FINDING OF NO SIGNIFICANT IMPACT
HOLE-IN-THE-ROCK BACKWATER RESTORATION PROJECT
MISSOURI RIVER BANK STABILIZATION AND NAVIGATION
FISH AND WILDLIFE MITIGATION PROJECT
THURSTON COUNTY, NEBRASKA

August 2004

In accordance with the National Environmental Policy Act and implementing regulations, an Environmental Assessment (EA), incorporated by reference herein, has been prepared for a proposed backwater restoration project at Hole-in-the-Rock on the right, or west, bank of the Missouri River near River Mile 706.0 to fulfill the authorization of the Water Resources Development Act of 1986 (P.L. 99-662) Sec. 601. The area for the proposed project is located in Section 36, Township 26 North, Range 9 East and Section 1, Township 25 North, Range 9 East approximately 5 miles north of Macy in Thurston County, Nebraska. The entire site is on Nebraska land within the Omaha Indian Reservation. The project would consist of dredging 8 to 9 acres to create backwater habitat for the benefit of a variety of wildlife including waterfowl, mammals, amphibians, reptiles, and aquatic species such as the endangered pallid sturgeon and other fish species.

The No Action alternative was eliminated from further consideration because it would not fulfill the purpose and need of the proposed action, which is to restore backwater habitat lost as a result of the Missouri River Bank Stabilization and Navigation Project.

The EA and comments received from other agencies have been used to determine whether the proposed action requires the preparation of an environmental impact statement (EIS). All environmental, social, and economic factors that are relevant to the proposal were considered in this assessment. These include, but are not necessarily limited to; prime farmland, water quality, air quality, noise, wetlands, wildlife, threatened and endangered species, and cultural resources. The primary benefit of the proposed project would be the creation of backwater habitat adjacent to the Missouri River. Adverse effects would include temporary noise, dust, and water quality impacts. However, these effects were deemed to be insignificant. No adverse impacts to threatened or endangered species or cultural resources are expected to occur as a result of the proposed project. The proposed actions would be in compliance with applicable environmental statutes.

It is my finding, based on the EA, that the proposed Federal activity will have no significant adverse impacts on the environment and that the proposed project will not constitute a major Federal action significantly affecting the quality of the human environment. Therefore, an EIS will not be prepared.

SIGNED
COL JEFFREY A. BEDEY

Date: OCT 0 4 2004

Jeffrey A. Bedey
Colonel, Corps of Engineers
District Engineer

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1. INTRODUCTION

The U.S. Army Corps of Engineers, Omaha District (Corps) proposes to restore aquatic habitat in an old river chute along the right, or west, bank of the Missouri River at Hole-in-the-Rock near river mile (RM) 706. The proposed project site is located in Section 36, Township 26 North, Range 9 East and Section 1, Township 25 North, Range 9 East approximately 5 miles north of Macy in Thurston County, Nebraska (Appendix A, Exhibit 1). The entire site is on Nebraska land within the Omaha Indian Reservation. The proposed project is part of the Missouri River Bank Stabilization and Navigation Fish and Wildlife Mitigation Project and would consist of creating a backwater channel. Specifically, the existing outlet channel to the river has accumulated sediment in the last 20 to 30 years and would be excavated to ensure adequate connectivity to the Missouri River. An outlet to the Missouri River would be established by removing approximately 7,200 tons of stone from 450 linear feet of an existing stone revetment. The backwater channel would be excavated as shown on Exhibits 3, 5, and 6 in Appendix A. The excavated soil would either be placed in the Missouri River to be reclaimed by the river system or hauled offsite to be disposed of in approved upland areas.

2. PURPOSE AND NEED

The purpose of the proposed project is to mitigate for aquatic and terrestrial habitat losses that resulted from past channeling efforts on the Missouri River as part of the Missouri River Bank Stabilization and Navigation Project. Historically, the Missouri River contained side channels that spread the river across the flood plain in a natural alluvial process producing numerous islands, channels, chutes, sandbars, backwater areas, and wetlands. This process created a diverse ecosystem important to migratory waterfowl and shorebirds, and provided spawning, rearing, and feeding habitat for native riverine fish. The river complex also supported habitat for water-oriented species including numerous large and small mammals, amphibians, reptiles, and game and non-game birds. The Missouri River has been drastically altered from its natural condition due to the construction of dikes and revetments as part of the Missouri River Bank Stabilization and Navigation Project. A relatively narrow channel of uniform width has replaced the natural river. It was estimated that 522,000 acres of aquatic and terrestrial habitat would be eliminated from the natural channel and meander belt by the year 2003 (U.S. Army Corps of Engineers 1981).

The proposed restoration of a backwater area at Hole-in-the-Rock would restore one component of the once dynamic ecosystem associated with land adjacent to the Missouri River. The backwater would be designed to provide appropriate wildlife habitat. For example, disturbed areas along the channel would be seeded with native grasses for wildlife habitat and permanent erosion control. The backwater would also be designed to provide maximum benefits to native fish. The design would include a permanent connection to the Missouri River at the outlet and two 300-foot long over

wintering holes that would be the same width as the bottom of the backwater. These over wintering holes would have a depth of 10 to 12 feet deep during the winter when the flows are significantly lower in the main channel of the river.

In addition, a total of 25 downed cottonwood trees would be placed evenly along the shoreline of the backwater with the exception of the portion of the northern shoreline that is directly adjacent to the bluff line. The trees would be placed with the top portion of the tree in the backwater at a slight downstream angle and the bottom portion of the tree on the bank. Five of the trees would be anchored by burying the lower 1/3 of the trunk to a depth of 3 feet below the ground surface. The five trees that are anchored would be evenly spaced around the backwater. Valuable wildlife habitat would also be provided by the submergent and emergent aquatic vegetation that should grow on the relatively shallow slopes constructed on the riverward side of the backwater. The substrate provided by this vegetation, along with that provided by the downed trees, would benefit the production of aquatic invertebrates that would in turn provide food to a number of different fish species and their young. It would also provide cover, spawning, rearing, and feeding habitat to fish.

3. BACKGROUND

The Missouri River Bank Stabilization and Navigation Fish and Wildlife Mitigation Project, Missouri, Kansas, Iowa, and Nebraska was authorized by Section 601(a) of the Water Resources Development Act of 1986 (Public Law 99-662). Title VI of the Water Resources Development Act of 1986 authorizes the mitigation project in accordance with the plans and subject to the conditions recommended in the *Missouri River Bank Stabilization and Navigation Project Final Feasibility Report and Final Environmental Impact Statement (EIS) for the Fish and Wildlife Mitigation Plan* (U.S. Army Corps of Engineers 1981). The intent of the mitigation project is to restore, preserve, and develop 18,200 acres of existing public lands and acquire and develop 29,900 acres of non-public land. A total of 48,100 acres of land in the four affected states would be acquired, restored, preserved, and developed for the mitigation project. Allocations of the acreage by affected state are presented in the report titled *Missouri River Bank Stabilization and Navigation Fish and Wildlife Mitigation Project, Reaffirmation Report* (U.S. Army Corps of Engineers 1990). In The Water Resources Development Act of 1999 (Public Law 106-53) Congress authorized the acquisition of an additional 118,650 acres for mitigation, increasing the total acreage authorized by the Missouri River Fish and Wildlife Mitigation Project to 166,750 acres.

4. AUHTORITY

The authority for project construction is the Water Resources Development Acts of 1986 (Public Law 99-662) and 1999 (Public Law 106-53).

5. ALTERNATIVES CONSIDERED

5.1. Alternative 1: Flow-Through Chute

Reconnection of the dry lake to the Missouri River in the form of a 3,550-foot-long flow-through chute would involve the following: 1) notching the upstream river control structures, 2) constructing a 10-foot wide pilot channel through the dry lake area, and, 3) widening the outlet (Appendix A, Exhibits 2, 4, 5, and 6). Very high flow events would initiate scouring and widening of the channel, which should erode to an ultimate width of approximately 150 feet. The erosion of the channel would take a considerable amount of time because this reach of the river historically has slow flows and thus has few high flow events to scour out the pilot channel. The channel would be free to meander across the former oxbow lake area and develop alternate point bars but meander activity would not be great enough to erode landward of the historic high bank.

Material excavated from the pilot channel would be placed adjacent to the channel and allowed to erode or it would be discharged into the Missouri River using a hydraulic dredge. The dynamic nature of the chute would create and fill wetland areas within the former oxbow lake area during high flow events. Emergent vegetation should develop along the channel margins and snags would likely accumulate in the channel. The substrate provided by the emergent vegetation and the snags would benefit the production of aquatic invertebrates, which are a major food source for fish. Many species of fish would use the channel margins and the vegetation and snags within them for breeding, cover, and feeding. Predatory fish species such as sauger, sturgeon, walleye, catfish, and northern pike would hunt among the bars, snags, and emergent plant beds. Fish species such as buffalo, carpsucker, shad, redhorse, and gar would find refuge from the main channel velocities, abundant food among off-channel habitat, and breeding and rearing areas among the snags, bars, and vegetation. Waterfowl, wading birds, and shorebirds would also benefit from the chute and the wetlands that would likely develop adjacent to the chute. This area would also be attractive to a variety of furbearers such as raccoon, mink, muskrat, beaver, and river otter.

If site conditions are conducive to the development of a self-maintaining flow through chute at Hole-in-the-Rock, this alternative would require little or no management and the maintenance costs, excluding any dredging cost to remove deposited chute sediment, would be relatively low. However, continued streambed degradation in the Missouri River adjacent to the site would decrease the amount of water entering the chute in the future which would decrease the number of wetted acres.

5.2. Alternative 2: Backwater Restoration

This alternative is similar to Alternative 1; however, it would function as a backwater rather than a flow-through chute. The upstream river control structures would not be notched preventing an upstream connection to the Missouri River, and the backwater would be excavated to a length of 2,700 feet upstream from the outlet structure (versus a 3,550-foot chute in Alternative 1). The existing outlet channel to the river has

accumulated sediment in the last 20 to 30 years and would be excavated to ensure adequate connectivity to the Missouri River. The backwater channel would be excavated as shown in Exhibits 3, 5, and 6 in Appendix A. The type of equipment used for excavation would be the contractor's decision and is currently unknown. The contractor would dispose of the approximately 70,050 cubic yards of excavated silty sand by either hauling it to an approved upland area offsite or, more likely, by using a hydraulic dredge to discharge it into the Missouri River. The discharge of hydraulic dredge material would occur only during periods when the Missouri River flows are greater than 25,000 cubic feet per second (cfs), which corresponds to a Blair gage reading of 12.85 feet. The end of the discharge pipe would be submerged in the thalweg, approximately 25 feet from the right bank. The outfall would be suspended 4 to 6 feet off the riverbed, in an area where the water is at least 11 feet deep. Missouri River discharges are typically above 25,000 cfs from April 1 to November 30. In addition, approximately 7,200 tons of stone would be removed from a 450-foot section of an existing rock revetment to create an outlet for the backwater. Most of the stone would be stockpiled to be used in other Corps projects. Any remaining stone would be pushed down to make the revetment shorter and wider. Disturbed areas along the channel would be seeded with a mixture of oats (to provide temporary erosion control) and switch grass, big bluestem, prairie cord grass, Canada wild rye, and Western wheat grass for wildlife habitat and permanent erosion control.

The backwater would be designed to provide maximum benefits to native fish. For example, the design would include a permanent connection to the Missouri River at the outlet, and two 300-foot over wintering holes that would be the same width as the bottom of the backwater. These over wintering holes would have a depth of 10 to 12 feet deep during the winter when the flows are significantly lower in the main channel of the river. A plan view is presented in Appendix A, Exhibit 3. The backwater channel would be excavated to the cross section as shown in Appendix A, Exhibit 6 (Alternative #2). The constructed bottom width of the backwater would be 50 to 75 feet. The side slopes would be constructed at slopes of 1:2 on the landward side and 1:10 on the riverward side.

In addition, a total of 25 downed cottonwood trees, or large woody debris (LWD), would be placed evenly along the shoreline of the backwater with the exception of the portion of the northern shoreline that is directly adjacent to the bluff line. Trees used would have all or a portion of the crown intact, and be a minimum of 20 feet tall with a minimum diameter at breast height (DBH) of 12 inches. The relatively shallow slopes that would be constructed on the riverward side of the backwater would create conditions conducive to the growth of submergent and emergent aquatic vegetation. The substrate provided by this vegetation, along with that provided by the submerged trees, would benefit the production of aquatic invertebrates that would in turn provide food to a number of different fish species and their young. It would also provide cover, spawning, rearing, and feeding habitat to fish. Predatory fish species such as sauger, walleye, catfish, and northern pike would hunt amongst the LWD and emergent plant beds. Fish species such as buffalo, carpsucker, shad, redhorse, and gar would find refuge from the main channel velocities, abundant food among off-channel habitat, and breeding and rearing areas among the snags, bars, and vegetation. Feeding, loafing, roosting, and

staging areas for shorebirds, wading birds, and waterfowl would also be created. The abundance of small fish in the backwater would not only attract avian species like the least tern, great blue heron, and bald eagle, but also mammals such as the raccoon, mink, and river otter. Other furbearers such as the muskrat and beaver would also be attracted to the backwater.

5.3. Alternative 3: No Action

Under the no action alternative, there would be no creation of a backwater chute to benefit native species that historically inhabited the Missouri River and its flood plain. The proposed project area consists of soil that has accreted in the last 20 to 30 years. If no action were taken, the site would continue to transition into terrestrial habitat. The no action alternative would do little to fulfill the goal of the fish and wildlife mitigation project, which is to restore large-river habitat and associated chutes and backwaters in the flood plain adjacent to the main channel of the Missouri River.

6. ALTERNATIVES ELIMINATED FROM FURTHER CONSIDERATION

6.1. Alternative 1: Flow-Through Chute

Alternative 1 is practical from an engineering point of view. However, the HEC-RAS computer model results showed that the flow-through pilot channel for Alternative 1 produced water velocities less than 2.0 feet per second (fps). Velocities in this range have not historically been able to move sediment to keep channels open. The simulated velocities would allow for deposition of sediments from the main channel into the flow through chute, causing a loss in capacity and possibly complete blockage in the future. Based on this analysis, Alternative 1 would not be the recommended alternative as a sustainable solution.

6.2. Alternative 3: No Action

Alternative 3 was eliminated from further consideration because this alternative would not fulfill the goal of the project, which is to restore large-river habitat and associated chutes and backwaters in the floodplain adjacent to the main channel of the Missouri River. If no action were taken, the site would continue to transition into terrestrial habitat. The no action alternative would do little to fulfill the goal of the fish and wildlife mitigation project, which is to restore large-river habitat and associated chutes and backwaters in the flood plain adjacent to the main channel of the Missouri River.

7. AFFECTED ENVIRONMENT

7.1. Physiography/Topography

The Hole-in-the-Rock site is located in the Missouri River floodplain within the Dissected Till Plains section of the Central Lowland physiographic province. The land in the proposed project area is relatively level, with an elevation of 1,046 to 1,048 feet above mean sea level (m.s.l.). Historical maps show that the river channel meandered across the flood plain and changed course several times prior to channelization. Remnant depressional areas and drainage patterns reveal the locations of former channels, chutes, and backwaters. These areas presently hold water seasonally and during high-water events. Confinement of the Missouri River's flow has resulted in a narrower and deeper channel and has led to aggradation of sediments on the adjacent floodplains, including deposition of sediment in the area to be dredged.

7.2. Soils

The area proposed for dredging was mainly covered by water at the time of the Thurston County soil survey that was published in 1972 and based on a 1965 photo base (Appendix B, Exhibit 1). At the time of the survey, the western edge of the proposed project area was located on soils of the Monona-Ida and Albaton-Haynie associations. The Monona-Ida association consists of well drained, sloping to very steep, silty soils on uplands and the Albaton-Haynie association consists of poorly drained and moderately well drained, nearly level, clayey to loamy soils on river bottoms (USDA 1972).

