CONTINUATION SHEET

Application for OEPA Section 401 State Water Quality Certification

ASHTABULA HARBOR STRATEGIC NAVIGATION DREDGING PROJECT

5. The project is located in Ashtabula Harbor, Ashtabula County, Ohio. The latitude/longitude of the dredging activity is 41º54'25"/80º47'53" near the mouth of the river channel and 41º53'15"/80º47'52" at the upstream limit of the federal channel. The latitude/longitude of the open-lake placement area is 41º55’60”/80º49’00”.

Sediment to be placed upland will be offloaded at Pinney Dock, 1149 East Fifth St, Ashtabula OH 44005-0041 (Minnesota Slip - 41º54'10"/80º47'41"), adjacent to the Outer Harbor. Dredged material return water generated prior to offloading is to be discharged from this location into the harbor. The upland placement site will be Pond 5C (41º54'33"/80º45'16") at Elkem Metals Incorporated (EMC-Ashtabula LP), 2700 Lake Road East, Ashtabula OH 44004. Storm water from the embankment during placement is to be directed into an open ditch on site, for ultimate conveyance to Lake Erie (41º55'00"/80º45'00").

7. Environmental Assessment (EA)/Finding of No Significant Impact (FONSI), Public Notice and Section 404(b)(1) Evaluation for Ashtabula Harbor, Ohio, Operation and Maintenance

< Issuing Agency – U.S. Army Corps of Engineers (USACE)
< Type of Approval – National Environmental Policy Act (NEPA) documentation, Section 404(b)(1) Evaluation
< Date of Application – April 2001
< Date of Approval – September 2001

< Issuing Agency – Ohio Department of Natural Resources (ODNR)
< Type of Approval – State of Ohio Coastal Management Program Consistency Determination
< Date of Application – January 2012
< Date of Approval – Pending

8a. The project will entail strategic navigation dredging of sediments from the authorized Federal navigation channels of Ashtabula Harbor, Ashtabula County, Ohio. Sediments unsuitable for open-lake placement which currently restrict regular dredging activities in the harbor are to be removed and placed upland. In 2010, material in the lower River Channel (downstream of Station 120+00) and Outer Harbor channels was evaluated using 2005, 2007 and 2009 data in accordance with joint U.S. Environmental Protection Agency (USEPA)/USACE protocols for the testing and evaluation of Great Lakes dredged material. Based on this evaluation, material within the lower River Channel between stations 120+00 and 107+75 and along the West Breakwater in the Outer Harbor between stations 16+67 and 17+77 was determined to not meet Federal guidelines for open-lake placement. In 2011, material in the Southern Reach between stations 198+00 and 213+36 was evaluated using 2010 data in

accordance with the joint USEPA/USACE protocols. Based on this evaluation, material between stations 198+00 and 210+00 was determined to not meet Federal guidelines for open-lake placement. Across these three areas, it is estimated that 140,000 cubic yards of contaminated material needs to be removed to eliminate restrictions on regular dredging activities in the harbor. In 2011, material within the Southern Reach between stations 210+00 and 213+36 was evaluated and determined to meet Federal guidelines for open-lake placement; this evaluation is forthcoming. It is estimated that 45,000 cubic yards of material need to be dredged from this area and open-lake placed.

The project is scheduled to occur between July 1 and December 15 in an effort to minimize impacts to local environmental resources, primarily fisheries (this includes dredging activities but not final upland placement activities). A Contractor of the Federal government will accomplish the project. Sediments will be removed from the channel bottom by a mechanical dredge, and placed into scows for transport to the dredged material offloading or placement areas. Dredged material not suitable for open-lake placement is to be transported to the Minnesota Slip at Pinney Dock (1149 East Fifth Street, Ashtabula, Ohio 44005-0041), and offloaded onto trucks for transport to former Elkem Metals Incorporated (EMC-Ashtabula LP) wastewater settling Pond 5C (2700 Lake Road East, Ashtabula, Ohio 44004) for upland placement. Sediment suitable for open-lake placement is proposed to be discharged at the existing 640-acre open-lake placement area in Lake Erie, located approximately 2.25 miles from the end of the harbor's East Breakwater, at an azimuth of 11°15'. The project is described in further detail in the attached Public Notice.

8b. The purpose of the project is to remove contaminated sediments from the Federal navigation channel which currently restrict regular dredging activities in the harbor. Additionally, the project will maintain sufficient water depths for commercial and recreation navigation.

8c. Based on past testing programs, material in these channels consists primarily of silts, clays and fine sands, although the area near the upstream limit of the channel consists mainly of sands, with some gravel and silts.

