for considering our comments.

Sincerely,

  
Kent E. Kroonemeyer  
Supervisor

cc: Chief, Ohio Division of Wildlife, Columbus, OH  
ODNR, Outdoor Recreation Service, (M. Colvin), Columbus, OH  
Ohio EPA, Water Quality Monitoring, L. Merchant, Columbus, OH

Environmental Analysis Branch

SUBJECT: Toledo Harbor, Lucas County, Ohio - Resumption of Use of  
Island 18 Confined Disposal Facility (CDF)

Mr. Kent E. Kroonemeyer  
Field Supervisor  
ATTN: Mr. Lynn MacLean  
U.S. Department of the Interior  
Fish and Wildlife Service  
Reynoldsburg Field Office  
6950-H Americana Parkway  
Reynoldsburg, Ohio 43068-4115

8 MAY 90 12 59  
MAILROOM-NCBIM-S

Dear Mr. Kroonemeyer:

This responds to your January 11, 1990 letter regarding our proposed reuse of the Toledo Harbor Island 18 CDF.

Regarding Comment 1, our intended use of the facility is compatible with its original purpose of construction, which is to use the facility for the disposal and containment of Toledo Harbor dredged material. There are no constraints regarding what dredged material (i.e., sediments classified as "heavily polluted" or "moderately polluted" under extant Region V USEPA Guidelines) may be placed in this facility. However, Section 148 of Public Law 94-587 requires that the Corps of Engineers maximize the useful life of CDF's. The Ohio EPA Section 401 State Water Quality Certification dated January 18, 1990 (Enclosure 1) requires that the open-lake disposal of Toledo Harbor dredged material is to be systematically reduced to zero cubic yards by 1992. Under the Memorandum of Agreement (MOA) dated February 4, 1986 (Enclosure 2), the Toledo Port Authority (local cooperator) must provide a location for this restricted placement of dredged material. The Island 18 CDF is not an item

Environmental Analysis Branch  
SUBJECT: Toledo Harbor, Lucas County, Ohio - Resumption of Use of  
Island 18 Confined Disposal Facility (CDF)

associated with the existing MOA for the Toledo Harbor Maintenance Dredging Program. Therefore, adjustments to the quantity of dredged material placed in the facility (i.e., whether the material is "heavily polluted" or moderately polluted") will need to be independently evaluated with regard to the possible advantages to the Federal government.

Regarding Comment 2, it is anticipated that disposal operations at the facility will not be implemented until late July. If this is the case, any adverse impacts to colonial nesting birds would be minimized. However, we plan to conduct a biological survey of the facility before resuming its use in order to ensure that dredged material disposal would occur in an environmentally acceptable manner. This survey would include, among other items, an inventory of colonial nesting birds. If the facility is found to be inhabited by significant nesting bird populations and that use of the facility would significantly affect them (i.e., interfere with nesting and brooding), appropriate measures would be taken.

Regarding Comment 3, it has been our experience that CDF's being filled to a level near existing lake levels (just above or just below) are more conducive to botulism outbreaks. The lowest point on the Island 18 is approximately 12 feet above existing lake levels. Nevertheless, a botulism control plan is being developed for the facility and will be implemented (if necessary) during and after dredged material disposal. The botulism control plan will be coordinated with your office.

Regarding Comment 4, it is our long-term objective to transfer operation and maintenance of the facility to a local cooperator who will agree to maintain its structural integrity in accordance with sound engineering practices. If USFWS is interested in managing the facility as a wildlife refuge, we will be willing to explore the transfer of the facility to your agency.

Regarding Comment 5, our current plan is to allow for the island to naturally revegetate after it has been filled. However, in consultation with the Waterways Experiment Station, we may initially employ some vegetative "priming" practices on the island in order to accelerate the natural succession process. Your comments on endangered species are noted and we concur.

Environmental Analysis Branch

SUBJECT: Toledo Harbor, Lucas County, Ohio - Resumption of Use of  
Island 18 Confined Disposal Facility (CDF)

Thank you for your comments. If you have any further comments or questions regarding environmental concerns for the subject project, please contact Mr. Scott Pickard of my Environmental Analysis Branch at (716) 879-4171. Questions or comments pertaining to the proposed reuse of the facility should be directed to Mr. Donald Borkowski, P.E., of my Maintenance and Operations Branch at (716) 879-4284.

Sincerely,

SIGNED

Hugh F. Boyd III  
Colonel, U.S. Army  
Commanding

Enclosures

APPENDIX EA-B

SECTION 404 (a) PUBLIC NOTICE  
AND  
SECTION 404 (b) (1) EVALUATION



REPLY TO  
ATTENTION OF

CENCB-PE-PR

**DEPARTMENT OF THE ARMY**  
BUFFALO DISTRICT, CORPS OF ENGINEERS  
1776 NIAGARA STREET  
BUFFALO, NEW YORK 14207-3199

**PUBLIC NOTICE**

TOLEDO HARBOR  
LUCAS COUNTY, OHIO  
OPERATION AND MAINTENANCE

**DREDGING AND DISPOSAL OF DREDGED MATERIAL  
AT ISLAND 18 CONFINED DISPOSAL FACILITY**

This Public Notice has been prepared and distributed pursuant to Section 404(a) of the Clean Water Act (33 USC 1344). Its purpose is to specify what fill materials would be discharged into waters of the United States by implementation of the proposed action. This notice provides the opportunity for any person who may be affected by such a discharge to submit comments or request a public hearing.

A Section 404(b)(1) Evaluation for the discharge of dredged material into the Island 18 Confined Disposal Facility (CDF), Toledo Harbor, Ohio, has been prepared pursuant to the Clean Water Act, and is attached to this Public Notice. Preliminary assessment of the impacts of the discharge (as discussed in the Section 404(b)(1) Evaluation applying the Guidelines for Specification of Disposal Sites for Dredged or Fill Material in 40 CFR 230) concludes that the proposed action would not cause unacceptable disruption to the water quality uses of the affected aquatic ecosystem.

The Toledo Harbor Federal navigation project is illustrated in Figure 1. The U.S. Army Corps of Engineers, Buffalo District, proposes to dredge the Federal navigation channels of Toledo Harbor and place the dredged material into the existing Island 18 CDF, which is located in Toledo Harbor, approximately 400 feet north and adjacent to the Federal navigation channel near Lake Mile 1 (Figure 2). The purpose of the dredging is to provide for safe commercial navigation.

The proposed operation and maintenance plan would provide for routine dredging of Toledo Harbor Federal navigation channels and subsequent discharge of the dredged material into the Island 18 CDF. The action would involve the dredging of an undetermined quantity of shoal material of which the placement into the Island 18 facility is determined to be of economic advantage to the maintenance dredging operation. The quality of the material to

be placed in the facility would either be classified as "Moderately Polluted" (suitable for open-lake disposal) or "Heavily Polluted" (unsuitable for open-lake disposal) under existing U.S. Environmental Protection Agency (USEPA) sediment quality Guidelines for the Pollutional Classification of Great Lakes Harbor Sediments (USEPA 1977). A contracted cutterhead, clamshell or other type of dredge would be used to perform the designated work. Suspended sediment within the decanted supernatant (effluent) would be discharged through the facility's overflow weir and would be limited to concentrations of 100 parts per million (ppm), or less. Dredged material discharge would be scheduled to occur after mid-July in order to minimize, to the maximum extent practicable, significant impacts to colonial nesting birds in the facility. If required, botulism control measures relative to an existing Botulism Control Management Plan (refer to Appendix EA-C) would be implemented during or after dredged material disposal into the facility. Dredged material disposal into the facility would be completed in approximately 90 days. Disposal operations may occur over an undetermined number of years until the facility is filled to capacity. When filled to capacity, the facility will be turned over to a local cooperator which will be required to maintain its structural integrity. If not developed for other uses, the facility will be allowed to naturally revegetate. Limited vegetation plantings may be performed in order to accelerate the natural succession process.

The Federal navigation channel sediments proposed to be dredged and placed in the Island 18 CDF are comprised primarily of silts and clays. Channel sediments lakeward of Lake Mile 2 (refer to Figure 1) have been classified overall as "Moderately Polluted" and those upstream of Lake Mile 2 have been classified overall as "Heavily Polluted" under extant U.S. Environmental Protection Agency (USEPA), Region V, Guidelines for the Pollutional Classification of Great Lakes Harbor Sediments (USEPA 1977). Section 2.4 of the attached Section 404(b)(1) Evaluation discusses the quality of these sediments in further detail.

The Island 18 CDF is a 132-acre diked enclosure originally constructed for the disposal of Toledo Harbor dredged material. The confinement dike is comprised of three berms, of which the third and innermost has a crest height of +23 feet LWD. It is constructed of a clay core capped with topsoil which has been fertilized and mulched. The facility was last used for dredged material disposal in 1977; material has since consolidated and provided an estimated 560,000 cubic yards of additional capacity.

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<sup>1</sup>Low Water Datum (LWD) is 568.6 feet above Mean Water Level at Father Point, Quebec, Canada (International Great Lakes Datum [IGLD] 1955).

The latest published version of the National Register of Historic Places has been consulted. There are no registered properties or properties listed as being eligible for inclusion therein that would be affected by this project. By this notice, the National Park Service is advised that presently unknown archaeological, scientific, or historical data may be lost or destroyed by the proposed work to be accomplished.

Based on the review of available environmental data, I have determined that the proposed work would not affect any species proposed or designated by the U.S. Department of the Interior as habitat of any such species. Therefore, unless additional information indicates otherwise, no additional formal consultation pursuant to Section 7 of the Endangered Species Act Amendments of 1978 will be undertaken with the U.S. Fish and Wildlife Service.

This project is being reviewed under the following applicable laws:

(a) National Environmental Policy Act, as amended, 42 USC 4321, et seq.

(b) Clean Air Act, as amended, 42 USC 7401, et seq.

(c) Clean Water Act, as amended (Federal Water Pollution Act), 33 USC 1251, et seq.

(d) Water Protection and Flood Prevention Act, 16 USC 1001, et seq.

(e) Fish and Wildlife Coordination Act, as amended 16 USC 661, et seq.

(f) Endangered Species Act, as amended, 16 USC 1531, et seq.

(g) Land and Water Conservation Fund Act, as amended, 16 USC 4601-11, et seq.

(h) Federal Water Project Recreation Act, as amended, 16 USC 406-1(12), et seq.

(i) Archaeological and Historical Preservation Act, as amended, 16 USC 469, et seq.

(j) National Historic Preservation Act, as amended, 16 USC 470a, et seq.

(k) River and Harbor Act, as Amended, 33 USC 401, et seq.

A Water Quality Certification (or waiver thereof) from the Ohio Environmental Protection Agency (OEPA) is required for this action. By this Section 404(a) Public Notice, the U.S. Army Corps of Engineers is requesting that the OEPA issue State Water Quality Certification, or waiver thereof, in accordance with Section 401 of the Clean Water Act.