7.3. Cropland/Prime Farmland

The United States Department of Agriculture (USDA) considers prime farmland to be land that has the best combination of physical and chemical characteristics that are readily available for producing crops. Prime farmland has the soil quality, growing season, and moisture supply needed to economically produce sustained high yields of crops when treated and managed according to acceptable farming methods. Prime farmlands are not excessively erodible or saturated with water for a long period of time, and they either do not flood frequently or are protected from flooding.

The site proposed for dredging for the backwater restoration at Hole-in-the-Rock was once covered by water, is now covered by alluvium deposited by Missouri River over bank flows, has been used in the past for hunting and fishing, and has no history of being planted to crops. In fact, the property on which the potential backwater restoration is located was historically an oxbow lake and consists of ground that has accreted in the last 20 to 30 years. The Natural Resources Conservation Service (NRCS) was contacted in January 2004 regarding prime farmland within the project site. An NRCS soil scientist indicated that Haynie silt loam, which may occur in a small portion of the western edge of the proposed excavation site (Appendix B, Exhibit 1), is prime farmland.

7.4. Fluvial Characteristics

Historically, the Missouri River flooded into its floodplain on an annual basis and tended to naturally meander within it. As a result, erosion and turbidity were major habitat features, carbon-based aquatic food sources and other nutrients were transported from the flood plain to the river, and the natural fluvial process of the river caused new secondary and tertiary channels to form and degrade in a dynamic equilibrium. The main channel typically had a deep thalweg that contained the highest velocities, and shallower areas were found on one or both sides of the channel. The channel was irregular in cross-section and exhibited a highly non-uniform velocity distribution (Hesse 1993). Currently, due to man's harnessing of the river, the historically dynamic river is very controlled. The river has been reduced in width and has been straightened to some degree through various actions over time. Meanders have been cut off, the floodplain has been constrained by levees, and the geometry of the channel is now more uniform in shape. From 1879 to 1972, the surface area of the river has been reduced by 50 percent, shortened in length by 45 miles, and the total area of sand islands declined by 97 percent (Galat et al. 1998). Its current condition (i.e., the lack of snags, sand bars, and side channels and shallow border area) has caused an increase in flow velocity, which today measures roughly three miles per hour (4.4 fps) at usual levels of river discharge (Schneiders 1999).

7.5. Water Quality

Prior to dam construction, the Missouri River was a dynamic, free-flowing river. As such, continuous bank erosion was common, and the Missouri River naturally tended to be a turbid river. Many of the native fish species in the Missouri River, such as the pallid sturgeon, are specially adapted for life in turbid waters like those that were present in the historic river. As a result of the upstream reservoirs being constructed in the mid-20th century, currently turbidity is lower than the natural condition. The suspended sediment load has decreased by 69 to 99 percent, depending on location and proximity to the main stem dams. Releases from Gavins Point Dam tend to be cooler than the historic river temperature, free of sediment, low in nutrients, and saturated with dissolved oxygen. With increasing distance from Gavins Point dam, the water temperature, turbidity, and nutrients tend to increase due to tributary input.

Since the implementation of the Clean Water Act over the last 30 years, water quality has improved with regard to pollutant levels in the Missouri River. Primary sources of pollution in the river include runoff of fertilizer, pesticides, and herbicides from the predominantly agricultural watershed, as well as discharges from municipal wastewater treatment facilities and other urban industrial operations. A few reports are cited below to highlight the main pollutants that are known to occur in the Missouri River; however, the reports do not suggest any major impairment to the river due to pollution.

It has been shown that increasing levels of fertilizers, pesticides, herbicides, and nutrients tend to increase with increasing distance downstream from the Gavins Point

Dam (USGS 2002). Fish collections have been made in the Missouri River that show elevated levels of pollutants in tissue samples. For example, the Nebraska Department of Health (NDH) issued consumption advisories in 2004 for the Missouri River from Omaha to Rulo due to polychlorinated biphenyls (industrial use), and dieldrin (agricultural pesticide) concentrations in fish (NGPC 2004). While these pollutants now occur at very low levels in the river, they can tend to bioaccumulate in fish tissues. However, NDH notes that a person eating 8 ounces of fish per week or less from this source is not considered subject to significant health risks.

Water quality management of the Missouri River is under the jurisdiction of the states. As required by the Clean Water Act, the Nebraska Department of Environmental Quality (NDEQ) and the Iowa Department of Natural Resources (IDNR) assessed and reported water quality data and information for the purpose of identifying the extent to which navigable waters support their designated uses, i.e., as a drinking water supply, for swimming and other recreation, fish and shellfish consumption, agriculture and as a habitat for wildlife. Both states have placed the Missouri River on the 303(d) list for water quality impairment mainly for reasons related to the beneficial use of "aquatic life support." The 2002 303(d) list for Iowa (IDNR 2002) states the reason is mainly due to lack of habitat attributable to river alterations due to channelization and flow modification. The Nebraska report (NDEQ 2002) states that fecal coliform from point and non-point sources and pH levels are the reasons for its listing.

Three sediment and water samples were collected at the proposed dredging site on January 20, 2004 (Appendix C). Parameters measured included total ammonia as N, chemical oxygen demand, turbidity, total suspended solids, pH, atrazine, biochemical oxygen demand, iron, copper, and lead. The substances included those that would reveal the presence of residual pesticides, herbicides, and fertilizer from agricultural runoff or industrial pollutants carried by wind or water. Ammonia as N was detected in the samples at levels ranging from 0.73-3.8 mg/L. Ammonia as N is used as an agricultural fertilizer and would be the most likely source at the site. Turbidity ranged from 0.4 to 3 Nephelometric Turbidity Units (NTUs). The chemical oxygen demand ranged from 7 to 16 mg/L in the samples, pH ranged from 8.2 to 8.4, and iron ranged from 40 to 60 µg/L (Appendix C).

Because the Omaha Tribe has no approved water quality standards or Section 401 authority for the purpose of regulating water resources within the borders of an Indian reservation pursuant to Section 518(e) of the Clean Water Act (Ousley 2004), sampling results were sent to the Environmental Protection Agency (EPA) to be reviewed for issuance of a water quality certification. Section 401 certification for discharge into the river was received from the Environmental Protection Agency.

7.6. Air Quality

Sources of suspended particulate matter and air pollutants in the project area include agricultural and recreational boating activities in the vicinity of the restoration site. One air quality monitoring station is in Thurston County that collects air quality

data as part of the Interagency Monitoring of Protected Visual Environments (IMPROVE) program (Hetzler 2004). This program is a cooperative measurement effort governed by a steering committee composed of representatives of Federal and regional-state organizations. The objectives of the program are to establish current visibility and aerosol conditions in mandatory class I areas; to identify chemical species and emission sources responsible for existing man-made visibility impairment; to document long-term trends for assessing progress towards the national visibility goal; and to provide regional haze monitoring representing all visibility-protected Federal class I areas where practical (IMPROVE 2004). Data for air quality parameters monitored in Thurston County can be accessed at the following web site by looking at data for the Omaha Tribe monitoring location: http://vista.cira.colostate.edu/improve/data/dataquery/querywizardclient.aspx However, the IMPROVE monitor in Thurston County is not used to officially test for compliance with the National Ambient Air Quality Standards. The IMPROVE monitor tests for a variety of parameters including aerosol extinction, aluminum, ammonium nitrate, ammonium sulfate, ammonium ion, arsenic, bromine, calcium, carbon, chloride, chlorine, chromium, coarse mass extinction, copper, hydrogen, iron, lead, magnesium, manganese, molybdenum, nickel, nitrate, nitrite, particulate matter (PM) 10, PM 2.5-10, PM 2.5, phosphorous, potassium, reconstructed fine mass, relative humidity, rubidium, selenium, silicon, sodium, soil, soil extinction, strontium, sulfate, sulfur, sulfur dioxide, titanium, vanadium, zinc, and zirconium.

7.7. Noise

Sources of noise in and around the project site result from recreational boating, commercial barges, hunting, and agricultural activities. These activities are seasonal. In the spring and fall, tractor and truck use increases on farms near the project site. Waterfowl may be hunted on the property during the fall and winter. Recreational boating on the Missouri River primarily occurs during the summer months. Background noise levels are generally low.

7.8. Wetlands and Riparian Vegetation

A National Wetlands Inventory (NWI) map was checked for information regarding potential wetlands in the proposed project area. According to the NWI map (Appendix A, Exhibit 7), the proposed excavation area consists of a palustrine emergent seasonally flooded wetland (PEMC) and there are also a variety of wetlands to the north of the project site. PEMC wetlands are less than 20 acres in size, have surface water present for extended periods, especially early in the growing season, have, at low water, a depth less than 2 meters (6.6 feet) in the deepest part of the basin, and are characterized by erect, rooted, herbaceous hydrophytes, excluding mosses and lichens, that is present for most of the growing season in most years (Cowardin et al. 1979). The NWI map was created in 1987 and the northern part of the channel depicted as open water on the map has since accreted sediment. A March 26, 2004 site visit confirmed that the northern section of the proposed project area currently exhibits characteristics of a palustrine wetland while the southern portion of the project area consists of shallow, open water that

will continue to accrete sediment and become wetlands unless the channel is excavated and deepened (Appendix D).

7.9. Fish

The Missouri River has historically been a turbid river, but the placement of dams has reduced the sediment load by trapping it in the reservoir basins. The lowered sediment load and turbidity in the modern river have made fish species that evolved in dark turbid environments more vulnerable to predation and competition from sight-feeding predators. The historic flood plain habitat of the Missouri River also provided important habitat features and functions for riverine fishes. Cottonwoods and other trees washed into the river during floods and collected in side channels along inside bends or behind sandbars and islands. As the trees decomposed, food and substrate were provided for insects and other organisms, which were in turn consumed by fish. The trees also created a complex habitat utilized by fish for cover. The main channel border areas and available side channels provided a diversity of depths and flows and probably served as nursery and feeding areas for many species of fish (Funk and Robinson 1974). Specifically, depth and flow diversity in the main channel border area are thought to be important habitat elements to endangered pallid sturgeon.

About 100 species regularly use the main channel or flood plain habitats downstream from Gavins Point Dam; about 35 native species are thought to be declining, whereas some 23 species (including 9 introduced species) are thought to be increasing (Hesse 1996). Studies of the benthic fishes within the Missouri River were conducted between 1995 and 1999 (USACE 2001). The studies indicate that the overall diversity of species in the unchannelized reaches is greatest, which reflects the greater number of microhabitats and available niches that are reflective of a more natural river channel. The most commonly captured species in the project areas (channelized reach) include emerald shiners (*Notropis atherinoides*), red shiners (*Cyprinella lutrensis*), gizzard shad (*Dorosoma cepedianum*), and river carpsuckers (*Carpiodes carpio*). The study also shows the fish more often use habitats associated with shallow depths and slower velocities. Species utilizing fast currents were shovelnose sturgeon (*Scaphirhynchus platorynchus*), blue sucker (*Cycleptus elongatus*), sicklefin chub (*Macrhybopsis meekii*) and sturgeon chub (*Macrhybopsis gelida*); while walleye (*Stizostedion vitreum*) and sauger (*Stizostedion canadense*) utilize medium flow areas; and bigmouth buffalo (*Ictiobus cyprinellus*), freshwater drum (*Aplodinotus grunniens*), and river carpsuckers use slow water habitat. Suitable nursery areas in the river are limited because of high velocity, turbulent flows, and silt and sand loads (USACE 1994). Freshwater drum, suckers (*Catistomidae*), minnows, and common carp (*Cyprinius carpio*) are the dominant larval species in the Missouri River. Spawning areas occur along the shoreline, in backwaters, and behind channel control structures. Over wintering habitats available to fish include deep scour areas with velocities that are relatively calm compared to the main channel, as well as the main channel itself during non-navigational winter discharges for main channel fish such as shovelnose sturgeon (Latka 1994). Scour areas are currently found behind dikes. In natural conditions, fish probably found backwaters with deep water and fall connectivity to the river to be suitable as winter refugia.

7.10. Wildlife

The lands in the vicinity of the project site are likely inhabited by a variety of wildlife species typical to lowlands adjacent to the Missouri River. Some of the common mammals that may inhabit the general project area include white-tailed deer, raccoons, opossums, eastern cottontail rabbits, skunks, fox squirrels, beavers, muskrats, and red foxes. Resident bird species that could be found in the general project area include wild turkeys, mourning doves, brown thrashers, eastern kingbirds, American goldfinches, American robins, Northern orioles, blue jays, and cardinals. Large numbers of migratory waterfowl and passerine birds also pass through the project area on their annual migrations. The Missouri River is part of the Central Flyway and serves as a major forested corridor for migrating birds. In addition, several species of reptiles and amphibians could be found at the site or in the adjacent Missouri River. These include northern leopard frogs, bullfrogs, northern cricket frogs, American toads, western painted turtles, snapping turtles, spiny softshell turtles, false map turtles, garter snakes, and bull snakes.

7.11. Federally Threatened and Endangered Species

In compliance with the Endangered Species Act, the Corps requested that the U.S. Fish and Wildlife Service (USFWS) provide a list of federally listed threatened or endangered species that may be found in the proposed project area. The USFWS responded with a comment dated March 2, 2004 determining that the activity as described is not likely to adversely affect federally listed species or designated critical habitat (Appendix B, Exhibit 2). The federally endangered interior least tern (*Sterna antillarum*) and federally threatened piping plover (*Charadrius melodus*) have not been recorded to nest in the channelized portion of the river where the project is located. However, two threatened and endangered species potentially occur in the project area: the federally threatened bald eagle (*Haliaeetus leucocephalus*) and the federally endangered pallid sturgeon (*Scaphirhynchus albus*).

7.11.1. Pallid Sturgeon, *Scaphirhynchus albus* (Endangered)

The pallid sturgeon was listed as an endangered species on September 6, 1990. It inhabits the Missouri River and the Mississippi River below the mouth of the Missouri. Little is known about the basic biology, life history, and habitat utilization of this species.

Pallid sturgeon abundance has declined throughout the Missouri River since construction of the Missouri River Bank Stabilization and Navigation Project (Carlson and Pflieger 1981). Over fishing, pollution, and hybridization that have occurred due to habitat alterations have also contributed to the population decline of the species (USFWS 1993). Destruction and alteration of habitats by human modification of the river system is believed to be the primary cause of declines in reproduction, growth and survival of pallid sturgeon, and the recovery of the species is unlikely if habitat elements of the Missouri and Mississippi River are not restored (USFWS 1993). The current acreage of

aquatic habitat, which includes a variety of habitat types such as shallow water habitat (SWH) and chutes, from Sioux City to the mouth is 4 percent of the historic acreage (personal communication: John Remus, USACE).

Very little is known about the current status of the pallid sturgeon in the Missouri River below Gavins Point Dam (USFWS 2000). Capture/recapture data are infrequent. Hatchery-raised juvenile pallid sturgeon were stocked below Gavins Point Dam and in the lower Platte River during the 1990s. Rough estimates of 1 to 5 pallid sturgeon per kilometer in the channelized river have been made to provide a total estimate of between 1,303 and 6,516 in this river section (Duffy et al. 1996). In a study conducted in the lower 200 miles of the Missouri River, it was noted the ratio of pallid sturgeon to all river sturgeon (including shovelnose, pallid, hybrid, and lake sturgeon) decreased from 1:311 in 1996 to 2000 to 1:387 in 2002 (USFWS 2003b).

In the Middle Mississippi River, pallid sturgeon has been shown to prefer main channel border, downstream island tips, areas between wing dams, and scour areas off wing-dam tips (Sheehan et al. 2000). On the Platte River, observations of hatchery reared pallid sturgeon usually occurred in areas downstream of sandbars where currents converge (Snook and Peters 2000). The range of water depths shown to be used by pallid sturgeon varies across studies; for example, an average of 12.5 and 20 feet in Mississippi River studies by the Missouri Department of Conservation and the Corps' Research and Development Center, respectively, and 1 to 3 feet in the Platte River (Snook and Peters 2000).