Approximately 140,000 cubic yards of sediment will be dredged from the harbor and placed at Elkem Pond 5C. The discharge of dredged material will be return water generated at the offloading site (Pinney Dock) and runoff generated at the placement site (Elkem). Prior to offloading at Pinney Dock and placement within the Pond 5C embankment, free water associated with the dredged material captured in the scows, would be discharged back to the harbor from the Minnesota Slip. This would mainly consist of river water entrained in the bucket during dredging. It is estimated that 40 gallons of free water will be generated per cubic yard of material dredged[1] for a mechanical operation. This assumes 80% efficiency in bucket fill. Based on this estimate, effluent in the range of six million gallons could be generated and discharged to the harbor from Pinney Dock, about forty thousand gallons per scow or intermittent discharge. Prior to discharge, this effluent would be retained for gross removal of solids and monitored for turbidity (in scows or temporary holding tanks onsite). A column settling test will be employed to establish a correlation between Total Suspended Solids (TSS)

1 EPA Assessment and Remediation of Contaminated Sediments Program: http://epa.gov/greatlakes/arcs/EPA-905-B94-003/B94-003.ch9.html#RTFToC87.

and turbidity; these data will be forthcoming. Upon attaining a turbidity level commensurate with a TSS criterion of 100 mg/L or less, the material will be discharged back to the harbor from a USACE established discharge point along the Minnesota Slip. The quality of this effluent (TSS, dissolved and total contaminant concentrations) will be determined by Modified Elutriate Testing (MET) as specified in the Upland Testing Manual (UTM)[2]. The MET is utilized to predict effluent quality during a hydraulic disposal scenario and is considered a conservative predictor of free water generated through a mechanical operation. Additionally, data generated from water column acute toxicity tests (standard 4-day *Pimephales promelas* and 48-hour *Ceriodaphnia dubia* bioassays) will be evaluated to characterize the effluent discharges. An evaluation of these data with regard to demonstrating compliance with promulgated Ohio Water Quality Standards will be forthcoming.

Upon removal of free water, admixtures may be utilized to provide the sediment strength properties required for final placement. Commercial mixtures of cement, flyash, lime or various proprietary materials could be used to meet project requirements. The viability of the materials will be determined through testing performed during the design process and by specific means, methods and materials available to contractors bidding the work.

Following treatment of material to meet strength requirements, material would be loaded onto trucks at Pinney Dock and transported to the Elkem facility. At Elkem, placement of the material would be restricted to within the Pond 5C embankments. As the material is placed and graded, sumps will be constructed where storm water runoff can be collected. These sumps will be maintained as placement proceeds. Water accumulation within the sumps will be monitored, and when necessary will be pumped to a temporary holding tank to ensure that collected water does not exceed the sump capacity. Similar to the return water generated at Pinney Dock, free water within the Elkem embankment would only be discharged per meeting a TSS threshold of 100 mg/L or less. Water from the embankment would be directed to an open ditch on-site (downstream of the Elkem site discharge monitoring point), with ultimate discharge to Lake Erie.

An estimated 45,000 cubic yards of material dredged between stations 210+00 and 213+36 is proposed to be discharged at the existing 640-acre open-lake placement area in Lake Erie, located approximately 2.25 miles from the end of the harbor's East Breakwater, at an azimuth of 11°15'. This is mainly sandy material (60% sand, 40% silt and clay based on composite sample), also contains gravel and cobbles. The USACE determination regarding the acceptability of this material for open lake placement is forthcoming.

9. The dredging portion of the project is located in the River Channel and Outer Harbor of Ashtabula Harbor, in or near the mouth of the Ashtabula River.

Lake Erie and Ashtabula River are the receiving waters for dredging and dredged material placement activities.

The dredged material offloading and return water discharge site will be the Minnesota Slip at

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2 Evaluation of Dredged Material Proposed for Disposal at Island, Nearshore, or Upland Confined Disposal Facilities Testing Manual (Chapter 4 :Effluent During Disposal Operations). http://el.erdc.usace.army.mil/dots/pdfs/trel03-1.pdf.

Pinney Dock, adjacent to the Outer Harbor. The upland placement site will be Pond 5C at Elkem Metals Incorporated (EMC-Ashtabula LP), 2700 Lake Road East, Ashtabula. Storm water from the embankment during placement is to be directed into an open ditch on site, for ultimate conveyance to Lake Erie (41º55'00"/80º45'00") The main entrance to this facility is approximately 2.0 miles east of Pinney Dock. The dredged material open-lake placement area is located in Lake Erie, as noted in Item 8a of this application.

10. Information required under this item will be included in the EA and Section 404(b)(1) Evaluation to be completed for this project.

a. **Descriptions**.