This Public Notice is published in conformance with Title 33 Code of Federal Regulations 209.145. Copies of this Public Notice have been furnished to the following Federal, State, and local agencies, and organizations:

Federal

Advisory Council on Historic Preservation  
Federal Emergency Management Administration  
Federal Maritime Commission  
U.S. Department of Agriculture - Forest Service  
U.S. Department of Agriculture - Soil Conservation Service  
U.S. Department of Commerce - National Oceanic and  
Atmospheric Administration  
U.S. Department of Energy  
U.S. Department of Health and Human Services  
U.S. Department of Housing and Urban Development  
U.S. Department of the Interior  
U.S. Department of the Interior - Fish and Wildlife Service  
U.S. Department of the Interior - National Park Service  
U.S. Department of Transportation  
U.S. Department of Transportation - Coast Guard  
U.S. Environmental Protection Agency

State

Honorable Richard F. Celeste  
Ohio Department of Natural Resources  
Ohio Environmental Protection Agency  
Ohio Historic Preservation Office  
Ohio State University  
State Clearinghouse

Local

Honorable Donna Owens  
City of Toledo  
Toledo-Lucas County Port Authority  
Toledo-Lucas County Plan Commissions  
Toledo Metropolitan Area Council of Governments  
University of Toledo

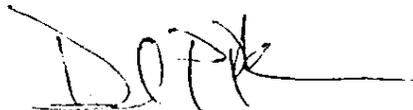
Organizations

The Center for the Great Lakes  
Ducks Unlimited  
Great Lakes Commission  
Great Lakes Tomorrow  
Great Lakes United  
Hull Consulting  
Lake Carriers Association  
League of Woman Voters  
Maumee Bay Audubon Society  
National Wildlife Federation  
Northwest Ohio Natural Resources Council  
Ohio Environmental Council  
Sierra Club  
Trout Unlimited

Any interested parties and/or agencies desiring to express their views concerning the proposed discharge may do so by filing their comments, in writing, no later than 30 days from the date of issuance of this notice. A lack of response will be interpreted as meaning that there is no objection to the proposed discharge.

Any person who has an interest which may be affected by the discharge of this material may request a public hearing. The request must be submitted in writing to the District Commander within 30 days of the date of this notice and must clearly set forth the interest which may be affected, and the manner in which the interest may be affected, by this activity.

Correspondence pertaining to this matter should be addressed to the District Commander, U.S. Army Corps of Engineers, Buffalo District, 1776 Niagara Street, Buffalo, New York, 14207-3199, ATTN: CENCB-PE-PR. If you have any questions or require additional information relative to this project, please contact Mr. Scott W. Pickard of my Environmental Analysis Section at telephone number (716) 879-4171.



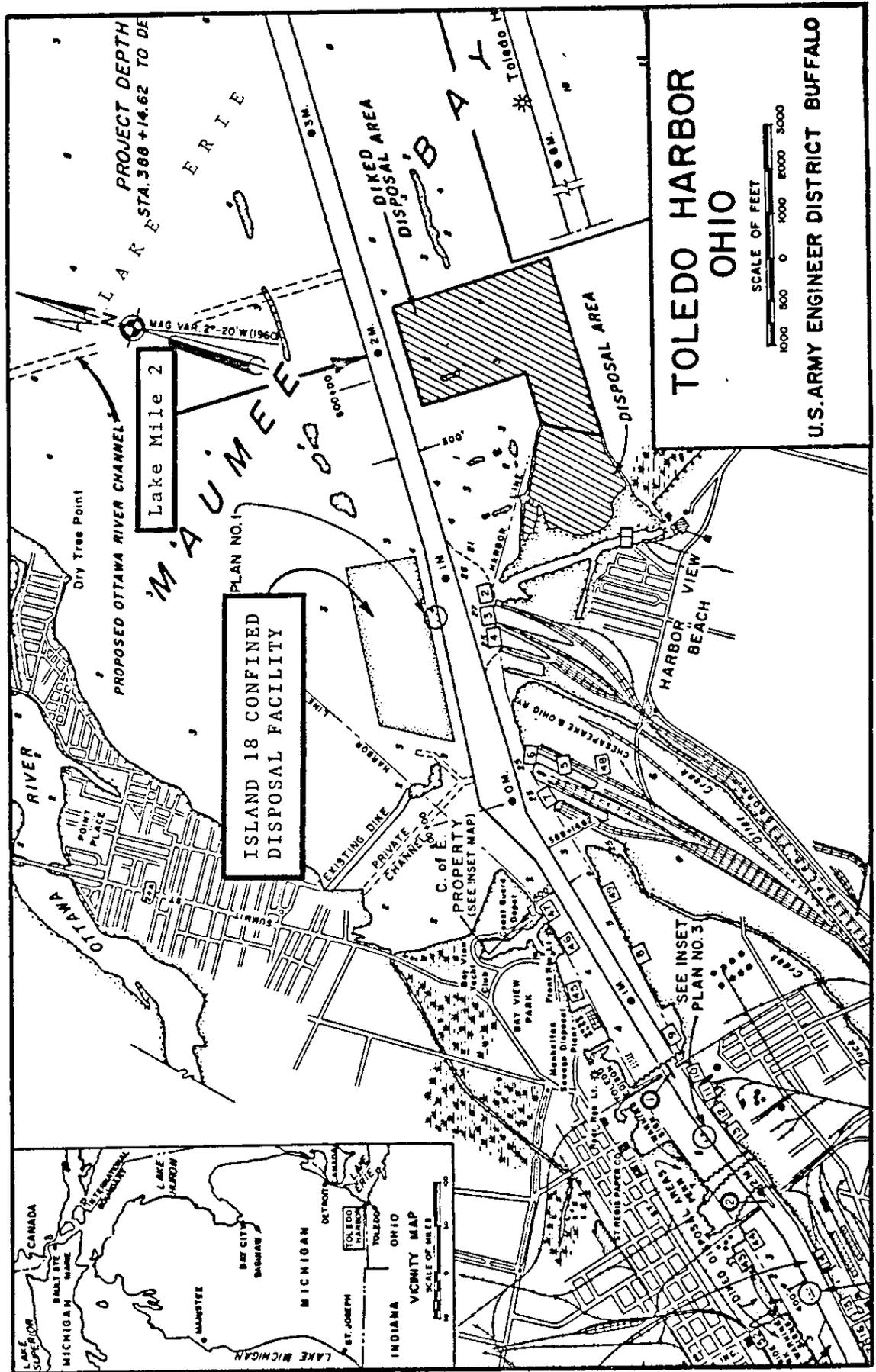
DAVID P. PLANK  
Major, U.S. Army  
Acting District Commander

Enclosure

**NOTICE TO THE POSTMASTER:** It is requested that this notice be conspicuously displayed for 30 days from the date of issuance.



FIGURE 2. Toledo Harbor, Lucas County, Ohio - Island 18 Confined Disposal Facility (CDF).



## SECTION 404(b)(1) EVALUATION

TOLEDO HARBOR  
LUCAS COUNTY, OHIO  
OPERATION AND MAINTENANCE

DREDGING AND DISPOSAL OF DREDGED MATERIAL  
AT ISLAND 18 CONFINED DISPOSAL FACILITY

### 1. INTRODUCTION

1.1 Shoaling in the Federal navigation channels of Toledo Harbor impedes commercial navigation. Dredging restores these channels to their authorized project depth and provides for safe commercial navigation. Dredging creates a need for a suitable disposal site for the associated dredged material.

1.2 Section 404(b)(1) of the Clean Water Act (33 USC 1344) requires that disposal sites and dredged or fill material to be discharged into navigable waters of the United States be evaluated through the application of guidelines developed by the Administrator of the U.S. Environmental Protection Agency (USEPA) in conjunction with the Secretary of the Army. The purpose of this Section 404(b)(1) Evaluation is to assess the impacts of the disposal of dredged material from the Federal navigation channels of Toledo Harbor at the existing Island 18 Confined Disposal Facility (CDF) in Toledo Harbor.

### 2. PROJECT DESCRIPTION

#### 2.1 Location.

2.1.1 Toledo Harbor is located in Lucas County, Ohio, and is situated along the southwestern shore of the Western Basin of Lake Erie, at the mouth of the Maumee River, approximately 110 miles west of Cleveland, Ohio, and 40 miles south of Detroit, Michigan (Figure 1).

2.1.2 The existing Island 18 CDF is situated in Maumee Bay near the mouth of the Maumee River, approximately 400 feet north, and adjacent and parallel to the existing Toledo Harbor Federal navigation channel near Lake Mile 1 (Figure 2).

#### 2.2 General Description.

2.2.1 **The Proposed Action** - Shoaling and sediment deposition processes in the Maumee River and Bay create the need for dredging of the existing Federal navigation channels. Major sediment accumulations in the Federal navigation channel have their source in suspended sediment load from the Maumee River. Primary contributors to the suspended sediment load include surface water runoff, bank and shoreline erosion along the river,

and dissolved constituents from, agricultural, industrial and municipal activities in the Maumee River Basin.

2.2.2 Maintenance dredging of the Federal navigation channels of Maumee River is performed annually. Since 1974, over 958,000 cubic yards of sediment have been dredged annually and deposited at various disposal sites. From 1983 through 1988, annual dredging quantities from Toledo Harbor have averaged about 780,000 cubic yards. Table 1 summarizes annual Federally contracted dredged quantities and their disposal sites from 1978 through 1989.

2.2.3 The proposed operation and maintenance plan would provide for routine dredging of Toledo Harbor Federal navigation channels to authorized project depth, and subsequent discharge of the dredged material into the Island 18 CDF. The action would involve the dredging of an undetermined quantity of shoal material of which the placement into the Island 18 CDF is determined to be of economic advantage to the maintenance dredging operation. The quality of the dredged material to be placed in the facility would either be classified overall as "Moderately Polluted" (and suitable for open-lake disposal) or "Heavily Polluted" (and unsuitable for open-lake disposal) under existing USEPA sediment quality guidelines. A contracted cutterhead, clamshell or other type of dredge would be used to perform the designated work. Suspended sediment within the decanted supernatant (effluent) would be discharged over the facility's overflow weir and would be limited to concentrations of 100 parts per million (ppm), or less. Dredged material discharge would be scheduled to occur after mid-July in order to minimize, to the maximum extent practicable, significant impacts to colonial nesting birds in the facility. If required, botulism control measures relative to an existing Botulism Control Management Plan (Appendix EA-C of this EA) would be implemented during or after dredged material disposal into the facility. Dredged material disposal operations at the facility would be completed in approximately 90 days. Disposal operations may occur over an undetermined number of years until the facility is filled to capacity. When the facility is filled to capacity, it will be turned over to a local cooperator which will be required to maintain its structural integrity. If not developed for other uses, the facility will be allowed to revegetate. Limited vegetation plantings may be performed in order to accelerate the natural succession process.

### 2.3 Authority and Purpose.

2.3.1 The existing Federal navigation project at Toledo Harbor, as well as its operation and maintenance, was authorized by the River and Harbor Acts of 1899, 1910, 1950, 1958 and 1960.

## 2.4 General Description of the Dredged Material.

2.4.1 **General Characteristics of the Sediments** - Sampling and testing of sediments within the Toledo Harbor Federal navigation channels was last performed in 1988 (T.P. Associates International, Inc. 1988). Particle size and bulk chemical (inorganic and organic) analyses, and bioassays were performed in order to evaluate the quality of the sediments. The sediment sampling sites for this testing program (inclusive of Lake Approach and River Channels) are shown in Figure 3. Sediment Sampling Sites R-7-M through R-M-1, and O-M through L-7-M, represent the River and Lake Approach Channels, respectively.

2.4.2 Particle size analysis of all sediment samples collected from Toledo Harbor Federal navigation channels (refer to Table 2) indicate that they are composed primarily of silts and clays.