7.11.2. Bald Eagle, *Haliaeetus leucocephalus* (Threatened)

The bald eagle was listed as an endangered species in 1978 following a dramatic drop in population that began at the turn of the century. Its status was upgraded to threatened on August 11, 1995. It was petitioned for delisting on July 6, 1999 (64 FR 36454).

Migrating and wintering bald eagles may be found using the large cottonwood trees along the Missouri River in Nebraska and Iowa as feeding perches between November 1 and April 1. At night, wintering bald eagles may congregate at communal roosts and will travel as much as 12 miles from feeding areas to a roost site. Preferred roosting areas are those that provide shelter from the wind and are near a body of water (Steenhof et al. 1980). Winter use is highest where the river is ice-free and adequate perch sites are available. Because the construction of this project will be limited to the spring and early summer, impacts to winter roost sites or perching sites are not expected. The period January 1 to March 1 is important for initiating nesting activity; March 1 to May 15 is the most critical time for incubation and rearing of young (Scott 2002). Nesting usually occurs in large trees with specific size and structure characteristics and generally occurs in the same territories in subsequent years (Stalmaster 1987). Nesting sites are also selected based on relative distances to shorelines of lakes or rivers and usually away from human disturbance. No live bald eagles or bald eagle nests were observed at Hole-in-the-Rock during the March 26, 2004 site visit, although one dead adult bald eagle was found at the base of the bluff near the area of open water. The bald

eagle appeared to have died of natural causes. Because its wings were outspread, it had possibly collided with the bluff when visibility was poor, such as during a snowstorm.

7.12. State Threatened and Endangered Species

In a letter dated February 6, 2004 (Appendix B, Exhibit 3) the Nebraska Game and Parks Commission (NGPC) provided a list of state threatened and endangered species that have been observed, collected, or are otherwise likely to be found along the Missouri River. The list included the pallid sturgeon (*Scaphirhyncus albus*) and bald eagle (*Haliaeetus leucocephalus*), which are both state and federally endangered. These species were previously discussed in the Federally Threatened and Endangered Species section. Nebraska threatened and endangered species that may be found in the Missouri River include the sturgeon chub (*Macrhybopsis gelida*) and lake sturgeon (*Acipenser fulvescens*).

7.12.1. Sturgeon Chub, *Macrhybopsis gelida* (NE Endangered)

Sturgeon chub are associated with fast flowing water and a gravel riverbed. The species has been collected in side chutes and backwaters. It is thought these kinds of areas provide spawning habitat to the fish. Sturgeon chub feed on invertebrates. Similar to lake and pallid sturgeons, alterations to the natural hydrograph, depletions, and river channelization have likely caused the decline of the sturgeon chub.

7.12.2. Lake Sturgeon, *Acipenser fulvescens* (IA Endangered, NE Threatened)

It is believed the lake sturgeon occupies similar habitats as the pallid sturgeon and both species spend a greater proportion of time in the Missouri River than the Platte River. Lake sturgeon feed on invertebrates and small fish and can be found at the downstream margins of islands and river confluences. Alterations to the natural hydrograph, river channelization, and flow depletions also have caused the decline of this species.

7.13. Cultural Resources

A Corps archaeologist performed a pedestrian survey at the project site on January 16, 2004. The Corps archaeologist also completed a site file search at the Nebraska Historical Society on January 23, 2004 and consulted the National Register of Historic Places to determine if any eligible or listed sites are located in the proposed project area. The Cultural Resources Reconnaissance Study (Appendix B, Exhibit 4) concluded that no archaeological sites are located in the area that would be affected by construction of the project. Two prehistoric burial sites are located on the uplands above the flood plain and two historic sites are located on the edge of the bluffs overlooking the flood plain south of the project area, but these are outside of the project area. Two steamboat wrecks, the *Gus Lynn* and the *Eclipse*, were reported near the project area. It is unlikely that construction of the project would result in the discovery of these wrecks or other buried cultural resources because the project area is made up of sediment that has

been deposited in the last 30 years. In a letter dated March 11, 2004 the Nebraska State Historical Society concurred with the findings of the report that no archaeological, architectural, or historic context property resources would be affected by the proposed project (Appendix B, Exhibit 5).

7.14. Socioeconomic Resources

The project site is located on the eastern side of Thurston County, Nebraska near the Missouri River. Macy, Nebraska is located about 5 miles to the south and is the largest town near the project site. In 2000, Macy had a population of approximately 956 citizens (U.S. Census Bureau 2000). Macy is the site of the Omaha Indian Tribe's annual powwow in August.

The Omaha Tribe's major economic occupations are Tribal and Federal government administration, farming by both Tribal and non-Tribal operators, or staff positions relative to the Tribal Casino operation (Mni Sose 2003). The majority of employment is provided by the Omaha Tribe, the Casino, Bureau of Indian Affairs, and the Carl T. Curtis Health Center, a Tribal health facility (Mni Sose 2003). Commercial business by private operators include: a gas station, two grocery stores, a bait shop, and an arts and handcrafts shop. The major commercial center for service area residents is Sioux City, Iowa, 26 miles north of the reservation.

8. ENVIRONMENTAL CONSEQUENCES

8.1. Physiography/Topography

Excavation of material at the proposed backwater restoration site would increase the local relief, or the difference in elevation between the high banks and the flat backwater area below. Because bluffs exist directly to the west of the proposed project site, there are no agricultural land or homes that would experience an added threat due to flooding. The changes in physiography and topography of the dredging area resulting from the project site would have no significant impact.

8.2. Soils

As a result of the proposed restoration project, a portion of the Monona-Ida and Albaton-Haynie soil mapping unit on the Thurston County Soil Survey could be replaced with the water soil-mapping unit, depending on the Missouri River water levels relative to the bottom elevation of the backwater channel during any future soil survey.

8.3. Cropland/Prime Farmland

A soil scientist with the NRCS indicated there are prime farmland soils in the project area. However, because this soil is at the edge of the proposed excavation area and only a small area will be affected there will be no significant impact of the proposed

project on prime farmland. The exchange of soils with the river in the floodplain is a natural process and the loss of prime farmland in this area is not irretrievable.

8.4. Fluvial Characteristics

The dredging would increase the amount of Missouri River water entering backwater areas and provide connectivity between the river and the secondary channels to increase the quality and quantity of spawning, rearing, and foraging areas for native fish. Water entering the Missouri River from the backwater restoration would tend to be rich in carbon and other nutrients, adding to the potential productivity of the river. The project would have beneficial impacts and no significant adverse impacts on fluvial characteristics of the Missouri River.

8.5. Water Quality

Discharged material will primarily affect Missouri River water quality for a short distance downstream. The dredged material will be at the highest concentration level at the discharge point in the Missouri River. Dispersion will take place immediately after the discharge point and will rapidly dilute to background levels within a distance of 2000 meters downstream. The discharge pipe would be placed in the thalweg. This deep-water discharge would be mixed both vertically and horizontally which would lessen the impacts. This was successfully demonstrated in 1996 by the Hidden Lake/Great Marsh restoration project. The discharge would not pose an adverse impact to human use.

Elutriate sample results were included in a Section 404 permit application (Appendix E) that was sent to the Corps' Omaha Regulatory Office, which regulates discharges of dredge or fill material into waters of the United States pursuant to Section 404 of the Clean Water Act. The Regulatory Office is expected to grant a type of Section 404 permit called an Individual Permit.

Section 401 of the Clean Water Act allows states or the EPA to grant or deny water quality certification for any activity that results in a discharge to waters of the United States and requires a Federal permit or license. Certification requires a finding by the state or EPA that the activities permitted will comply with all water quality standards individually or cumulatively over the term of the permit. On April 16, 2004 the 404 permit application was copy furnished to the EPA and Omaha Tribe in order to provide the EPA with the information about the project that was needed for issuance of a 401 water quality certification (Appendix B, Exhibits 6 and 7). Since the Iowa DNR serves as a consulting agency to the EPA in the issuance of the certification (Schwake 2004a), they were copy furnished the information as well. The EPA reviewed the information and issued a 401 water quality certification on June 10, 2004 (Appendix B, Exhibit 8). The EPA certified that the project as described will comply with applicable provisions of the Clean Water Act provided the Corps follows general and special conditions outlined in the EPA's June 10, 2004 letter.

8.6. Air Quality

Minor increases in dust and equipment exhaust are expected during construction. These increases would be temporary and would not be expected to be high. Therefore, the proposed project would have no significant impacts on air quality

8.7. Noise

Minor increases in noise from construction equipment are expected at the project during construction. The expected increases in noise would be minor, temporary, and similar to those already occurring in the area from farm machinery. Therefore, the expected increases in noise levels from project construction would not be significant.

Increases in recreation would be expected after project construction. Increases in the number of hunting days may result in increased rifle noise, and increases in boat use by hunters and fishermen may result in increases in noise from boat engines. The expected increases in noise after project construction from boaters who use the backwater would not be significant.

8.8 Wetlands and Riparian Vegetation

Although approximately 8 to 9 acres of palustrine wetlands would be dredged to create the backwater area, these wetlands were observed to have a low diversity of plant species during a March 26, 2004 site visit. In addition, these wetlands are inaccessible to fish because they are not directly connected to the river channel. The proposed creation of shallow water habitat would create a backwater area 8 to 9 acres in size that consists primarily of open water. Some areas of the backwater area would contain emergent macrophytic vegetation. The 450-foot wide outlet would provide a hydrologic connection to the Missouri River and make the backwater area accessible by the endangered pallid sturgeon and other fish species. The backwater area would also provide quality habitat for waterfowl, shorebirds, amphibians, reptiles, furbearers, and other mammals. Thus, the proposed project is likely to positively impact aquatic resources.

Wooded riparian habitats support valuable resources for fish and wildlife. They are dependent on imported water, nutrients, and sediments and are vulnerable to alteration when deprived of these materials (Brinson 1990). The proposed project would not decrease, but would likely increase the ability of the woodlands to receive any of these resources. Thus, the project is expected to have no adverse impacts on the adjacent riparian systems of the Missouri River or on the remnant secondary channels.

8.9. Fish

Little is known about exactly what factors actually control fish production in this reach of the river. The proposed project would likely benefit fish because it will provide a more natural diversity of habitats not found in the main channel/main channel border area, which in turn would provide increased potential for production, rearing, and refuge

for invertebrates and fish. The larval stage is a bottleneck in the life cycle of fishes. The river's sandbars and the slow-moving, shallow water associated with them have historically provided larval fish with the habitat necessary for survival. By providing more of this currently lacking habitat, this project should benefit many species of fish. Aquatic vegetation in the backwater and trees that erode into it and/or are carried into the river by floodwaters would add carbon to the river system and provide areas of complex habitat, substrate for invertebrates, shelter from current, and hiding places for forage fish. The backwater would also have two 300-foot long over wintering holes for fish.

Use of a dredge to excavate the area may impact invertebrates in the soil within the localized project area. Fish have also been known to be inhaled into a dredge. When comparing the acres dredged to the habitat available for these species, however, these impacts are considered insignificant at the regional level. For these reasons, the net impact to fish is considered a positive one.

For detailed information on benefits of the project to pallid sturgeon, please refer to the Federally Threatened and Endangered Species section of this environmental assessment.

8.10. Wildlife

Some animals may be disturbed or displaced during construction; however, this would be a temporary and minor impact. After construction is complete, the backwater produced would attract and provide food and cover for a diversity of waterfowl and other wildlife. Small mammals would be able to find food and cover in the area. Several species of passerines such as common yellowthroats, indigo buntings, and sedge wrens would be expected to utilize the drier wetland areas. Other bird species such as herons, rails, red-winged blackbirds, and marsh wrens would be expected to utilize wetter wetland areas. Waterfowl such as mallards, blue-winged teal, and northern pintails would use the open water areas. Moist-soil regions would provide brood and foraging habitats for game birds such as northern bobwhite quail, turkeys, and pheasants. Hawks and other raptors would hunt for prey in and around the backwater. Deer would use the project area as a nursery and feeding area. The backwater would also provide valuable habitat for a number of furbearers such as raccoons, mink, muskrats, and beaver.

Grubbing and clearing would most likely take place outside of the nesting season. If grubbing and clearing did occur during the nesting season, surveys would be performed. The completed project would provide benefits to riparian bird species by increasing available habitat as well as restoring a more natural ecosystem.

8.11. Federally Threatened and Endangered Species

8.11.1. Pallid Sturgeon, *Scaphirhynchus albus* (Endangered)

Most of the Hole-in-the-Rock site proposed for dredging is currently silted in and there is no hydrologic connection to the Missouri River; therefore, it would contain no pallids that could be adversely affected by the dredging. Pallid sturgeon could be

expected to occur in the Missouri River reach where Hole-in-the-Rock is located. Because pallid sturgeon are adapted to areas of high turbidity, the short-term discharge of 70,050 cubic yards of dredged material into the entrained bed load of the Missouri River would not be expected to adversely affect the pallid sturgeon.

The creation of 8 to 9 acres of a backwater area would be expected to benefit the pallid sturgeon (USFWS 2000, 2003a). Adult pallid sturgeon have been found at depths of 3 feet in the Missouri River by the Nebraska Game and Parks Commission (Mestl 2004), and at depths of 1 to 3 feet in the Platte River (Snook and Peters 2000). The backwater area is expected to be suitable for use by the pallid sturgeon, even if its depth is shallower than that generally preferred by adult pallids. This project would provide habitat needed to support components of the ecosystem that are thought to be very important to pallids. For example, the primary food eaten by the pallid sturgeon includes mostly aquatic invertebrates (principally early life stages of insects) but also some fish (USFWS 1993). The emergent and submergent macrophytes in the backwater would provide cover for small or young fish (including the small minnow species preyed upon by pallids), substrate for periphyton, and organic materials that would increase production of aquatic invertebrates. The backwater would constitute a good foraging area for various life history stages of Missouri River fish and their predators, including pallid sturgeon. The backwater is also thought to provide a suitable nursery and rearing habitat, where free swimming and drifting fish larvae (including larval pallids) and juvenile fish can find refuge from high water velocities, accumulations of organic materials, and good foraging, facilitating their recruitment into later developmental stages. The rationale for pallid sturgeon benefits from backwater creation is similar to that used by the USFWS Biological Opinion (BiOp) for the Platte West Wellfield Expansion Project, as discussed next.

Construction of backwater habitat has been proposed before to benefit the pallid sturgeon. In the 1999 BiOp from the USFWS (Nebraska office) on the Platte River depletions associated with the construction of the Platte West Water Production Facilities in Douglas and Saunders Counties, the USFWS stated that the implementation of a "riverine habitat restoration project would offset the impacts of the project on the pallid sturgeon" (USFWS 1999). The restoration project is described in Appendices A and B of the 1999 BiOp and consisted of construction of a backwater channel complex connected to the Missouri River by the removal of a section of existing levee (NGPC 1998). Citing the benefits of increased aquatic insect production, spawning and nursery areas for fish, refugia for all species of fish from the high velocities of the main channel, and backwaters being part of the historic diverse habitat assemblage, the USFWS and the NGPC indicated pallid sturgeon would benefit from the construction of a backwater project (NGPC 1998, USFWS 1999). In fact, the 1999 Biological Opinion states that the construction of the backwater would "...benefit the recovery of the [pallid sturgeon] species" (USFWS 1999).

Therefore the dredging project at Hole-in-the-Rock is anticipated to improve habitat found along the Missouri River for pallid sturgeon, and this action, along with

other activities currently being planned to create SWH, would be expected to have a beneficial cumulative impact on pallid sturgeon populations.