(1) *Preferred Design Alternative*: Attachment 1 shows the areas to be dredged under this alternative. This alternative would entail dredging to the authorized depth in the Federal navigation channel, including the removal of an estimated 230,000 cubic yards of dredged material from the harbor, with placement of the dredged material at the existing Pond 5C at Elkem as previously segregated based on river stations, and open-lake area in Lake Erie. This would entail approximately 165,000 cubic yards of dredged material being placed within the Elkem embankment and approximately 65,000 cubic yards of dredged material being open-lake placed. Seven million gallons of return water may be generated at the Pinney Dock offloading site and discharged at the Minnesota Slip. Mechanical equipment will be used to complete the maintenance dredging operation. Dredging would not be performed during Lake Erie storm events. The project would take about 120 days to complete.

(2) *Non-Degradation Alternative*: This is the "No Action" alternative and is addressed in the EA and Section 404(b)(1) Evaluation. No construction or filling of surface waters would occur as a result of this alternative.

(3) *Minimum Degradation Alternative*: See Items 8a-c of this application. Attachment 2 shows the areas to be dredged under this alternative. This alternative would entail the dredging of an estimated 185,000 cubic yards of material from the harbor, with placement at the existing Pond 5C at Elkem as previously segregated based on river stations, and open-lake area in Lake Erie. This alternative would involve dredging to -12 ft LWD[3] between stations 205+00 and 210+00 and -10 ft LWD between stations 210+00 and 213+36, rather than project depth of -16 ft LWD as proposed in the Preferred Design Alternative. This would entail approximately 140,000 cubic yards of dredged material being placed within the Elkem embankment and approximately 45,000 cubic yards of dredged material being open-lake placed. Mechanical equipment will be used to complete the maintenance dredging operation. As a mitigative technique, the dredging operation would occur between July 1 and December 15 in order to minimize impacts to local environmental resources, primarily fisheries. In addition, dredging would not be performed during Lake Erie storm events. The project would take about 90 days to complete.

Note that the Minimum Degradation Alternative estimates dredging 45,000 cubic yards less than the Preferred Design Alternative. The estimated “length” of Federal navigation channel (i.e., not actually stream) to be dredged under both the Preferred Design and Minimum Degradation

3 569.2 feet above mean water level at Rimouski, Quebec, International Great Lakes Datum 1985 (IGLD85)

Alternatives is 2,875 feet and both alternatives have an estimated project area of 11 acres. Note that the actual shoal thickness cannot be determined until just before the dredging begins. In addition, shoal thickness will vary throughout the harbor and greatly depend on weather conditions. Therefore, the above quantities are merely estimates to be dredged under either alternative.

b. **Water Quality Impacts**.

(1) *Preferred Design Alternative*: The material that would be dredged and open-lake placed under this alternative consists of sediments that have deposited in the Federal navigation channels since the last maintenance dredging effort. These types of sediments are homogenous and residually contaminated with pollutants that are ubiquitous throughout the Great Lakes. As such, these sediments are toxicologically similar to those present in the Lake Erie environment. A characterization of this material is contained in the EA/FONSI and Section 404(b)(1) Evaluation (2001 and 2012 under development), and an evaluation provided to Ohio Environmental Protection Agency (OEPA). For the effects of this alternative's lowering of water quality on aquatic life, refer to the referenced EA/FONSI and Section 404(b)(1) Evaluation. The open-lake placement area consists of deep, mud-bottom, warmwater lacustrine habitat. This alternative would result in a short-term, negligible lowering of ambient water quality, comparable to that which occurs during Lake Erie storm events. Dredging and dredged material placement activities would result in the excavation, smothering and mortality of benthic macroinvertebrates, and the temporary avoidance of work areas by fish and wildlife species (i.e., mostly waterfowl). Following dredging and dredged material placement activities, the benthic communities would recolonize the impacted areas, and fish and wildlife would return. The dredging area is quite industrialized, so benthic, fish and wildlife use of the water resource is limited; therefore, impacts in this regard would be minor. Dredging would not be performed during Lake Erie storm events. No impacts to threatened or endangered species would occur.

The main water quality impacts would be the generation of turbidity and variation of dissolved oxygen levels in the water column.