2.4.3 The results of bulk inorganic analysis of the sediment samples are presented in Table 3. Table 4 presents the pollutional classifications of the inorganic parameters measured in these sediments samples, relative to USEPA, Region V, Guidelines for the Pollutional Classification of Great Lakes Harbor Sediments listed in Table 5 (USEPA 1977). The bulk inorganics data classified all channel material upstream of Lake Mile 2 (refer to Figure 1) overall as "Heavily Polluted." Sediments at these sampling sites showed "Heavily Polluted" levels of Arsenic, Barium, Cyanide and Phosphorus, and sediments at all river sampling sites showed "Heavily Polluted" or "Moderately Polluted" levels of Chemical Oxygen Demand (COD). Copper was classified at "Moderately Polluted" levels at most of the sampling sites. Sediments at most sampling sites were classified either "Moderately Polluted" or "Heavily Polluted" with respect Ammonia, Iron, Manganese, Total Kjeldahl Nitrogen, Volatile Residues and Zinc. Some sampling sites showed "Moderately Polluted" levels of Chromium, Lead and Nickel, and a few showed "Moderately Polluted" or "Heavily Polluted" levels of Oil/Grease. These sediments are currently placed in the existing Toledo Harbor CDF just to the east of the Maumee River mouth (shown in Figure 2). All channel material lakeward of Lake Mile 2 is classified overall as "Moderately Polluted" and suitable for open-lake disposal. Sediments at these sampling sites also showed "Heavily Polluted" levels of Arsenic, Barium, Cyanide and Phosphorus, and sediments at all river sampling sites showed "Heavily Polluted" or "Moderately Polluted" levels of Chemical Oxygen Demand (COD). Sediments at all sampling sites showed "Moderately Polluted" levels of Copper, Manganese, Nickel, Nitrogen, Total Kjeldahl Nitrogen and Zinc. Sediments at most of these sampling sites were classified as "Moderately Polluted" with respect to Iron and Volatile Solids. All other parameters tested in these sediment samples showed "Nonpolluted" levels.

2.4.4 Bulk organic analysis of the sediment samples detected the following Polynuclear Aromatic Hydrocarbons (PAH's) at most of the lake sampling sites (lakeward of Lake Mile 2): Phenanthrene

and Pyrene. Flouranthene was detected at two lake sampling sites. The following PAH's were detected in sediments at the majority of river sampling sites (upstream of Lake Mile 2): Phenanthrene, Pyrene, Flouranthene and Anthracene. Benzo(a)Anthracene, Benzo(a)Pyrene, Chrysene and Naphthalene were detected in sediments at some of these sampling sites. Flourene and Di-n-octyl Phthalate were each detected in sediments at a single sampling site. No Purgeable Hydrocarbons, Organochlorine Pesticides or Polychlorinated Biphenyls (PCB's) were detected in any of the lake or river sediment samples.

2.4.5 Acute toxicity tests (bioassays) were performed on the Federal navigation channel sediment samples in order to evaluate the toxicological effects of the sediments on select test species. The test species utilized in the bioassay included the fathead minnow (Pimephales promelas), burrowing mayfly nymph (Hexagenia limbata) and a zooplankton (Daphnia magna). These tests showed low mortalities to fathead minnows at all sediment sampling sites, which classified the sediments as "nonpolluted" with respect to fathead minnow mortality (Figure 4; for bioassay pollutional classifications, refer to Table 6). Daphnid bioassays produced mostly low mortalities, but showed moderate mortalities at select sampling sites, thus classifying the sediment samples as "nonpolluted" or "moderately polluted" with respect to their mortalities. Moderate mortalities of mayfly nymphs were detected at most of the sampling sites, with higher mortalities at two River Channel sampling sites. These mortalities classified the sediment samples as "moderately polluted" or "heavily polluted."

2.4.6 **Quantity of Sediments** - An undetermined quantity of material determined to be of economic advantage would be dredged from the Toledo Harbor Federal navigation channels and placed in the Island 18 CDF.

2.4.7 **Source of Sediments** - The material would be dredged from the Federal navigation channels of Toledo Harbor.

## 2.5 Description of the Proposed Discharge Site.

2.5.1 **Location** - The proposed dredged material deposition and weir overflow discharge would take place at the existing Island 18 CDF in Toledo Harbor, which is situated in Maumee Bay near the mouth of the Maumee River, approximately 400 feet north, adjacent and parallel to the existing Toledo Harbor Federal navigation channel near Lake Mile 1 (refer to Figure 2).

2.5.2 **Size of Site** - The Island 18 CDF is a 132-acre diked enclosure (150 acres total). Figure 5 presents a project condition survey of the facility taken in 1977. Based upon this survey, an estimated 590,000 cubic yards of capacity remain. Of this total, approximately 327,000 and 261,000 cubic yards are allocated within the western and eastern halves of the facility, respectively (USAED, Buffalo 1990).

2.5.3 **Type of Site** - The existing Island 18 dredged material disposal site is confined.

2.5.4 **Type of Habitat** - The Island 18 CDF has developed wetland habitats within its confines, which is typical for these types of facilities between periods, as well as after the cessation, of dredged material disposal. In consultation with the U.S. Fish and Wildlife Service (USFWS 1990, Personal Communication), wetland habitat within the facility was classified overall as a palustrine, emergent, persistent type. The site possesses a saturated, dredged spoil substrate, and is dike impounded. The above classification is not exclusive throughout the site, but is inclusive of various wetland types. The western approximate one-third portion of the facility, which is also one of the lowest (approximately 16.5 feet above LWD) and most saturated portions, is comprised primarily of palustrine, persistent emergent/submergent, wetland habitat. West of this area, existing elevations in the facility increase towards the center, then decrease eastward to the northeast dike. Accordingly, habitat throughout most of the remaining two-thirds of the facility has developed into a palustrine, scrub-shrub/forested wetland habitat. No existing ponding water was observed within the facility during a November 1989 field investigation. However, the extensive cattail stand in the western approximate one-third portion, which is colonized with an extensive algal mat (probably *Cladophora* spp.), indicates that the site was inundated in the spring and early to mid-summer seasons, presumably as a result of rainfall and the facility's containing capabilities. An August 1984 aerial photograph of the CDF shows ponding water in this area. This ponding area, when present, provides resting and feeding habitat for local and migratory waterfowl species. No known botulism outbreaks have occurred at the facility. Subsection 2.6 of the EA includes discussions on the habitat within the Island 18 CDF in further detail. Relatively shallow, warmwater, mud-bottom habitat surrounds the Island 18 CDF.

2.5.5 **Timing and Duration of Discharge** - The specific timing and duration of the disposal operations at the Island 18 CDF relative to the proposed action would in part be controlled by the Corps of Engineers' Contractor, and the limitations of their dredging and disposal equipment and workload. The dredging and discharge operation would likely occur after mid-July and would be completed in approximately 90 days. During the period of discharge operations, the barge scow would make an undetermined number of trips (depending on capacity) to the facility in order to dispose of the dredged material.

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<sup>1</sup>Low Water Datum, elevation 568.6 feet above Mean Water Level at Father Point, Quebec, Canada (International Great Lakes Datum [IGLD] 1955).

## 2.6 Description of the Discharge Method.

2.6.1 The proposed dredging would employ a cutterhead, clamshell or other dredge type. The excavated Federal navigation channel sediments would be loaded on scows for transport to the Island 18 CDF. Upon arrival at the disposal site, dredged material from the barge scows would be hydraulically pumped or mechanically placed into the facility. Effluent would be discharged through the facility's overflow weir, when required.

## 3. **FACTUAL DETERMINATIONS**

### 3.1 Physical Substrate Determinations.

3.1.1 **Substrate Elevation and Slope** - Figure 5 presents a project condition survey of the facility taken in 1977. This survey indicates that an estimated 590,000 cubic yards of additional capacity remain within the facility. Overall, the western portion of the facility has consolidated most, and accordingly, contains the majority of the facility's lower elevations. According to the 1977 survey, fill elevations in this portion range from about 16.1 - 16.6 feet above LWD along the interior of the west dike, to about 20.9 - 25.2 feet above LWD near the center of the facility. Fill elevations in the eastern portion of the facility range from about 15.2 - 16.8 feet above LWD along the interior of the northeast dike, to about 20.9 - 25.2 feet above LWD near the center. Generally, fill elevations slope upward from the opposite western and northeastern ends, to the highest areas near the center of the facility.

3.1.2 **Sediment Type** - Physical testing of the sediments sampled from Toledo Harbor Federal navigation channels (T.P. Associates, International, Inc. 1988; see Subsection 2.4) indicates that the sediments proposed to be placed in the Island 18 CDF consist primarily of silts and clays. This testing also suggests that the material within the confines of the Island 18 CDF also consists primarily of silts and clays, since only Toledo Harbor Federal navigation channel material has been historically disposed in the facility. Thus, with respect to particle size, the sediments are compatible.

3.1.3 **Dredged Material Movement** - The sediments proposed to be placed in the existing Island 18 CDF would remain confined within the facility.

3.1.4 **Physical Effects on Benthos** - The deposition of dredged sediments into the existing Island 18 CDF would result in the smothering and subsequent mortality of some benthic macroinvertebrates residing in the substrate within the facility (refer to Subsection 2.5 of the EA). The clogging of gill filaments by suspended sediment particles may also account for some benthic mortality. After burial, some upward migration of

surviving benthic macroinvertebrates may occur. Lateral migrations from surrounding benthic communities would contribute most to the recolonization of the impacted areas. Benthic fauna residing in the dredged material would also play a role in benthic recolonization.

3.1.5 **Other Effects** - Some compaction of the existing substrate within the Island 18 CDF would occur as a result of the dredged material discharge.

### 3.2 Water Circulation and Salinity Determinations.

#### 3.2.1 **Water:**

(a) **Salinity** - Salinity determinations are not applicable to this Section 404(b)(1) Evaluation since the Island 18 CDF is located in fresh water.

(b) **Chemistry** - The results of sediment testing performed by T.P. Associates International, Inc. (1988) on Toledo Harbor Federal navigation channel sediments are discussed in Subsection 2.4 of this Section 404(b)(1) Evaluation. Some very slight changes in water chemistry may occur in the immediate vicinity of minor spillages of supernatant from barge scows during the transport of dredged material to the Island 18 CDF, and in the vicinity of the effluent discharged through the overflow weir. No significant degradation of water chemistry would occur as a result of the proposed discharge of sediments into the Island 18 CDF. No significant alterations in water pH would be expected as a result of the proposed discharge.

(c) **Clarity** - Some very minor spillage of supernatant from the barge scows during the transport of dredged material to the Island 18 CDF may temporarily decrease surface water clarity within the immediate vicinity of the discharge. Surface water clarity may also be slightly decreased in the vicinity of the effluent discharged through the overflow weir. No significant impacts would be anticipated with regard to water clarity as a result of the proposed discharge.

(d) **Color** - Some very minor spillage of supernatant from the barge scows during the transport of dredged material to the Island 18 CDF may temporarily alter surface water color within the immediate vicinity of the discharge. Surface water color may also be slightly altered in the vicinity of the effluent discharged through the overflow weir. No significant impacts would be anticipated with regard to water color as a result of the proposed discharge.

(e) **Odor** - Minimal malodors associated with the dredged material during discharge would be expected. Such odors would not be expected to be in excess of what normally occurs during regular dredged material discharge operations.

(f) Taste - No impacts with regard to water taste would occur as a result of the proposed discharge.

(g) Dissolved Gas Levels and Nutrients - Some very minor spillage of supernatant from barge scows during the transport of dredged material to the Island 18 CDF may temporarily alter dissolved gas levels and nutrients within the immediate vicinity of the discharge. Dissolved gas levels and nutrients may also be slightly altered in the vicinity of the effluent discharged through the overflow weir. No significant impacts would be anticipated with regard to dissolved gas levels as a result of the proposed discharge. With respect to nutrients, refer to the results of the testing of the sediments to be discharged are discussed in Subsection 2.4 of this Section 404(b)(1) Evaluation. No significant adverse impacts with regard to nutrients would be anticipated as a result of the proposed discharge.