8.11.2. Bald Eagle, *Haliaeetus leucocephalus* (Threatened)

No bald eagles or nests were observed at Hole-in-the-Rock during the site visit March 26, 2004. If construction were to take place during bald eagle nesting season and bald eagles are found to be nesting in the proximity of the proposed dredging site, a buffer zone of 1/2 mile would be maintained, restricting construction access to areas within the specified distance from nesting areas.

The creation of the proposed backwater area would improve bald eagle habitat by providing an additional feeding area for the eagles. The cottonwood trees to the north of the dredging site are mature and their high density would provide shelter from the wind. Under existing conditions, the cottonwoods would have a much lower likelihood of being used by bald eagles for roosting, perching, or nesting than cottonwoods located along the Missouri River. After project construction, however, bald eagles could also be attracted to this portion of the cottonwood riparian area at Hole-in-the-Rock because of its proximity to the newly created backwater and because the backwater will attract waterfowl.

This dredging project is not anticipated to have site-specific adverse impacts on bald eagle habitat, nor individually or cumulatively have an adverse impact on the population, but it does have the potential to benefit bald eagles.

8.12. State Threatened and Endangered Species

8.12.1. Sturgeon Chub, *Macrhybopsis gelida* (Nebraska Endangered)

The Hole-in-the-Rock site proposed for dredging is silted in and so would not contain any sturgeon chubs that could be adversely affected by the dredging. Sturgeon chubs have been collected in side chutes and backwaters and it is thought these kinds of areas provide spawning habitat to the fish. Therefore, the proposed creation of a backwater may benefit the sturgeon chub.

8.12.2. Lake Sturgeon, *Acipenser fulvescens* (Iowa Endangered, Nebraska Threatened)

The Hole-in-the-Rock site proposed for dredging is silted in and so would not contain any lake sturgeon that could be adversely affected by the dredging. The created shallow water habitat would provide cover for small fish and organic materials that would increase the production of aquatic invertebrates. Since lake sturgeon feed on small fish and invertebrates, the backwater may provide a good foraging area for the lake sturgeon.

8.13. Cultural Resources

The likelihood of significant adverse impacts to any historic or archaeological resources resulting from construction of the mitigation project is minimal. All construction activities are expected to occur on lands that have previously been disturbed by historic shifting of the Missouri River channel across the flood plain and where the land consists of recently accreted sediment. Investigation into the locations of steamboat wrecks indicates two steamboat wrecks, the *Gus Lynn* and the *Eclipse*, were reported near the project area. However, it is unlikely that construction of the project would result in the discovery of these wrecks or other buried cultural resources because the project area is made up of sediment that has been deposited in the last 30 years. For these reasons, the proposed project is not likely to adversely impact cultural resources. The Nebraska State Historic Preservation Officer (SHPO) concurred with the submitted "no adverse effect" finding.

If a discovery is made during construction, all activity would be halted around the discovery site and a Corps archaeologist would inform the Nebraska SHPO of the discovery. The Corps archaeologist would examine the discovery area as soon as possible and then consult with the Nebraska SHPO about the nature and National Register of Historic Places eligibility of the area prior to resumption of any activity near the site. For these reasons, the proposed project is not likely to adversely impact cultural resources.

8.14. Socioeconomic Resources

Construction and implementation of the proposed project are not expected to impact the population and income of the local area. However, the proposed project would provide additional recreational activities to residents and visitors to the area in the form of increased wildlife viewing, hiking, and hunting opportunities.

The Omaha Tribe would like the old chute to be renovated for fish and wildlife enhancement. The Tribe would also like picnic and camping facilities to be installed. The Mitigation Project involves only the restoration of the chute area. A management plan that would include public access can be developed later. This access plan would have to be complementary to the mitigation effort, and would have to be funded by other means.

9. CUMULATIVE EFFECTS

Cumulative effects are those that result from the incremental effects of the action when added to past, present, and reasonably foreseeable future actions within a region. Analysis of cumulative effects for the proposed project requires evaluation of actions that have occurred throughout the Missouri River.

As discussed previously, significant cumulative effects have already occurred throughout the Missouri River, which have caused or contributed to the decline of listed species known to occur in the project area. Anthropogenic alteration of river hydrographs and dynamic processes has resulted in dramatic changes and the loss of properly functioning conditions.

Overall, the proposed project would create approximately 8-9 acres of new shallow water habitat at Hole-in-the-Rock. Although this individual project may not restore natural processes, halt the decline of species, or significantly improve habitat along the entire Missouri River Bank Stabilization and Navigation Project as a whole, it does have the potential to provide some incremental cumulative benefits to the Missouri River ecosystem. When the benefits of this project are combined with those of the total 166,750 acres of habitat slated for restoration under the Missouri River Mitigation Project, as well as with those of other ongoing restoration efforts along the river, this project may potentially have cumulative beneficial impacts to species along the river and incrementally reduce the adverse cumulative effects that have already occurred.

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USFWS (U.S. Fish and Wildlife Service). 2000. Biological Opinion on the Operation of the Missouri River Main Stem Reservoir System, Operation and maintenance of the Missouri River Bank Stabilization and Navigation Project, and Operation of the Kansas River Reservoir System. Denver, Colorado and Fort Snelling, Minnesota.
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http://www.cerc.cr.usgs.gov/pubs/center/pdfDocs/BEST_1995.pdf

COMPLIANCE WITH ENVIRONMENTAL STATUTES

American Indian Religious Freedom Act (AIRFA) of 1978, 42 U.S.C. 1996.

In compliance.

AIRFA protects the rights of Native Americans to exercise their traditional religions by ensuring access to sites, use and possession of sacred objects, and the freedom to worship through ceremonials and traditional rites. The Hole-in-the-Rock project would not adversely affect the protections offered by this Act. Access to sacred sites by Tribal members would not be affected.

Bald Eagle Protection Act, 16 U.S.C. Sec. 668, 668 note, 668a-668d.

In compliance.

The Endangered Species Act (ESA) contains requirements on Corps projects concerning bald eagles. See Endangered Species Section of the EA.

CEQ Memorandum, August 10, 1980, Interagency Consultation to Avoid or Mitigate Adverse Effects on Rivers in the Nationwide Inventory.

Not applicable.

This memorandum states that each Federal agency shall take care to avoid or mitigate adverse effects on rivers identified in the Nationwide Inventory (FR 1980). No portion of this project is listed on the Nationwide Rivers Inventory.

Clean Air Act, as amended, 42 U.S.C. 1857h-7, et seq.

In compliance.

The purpose of this Act is to protect public health and welfare by the control of air pollution at its source, and to set forth primary and secondary National Ambient Air Quality Standards to establish criteria for States to attain, or maintain. Some temporary emission releases may occur during construction activities; however, air quality is not expected to be impacted to any measurable degree.

Clean Water Act, as amended, (Federal Water Pollution Control Act) 33 U.S.C. 1251, et seq.

In compliance.

The objective of this Act is to restore and maintain the chemical, physical and biological integrity of the Nation's waters (33 U.S.C. 1251). The Corps regulates discharges of dredge or fill material into waters of the United States pursuant to Section 404 of the Clean Water Act. This permitting authority applies to all waters of the United States including navigable waters and wetlands. The selection of disposal sites for dredged or fill material is done in accordance with the Section 404(b)(1) guidelines, which were developed by the U.S. Environmental Protection Agency (see 40 CFR Part 230). An individual 404 permit has been granted for this project and the Environmental Protection Agency granted section 401water quality certification on June 10, 2004.

Comprehensive Environmental Response, Compensation, and Liability Act of 1980.

Not applicable.

Typically CERCLA is triggered by (1) the release or substantial threat of a release of a hazardous substance into the environment; or (2) the release or substantial threat of a release of any pollutant or contaminant into the environment which presents an imminent threat to the public health and welfare. To the extent such knowledge is available, 40 CFR Part 373 requires notification of CERCLA hazardous substances in a land transfer. This project will not involve any real estate transactions.

Endangered Species Act, as amended. 16 U.S.C. 1531, et seq.

In compliance.

Section 7 (16 U.S.C. 1536) states that all Federal departments and agencies shall, in consultation with and with the assistance of the Secretary of the Interior, insure that any actions authorized, funded, or carried out by them do not jeopardize the continued existence of any threatened or endangered (T&E) species, or result in the destruction or adverse modification of habitat of such species which is determined by the Secretary to

be critical. The Corps has determined that the proposed action is not likely to adversely affect any threatened and endangered species, and the USFWS has concurred (Appendix B, Exhibit 2).

Environmental Justice (E.O. 12898).

In compliance.

Federal agencies shall make achieving environmental justice part of its mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low-income populations in the United States. The project does not disproportionately impact minority or low-income populations.

Farmland Protection Policy Act, 7 U.S.C. 4201, et seq. (Subtitle I of Title XV of the Agriculture and Food Act of 1981), effective August 6, 1984.

In compliance.

This Act instructs the Department of Agriculture, in cooperation with other departments, agencies, independent commissions and other units of the Federal government, to develop criteria for identifying the effects of Federal programs on the conversion of farmland to nonagricultural uses. A soil scientist with the Natural Resources Conservation Service determined there are prime farmland soils in the project area (Appendix B, Exhibit 1). However, because this soil is at the edge of the proposed excavation area and only a small area will be affected there will be no significant effect.

Federal Water Project Recreation Act, as amended, 16 U.S.C. 460-1(12), et seq.

In compliance.

The Act establishes the policy that consideration be given to the opportunities for outdoor recreation and fish and wildlife enhancement in the investigating and planning of any Federal navigation, flood control, reclamation, hydroelectric or multi-purpose water resource project, whenever any such project can reasonably serve either or both purposes consistently. The purpose of this project can be considered fish and wildlife enhancement and it will not negatively impact recreational use of the river.

Fish and Wildlife Coordination Act, as amended, 16 U.S.C. 661, et seq.

In compliance.

The FWCA requires governmental agencies, including the Corps, to coordinate activities so that adverse effects on fish and wildlife will be minimized when water bodies are proposed for modification. The U.S. Fish and Wildlife Service determined that the proposed project is not likely to adversely affect federally listed species or designated critical habitat and the Nebraska Game and Parks Commission determined that the proposed project would provide possible habitat for state or federal threatened, endangered, candidate, or proposed species (Appendix B).

Floodplain Management (E.O. 11988).

In compliance.

Section 1 requires each agency to provide leadership and take action to reduce the risk of flood loss, to minimize the impact of floods on human safety, health and welfare, and to restore and preserve the natural and beneficial values served by floodplains in carrying out its responsibilities for (1) acquiring, managing, and disposing of Federal lands and facilities; (2) providing Federally undertaken, financed, or assisted construction and improvements; and (3) conducting Federal activities and programs affecting land use, including but not limited to water and related land resources planning, regulating, and licensing activities. This project will not adversely affect the flood holding capacity or flood surface profiles of any stream.

Land and Water Conservation Fund Act (LWCFA), as amended, 16 U.S.C. 4601-4601-11, et seq.

Not applicable.

Planning for recreation development at Corps projects is coordinated with the appropriate states so that the plans are consistent with public needs as identified in the State Comprehensive Outdoor Recreation Plan (SCORP). The Corps must coordinate with the National Park Service (NPS) to insure that no property acquired or developed with assistance from this Act will be converted to other than outdoor recreation uses. If conversion is necessary, approval of NPS is required, and plans are developed to relocate or re-create affected recreational opportunities. No lands involved in the proposed project were acquired or developed with LWCFA funds.

Migratory Bird Treaty Act of 1918 as amended, 16 U.S.C. 703-711, et seq.

In compliance.

The Migratory Bird Treaty Act of 1918 (MBTA) is the domestic law that affirms, or implements, the United States' commitment to four international conventions with Canada, Japan, Mexico and Russia for the protection of shared migratory bird resources. The MBTA governs the taking, killing, possession, transportation, and importation of migratory birds, their eggs, parts and nests. The take of all migratory birds is governed by the MBTA's regulation of taking migratory birds for educational, scientific, and recreational purposes and requiring harvest to be limited to levels that prevent overutilization. Executive Order 13186 (2001) directs executive agencies to take certain actions to implement the act. The Corps will avoid impacts to migratory birds, and their nests, to the extent possible.

National Historic Preservation Act, as amended, 16 U.S.C. 470a, et seq.

In compliance.

Federal agencies having direct or indirect jurisdiction over a proposed Federal or federally assisted undertaking shall take into account the effect of the undertaking on any district, site, building, structure, or object that is included in or eligible for inclusion in the National Register of Historic Places. The Corps has made the determination that the proposed project does not have the potential to adversely impact cultural resources and the Nebraska State Historic Preservation Office concurred with this determination in a March 11, 2004 letter (Appendix B, Exhibit 4). Caution will be exercised during all phases of work in order to minimize any disturbance to deeply buried cultural resources. The contractor will be explicitly warned about this possibility and instructed that if any resources are found, he or she shall stop work and contact the District Office contacted immediately.

National Environmental Policy Act (NEPA), as amended, 42 U.S.C. 4321, et seq.

In compliance.

This environmental assessment (EA) and finding of no significant impact (FONSI) have been prepared for the proposed action. An environmental impact statement is not required.

Noise Control Act of 1972, 42 U.S.C. Sec. 4901 to 4918.

In compliance.

This Act establishes a national policy to promote an environment for all Americans free from noise that jeopardizes their health and welfare. Federal agencies are required to limit noise emissions to within compliance levels. Noise emission levels at the project site will increase above current levels temporarily due to construction; however, appropriate measures will be taken to keep the noise level within the compliance levels.

North American Wetlands Conservation Act, 16 U.S.C. Sec. 4401 et seq.

Not applicable.

This Act establishes the North American Wetlands Conservation Council (16 U.S.C.4403) (NAWCC) to recommend wetlands conservation projects to the Migratory Bird Conservation Commission (MBCC). Section 9 of the Act (16 U.S.C. 4408) addresses the restoration, management, and protection of wetlands and habitat for migratory birds on Federal lands. Federal agencies acquiring, managing, or disposing of Federal lands and waters are to cooperate with the Fish and Wildlife Service to restore, protect, and enhance wetland ecosystems and other habitats for migratory birds, fish and wildlife on their lands, to the extent consistent with their missions and statutory authorities. This project does not involve Federal lands.

Protection of Wetlands (E.O. 11990).

In compliance.

Federal agencies shall take action to minimize the destruction, loss or degradation of wetlands, and to preserve and enhance the natural and beneficial values of wetlands in carrying out the agencies responsibilities. Each agency, to the extent permitted by law, shall avoid undertaking or providing assistance for new construction located in wetlands unless the head of the agency finds (1) that there is no practicable alternative to such construction, and (2) that the proposed action includes all practicable measures to minimize harm to wetlands, which may result from such use. In making this finding the head of the agency may take into account economic, environmental and other pertinent factors. Each agency

shall also provide opportunity for early public review of any plans or proposals for new construction in wetlands. According to the 1987 National Wetlands Inventory Map, the proposed project area is composed predominantly of a palustrine emergent seasonally flooded wetland (PEMC). However, the wetland has a low diversity of plants and offers wildlife poor quality habitat.

Section 10 of the Rivers and Harbors Act of 1899 (33 U.S.C. 403).

In compliance.

This law prohibits the unauthorized obstruction or alteration of any navigable water of the United States. This section provides that the construction of any structure in or over any navigable water of the United States, or the accomplishment of any other work affecting the course, location, condition, or physical capacity of such waters is unlawful unless the work has been recommended by the Chief of Engineers and authorized by the Secretary of the Army. The Secretary's approval authority has since been delegated to the Chief of Engineers. Because the Corps of Engineers is doing this project, no authorization is required because the law specifically exempts the Corps of Engineers from regulation under Section 10.

Watershed Protection and Flood Prevention Act, 16 U.S.C. 1101, et seq.

Not applicable.