Sediments unsuitable for open-lake placement and toxicologically dissimilar to those present in the Lake Erie environment are to be placed and contained upland. Dredged material in the form of return water would be discharged to the Outer Harbor from the Minnesota Slip and to Lake Erie (41º55'00"/80º45'00"). The Minnesota Slip and Elkem outfall effluent discharge sites are essentially comprised of deeper, mud-bottom, lentic, and shallower, sandy-bottom lacustrine habitats, respectively. A large portion of the contaminant load associated with return water generated during upland placement is particle-associated (suspended and colloidal particles with adsorbed or ion exchange held contaminants). Dissolved contaminant concentrations (including total polychlorinated biphenyls [PCBs]) from existing Standard Elutriate Test (SET) data on this dredged material do not exceed State WQSs. Return water is to be discharged upon establishing a TSS level no greater than 100 mg/L. The quality of this effluent (TSS, dissolved and total contaminant concentrations) will be determined through modified elutriate testing (MET), the results of which will be compared to State WQSs to evaluate compliance. A TSS level of 100 mg/L in the effluent at the point of discharge, would not settle to form a "putrescent" or "objectionable" sludge deposit. Assuming a 25 mg/L background TSS level (not uncommon for

harbor waters) the aesthetic appearance of a 100 mg/L TSS in the effluent would not be great in comparison and could be visually indiscernible when observing the discharge from above through 10 or more feet of water. The effluent water TSS would be rapidly diluted to near background levels.

(2) *Non-Degradation Alternative*: Since this alternative involves no construction or filling of surface waters, no lowering of water quality would result.

(3) *Minimum Degradation Alternative*: The material that would be dredged under this alternative consists of sediments that have deposited in the Federal navigation channels since the last maintenance dredging effort. These types of sediments are homogenous and residually contaminated with pollutants that are ubiquitous throughout the Great Lakes. As such, these sediments are toxicologically similar to those present in the Lake Erie environment. A characterization of this material is contained in the EA/FONSI and Section 404(b)(1) Evaluation (2001 and 2012 under development), and an evaluation provided to OEPA. For the effects of this alternative's lowering of water quality on aquatic life, refer to the referenced EA/FONSI and Section 404(b)(1) Evaluation. The open-lake placement area consists of deep, mud-bottom, warmwater lacustrine habitat. This alternative would result in a short-term, negligible lowering of ambient water quality, comparable to that which occurs during Lake Erie storm events. Dredging and dredged material placement activities would result in the excavation, smothering and mortality of benthic macroinvertebrates, and the temporary avoidance of work areas by fish and wildlife species (i.e. mostly waterfowl). Following dredging and dredged material placement activities, the benthic communities would recolonize the impacted areas, and fish and wildlife would return. The dredging area is quite industrialized, so benthic, fish and wildlife use of the water resource is limited; therefore, impacts in this regard would be minor. As a mitigative technique, the dredging operation would occur between July 1 and December 15 in order to minimize impacts to local environmental resources, primarily fisheries. In addition, dredging would not be performed during Lake Erie storm events. No impacts to threatened or endangered species would occur.

The main water quality impacts would be the generation of turbidity and variation of dissolved oxygen levels in the water column.

Sediments unsuitable for open-lake placement and toxicologically dissimilar to those present in the Lake Erie environment are to be placed and contained upland. Dredged material in the form of return water would be discharged to the Outer Harbor from the Minnesota Slip and to Lake Erie (41º55'00"/80º45'00"). The Minnesota Slip and Elkem outfall effluent discharge sites are essentially comprised of deeper, mud-bottom, lentic, and shallower, sandy-bottom lacustrine habitats, respectively. A large portion of the contaminant load associated with return water generated during upland placement is particle-associated (suspended and colloidal particles with adsorbed or ion exchange held contaminants). Dissolved contaminant concentrations (including total PCBs) from existing SET data on this dredged material do not exceed State WQSs. Return water is to be discharged upon establishing a TSS level no greater than 100 mg/L. The quality of this effluent (TSS, dissolved and total contaminant concentrations) will be determined through MET, the results of which will be compared to State WQSs to evaluate compliance. A TSS level of 100 mg/L in the effluent at the point of discharge, would not settle to form a "putrescent" or

"objectionable" sludge deposit. Assuming a 25 mg/L background TSS level (not uncommon for harbor waters) the aesthetic appearance of a 100 mg/L TSS in the effluent would not be great in comparison and could be visually indiscernible when observing the discharge from above through 10 or more feet of water. The effluent water TSS would be rapidly diluted to near background levels.

c. **Feasibility**.

(1) *Preferred Design Alternative*: Open water placement is technically feasible, as it involves routine maintenance dredging and dredged material placement procedures. Equipment is readily available to accomplish this type of work. The Benefit/Cost (B/C) ratio for this alternative with respect to commercial navigation in the harbor is greater than or equal to 1.0. Costs of this project would range from $7.00 to $8.00 per cubic yard of dredged material. Although this alternative is the most viable for commercial navigation, recurrent maintenance dredging needs of the Federal navigation channels, as required, would continue to temporarily degrade water quality.