### 3.2.2 Current Patterns and Circulation:

(a) Current Patterns and Flow - No impacts would occur as a result of the proposed discharge.

(b) Velocity - No impacts would occur as a result of the proposed discharge.

(c) Stratification - No impacts would occur as a result of the proposed discharge.

(d) Hydrologic Regime - No impacts would occur as a result of the proposed discharge.

3.2.3 Normal Water Level Fluctuations - No impacts would occur as a result of the proposed discharge.

3.2.4 Salinity Gradients - Not applicable.

3.2.5 Actions Taken to Minimize Impacts. The Island 18 diked structure was designed to retain sediment particulates and associated pollutants within the facility; the Contractor would be required to handle the dredged material in a manner which would minimize spillage of supernatant from barge scows during the transport of dredged material to the Island 18 CDF; and the Contractor would be required to minimize accidental spills of fuel, oil and/or greases.

### 3.3 Suspended Particulate/Turbidity Determinations.

3.3.1 Expected Changes in Suspended Particulates and Turbidity in the Vicinity of the Discharge Site - The results of the testing of the sediments proposed to be discharged are discussed in Subsection 2.4 of this Section 404(b)(1) Evaluation. Some very minor spillages of supernatant from the barge scows during the transport of dredged material to the Island 18 CDF may temporarily increase surface water suspended particulates and

turbidity within the immediate vicinity of the discharge. Suspended particulates and turbidity may also be slightly increased in the vicinity of the effluent discharged through the overflow weir. Suspended sediment within the effluent would be limited to concentrations of 100 ppm, or less. No significant impacts on suspended particulates and turbidity in the water column would be expected to occur as a result of the proposed discharge.

### 3.3.2 Effects on Chemical and Physical Properties of the Water Column:

(a) Light Penetration - Some very minor spillages of supernatant from the barge scows during the transport of dredged material to the Island 18 CDF may temporarily decrease surface water column light penetration within the immediate vicinity of the discharge. Surface water light penetration may also be slightly decreased in the vicinity of the effluent discharged through the overflow weir. No significant decreases in light penetration into the water column would be expected to occur as a result of the proposed discharge.

(b) Dissolved Oxygen - Refer to paragraph 3.2.1(g) of this Section 404(b)(1) Evaluation. Some very minor spillages of supernatant from barge scows during the transport of dredged material to the Island 18 CDF may temporarily decrease surface water column dissolved oxygen levels in the immediate vicinity of the discharge. Surface water dissolved oxygen levels may also be slightly decreased in the vicinity of the effluent discharged through the overflow weir. No significant effects on dissolved oxygen in the water column would occur as a result of the proposed discharge.

(c) Toxic Metals and Organics - The results of the testing of the sediments proposed to be discharged are discussed in Subsection 2.4 of this Section 404(b)(1) Evaluation. No significant effects with regard to toxic metals and organics in the water column would occur as a result of the proposed discharge.

(d) Pathogens - No effect with regard to pathogens in the water column would occur as a result of the proposed discharge.

(e) Aesthetics - Some very minor spillages of supernatant from barge scows during the transport of dredged material to the Island 18 CDF may temporarily detract from the aesthetics of the surface water column in the immediate vicinity of the discharge. Minor turbidity in the vicinity of the effluent discharged through the overflow weir may also temporarily detract from local aesthetics. No significant effects with regard to water column aesthetics would be expected to occur as a result of the proposed discharge.

### 3.3.3 Effects on Biota:

(a) Primary Production and Photosynthesis - The discharge of dredged sediments into the Island 18 CDF would partially inundate some herbaceous, scrub-shrub and woody vegetation inhabiting the facility. This would result in moderate, temporary decreases in primary production and photosynthesis. Some very minor spillages of supernatant from barge scows during the transport of dredged material to the Island 18 CDF may temporarily decrease surface water column phytoplanktonic primary production and photosynthesis in the immediate vicinity of the discharge. Primary production and photosynthesis may also be slightly decreased in the vicinity of the effluent discharged through the overflow weir.

(b) Suspension/Filter Feeders - Temporary adverse effects to suspension and filter feeders (i.e., benthic fauna) may occur as a result of burial with dredged material, as well as temporary increases in turbidity and suspended solids during dredged material discharge. Burial of benthic organisms would occur as described in paragraph 3.1.4 of this Section 404(b)(1) Evaluation.

(c) Sight Feeders - Temporary adverse effects on sight feeders utilizing habitat within the Island 18 CDF (primarily bird species) may occur as a direct result of the dredged material discharge into the facility. Most sight feeding species would temporarily avoid the area during dredged material discharge periods and would return after the completion of discharge operations. Some very minor spillages of supernatant from barge scows during the transport of dredged material to the Island 18 CDF may temporarily cause avoidance of the surface water column by sight feeders in the immediate vicinity of the discharge. Sight feeders may temporarily avoid areas in the vicinity of the effluent discharged through the overflow weir.

3.3.4 **Actions Taken to Minimize Impacts** - The Island 18 diked structure was designed to retain sediment particulates and associated pollutants within the facility; the overflow weir design would limit the suspended sediment concentrations to 100 ppm, or less; dredged material discharge would be scheduled to occur after mid-July in order to minimize, to the maximum extent practicable, significant impacts to colonial nesting birds in the facility; the Contractor would be required to handle the dredged material in a manner which would minimize spillage of supernatant from the barge scows during the transport of dredged material to the Island 18 CDF; and the Contractor would be required to minimize accidental spills of fuel, oil and/or greases.

### 3.4 Contaminant Determinations.

3.4.1 The term "contaminant" is defined by USEPA Guidelines, 40 CFR 230.3(e) as "a chemical or biological substance in a form that can be incorporated into, onto, or be ingested by and that

harms aquatic organisms, consumers of aquatic organisms, or users of the aquatic environment, and includes but is not limited to the substances on the 307(a)(1) list of toxic pollutants promulgated on 31 January 1978 (43 CFR 4109)."

3.4.2 Subsection 2.4 of this Section 404(b)(1) Evaluation presents the results of sediment testing performed on the Toledo Harbor Federal navigation channel sediments proposed to be discharged (T.P. Associates International, Inc. 1988) into the Island 18 CDF. The proposed sediments to be dredged consists of silts and clays, and are classified overall as "Moderately Polluted" or "Heavily Polluted" under existing USEPA, Region V, Guidelines (USEPA 1977).

### 3.5 Aquatic Ecosystems and Organisms Determinations.

3.5.1 **Effects on Plankton** - Only minor, short-term adverse effects would be expected to occur to plankton due to temporary increases in turbidity and suspended solid levels in the ponding water within the Island 18 CDF during the proposed discharge. Some very minor spillages of supernatant from barge scows during the transport of dredged material to the Island 18 CDF may temporarily decrease surface water column phytoplanktonic primary production and photosynthesis in the immediate vicinity of the discharge. Phytoplanktonic primary production and photosynthesis may also be slightly decreased in the vicinity of the effluent discharged through the overflow weir.

3.5.2 **Effects on Benthos** - The proposed discharge would result in the burial and mortality of some benthic organisms inhabiting the confined material within the Island 18 CDF, as discussed in paragraph 3.1.4 above.

3.5.3 **Effects on Nekton** - Some very minor spillages of supernatant from barge scows during the transport of dredged material to the Island 18 CDF may temporarily cause the avoidance of the immediate discharge area by nekton. Nekton may also temporarily avoid areas in the vicinity of the effluent discharged through the overflow weir. No significant effects would be expected to occur to nekton (fish and other larger free-swimming aquatic animals) as a result of the proposed discharge.

3.5.4 **Effects on the Aquatic Food Web** - No other effects would be expected to occur to the aquatic food web as a result of the proposed discharge.

#### 3.5.5 **Effects on Special Aquatic Sites:**

(a) Sanctuaries and Refuges - Not applicable.

(b) Wetlands - The man-made, perched wetland habitat within the Island 18 CDF (refer to paragraph 2.6.5 of the EA) would be inundated during the proposed discharge. The newly-placed dredged material would be colonized by indigenous wetland plant

species after the completion of disposal operations. Thus, the existing wetland habitat would eventually be restored.

- (c) Mud Flats - Not applicable.
- (d) Vegetated Shallows - Not applicable.
- (e) Coral Reefs - Not applicable.
- (f) Riffle and Pool Complexes - Not applicable.

**3.5.6 Threatened and Endangered Species.** The Island 18 CDF lies within the range of the bald eagle (Haliaeetus leucocephalus), Indiana bat (Myotis sodalis), peregrine falcon (Falco peregrinus anatum), and eastern prairie fringed orchid (Platanthera leucophaea), which are Federally listed endangered species. Due to the project type, size and location, the project, as proposed, would have no effect on these species (USFWS letter, 11 January 1990).

**3.5.7 Other Wildlife** - The man-made, perched wetland habitat within the Island 18 CDF is utilized by some species of gulls, terns, sandpipers and songbirds, and as a resting habitat by migratory waterfowl (refer to paragraph 2.7.2 of the EA). These bird species would tend to avoid areas within the facility which are impacted by the proposed discharge, and would return after the completion of discharge operations. No significant adverse effects to these bird species would be anticipated.

**3.5.8 Actions Taken to Minimize Impacts** - The Island 18 diked structure was designed to retain sediment particulates and associated pollutants within the facility; dredged material discharge would be scheduled to occur after mid-July in order to minimize, to the maximum extent practicable, significant impacts to colonial nesting birds in the facility; a Botulism Control Management Plan has been developed for the unlikely occurrence of a botulism outbreak in the facility; the Contractor would be required to handle the dredged material in a manner which would minimize spillage of supernatant from barge scows during the transport of dredged material to the Island 18 CDF; and the Contractor would be required to minimize accidental spills of fuel, oil and/or greases.

### **3.6 Proposed Discharge Site Determinations.**

**3.6.1 Mixing Zone Determinations** - Island 18 CDF is constructed with a clay-core confinement dike, which allows it to retain the sediment particulates of dredged material, as well as the supernatant associated with the dredged material. The overflow weir provides for the discharge of effluent from the facility, when the supernatant reaches an appropriate level. Therefore, the area where effluent discharges into Lake Erie waters will be considered the "mixing zone." The following factors were considered in determining the acceptability of the

mixing zone as required by USEPA guidelines:

FACTOR	RELEVANT COMMENTS
Water Depth	Water depths in the vicinity of the vicinity of the mixing zone range from about -3 to -5 feet LWD.
Current Velocity, Direction and Variability	Water currents in the vicinity of the mixing zone would be predominated by currents of the Maumee River, which are from southwest to northeast. Exact current velocities at the site are unknown.
Degree of Turbulence	Turbulence in the vicinity of the mixing zone would be limited to that created by the effluent discharging into lake waters.
Stratification	No significant impacts on Lake Erie stratification would occur as a result of the discharge of effluent through the overflow weir.
Discharge Vessel Speed and Direction	Not applicable, since this factor would not affect the mixing zone.
Rate of Discharge	Effluent would be discharged through the overflow weir at an undetermined rate. This would be directly dependent upon the rate of filling of the CDF, and would only occur during or shortly after disposal operations.
Ambient Concentrations of Constituents of Interest and Dredged Material Characteristics	Discussed in Sections 2.4, 3.1, 3.2, 3.3 and 3.4 of this Section 404(b) (1) Evaluation.
Other Factors Affecting Rates and Patterns of Mixing	Water circulation and water level fluctuations were discussed previously in this Section 404(b) (1) Evaluation.