This Act authorizes the Secretary of Agriculture to cooperate with states and other public agencies in works for flood prevention and soil conservation, as well as the conservation, development, utilization, and disposal of water. This act imposes no requirements on Corps Civil Works projects.

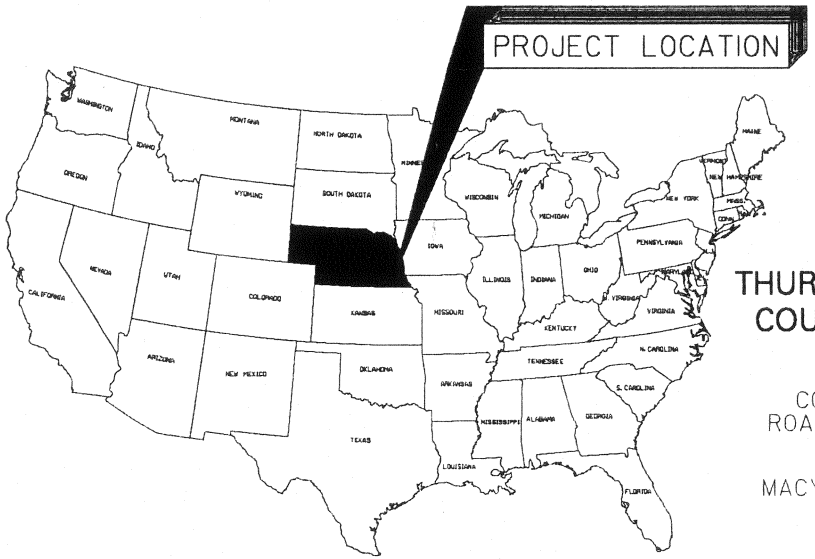
Wild and Scenic Rivers Act, as amended, 16 U.S.C. 1271, et seq.

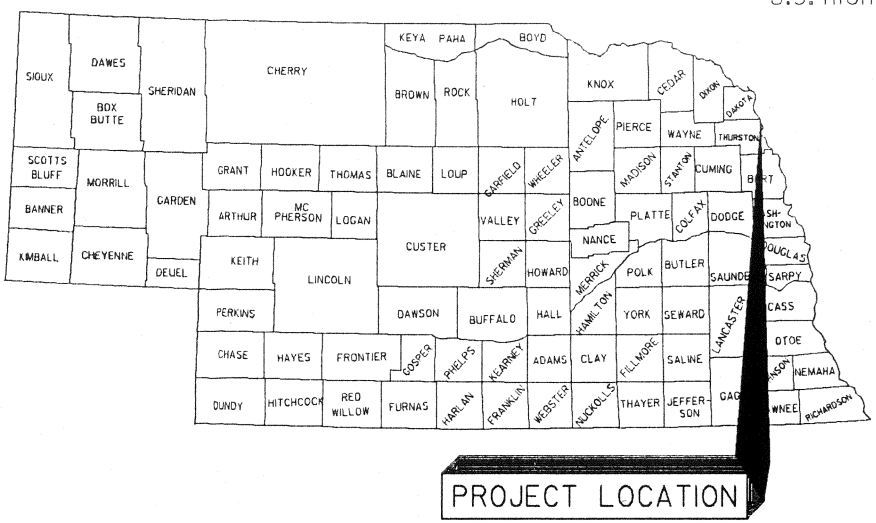
Not applicable.

This act establishes that certain rivers of the Nation, with their immediate environments, possess outstandingly remarkable scenic, recreational, geologic, fish and wildlife, historic, cultural, or other similar values, shall be preserved in free-flowing condition, and that they and their immediate environments shall be protected for the benefit and enjoyment of present and future generations. The area in which the proposed activity would occur is not designated as a wild or scenic river, nor is it on the National Inventory of Rivers potentially eligible for inclusion.

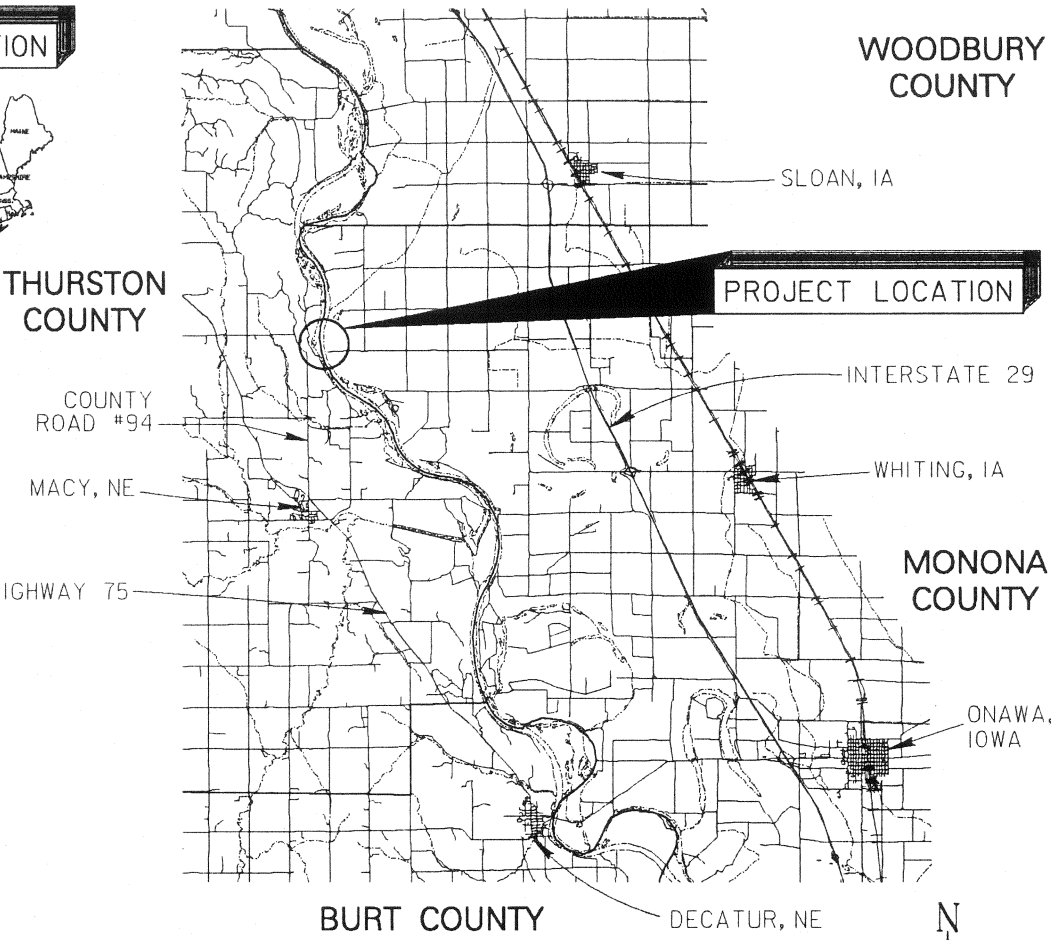
APPENDIX A:
MAPS

REVISIONS	SYMBOL	DESCRIPTIONS	DATE	APPROVED





NEBRASKA



VINCINITY, MAP

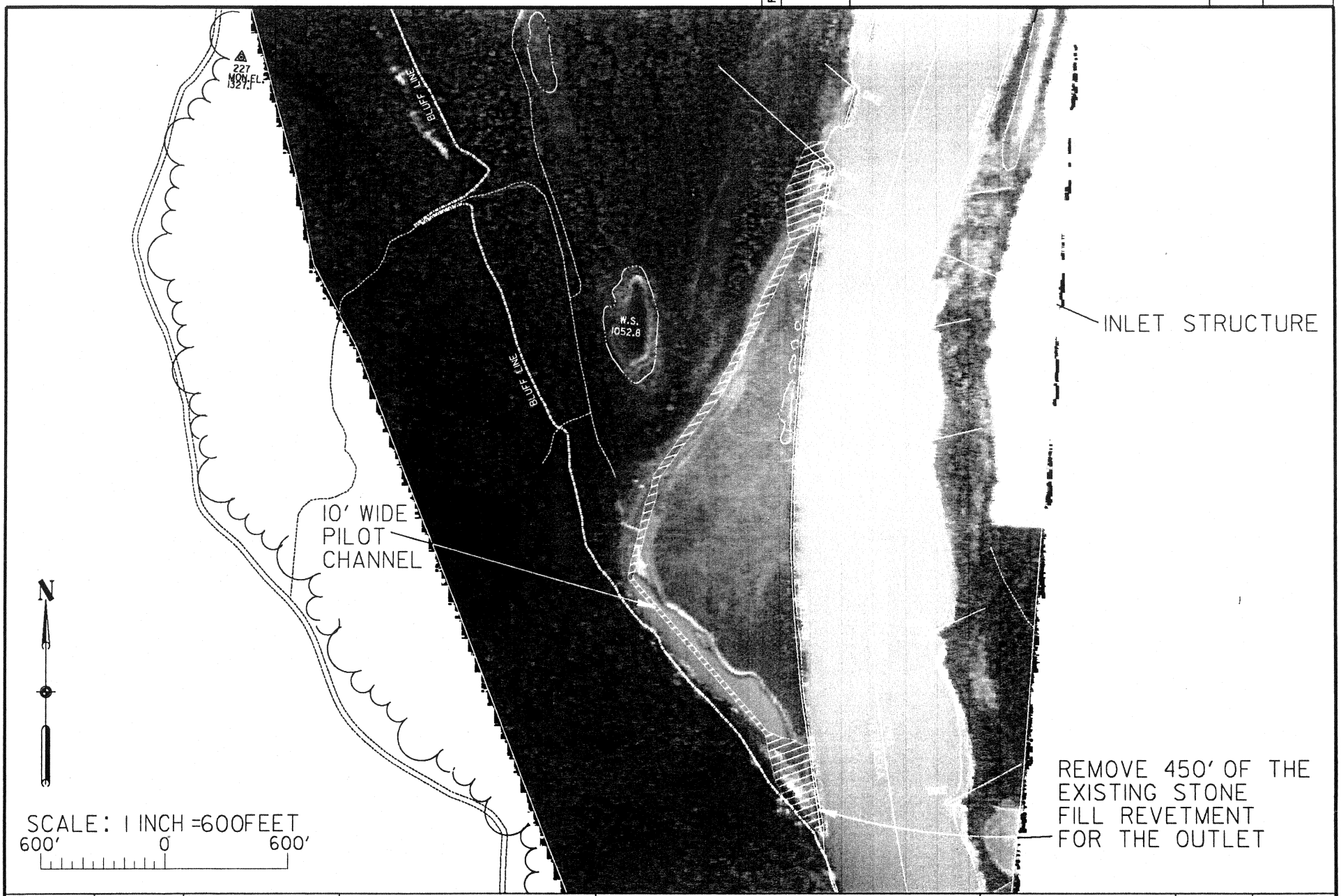
NO SCALE

LOCATION PLAN

Sheet No.	Computer File:	Spec. No.	U S ARMY ENGINEER DISTRICT CORPS OF ENGINEERS OMAHA, NEBRASKA	FISH AND WILDLIFE MITIGATION; MISSOURI RIVER HOLE-IN-THE-ROCK PROJECT LOCATION MAP	Submitted by:	Designed by:	Checked by:
1	loc.dgn	DACW45-99-B-00XX				R.G.P.	J.I.R.
	Date: JAN. 2003	Contract No. DACW45-00-00xx			Chief SED. & CHAN. STAB. Section	Reviewed by: J.I.R.	Drawn by: R.G.P.
	Drawing Code: PUBDATA\RICKP\X						

Exhibit 1

REVISIONS	SYMBOL	DESCRIPTIONS	DATE	APPROVED



Sheet No. 2	Computer File: SHEET2.DGN	Spec. No. DACW45-99-B-00XX	U S ARMY ENGINEER DISTRICT CORPS OF ENGINEERS OMAHA, NEBRASKA	FISH AND WILDLIFE MITIGATION; MISSOURI RIVER HOLE-IN-THE-ROCK PROJECT ALTERNATIVE #1 – SITE PLAN	Submitted by: Chief SED. & CHAN. STAB. Section	Designed by: R.G.P.	Checked by: J.I.R.
	Date: JAN. 2003	Contract No. DACW45-00-00xx				Reviewed by: J.I.R.	Drawn by: R.G.P.
	Drawing Code: PUBDATA\RICKP\X						

Exhibit 2

REVISIONS	SYMBOL	DESCRIPTIONS	DATE	APPROVED

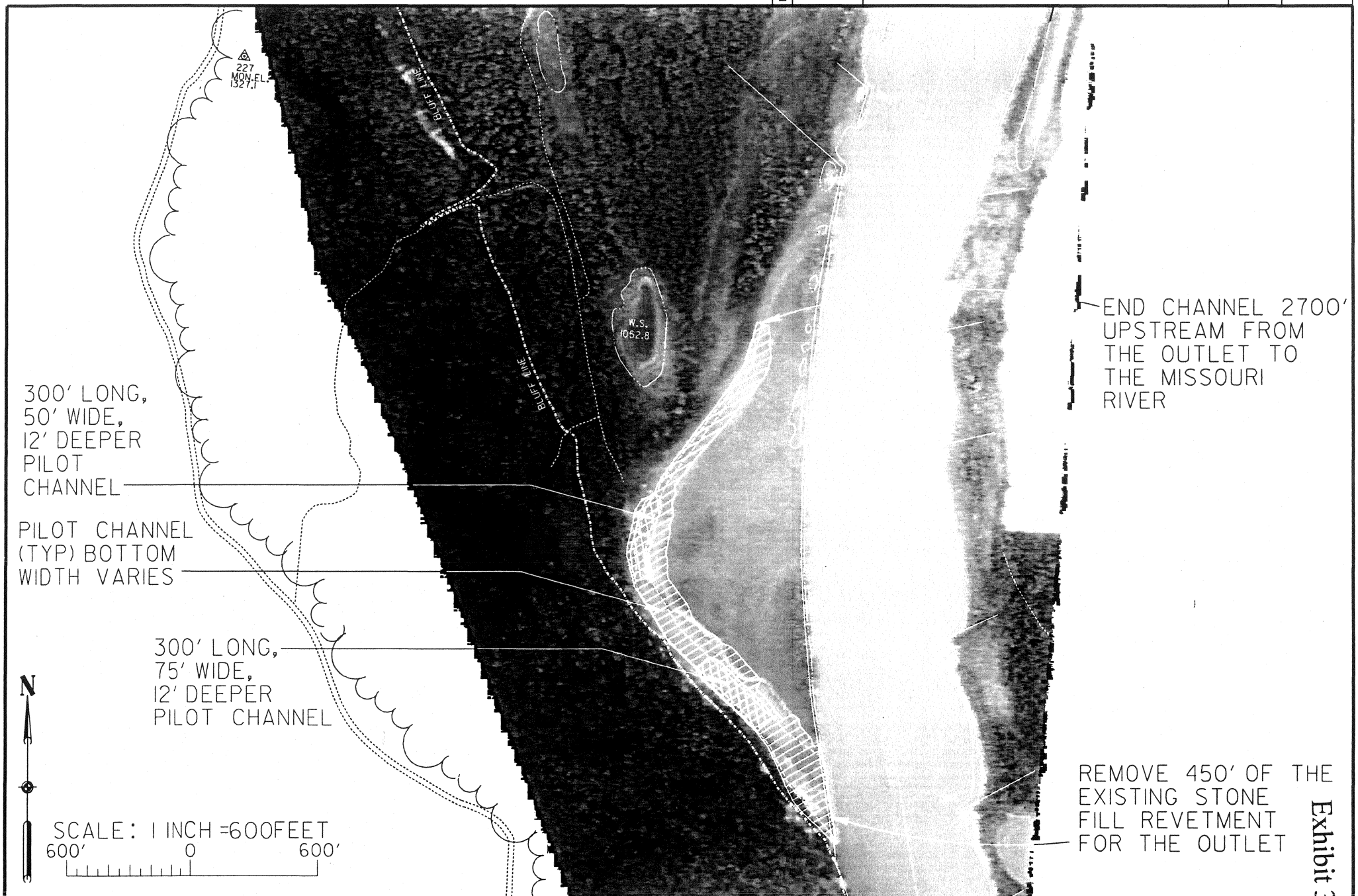


Exhibit 3

Sheet No.	Computer File:	Spec. No.
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	Date: JAN. 2003	Contract No. DACW45-00-00xx
	Drawing Code: PUBDATA\RICKP\X	