Upland placement and containment of dredged material is technically feasible. Treatability tests of the sediment show that strength requirements needed for the transport and grading of dredged material for upland placement can be obtained through the addition of relatively low amounts of a stabilizing amendment such as Calciment. USACE conducted a subsurface investigation of the Elkem embankment to confirm that it was a suitable location for the placement of dredged material. Data collected from boreholes along the crest and toe of the embankment includes standard penetration tests, unconsolidated-undrained triaxel tests of undisturbed samples, atterberg limits, moisture content, specific gravity, sieve analysis, consolidated undrained triaxel tests, and piezometer water levels. As a former wastewater settling pond, Elkem Pond 5C provides properties similar to a dredged material confined disposal facility (CDF), with respect to the containment of sediment from adjacent land and waters. The cost of upland placement (sediment dewatering, amendment, offloading, transportation and placement) would be in the range of $100 per cubic yard of dredged material.

(2) *Non-Degradation Alternative*: Since this alternative involves no construction or filling of surface waters, this alternative is technically feasible and available, but would not be cost effective from a commercial navigation standpoint. Under this alternative, the Federal navigation channels would progressively shoal in and impede commercial navigation, which would result in an increased cost of commodities to the local community. Deep-draft commercial navigation in the harbor would become economically nonviable and gradually cease.

(3) *Minimum Degradation Alternative*: Open water placement is technically feasible, as it involves routine maintenance dredging and dredged material placement procedures. Equipment is readily available to accomplish this type of work. The Benefit/Cost (B/C) ratio for this alternative with respect to commercial navigation in the harbor is greater than or equal to 1.0. Costs of this project would range from $8.00 to $9.00 per cubic yard of dredged material over the past five years. Although this alternative is the most viable for commercial navigation, recurrent maintenance dredging needs of the Federal navigation channels, as required, would continue to temporarily degrade water quality.

Upland placement and containment of dredged material is technically feasible. Treatability tests of the sediment show that strength requirements needed for the transport and grading of dredged material for upland placement can be obtained through the addition of relatively low amounts of a stabilizing amendment such as Calciment. USACE Corps conducted a subsurface investigation of the Elkem embankment to confirm that it was a suitable location for the placement of dredged material. Data collected from boreholes along the crest and toe of the embankment includes standard penetration tests, unconsolidated-undrained triaxel tests of undisturbed samples, atterberg limits, moisture content, specific gravity, sieve analysis, consolidated undrained triaxel tests, and piezometer water levels. As a former wastewater settling pond, Elkem Pond 5C provides properties similar to a dredged material CDF, with respect to the containment of sediment from adjacent land and waters. The cost of upland placement (sediment dewatering, amendment, offloading, transportation and placement) would be in the range of $100 per cubic yard of dredged material.

d. **Regional Sewage Collection/Treatment Facilities**. N/A.

e. **Water Quality Improvement/Recreation Projects**. Between 2006 and 2007, USEPA Great Lakes National Program Office (GLNPO) conducted a mass removal of contaminated sediments from the Upper River between the upstream end of the Upper River Turning Basin and Fifth Street Bridge, under the Great Lakes Legacy Act of 2002. In 2008, USACE dredged contaminated sediments from the Federal navigation channel and adjacent areas between the Fifth Street Bridge and station 120+00 in the Lower River, under Section 312 of the Water Resources Development Act of 1990. This project will compliment this past work by removing remaining contaminated sediments from the AOC. The dredging will remove contaminated sediments from the aquatic ecosystem and thereby improve water quality, and will support the lifting of dredging restrictions in the AOC.

f. **Water Pollution Control Costs**.

(1) *Preferred Design Alternative*: Not dredging during storm events constitutes "blow days," which cost about $10,000 to $20,000 per day of lost work. The decision not to dredge based on weather conditions would be due to safety concerns. Costs associated with upland placement of sediments (sediment dewatering, amendment, offloading, transportation and placement) unsuitable for open-lake placement would be on the order of $100 per cubic yard of dredged material, compared to about $10 per cubic yard for unconfined open-lake placement, an order of magnitude difference.

(2) *Non-Degradation Alternative*: Since this alternative involves no construction or filling of surface waters, no costs result from water pollution controls.

(3) *Minimum Degradation Alternative*: The costs of adhering to the environmental window for this alternative would be significant. The moderately restrictive environmental window under this alternative raises the cost of this alternative about 10-20 percent per cubic yard. In addition, not dredging during storm events constitutes "blow days," which cost about $10,000 to $20,000 per day of lost work. Costs associated with upland placement of sediments (sediment

dewatering, amendment, offloading, transportation and placement) unsuitable for open-lake placement would be on the order of $100 per cubic yard of dredged material, compared to about $10 per cubic yard for unconfined open-lake placement, an order of magnitude difference.

g. **Human Health Impacts**.