**3.6.2 Determination of Compliance with Applicable Water Quality Standards** - The Island 18 CDF is located in the Toledo Outer Harbor, which is designated as Warmwater Habitat, Agricultural Water Supply, Industrial Water Supply and Primary Contact

Recreation (OEPA 1990). These water quality standards would not be significantly exceeded and/or affected by the proposed discharge based on available presented information. OEPA will review this action for compliance with Section 401 of the Clean Water Act, as well as State water quality standards. Section 401 Water Quality Certification, or waiver thereof, will be granted pending OEPA's favorable review of this Section 404(b)(1) Evaluation.

### 3.6.3 Potential Effects on Human Use Characteristics:

(a) Municipal and Private Water Supply - No significant effects would occur to municipal or private water supplies as a result of the proposed discharge.

(b) Recreational and Commercial Fisheries - No significant effects are anticipated to recreational and commercial fisheries as a result of the proposed discharge. Paragraph 2.7.1 of the EA discusses the fishery resources present in the Toledo Harbor vicinity.

(c) Water-Related Recreation - The proposed discharge may temporarily interfere with water-related recreational activities. All possible attempts would be made to schedule discharge operations so to avoid interference with recreational activity in the area, to the maximum extent practicable.

(d) Aesthetics - The temporary presence of dredging equipment in the Toledo Outer Harbor during the proposed discharge would be aesthetically displeasing. Some very minor spillages of supernatant from barge scows during the transport of dredged material to the Island 18 CDF may temporarily detract from the aesthetics of surface water in the immediate vicinity of the discharge. Minor turbidity in the vicinity of the effluent discharged through the overflow weir may also temporarily detract from local aesthetics.

(e) Parks, National and Historic Monuments, National Seashores, Wilderness Areas, Research Files, and Similar Preserves - No effect would be expected as a result of the proposed discharge.

### 3.7 Determination of Cumulative Effects on the Aquatic Ecosystem.

3.7.1 The primary long-term, cumulative physical effect of the proposed discharge would be to increase the elevation of the dredged material within the confines of the Island 18 CDF. The proposed discharge would also result in the burial and mortality of some benthic organisms inhabiting the substrate within the facility. Lateral and upward migrations of benthos, as well as benthic invertebrate organisms inhabiting the dredged material, would contribute to benthic recolonization of the impacted areas with the facility. The man-made, perched wetland habitat within

the facility would be inundated as a result of the proposed discharge. Indigenous wetland vegetation would eventually colonize the areas inundated with dredged material after the completion of disposal operations. No long-term, adverse impacts to the aquatic ecosystem would be anticipated to occur as a result of the proposed discharge.

3.8 Determination of Secondary Effects on the Aquatic Ecosystem.

3.8.1 No significant secondary impacts on the aquatic ecosystem are expected to result from the proposed discharge.

## FINDING OF COMPLIANCE

FOR

TOLEDO HARBOR, LUCAS COUNTY, OHIO  
OPERATION AND MAINTENANCE

DREDGING AND DISPOSAL OF DREDGED MATERIAL  
AT ISLAND 18 CONFINED DISPOSAL FACILITY

1. No significant adaptations of the USEPA guidelines were made relative to this evaluation.
2. Alternative disposal methods considered for the materials dredged from the Toledo Harbor navigation channels included "No Action," upland use (including upland landfill disposal), open-lake disposal, diked lakeshore disposal and diked island disposal. Of all the alternatives considered, it was found that diked island disposal was the most economically viable and environmentally acceptable option.
3. The proposed discharge of dredged materials should not contribute to a violation of State water quality standards. The disposal operation would not violate the Toxic Effluent Standards of Section 307 of the Clean Water Act.
4. Use of the selected disposal site would not jeopardize the continued existence of any species listed as endangered or threatened under the Endangered Species Act of 1973, as amended, or result in the likelihood of the destruction or adverse modification of their critical habitat. The proposed discharge would not violate any requirement imposed by the Secretary of Commerce to protect any marine sanctuary designated under the Marine Protection, Research, and Sanctuaries Act of 1972.
5. The proposed discharge of dredged material would not result in significant adverse effects on human health and welfare, including municipal and private water supplies, recreational and commercial fishing, plankton, fish, shellfish, wildlife, and special aquatic sites. Significant adverse effects on the life stages of aquatic life and other wildlife dependent on aquatic systems would not occur. The discharge would have no significant adverse effects on aquatic ecosystem diversity, productivity, and stability, or on recreational, aesthetic, and economic values.
6. Appropriate steps to minimize potential adverse impacts of the discharge into aquatic ecosystems include the following:
  - placing the dredged material into an already existing facility designed to retain sediment particulates and associated pollutants;

- operating the facility's overflow weir in a manner whereby suspended sediment concentrations would be limited to 100 pmm, or less;

- dredged material discharge would be scheduled to occur after mid-July in order to minimize, to the maximum extent practicable, significant impacts to colonial nesting birds in the facility;

- the development of a Botulism Control Management Plan to prevent or minimize the likelihood or intensity of botulism outbreaks, until the CDF becomes filled to a level which would provide conditions nonconducive to such developments;

- requiring the Contractor to handle the dredged material in a manner which would minimize spillage of supernatant from barge scows during the transport of the dredged material to the Island 18 CDF;

- requiring the Contractor to minimize accidental spillages of fuel, oil and/or greases.

7. On the basis of the Guidelines, the proposed discharge is specified as complying with the requirements of these Guidelines, with the inclusion of appropriate and practical conditions to minimize pollution and adverse effects on the aquatic ecosystem.



FIGURE 2. Toledo Harbor, Lucas County, Ohio - Island 18 Confined Disposal Facility (CDF).

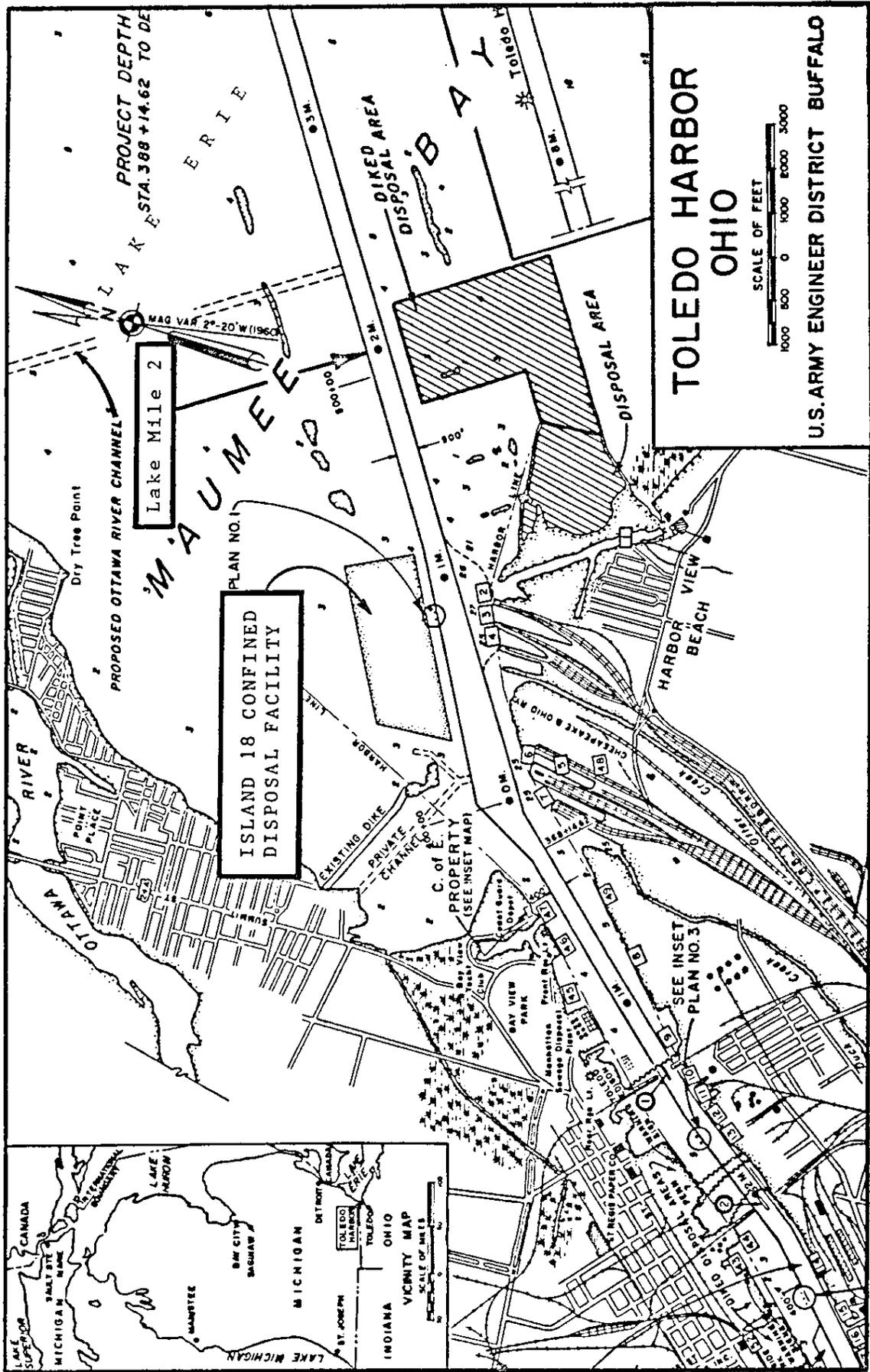


FIGURE 3. Toledo Harbor, Lucas County, Ohio - Sediment Sampling Sites.