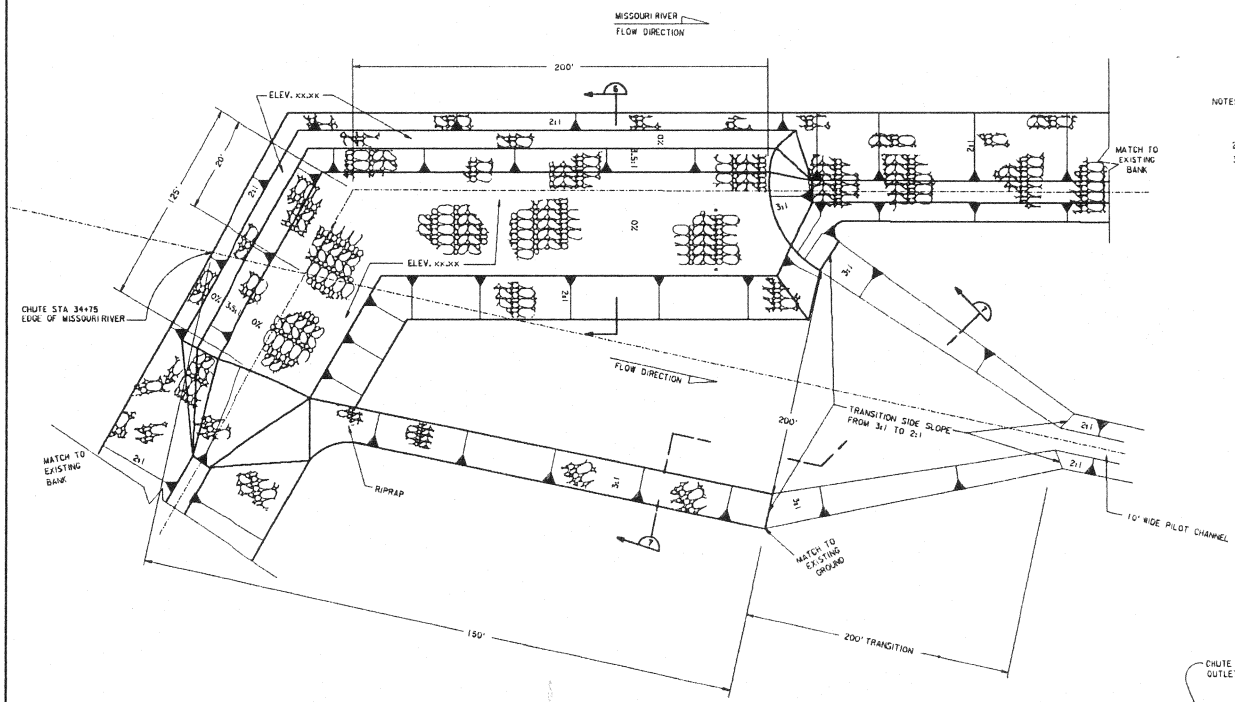
U S ARMY ENGINEER DISTRICT
CORPS OF ENGINEERS
OMAHA, NEBRASKA

FISH AND WILDLIFE MITIGATION; MISSOURI RIVER
HOLE-IN-THE-ROCK PROJECT
ALTERNATIVE #2 – SITE PLAN

Submitted by:
Chief SED. & CHAN. STAB. Section

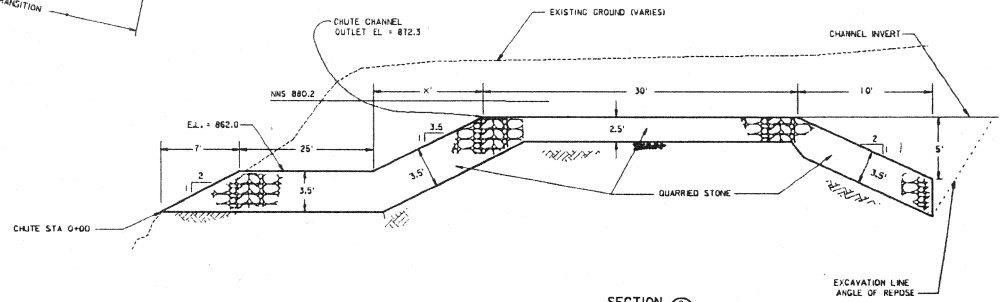
Designed by:	Check
R.G.P.	J.I.R.
Reviewed by:	Drawn by:
J.I.R.	R.G.P.

REVISIONS	SYMBOL	DESCRIPTIONS	DATE	APPROVED



NOTES:
1. MATERIAL PLACED BELOW THE PILOT CHANNEL INVERT ELEVATION DOES NOT REQUIRE BACKFILLING.
2. NNS = NORMAL NAVIGATION STAGES (APRIL - NOVEMBER)
3. THE WATER SURFACE ELEVATIONS SHOWN IN THE DRAWINGS (DESIGNATED AS NNS) ARE THE EXPECTED RIVER STAGE ELEVATIONS DURING THE "NORMAL" NAVIGATION RELEASES (THE MONTHS OF APRIL THROUGH NOVEMBER). THE EXPECTED RIVER GAGE ELEVATION CAN AND WILL FLUCTUATE PLUS OR MINUS SEVERAL FEET THROUGHOUT THE YEAR. THE FLUCTUATING ARE THE RESULTS OF THE COMBINATION OF RELEASES FROM THE MISSOURI RIVER MAIN STEM SYSTEM AND UNCONTROLLED TRIBUTARIES THAT ENTER THE MISSOURI RIVER UPSTREAM OF THE PROJECT. THE CORPS OF ENGINEERS WILL NOT REGULATE THE FLOWS BEING RELEASED FROM THE MAIN STEM DAMS FOR THIS PROJECT. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO ANTICIPATE THESE CONDITIONS. THE ACTUAL AND FORECASTED RIVER STAGE ELEVATIONS AT THIS PROJECT CAN BE OBTAINED FROM THE U.S. ARMY CORPS OF ENGINEERS RESERVOIR CONTROL CENTER BY CALLING (402) 697-2675 OR THE WEB SITE HTTP://WWW.NWD-MR.USACE.ARMY.MIL/RCC/INDEX.HTML.

INLET STRUCTURE - PLAN VIEW
NOT TO SCALE



SECTION 6
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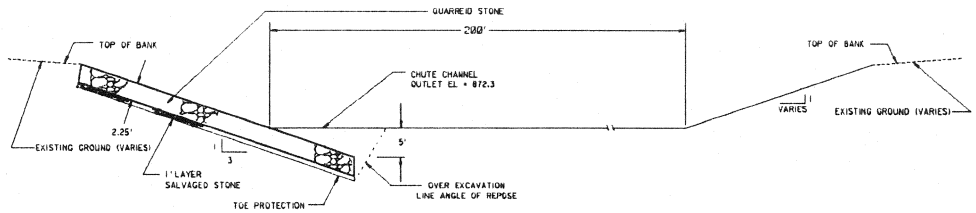

SECTION 1
NOT TO SCALE

Sheet No.	Computer File:	Spec. No.		Designed by:	Checked by:
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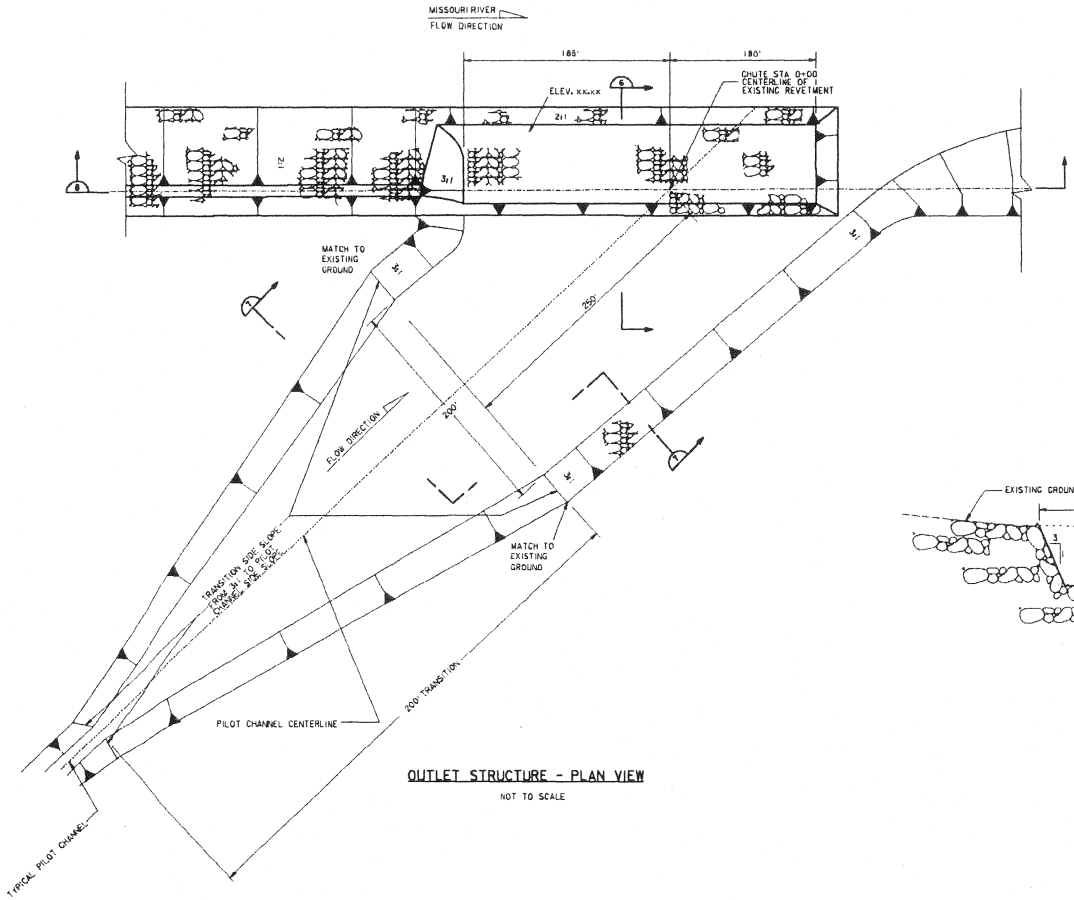
	Date: JAN. 2003	Contract No. DACW45-00-00xx	FISH AND WILDLIFE MITIGATION; MISSOURI RIVER HOLE-IN-THE-ROCK PROJECT ALTERNATIVE #1 -INLET STRUCTURE	Reviewed by: J.I.R.	Drawn by: R.G.P.
	Drawing Code: PUBDATA\RICKP\X		Submitted by: Chief SED. & CHAN. STAB. Section		

Exhibit 4

REVISIONS	SYMBOL	DESCRIPTIONS	DATE	APPROVED

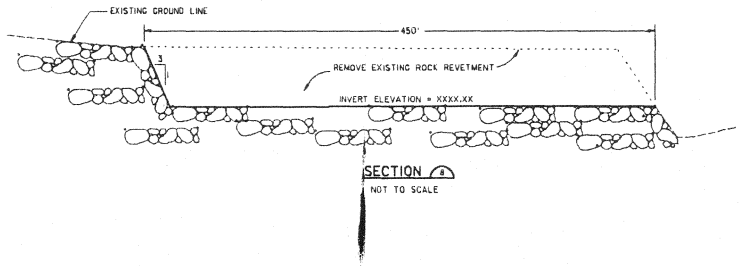


OUTLET STRUCTURE - PLAN VIEW

NOT TO SCALE

NOTES:

1. MATERIAL PLACED BELOW THE PILOT CHANNEL INVERT ELEVATION DOES NOT REQUIRE BACKFILLING.
2. NNS = NORMAL NAVIGATION STAGES (APRIL - NOVEMBER)
3. THE WATER SURFACE ELEVATIONS SHOWN IN THE DRAWINGS (DESIGNATED AS NNS) ARE THE EXPECTED RIVER STAGE ELEVATIONS DURING THE "NORMAL" NAVIGATION RELEASES (THE MONTHS OF APRIL THROUGH NOVEMBER). THE EXPECTED RIVER GAGE ELEVATION CAN AND WILL FLUCTUATE PLUS OR MINUS SEVERAL FEET THROUGHOUT THE YEAR. THE FLUCTUATING ARE THE RESULTS OF THE COMBINATION OF RELEASES FROM THE MISSOURI RIVER MAIN STEM SYSTEM AND UNCONTROLLED TRIBUTARIES THAT ENTER THE MISSOURI RIVER UPSTREAM OF THE PROJECT. THE CORPS OF ENGINEERS WILL NOT REGULATE THE FLOWS BEING RELEASED FROM THE MAIN STEM DAMS FOR THIS PROJECT. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO ANTICIPATE THESE CONDITIONS. THE ACTUAL AND FORECASTED RIVER STAGE ELEVATIONS AT THIS PROJECT CAN BE OBTAINED FROM THE U.S. ARMY CORPS OF ENGINEERS RESERVOIR CONTROL CENTER BY CALLING (402) 697-2675 OR THE WEB SITE HTTP://WWW.NWD-MR.USACE.ARMY.MIL/RCC/INDEX.HTML.



SECTION 6

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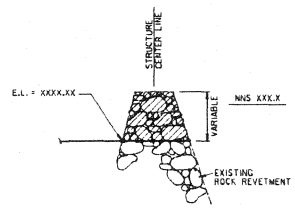

SECTION 6

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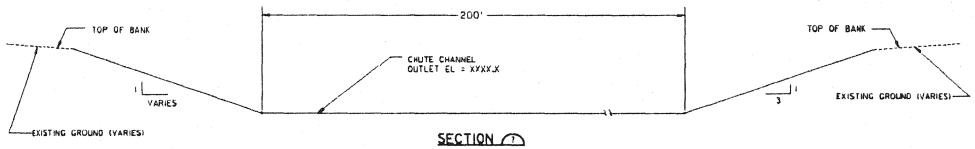

SECTION 7

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Sheet No.	Computer File:	Spec. No.			
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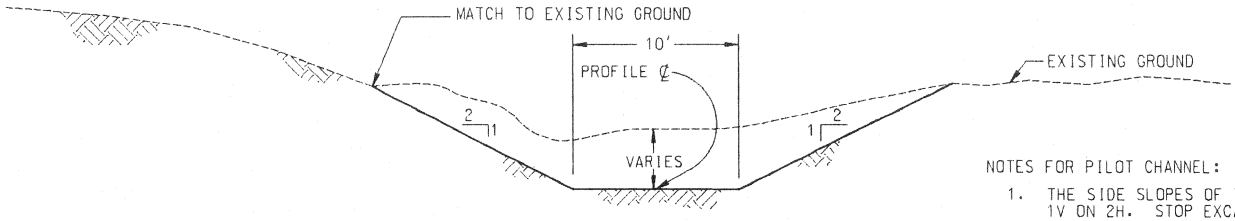
	Date: JAN. 2003	Contract No. DACW45-00-00xx			Designed by: R.G.P. / Reviewed by: J.I.R.
	Drawing Code: PUBDATA\RICKP\X				Checked by: J.I.R. / Drawn by: R.G.P.