(1) *Preferred Design Alternative*: The human health impacts associated with this alternative would be indiscernible. The generation of turbidity and reduced dissolved oxygen in the water column would be the primary effects associated with the dredging and dredged material placement activities. The dredging area is within an industrialized water resource committed to commercial navigation. This alternative would result in short-term, minimal impacts to the quality and value of the receiving waters. Contaminated sediments would be removed from the Federal navigation channel and contained at the Elkem embankment, which would serve to improve water quality in the harbor on the long-term, and reduce contaminant availability to aquatic life and wildlife.

(2) *Non-Degradation Alternative*: Since this alternative involves no construction or filling of surface waters, no effects to human health would occur. Lowered water quality during dredging and dredged material placement activities (turbidity and reduced dissolved oxygen in the water column) would not occur. The overall value of the harbor as a water resource to commercial navigation would progressively deteriorate to a point at which deep-draft commercial vessels would no longer be able to navigate the harbor due to inadequate depths.

(3) *Minimum Degradation Alternative*: The human health impacts associated with this alternative would be indiscernible. The generation of turbidity and reduced dissolved oxygen in the water column would be the primary effects associated with the dredging and dredged material placement activities. The dredging area is within an industrialized water resource committed to commercial navigation. This alternative would result in short-term, minimal impacts to the quality and value of the receiving waters. Contaminated sediments would be removed from the Federal navigation channel and contained at the Elkem embankment, which would serve to improve water quality in the harbor on the long-term, and reduce contaminant availability to aquatic life and wildlife. The restriction of dredging to the environmental window would generally minimize the effects of turbidity and low dissolved oxygen level on fisheries.

h. **Social/Economic Benefits Gained**.

(1) *Preferred Design Alternative*: This alternative would restore navigable depths in the harbor channels for commercial and recreational vessel traffic to the full authorized depth. A large industrial base depends on the harbor to receive commercial goods and ship them off-site for a reasonable cost. This would have a substantial positive impact on the local economy by providing jobs that support these commodities, as well as by maintaining competitive price level on commercial goods.

Bulk commodities that pass through Ashtabula Harbor generate approximately $128M annually in direct revenue which supports approximately 1,625 jobs. These jobs generate over $60M per year in personal income. This industrial base generates substantial tax revenues for local

governments. Construction of the project itself would support about 10-15 blue–collar jobs in the dredging industry for a period of about 3-4 months. In addition, social and economic benefits associated with recreational navigation would accrue with project construction. The objective of this alternative includes removal of contaminated sediments from the Federal navigation channel that currently restricts regular dredging in the AOC. Removal of these sediments would allow for cost-effective dredging for both commercial and recreational purposes in the future.

(2) *Non-Degradation Alternative*: This alternative would involve the cessation of maintenance of harbor Federal navigation channels. However, benefits would accrue to recreational navigation until the channels shoal into a degree at which they would no longer be usable for shallow-draft vessels. Recreational benefits in this regard would include primarily those associated with local marinas and the leisure craft they support.

(3) *Minimum Degradation Alternative*: This alternative would restore navigable depths in the harbor channels for commercial vessel traffic in applicable areas to the full authorized depth and depths of -10' and -12' in the upper river area, suitable for recreational vessels (Station 205+00 to 213+36). The social and economic benefits generated as a result of this alternative would be similar to those associated with the Preferred Design Alternative. A large industrial base depends on the harbor to receive commercial goods and ship them off-site for a reasonable cost. This would have a substantial positive impact on the local economy by providing jobs that support these commodities, as well as by maintaining competitive price level on commercial goods.

Bulk commodities that pass through Ashtabula Harbor generate approximately $128M annually in direct revenue which supports approximately 1,625 jobs. These jobs generate over $60M per year in personal income. This industrial base generates substantial tax revenues for local governments. Construction of the project itself would support about 10-15 blue–collar jobs in the dredging industry for a period of about 3-4 months. In addition, social and economic benefits associated with recreational navigation would accrue with project construction. The objective of this alternative includes removal of contaminated sediments from the Federal navigation channel that currently restricts regular dredging in the AOC. Removal of these sediments would allow for cost-effective dredging for both commercial and recreational purposes in the future.

i. **Social/Economic Benefits Lost**.