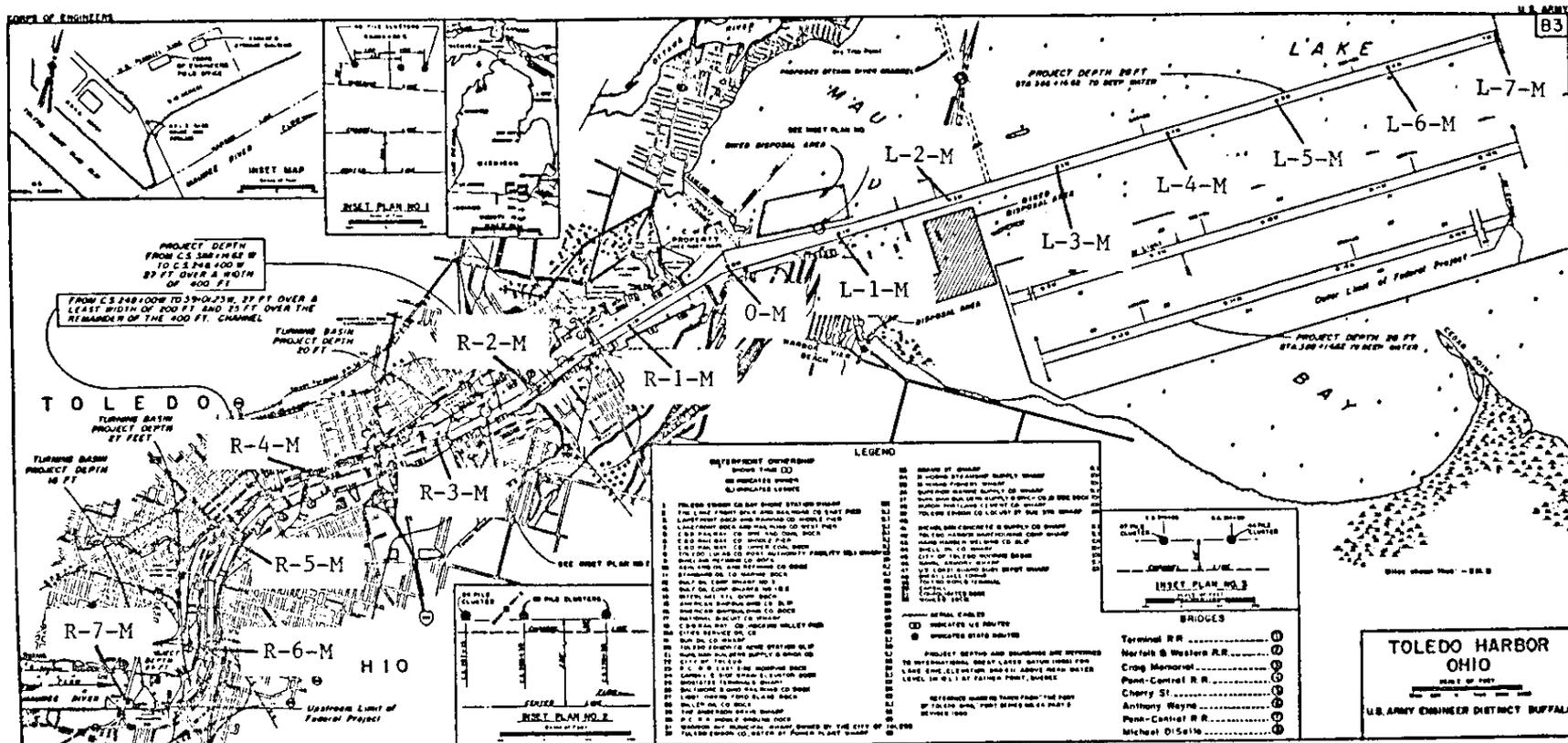


FIGURE 4.

SEDIMENT BIOASSAY RESULTS  
TOLEDO HARBOR - OHIO

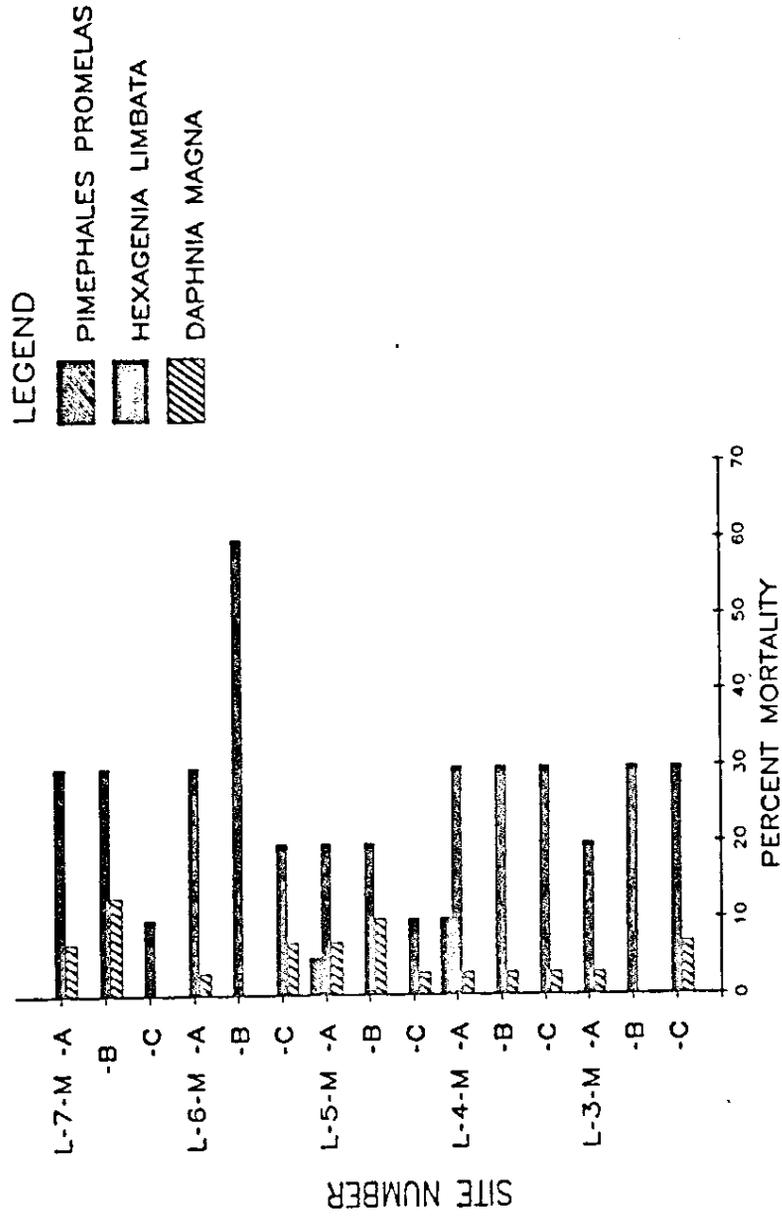


FIGURE 4. (Con't)

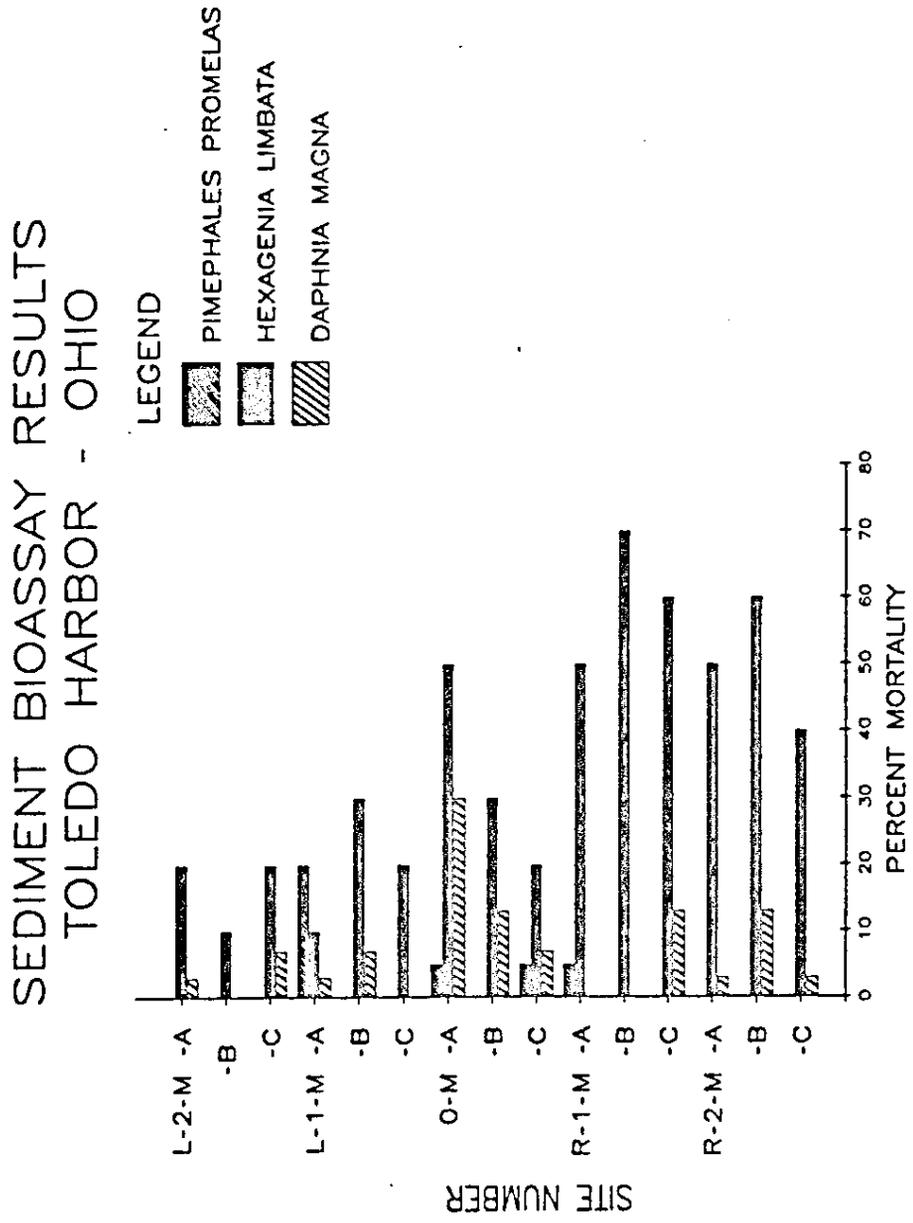


FIGURE 4. (Cont)

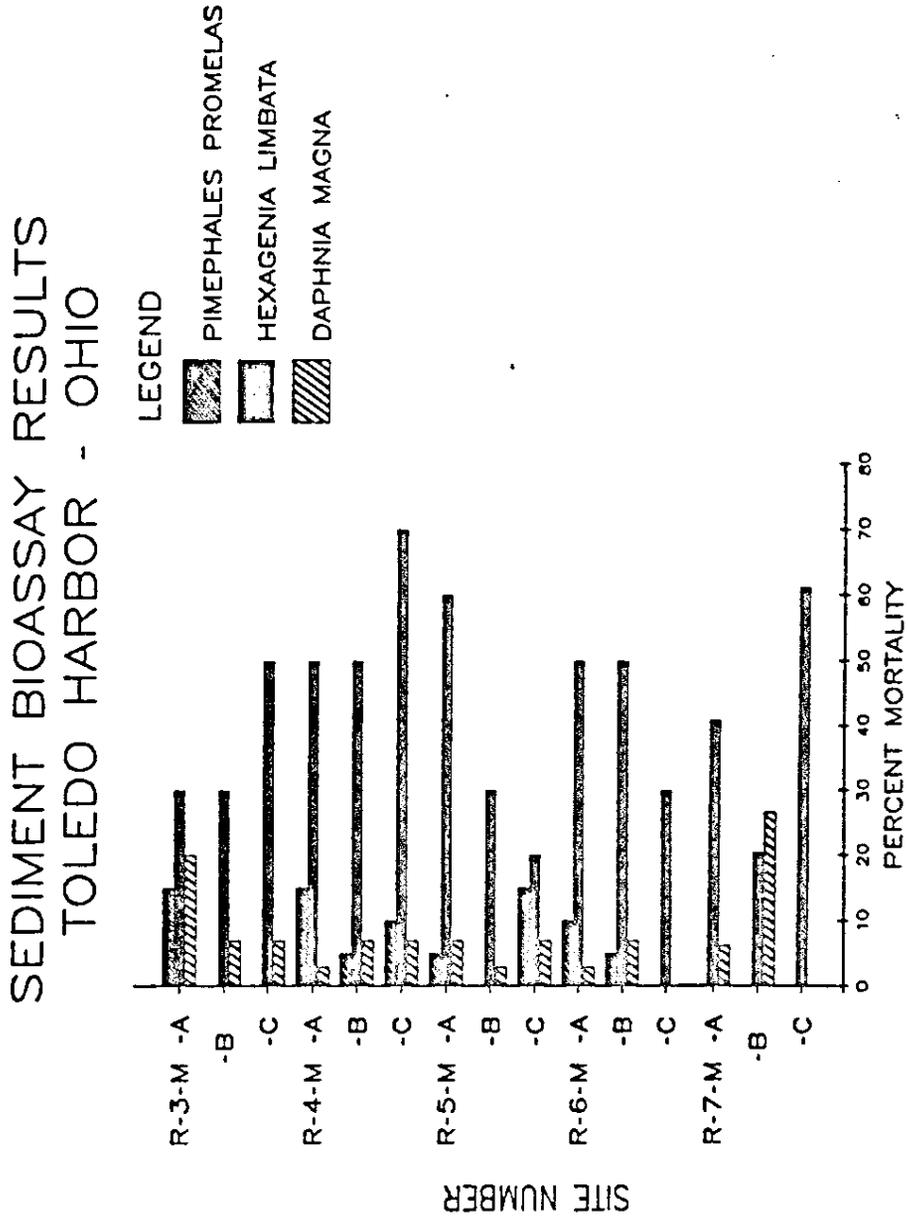


FIGURE 5. Island 18 Confined Disposal Facility, Toledo Harbor, Ohio - 1977 Project Condition Survey.