Exhibit 5

REVISIONS	SYMBOL	DESCRIPTIONS	DATE	APPROVED

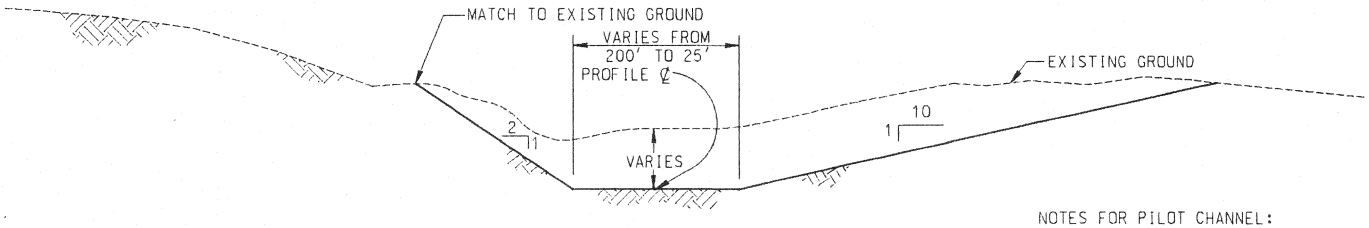


ALTERNATIVE #1 - PILOT CHANNEL TYPICAL CROSS-SECTION

NOT TO SCALE

NOTES FOR PILOT CHANNEL:

1. THE SIDE SLOPES OF THE PILOT CHANNEL ARE 1V ON 2H. STOP EXCAVATION WHEN THE SIDE SLOPE INTERSECTS THE EXISTING GROUND LINE.
2. THE PILOT CHANNEL SHALL FOLLOW THE ALIGNMENT SHOWN ON THE PLAN AND PROFILE SHEETS.

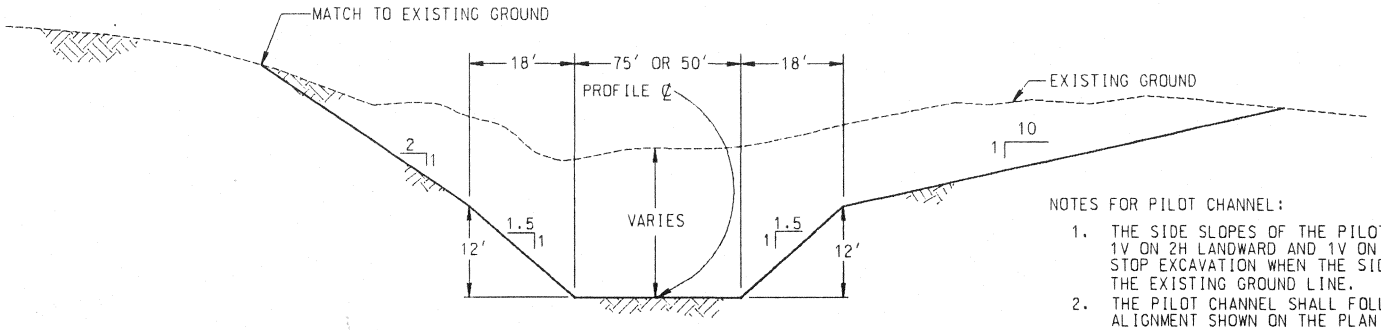


ALTERNATIVE #2 - PILOT CHANNEL TYPICAL CROSS-SECTION

NOT TO SCALE

NOTES FOR PILOT CHANNEL:

1. THE SIDE SLOPES OF THE PILOT CHANNEL ARE 1V ON 2H LANDWARD AND 1V ON 10H RIVERWARD. STOP EXCAVATION WHEN THE SIDE SLOPE INTERSECTS THE EXISTING GROUND LINE.
2. THE PILOT CHANNEL SHALL FOLLOW THE ALIGNMENT SHOWN ON THE PLAN AND PROFILE SHEETS.



ALTERNATIVE #2 - PILOT CHANNEL (with 12' hole) TYPICAL CROSS-SECTION

NOT TO SCALE

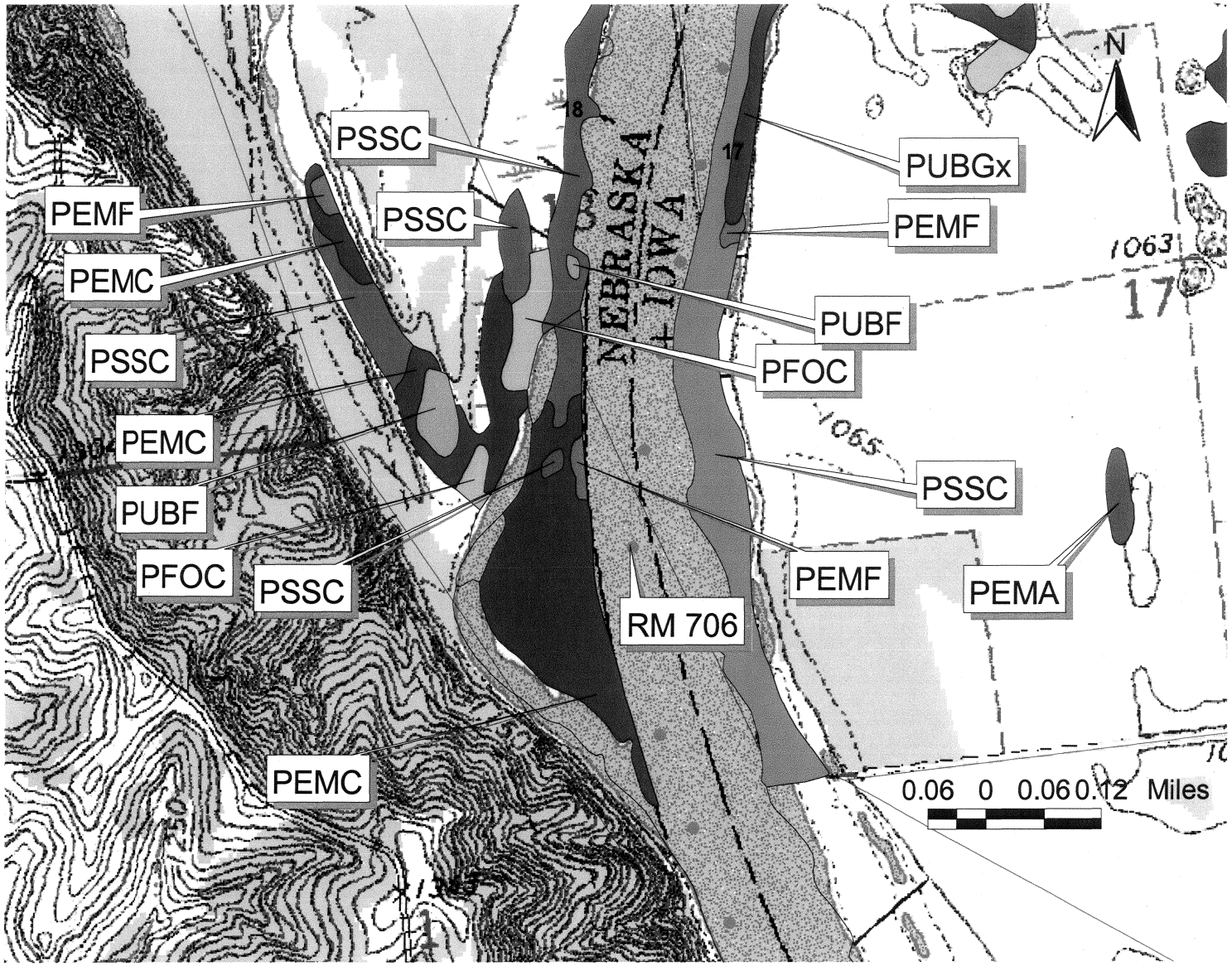
NOTES FOR PILOT CHANNEL:

1. THE SIDE SLOPES OF THE PILOT CHANNEL ARE 1V ON 2H LANDWARD AND 1V ON 10H RIVERWARD. STOP EXCAVATION WHEN THE SIDE SLOPE INTERSECTS THE EXISTING GROUND LINE.
2. THE PILOT CHANNEL SHALL FOLLOW THE ALIGNMENT SHOWN ON THE PLAN AND PROFILE SHEETS.

Sheet No.	Computer File:	Spec. No.			
9	SHEET6.DGN	DACW45-99-B-00XX	U S ARMY ENGINEER DISTRICT CORPS OF ENGINEERS OMAHA, NEBRASKA	FISH AND WILDLIFE MITIGATION; MISSOURI RIVER HOLE-IN-THE-ROCK PROJECT MISCELLANIOUS DETAILS	Submitted by: Chief SED. & CHAN. STAB. Section
	Date: JAN. 2003	Contract No. DACW45-00-00xx			Designed by: R.G.P. / Checked by: J.I.R.
	Drawing Code: PUBDATA\RICKP\X				Reviewed by: J.I.R. / Drawn by: R.G.P.

Exhibit 6

Hole-in-the-Rock Backwater Restoration
National Wetlands Inventory



Riv_miles Albaton
Nwi Albaton
- L1UBG
- L1UBH
- L2UBF
- PEM/FO1Cd
- PEM/SS1C
- PEM/SS1Cd
- PEMA
- PEMAd
- PEMC
- PEMCd
- PEMCx
- PEMF
- PEMFd
- PFO1A
- PFO1C
- PFOA
- PFOAh
- PFOC
- PSS1/EMC
- PSS1C
- PSS1Cd
- PSSA
- PSSC
- PUBF
- PUBFh
- PUBFx
- PUBG
- PUBGx
- PUBH
- R2UBH
- R2USC
- U

Municpts00 Thurston
Plss Sioux City

Exhibit 7

APPENDIX B:
CORRESPONDENCE

United States Department of Agriculture

Exhibit 1

NRCS Natural Resources Conservation Service

Stanton Field Office
715-11th Street, P.O. Box 167
Stanton, NE 68779
402-439-2213, EXT. #3

April 12, 2004

Ms. Candace M. Gorton
U.S. Army Corps of Engineers
Omaha District
106 South 15th Street
Omaha, NE 68102-1618

RE: Hole-in-the-Rock Restoration Project

Dear Ms. Gorton:

I have enclosed a copy of the Thurston County Soil Survey map of Section 36, Township 26N, Range 9E and Section 1, Township 25N, Range 9E. I have highlighted the soils that are considered to be prime farmland. Please keep in mind, when using this map, that these soils were identified and mapped between 1957 and 1964. The soil delineations are on a 1965 photo base and the Thurston Soil Survey was published in 1972.

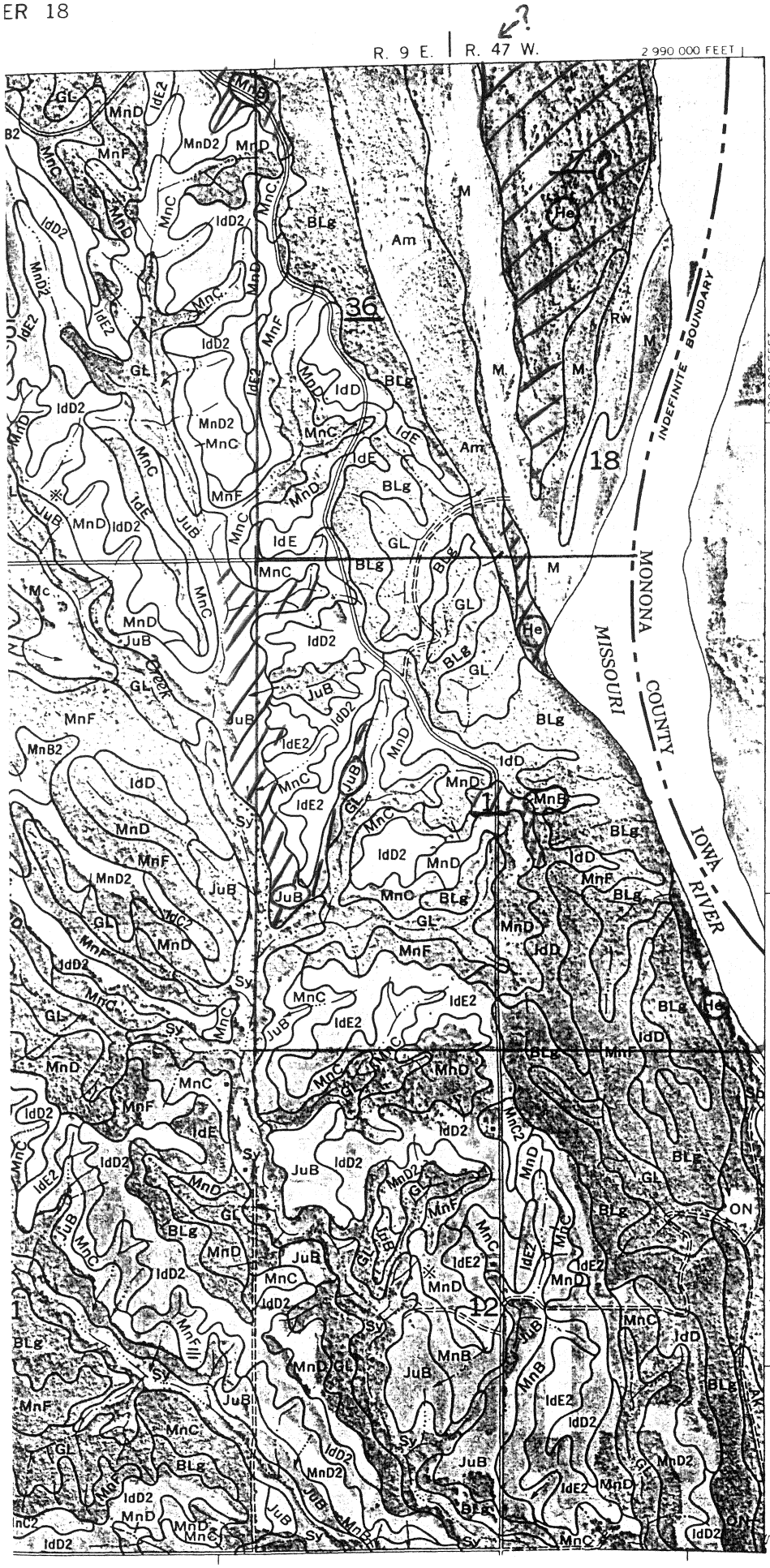
If you have any further questions, please feel free to contact me.

Sincerely,

Gary McCoy
NRCS, Soil Scientist

C: Steve Chick, NRCS, Nebraska State Conservationist
Luis Hernandez, NRCS, Nebraska State Soil Scientist
Robin Sutherland, NRCS, District Conservationist, Stanton
Don Doty, NRCS, District Conservationist, Omaha
Doug Gahn, NRCS, Assistant State Conservationist/Operations

ER 18



THURSTON COUNTY, NEBRASKA NO. 18

Photobase from 1965 aerial photographs. 5,000-foot grid ticks based on Nebraska plane coordinate system, north zone. 1927 North American datum.

Exhibit 2

DEPARTMENT OF THE ARMY
CORPS OF ENGINEERS, OMAHA DISTRICT
106 SOUTH 15TH STREET
OMAHA, NEBRASKA 68102-1618

January 8, 2004

REPLY TO:
Planning, Programs and Project Management Division

REC'D JAN 15 2004

Ms. Jane Ledwin
U.S. Fish and Wildlife Service
Columbia Ecological Services Field Office
101 Park DeVille Drive, Suite A
Columbia, Missouri 65203-0007

Dear Ms. Ledwin:

The U.S. Army Corps of Engineers, Omaha District (Corps) is currently in the process of preparing an Environmental Assessment (EA) for a proposed habitat restoration project near Hole-in-the-Rock. The project is located on property owned by the Omaha Tribe along the right bank of the Missouri River (west side of the river at River Mile 706) in Section 36, Township 26 North, Range 9 East and Section 1, Township 25 North, Range 9 East in Thurston County, Nebraska, approximately 5 miles north of Macy, Nebraska (Enclosure 1). This project is part of the Missouri River Bank Stabilization and Navigation Fish and Wildlife Mitigation Project.