(1) *Preferred Design Alternative*: Lowered water quality associated with this alternative, such as turbidity and reduced dissolved oxygen levels in the water column, would be aesthetically displeasing and may not be attractive to recreational boaters in the area. Except for commercial industries such as restaurants and other riparian retail establishments, the lowering of water quality would have minimal negative effects on commercial activities.

(2) *Non-Degradation Alternative*: Since this alternative involves no construction or filling of surface waters, no lowering of water quality would occur. Therefore, negative effects on the recreational use of the harbor would not occur. However, substantial effects on commercial navigation and associated industries would occur as a result of this alternative. The overall value of the harbor as a water resource to commercial navigation would progressively deteriorate to a

point at which deep-draft commercial vessels would no longer be able to navigate the harbor due to inadequate depths. The large industrial base that depends on the harbor to transport commodities would no longer be able to do so cost-effectively. The harbor would no longer be a viable alternative for the transportation of goods. This would have a substantial negative impact on the local economy resulting in the loss of over 100 blue-collar jobs that support these commodities. The harbor would no longer effect competitive price levels on local commercial goods. Since the industrial base on the harbor would likely close down, all tax revenues in this regard would be lost. The lack of project construction itself would result in the loss of about 10-15 blue-collar jobs in the dredging industry for a period of about 3-4 months.

Contaminated sediments would remain in the system, resulting in a continuation of dredging restrictions in this AOC that would adversely impact future commercial and recreational use of the harbor.

(3) *Minimum Degradation Alternative*: Lowered water quality associated with this alternative, such as turbidity and reduced dissolved oxygen levels in the water column, would be aesthetically displeasing and may not be attractive to recreational boaters in the area. Except for commercial industries such as restaurants and other riparian retail establishments, the lowering of water quality would have minimal negative effects on commercial activities. The restriction of dredging to the environmental window would minimize impacts to recreational fishing, particularly during periods of concentrated fisheries activities, such as recreational tournaments and seasonal sport fishing.

j. **Environmental Benefits Lost/Gained**.

(1) *Preferred Design Alternative*: This alternative would result in a short-term reduction of water quality in the receiving waters. Dredging and dredged material placement activities would result in the excavation, smothering and mortality of benthic macroinvertebrates, and the temporary avoidance of work areas by fish and wildlife species (i.e., mostly waterfowl). The dredging area is quite industrialized, so benthic, fish and wildlife use of the water resource is limited; therefore, impacts in this regard would be minor. Following dredging and dredged material placement activities, the benthic communities would recolonize the impacted areas, and fish and wildlife would return. No effects to endangered or threatened species would occur.

This alternative would remove contaminated sediments from the river channel, with the objective of eliminating dredging restrictions in the harbor. Removal of contaminated sediments will reduce long term contaminant exposure to aquatic life and wildlife.

(2) *Non-Degradation Alternative*: Since this alternative involves no construction or filling of surface waters, associated environmental benefits would include no degradation of water quality in receiving waters, and no physical disturbances to benthos, or fish and wildlife. No effects to endangered or threatened species would occur.

Contaminated sediments would remain in the system, resulting in the continuation of dredging restrictions in the AOC as well as long-term exposure of contaminants to aquatic life and wildlife.

(3) *Minimum Degradation Alternative*: This alternative would result in a short-term reduction of water quality in the receiving waters. Dredging and dredged material placement activities would result in the excavation, smothering and mortality of benthic macroinvertebrates, and the temporary avoidance of work areas by fish and wildlife species (i.e., mostly waterfowl). The dredging area is quite industrialized, so benthic, fish and wildlife use of the water resource is limited; therefore, impacts in this regard would be minor. The restriction of dredging to the environmental window would generally minimize the effects of turbidity and low dissolved oxygen level on fisheries. Following dredging and dredged material placement activities, the benthic communities would recolonize the impacted areas, and fish and wildlife would return. No effects to endangered or threatened species would occur.

This alternative would remove contaminated sediments from the river channel, with the objective of eliminating dredging restrictions in the harbor. Removal of contaminated sediments will reduce long term contaminant exposure to aquatic life and wildlife.

k. **Mitigative Techniques**.