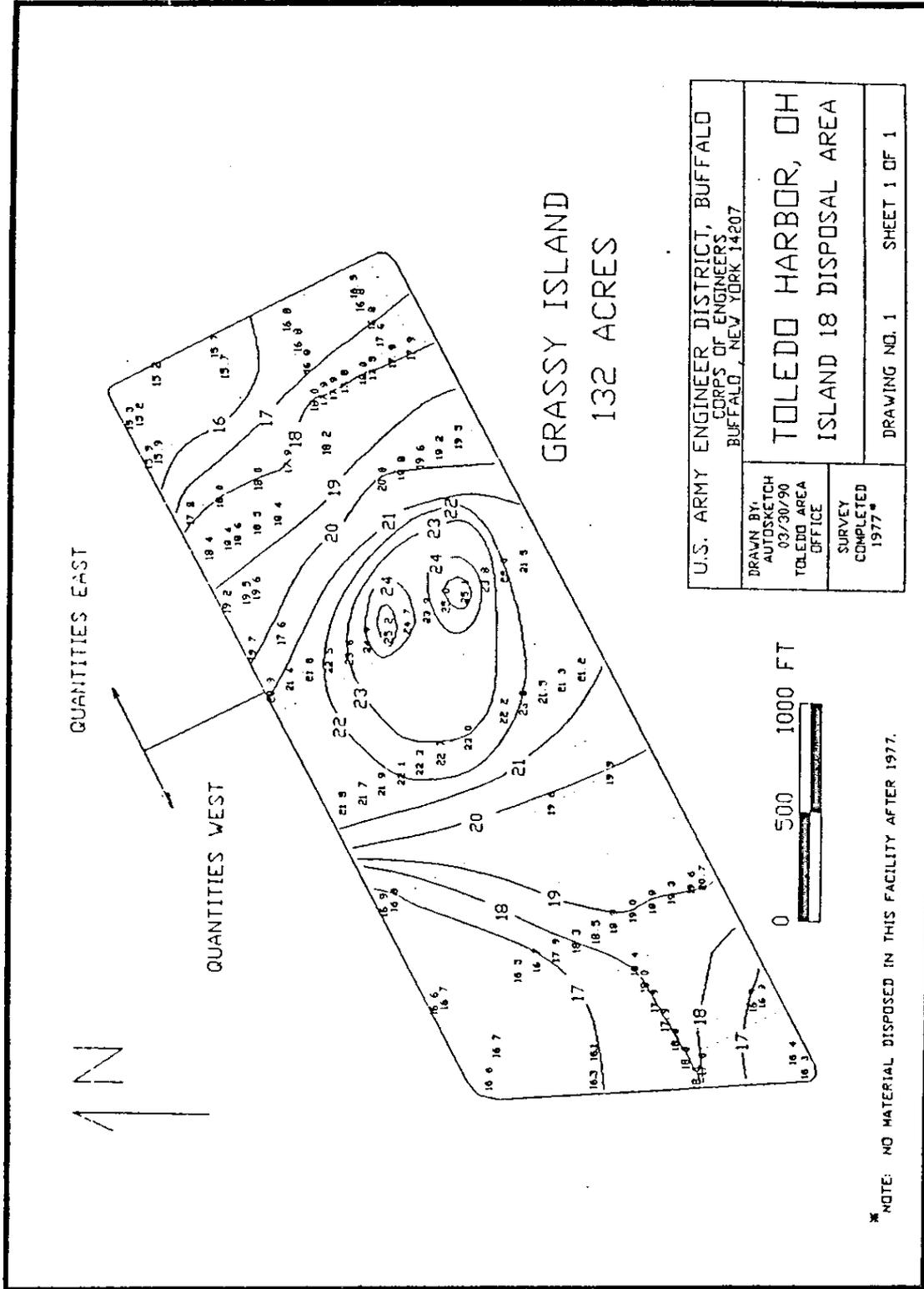


TABLE 1. Quantities of Material Dredged from Toledo Harbor Federal Navigation Channels Between 1978 and 1989, and Respective Dredged Material Disposal Sites. Quantities in Parentheses are Estimated.

Year Dredged	Area(s) Dredged	Quantity (Cubic Yards)	Disposal Site
1978	Harbor	5,418	Toledo Harbor CDF
	Harbor	63,481	"
	Harbor	208,588	"
1979	Harbor	94,950	"
	Harbor	292,000	"
	Harbor	25,050	"
	Harbor	142,000	"
1980	Harbor	50,085	"
	Harbor	649,724	"
	Harbor	119,565	"
	Harbor	38,519	"
	Harbor	2,000	"
1981	Harbor	43,930	"
	Harbor	171,927	"
	Harbor	221,382	"
	Harbor	562,353	"
1982	Outer Harbor	113,194	"
	Outer Harbor	169,858	"
	Harbor	854,949	"
	Harbor	60,285	"
1983	Outer Harbor	268,673	"
	Harbor	631,266	"
1984	Outer Harbor	275,209	"
	Outer Harbor	189,619	"
	Harbor	451,416	"
1985	Inner Harbor	308,663	"
	Outer Harbor	567,487	Open-lake
1986	Outer Harbor	862,368	Open-lake
	Inner Harbor	375,244	Toledo Harbor CDF
1987	Outer Harbor	689,646	Open-lake
	Inner Harbor	(500,000)	Toledo Harbor CDF
1988	Outer Harbor	503,000	Open-lake
	Inner Harbor	274,039	Toledo Harbor CDF
1989	Outer Harbor	298,066	Open-lake
	Inner Harbor	183,206	Toledo Harbor CDF

Table 3 - Bulk Inorganic Analysis of Sediments Sampled From Toledo Harbor, Lucas County, Ohio (T.P. Associates International, Inc. 1988). All Parameter Concentrations are in mg/kg, Unless Otherwise Indicated. Sediment Sampling Sites are Shown in Figure 3.

Inorganic Parameter	Sediment Sampling Site														
	L-7-M	L-6-M	L-5-M	L-4-M	L-3-M	L-2-M	L-1-M	O-M	R-1-M	R-2-M	R-3-M	R-4-M	R-5-M	R-6-M	R-7-M
Arsenic, Total	16	16	15	20	18	20	22	20	21	22	23	12	22	18	16
Barium, Total	74	76	72	90	82	92	110	100	120	120	120	70	110	82	65
Cadmium, Total	0.9	1	1	1	1	2	2	2	2	2	2	2	1	0.9	2
Chromium, Total	18	19	18	20	17	23	24	31	57	39	24	14	20	16	13
COD	76000	76000	72000	82000	74000	86000	97000	83000	120000	84000	87000	46000	82000	58000	61000
Copper, Total	28	27	29	32	29	33	37	38	52	39	36	27	40	26	23
Cyanide, Total	0.52	0.6	0.56	0.48	0.47	0.7	1.5	0.52	1.58	0.67	0.98	<0.3	0.5	<0.6	<0.3
Iron, Total	20300	18900	14400	23100	16000	22900	24900	27200	31500	29000	30600	13900	24500	19900	13200
Lead, Total	25	24	24	23	23	29	26	34	52	29	32	23	41	19	16
Manganese, Total	440	360	370	400	355	470	460	390	420	530	470	320	440	340	335
Mercury, Total	0.1	0.3	0.1	0.1	0.3	0.1	0.1	0.2	0.4	0.2	0.1	0.2	0.2	0.1	0.2
Nickel, Total	29	25	23	27	24	30	32	33	46	33	31	19	27	23	23
Nitrate N	<10	<9	<8	<10	<9	<10	<9	<9	<10	<10	<10	<6	<9	<7	<8
Nitrogen, Ammonia	120	160	140	110	160	200	180	270	870	210	150	88	150	91	89
Oil/Grease	420	330	30	340	380	680	900	1300	3900	1100	710	340	980	270	430
Phenols, 4-AAP	0.19	0.23	0.13	0.20	<0.10	0.39	0.23	0.21	0.69	0.29	0.16	0.13	0.17	0.13	0.12
Phosphorus, Total	750	770	830	840	900	980	1100	1200	3500	1400	1100	840	1100	820	735
Residue, T, Volatile (%)	5.52	5.58	6.11	5.98	4.83	7.16	7.58	6.63	8.84	7.45	7.29	4.29	10.0	4.25	7.47
Residue, Total (%)	39.3	44.4	46.2	38.9	43.3	36.9	37.6	42.3	36.8	37.0	37.6	54.7	41.5	46.6	47.6
Total Kjeldahl N	1270	1460	1450	1500	1810	1420	1870	1700	2620	1630	2860	1630	2750	1690	1980
Zinc, Total	100	95	100	110	98	120	150	140	330	170	160	93	150	97	82

Table 4 - Pollutonal Classifications of Inorganic Parameters in Sediments Sampled from Toledo Harbor, Lucas County, Ohio. Classifications are Based Upon USEPA, Region V, Guidelines Shown in Table EA-5 and are Relative to Bulk Inorganics Data Presented in Table EA-3. Classifications are Represented by the Following Letters: U = Unpolluted; M = Moderately Polluted; H = Heavily Polluted. Sediment Sampling Sites are Shown in Figure 3.

Inorganic Parameter	Sediment Sampling Site														
	L-7-M	L-6-M	L-5-M	L-4-M	L-3-M	L-2-M	L-1-M	O-M	R-1-M	R-2-M	R-3-M	R-4-M	R-5-M	R-6-M	R-7-M
Arsenic	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H
Barium	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H
Cadmium	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
Chromium	U	U	U	U	U	U	U	M	M	M	U	U	U	U	U
COD	M	M	M	H	M	H	H	H	H	H	H	M	H	M	M
Copper	M	M	M	M	M	M	M	M	H	M	M	M	M	M	U
Cyanide	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H
Iron	M	M	U	M	U	H	H	H	H	H	H	U	M	M	U
Lead	U	U	U	U	U	U	U	U	M	U	U	U	M	U	U
Manganese	M	M	M	M	M	M	M	M	M	H	M	M	M	M	M
Mercury	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
Nickel	M	M	M	M	M	M	M	M	M	M	M	U	M	M	M
Ammonia-N	M	M	M	M	M	M	M	H	H	H	M	M	M	M	M
Oil/Grease	U	U	U	U	U	U	U	M	H	M	U	U	U	U	U
Total Phosphorus	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H
Total Volatile Solids	M	M	M	M	U	M	M	M	H	M	M	U	H	U	M
TKN	M	M	M	M	M	M	M	M	H	M	H	M	H	M	M
Zinc	M	M	M	M	M	M	M	M	H	M	M	M	M	M	U
Classification Totals															
Per Sampling Site															
Unpolluted	5	5	6	5	7	5	5	3	2	3	5	8	4	6	8
Moderately Polluted	9	9	8	8	7	7	7	8	4	7	6	6	7	8	6
Heavily Polluted	4	4	4	5	4	6	6	7	12	8	7	4	7	4	4

Table 2 - Particle Size Analysis of Sediments Sampled from Toledo Harbor, Lucas County, Ohio (T.P. Associates International Inc. 1988). Sediment Sampling Sites are Shown in Figure 3.

Sediment Sampling Site	Percent Retained						Passed No. 200
	Retained No. 8	Retained No. 16	Retained No. 30	Retained No. 50	Retained No. 100	Retained No. 200	
L-7-M	0.2	<0.1	<0.1	0.7	1.5	6.9	90.7
L-6-M	0.1	0.3	0.3	0.7	1.1	3.5	94.0
L-5-M	0.8	0.3	0.5	0.8	1.9	6.7	89.0
L-4-M	<0.1	0.2	<0.1	0.5	0.5	1.9	96.9
L-3-M	<0.1	<0.1	<0.1	0.4	0.9	6.1	92.6
L-2-M	<0.1	<0.1	<0.1	0.3	0.6	2.7	96.4
L-1-M	<0.1	0.2	<0.1	0.2	0.6	1.1	97.9
O-M	<0.1	<0.1	<0.1	0.5	1.2	1.4	96.9
R-1-M	0.2	0.2	0.2	0.5	4.6	11.5	82.8
R-2-M	<0.1	<0.1	<0.1	0.4	1.7	1.4	96.5
R-3-M	<0.1	<0.1	<0.1	0.6	1.0	0.4	98.0
R-3-M Replicate	<0.1	0.2	<0.1	1.1	1.3	0.5	96.9
R-4-M	1.0	0.7	1.5	6.2	7.1	2.9	80.6
R-5-M	7.3	2.6	2.9	5.8	4.8	3.1	73.5
R-6-M	7.2	2.7	2.3	2.8	9.0	8.3	67.7
R-7-M	<0.1	1.3	0.6	2.3	9.1	5.7	81.0

TABLE 5. USEPA, Region V Guidelines for the Pollutational Classification of Great Lakes Harbor Sediments (from USEPA 1977).

Parameter	USEPA Criteria		
	Unpolluted	Moderately Polluted	Heavily Polluted
T. Solids (%)	NC	NC	NC
T. Volatile Solids (%)	<5	5-8	>8
T. Ammonia, N	<75	75-200	>200
T. Kjeldahl, N	<1,000	1,000-2,000	>2,000
T. Phosphorus	<420	420-650	>650
COD	<40,000	40,000-80,000	>80,000
T. Cyanide	<0.10	0.10-0.25	>0.25
T. Phenols	NC	NC	NC
T. Arsenic	<3	3-8	>8
T. Barium	<20	20-60	>60
T. Cadmium	*	*	>6
T. Chromium	<25	25-75	>75
T. Copper	<25	25-50	>50
T. Iron	<17,000	17,000-25,000	>25,000
T. Lead	<40	40-60	>60
T. Manganese	<300	300-500	>500
T. Mercury	*	*	≥1.0
T. Nickel	<20	20-50	>50
T. Zinc	<90	90-200	>200
T. Oil/Grease	<1,000	1,000-2,000	>2,000

All units are in mg/kg, unless otherwise indicated.

NC = No criteria.

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\* = No criteria for this  
pollutational classification.

TABLE 6. Suggested Percent Mortality Ranges from a 96-hour Sediment Bioassay for Hexagenia limbata, Daphnia magna, and Pimephales promelas used in the Sediment Classifications (Prater 1976).

Species	Pollution Range		
	Nonpolluted	Moderately Polluted	Heavily Polluted
<u>H. limbata</u>	<10	10-50	>50
<u>D. magna</u>	<10	10-50	>50
<u>P. promelas</u>	<10	10-50	>50

LITERATURE CITED

- Ohio Environmental Protection Agency. 1990. Ohio Water Quality Standards. Chapter 3745-1 of the Administrative Code.
- T.P. Associates, International, Inc. 1988. The Analysis of Sediments from Toledo Harbor, Ohio. Prepared under contract for U.S. Army Corps of Engineers, Buffalo District.
- U.S. Environmental Protection Agency. 1977. Region V Guidelines for the Pollutonal Classification of Great Lakes Harbor Sediments.
- U.S. Army Engineer District, Buffalo. 1990. Toledo Harbor, Ohio, Island 18 Disposal Area. Quantity Calculations Sheet.

APPENDIX EA-C  
BOTULISM CONTROL MANAGEMENT PLAN

TOLEDO HARBOR  
ISLAND 18 CONFINED DISPOSAL FACILITY (CDF)  
LUCAS COUNTY, OHIO

**BOTULISM CONTROL MANAGEMENT PLAN**

1. GENERAL

1.1 Avian botulism has its source in the toxin-producing bacterium Clostridium botulinum. Botulism becomes a concern at CDF's when confined dredged material forms shallow ponds or is raised slightly above the existing water level, which provide conditions suitable for the growth of invertebrate organisms. Consequently, these shallow ponds provide an attractive food-source for waterfowl and shorebirds. When the invertebrates in the dredged material die due to a change in the CDF's water regime (i.e., flooding or drying) and higher temperatures exist, the process of bacterial growth begins. Freshly deposited dredged material or previously deposited dredged material can provide conditions conducive to bacterial growth. When these conditions are present in the CDF environment, the potential for a botulism outbreak is established. In developing the Botulism Control Management Plan for the Island 18 CDF, consideration was given to the data collection phase, early action phase, long-range operation phase and coordination.

2. DATA COLLECTION PHASE

2.1 Site inspections:

- a. From 15 April through 31 May - Once every two weeks.
- b. From 1 June through 15 September - Weekly.

2.2 Monitoring Team:

At least one person from the Buffalo District and one person from the Ohio Department of Natural Resources (ODNR) will participate in the Monitoring Team. Personnel will walk along the top of the perimeter dike to make field observations. If access is possible, inspections within the interior of the facility should also be conducted.

2.3 The Buffalo District will provide the boat required to reach the Island 18 CDF.

2.4 The Buffalo District will provide equipment to collect physical parameter data, specifically air and water temperature, dissolved oxygen (DO) and pH. Water temperature, DO and pH measurements will be made in areas where there is accessible ponded water.

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Botulism Control Management Plan for the Island 18 CDF

2.5 During each inspection, the Monitoring Team should indicate the following on a plan view of the CDF:

- a. Time and date of inspection.
- b. General weather conditions.
- c. Map/sketch mudflat areas, ponded water, mud crack areas, dry-firm areas.
- d. Map/sketch vegetated areas.
- e. Location of birds within the facility.
  - (1) Types, species and estimated numbers of birds.
  - (2) Physical condition of birds.
- f. Other general observations.

2.6 The Buffalo District will take Polaroid photographs during each site inspection showing the general project condition within the CDF. Each photograph will be labeled to include: title of photo, date, time, approximate location and viewing direction.

### 3. EARLY ACTION PHASE

3.1 In the event that individuals and/or the Monitoring Team report or identify sick or dead birds, the Buffalo District and ODNR Monitoring Team will immediately notify (by telephone) the following individuals:

Chief, Toledo Area Office  
Toledo Area Office  
U.S. Army Corps of Engineers, Buffalo District  
Bay View Park  
3900 Summit Street  
P.O. Box 5002  
Toledo, Ohio 43611  
Phone: (419) 259-6480

Supervisor  
Crane Creek Wildlife Experiment Station  
Ohio Department of Natural Resources  
13229 West State Route 2  
Oak Harbor, Ohio 43449  
Phone: (419) 898-0960

Field Supervisor  
Reynoldsburg Field Office  
U.S. Department of the Interior  
Fish and Wildlife Service  
6950-H Americana Parkway  
Reynoldsburg, Ohio 43069  
Phone: (614) 469-6923

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3.2 Sick or dead bird specimens will be collected and provided to the ODNR team member. ODNR laboratories will make the determination as to whether or not botulism is present in the affected birds. Field visits will be increased to two to three times per week if dead or sick birds are present in the facility.

3.3 If botulism is determined to be the source of the problem, the Buffalo District will expeditiously initiate a contract to implement the use of noise-making devices (i.e., carbide cannons) to scare aquatic birds from the facility as much as possible.

3.4 Additionally, a determination will be made as to whether or not immediate operational changes should be made in response to the botulism outbreak. This could include one or more of the following operational changes:

- a. Stopping dredged material discharge into the CDF.
- b. Pumping more fresh water into the CDF after dredged material discharge operations.
- c. Prompt seeding of unvegetated mudflats with a tall growing grass mixture (possibly by hydroseeding), in order make the areas less desirable as habitat for aquatic birds.

#### 4. LONG-RANGE OPERATIONAL PHASE

4.1 On the basis that water-related management practices are the key to the successful control of botulism outbreaks within the CDF, this plan includes the following:

a. Timing of Dredged Material Discharge.

(1) Discharge dredged material into the CDF as late in the season as practically possible. Cool weather (i.e., <67° F) inhibits production of the toxin. Sediments are kept dry in the warmer summer months by restricting the placement of dredged material in the facility to later, cooler periods. Dry sediments preclude bacterial growth.

(2) Placement of dredged material during cooler weather periods also had the added advantage of holding back the protein substrate (i.e., the organic matter in the dredged material which C. botulinum requires for growth) until after it is too late in the year for the bacteria to grow.

b. Planned Distribution of Dredged Material within the CDF.

(1) Place dredged material directly into low areas during discharge operations. This will allow mud flat areas to dry out and keep a water layer over the most recently placed dredged material.

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c. Drying of Sediments within the CDF.

(1) Evaporative drying removes water from the upper few inches of dredged material by capillary resupply of the soil, resulting in crust formation. This aids precipitation runoff via dessication cracks.

(2) Evaporative drying is accelerated by good surface layer drainage, rapid removal of precipitation and the prevention of ponding by surface water. Surface drainage could be accomplished by the construction of drainage trenches in the disposal area.

(3) A perimeter trench (using either a dragline or backhoe) should be excavated approximately 10 to 15 feet interior of the dike walls. This perimeter trench should be about 6 to 8 feet wide and two feet deep. Operations should normally begin at the weir, where a sump pit should be dug to extend into the disposal area, using the maximum reach of the dragline or backhoe. The excavated material should be side-cast to form a low berm inside the CDF along the interior side of the perimeter trench.

(4) Interior drainage via trenches should be initiated when the perimeter trenching decreases the fluid consistency of dredged material below the thin drying skin, to allow trench construction, and when the support capacity of the soil allows conventional low-ground pressure construction equipment (utilizing mats, if required) safe entrance onto the disposal area to construct drainage trenches. Surface trenching and drying out not only decrease the chance for botulism outbreaks, but aids in the prevention of mosquito problems and firms soil within the facility. Drying the sediments also increases CDF capacity.

5. COORDINATION

5.1 Maintain coordination with the U.S. Fish and Wildlife Service and ODNR regarding the status of conditions at the CDF.

5.2 Maintain coordination with research biologists at the U.S. Army Engineer Waterways Experiment Station (WES) staff at Vicksburg, Mississippi, to obtain further recommendations and to arrange site visits that would provide the basis for immediate advice, and possibly longer range study of CDF management with regard to minimizing outbreaks of botulism.