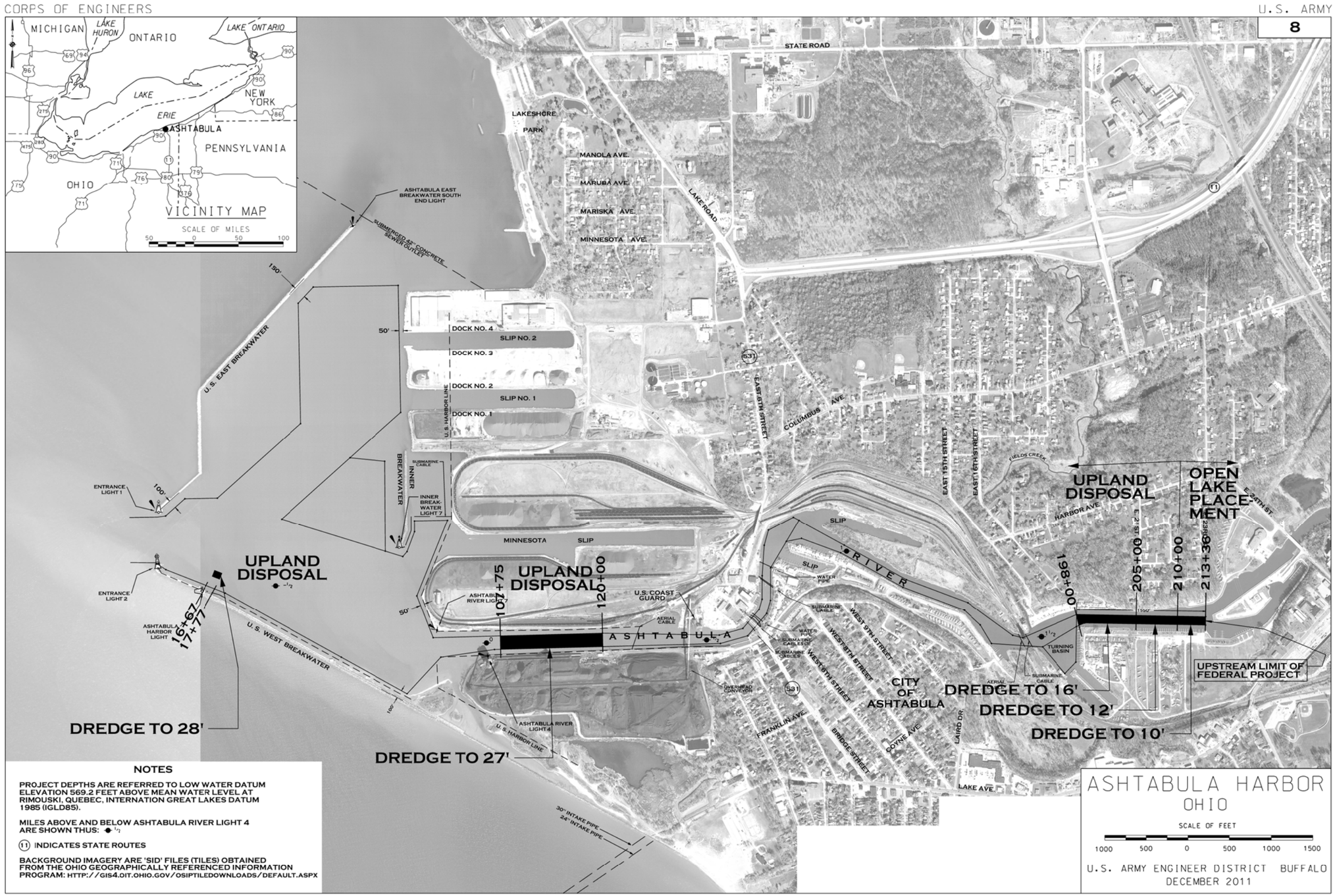
(1) *Preferred Design Alternative*: Dredging will not be performed during Lake Erie storm events. Care would be employed throughout the course of the dredging/discharge material placement operations to avoid the creation of unnecessary turbidity that may degrade water quality or adversely affect aquatic life outside the project area.

Dredged material return water would be retained for gross removal of solids prior to discharge; effluent would be monitored for a TSS criterion of 100 mg/L prior to discharge.

(2) *Non-Degradation Alternative*: N/A.

(3) *Minimum Degradation Alternative*: Dredging in Ashtabula Harbor will be scheduled to occur between July 1 and December 15 to minimize any potential impacts to local environmental resources, primarily fisheries. Dredging will not be performed during Lake Erie storm events. Care would be employed throughout the course of the dredging/dredged material placement operations to avoid the creation of unnecessary turbidity that may degrade water quality or adversely affect aquatic life outside the project area.

Dredged material return water would be retained for gross removal of solids prior to discharge; effluent would be monitored for a TSS criterion of 100 mg/L prior to discharge.

ATTACHMENT 1
PREFERRED DESIGN ALTERNATIVE
(DREDGE 11 ACRES, DEPTHS AS SHOWN [redacted])

ATTACHMENT 2
MINIMUM DEGRADATION ALTERNATIVE
(DREDGE 11 ACRES, DEPTHS AS SHOWN [redacted])