The purpose of the proposed project is to mitigate for aquatic and terrestrial habitat loss that resulted from past channeling efforts on the Missouri River as part of the Missouri River Bank Stabilization and Navigation Project. This would be accomplished by creating a backwater channel. The existing outlet channel to the river would be excavated to ensure adequate connectivity to the Missouri River. Some of the lower areas between the river and the backwater area would be filled during construction to protect against sedimentation during smaller flood events. All excess excavated soil would be restored back into the Missouri River and be reclaimed by the river system. The backwater would be designed to provide maximum benefits to native fish. The design would include a permanent connection to the Missouri River at the outlet, and two 300-foot long over wintering holes that would be the same width as the bottom of the backwater. These over wintering holes would have a depth of 10 to 12 feet during the winter when the flows are significantly lower in the main channel of the river. The outlet would be constructed as shown on Enclosure 2 with the profile invert elevation at 4 feet below the construction reference plane. The backwater channel should be excavated to the cross section as shown on Enclosure 3 (Alternative #2). The profile slope of the backwater would match that of the Missouri River (0.035%). The constructed bottom width of the backwater would be 75 feet, however, the side slopes would be constructed at 1:2 on the landward side, and 1:10 on the riverward side. In addition, 8 pieces of large woody debris per acre in the form of large cottonwood trees, or other similar sized species would be placed along the margins of the backwater and anchored into the bank. The relatively shallow slopes that would be constructed on the riverward side of the backwater would create conditions conducive to the growth of submergent and emergent aquatic vegetation.

In accordance with the Endangered Species Act, please provide us with a list of the threatened and endangered species that may be affected by the proposed habitat restoration project and any information on the possible beneficial or adverse effects of the proposed project on these species.

If you have questions or require additional information, please contact Ms. Kristine Nemec at (402) 221-4628.

Sincerely,

Enclosures

Candace Gorton

Candace M. Gorton, Chief
Environmental, Economics and
Cultural Resources Section
Planning Branch

"The U.S. Fish and Wildlife Service has reviewed the subject proposal and accompanying information and determined that the activity as described, is not likely to adversely affect federally listed species or designated critical habitat; consequently, this concludes section 7 consultation. Please contact the Missouri Department of Conservation (573/751-4115) for state listed species of concern."

for [signature] 3/2/04

Field Supervisor — Date

Nebraska Game and Parks Commission

2200 N. 33rd St. / P.O. Box 30370 / Lincoln, NE 68503-0370
Phone: 402-471-0641 / Fax: 402-471-5528 / http://www.ngpc.state.ne.us/

February 6, 2004

Candace Gorton
Corps of Engineers
106 South 15th Street
Omaha, NE 68102-1618

Dear Ms. Gorton:

Nebraska Game and Parks Commission (NGPC) staff members have reviewed the information for the proposed habitat restoration project near Hole-in-the-Rock in Thurston County, NE. This property is located on property owned by the Omaha Tribe along the right bank of the Missouri River (west side of the river at River Mile 706). The proposed project is being implemented as part of the Missouri River Bank Stabilization and Navigation Fish and Wildlife Mitigation Project.

We fully support this effort, as NGPC staff members have been active participants in the Mitigation Project from early planning stages to the present. The project as outlined will restore much needed functions of aquatic and terrestrial habitat, which were largely lost from decades of modification to the Missouri River. We commend the effort made by the Corps of Engineers and the Omaha Tribe on this project.

The project purpose would be accomplished by creating a backwater channel. The existing outlet channel to the river would be excavated to ensure adequate connectivity to the river. It appears that Alternative #2 (channel with 12' hole) would provide the most diversified habitat and benefit many species.

We determined that there is possible habitat for state or federal threatened, endangered, candidate or proposed species at the proposed project site based on a review of the present species distribution maps, aerial photos, and the Nebraska Natural Heritage database. The following are state and federally-listed species we have identified as possible concerns.

The pallid sturgeon, lake sturgeon, sturgeon chub, and bald eagle have been observed, collected, or otherwise are likely to be found in this reach of Missouri River. The pallid sturgeon is state and federally endangered; the bald eagle is state and federally threatened; the lake sturgeon is state threatened; and the sturgeon chub is state endangered.

Pallid Sturgeon (*Scaphirhyncus albus*)—pallid sturgeon feed on small fish and invertebrates and can be found in association with riverine sandbars. Often, the fish is found near confluences, islands, and at the downstream margins of sandbars. Pallids spawn over open gravel beds or

other hard bottoms at mouths of large tributaries, in main river channel areas, or along the periphery of the main river channel. Alterations to the natural hydrograph, river channelization, and flow depletions have caused the decline of this species.

Sturgeon chub (*Macrhybopsis gelida)* —sturgeon chub are associated with fast flowing water and a gravel riverbed. The species has been collected in side chutes and backwaters. It is thought that these kinds of areas provide spawning habitat to the fish. Sturgeon chub feed on invertebrates. Similar to lake and pallid sturgeons, alterations to the natural hydrograph, depletions, and river channelization have caused the decline of the sturgeon chub.

Lake Sturgeon (*Acipenser fulvescens*)—it is believed that the lake sturgeon occupies similar habitats as the pallid sturgeon, but spends a greater proportion of its time in the Missouri River than the Platte River. Lake sturgeon feed on invertebrates and small fish and can be found at the downstream margins of islands and river confluences. Alterations to the natural hydrograph, river channelization, and flow depletions also have caused the decline of this species.

To avoid impacts to endangered and threatened fish species, we recommend that modification to the instream habitat not occur at the time of fish spawning, which is believed to occur in Nebraska in the spring and early summer (i.e. March 1 to June 30).

Bald eagle (*Haliaeetus leucocephalus*) —bald eagles nest along the Missouri River—nests may be present in the segment along Missouri River. The bald eagle is associated with the Missouri River during annual migrations and throughout the winter where open water is present. To avoid impacts to the bald eagle we recommend a survey for eagle nests be conducted prior to the removal of any large cottonwood trees from the project area. If nests are observed, please contact Julie Godberson at the NGPC office.

Thank you for the opportunity to review this proposal. If you have any questions, please call me at 402-471-5539.

Sincerely,

K L Nelson

Kirk Nelson
Assistant Director

Cc Steve Anschutz, USFWS
Julie Godberson, NGPC
Mark Brohman, NGPC
Scott Luedtke, NGPC
Gene Zuerlien, NGPC
Gerald Mestl, NGPC
Frank Albrecht,NGPC

Exhibit 4

February 19, 2004

Planning, Programs and Project Management Division

Mr. Lawrence J. Sommer, Director
Nebraska State Historical Society
1500 R Street
Lincoln, Nebraska 68501

Dear Mr. Sommer:

Enclosed find a copy of a report titled "A Cultural Resource Reconnaissance Study At Hole-In-The-Rock, Omaha Indian Reservation, Thurston County, Nebraska." Based upon our investigations, we have determined that no historic properties would be affected by the proposed undertaking. Your concurrence is anticipated.

Please review the report and provide your comments within thirty days following receipt of this letter. Please contact Mr. Edward Brodnicki at (402) 221-4888 with any questions. Thank you for your time in reviewing this project.

Sincerely,

Candace M. Gorton, Chief
Environmental, Economics, and
Cultural Resources Section
Planning Branch

Enclosures

Exhibit 5

NEBRASKA STATE HISTORICAL SOCIETY
1500 R STREET, P.O.BOX 82554, LINCOLN, NE 68501-2554
(402) 471-3270 Fax: (402) 471-3100 1-800-833-6747 www.nebraskahistory.org

11 March 2004

Candace M. Gorton
Planning Branch
Corps of Engineers
106 South 15th Street
Omaha, NE 68102-1618

Re: Hole-In-The-Rock
Thurston Co.
H.P. #0403-013-01

Dear Ms. Gorton:

The cultural resources survey report (Brodnicki 2004) on the above referenced project has been reviewed by this office. We concur with the findings of the report that no archaeological, architectural, or historic context property resources will be affected by the proposed project.

Sincerely,

Terry Steinacher
H.P. Archaeologist

Concurrence:

L. Robert Puschendorf
Deputy NeSHPO

Exhibit 6

April 16, 2004

Planning, Programs and Project Management Division

Ms. Jennifer Ousley
U.S. Environmental Protection Agency (WWPD/WIPB)
901 North Fifth Street
Kansas City, Kansas 66108

Dear Ms. Ousley:

The U.S. Army Corps of Engineers, Omaha District is currently in the process of preparing an Environmental Assessment for a proposed habitat restoration project near Hole-in-the-Rock. The project is located on property owned by the Omaha Tribe along the right bank of the Missouri River (west side of the river at River Mile 706) in Section 36, Township 26 North, Range 9 East and Section 1, Township 25 North, Range 9 East in Thurston County, Nebraska, approximately 5 miles north of Macy, Nebraska. This project is part of the Missouri River Bank Stabilization and Navigation Fish and Wildlife Mitigation Project.

The purpose of the proposed project is to mitigate for aquatic and terrestrial habitat loss that resulted from past channeling efforts on the Missouri River as part of the Missouri River Bank Stabilization and Navigation Project. This would be accomplished by creating a backwater channel. The existing outlet channel to the river would be excavated to ensure adequate connectivity to the Missouri River and approximately 70,050 cubic yards of excavated silty sand would be discharged with a hydraulic dredge into the river. In-water disposal is needed at this project because it is designed to restore backwater habitat adjacent to the Missouri River. Side casting material would impair the ability of water to flood the site and provide water to the restored channel. In much of the area, the material would have to be placed over young trees and shrubs adjacent to the old side channel or along the fringes of the wetland areas. Side casting this large volume of material would hinder our project from reaching its full habitat potential. The project would be constructed as described in the enclosed copy of the 404 Permit Application. In accordance with the Clean Water Act, please review the enclosed information and consult with the Omaha tribe to determine if a Section 401 water quality certification will be issued.

If you have questions or require additional information, please contact Ms. Kristine Nemec at (402) 221-4628.

Sincerely,

Candace M. Gorton, Chief
Environmental, Economics and
Cultural Resources Section
Planning Branch

Enclosure
Copy Furnished:

Ms. Christine Schwake
Iowa Department of Natural Resources
Wallace State Office Building
Des Moines, Iowa 50319-0034

Mr. Tony Provost, Executive Director
Omaha Tribe Environmental Protection Department
P.O. Box 368
Macy, Nebraska 68039

Exhibit 7

April 16, 2004

Planning, Programs and Project Management Division

Mr. Tony Provost, Executive Director
Omaha Tribe Environmental Protection Department
P.O. Box 368
Macy, Nebraska 68039

Dear Mr. Provost:

The U.S. Army Corps of Engineers, Omaha District (Corps) is currently in the process of preparing an Environmental Assessment (EA) for a proposed habitat restoration project near Hole-in-the-Rock. The project is located on property owned by the Omaha Tribe along the right bank of the Missouri River (west side of the river at River Mile 706) in Section 36, Township 26 North, Range 9 East and Section 1, Township 25 North, Range 9 East in Thurston County, Nebraska, approximately 5 miles north of Macy, Nebraska. This project is part of the Missouri River Bank Stabilization and Navigation Fish and Wildlife Mitigation Project.

The purpose of the proposed project is to mitigate for aquatic and terrestrial habitat loss that resulted from past channeling efforts on the Missouri River as part of the Missouri River Bank Stabilization and Navigation Project. This would be accomplished by creating a backwater channel. The existing outlet channel to the river would be excavated to ensure adequate connectivity to the Missouri River and approximately 70,050 cubic yards of excavated silty sand would be discharged with a hydraulic dredge into the river. In-water disposal is needed at this project because it is designed to restore backwater habitat adjacent to the Missouri River. Side casting material would impair the ability of water to flood the site and provide water to the restored channel. In much of the area, the material would have to be placed over young trees and shrubs adjacent to the old side channel or along the fringes of the wetland areas. Side casting this large volume of material would hinder the project from reaching its full habitat potential. The project would be constructed as described in the enclosed copy of the 404 Permit Application. In accordance with the Clean Water Act, please review the enclosed information and consult with the Environmental Protection Agency to determine if a Section 401 water quality certification will be issued.

If you have questions or require additional information, please contact Ms. Kristine Nemec at (402) 221-4628.

Sincerely,

Candace M. Gorton, Chief
Environmental, Economics and
Cultural Resources Section
Planning Branch

Enclosure

Copy Furnished:

Ms. Christine Schwake
Iowa Department of Natural Resources
Wallace State Office Building
Des Moines, IA 50319-0034

Ms. Jennifer Ousley
U.S. Environmental Protection Agency (WWPD/WIPB)
901 North Fifth Street
Kansas City, Kansas 66108

Exhibit 8

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION VII
901 NORTH 5TH STREET
KANSAS CITY, KANSAS 66101

SEP 2 0 2004

Ms. Kristine Nemec
Corps of Engineers, Omaha District
106 South 15th Street
Omaha, Nebraska 68102

Dear Ms. Nemec:

SUBJECT: Revised Section 401 of the Clean Water Act Quality Certification

RE:	Project No.:	Missouri River Bank Stabilization and Navigation Fish and Wildlife Mitigation Project - Hole in the Rock Backwater Restoration (River Mile 706)
	Applicant:	U.S. Army Corps of Engineers
	Project:	Construct a backwater channel to mitigate for aquatic and terrestrial habitat loss
	Location:	Missouri River mile 706; approximately 5 miles north of Macy, Nebraska; Section 36, Township 26 North, Range 9 East and Section 1, Township 25 North, Range 9 East, Thurston County, Nebraska

The United States Environmental Protection Agency (EPA) has completed its review of a request from the Omaha District Corps of Engineers (Corps) for issuance of a Clean Water Act (CWA) Section 401 Water Quality certification (certification). The Corps is seeking 401 water quality certification from EPA for a project to construct a backwater channel. The existing outlet channel to the river would be excavated to ensure adequate connectivity to the Missouri River and approximately 70,050 cubic yards of excavated silty sand would be discharged with a hydraulic dredge into the river. In-water disposal is needed at this project because it is designed to restore backwater habitat adjacent to the Missouri River. Side casting material would impair the ability of the water to flood the site and to provide water to the restored channel. The project is to be constructed by the Corps under a Corps authorization according to Section 404 of the CWA. As provided under Section 401 (a)(1) of the CWA, EPA hereby certifies according to conditions specified below that the project described herein complies with applicable requirements of the CWA.

The Omaha Tribe of Nebraska is a federally recognized tribe. All work will occur within the boundaries of the Omaha Reservation in Nebraska. The reservation is the homeland of the Tribe and is Indian Country located within the State of Nebraska.

The Corps requested certification because Section 401 of the CWA requires that an applicant for a federal permit, such as Section 404 permit which allows any discharge into waters of the United States, must obtain certification that the discharge will comply with the applicable provision of Sections 301, 302, 303, 306, and 307 of the CWA. Presently, the Omaha Tribe in Nebraska does not have approved water quality standards or Section 401 authority for the purpose of regulating water resources within the borders of an Indian reservation pursuant to Section 518(e) of the CWA. The CWA states in part that in any case where a state, interstate agency, or Tribe has no authority to issue a water quality certification, such certification shall be issued by EPA.

In issuing certifications, EPA considers for guidance any tribal, federal, and/or adjacent state standards and any EPA guidance for the water quality standards program, such as water quality criteria published under Section 304(a) of the CWA and the Water Quality Standards Handbook. EPA also consults with affected federally recognized tribes regarding their concerns, when evaluating projects for certification under Section 401 of the CWA.

The certification provided herein is being issued under CWA Section 401 (Public Law 95-217) as amended in 1977 and ensures that the certified project is consistent with applicable water quality standards. The proposed project, as described above, is sited on the west bank of the Missouri River within the Omaha Tribal reservation. The adjacent states of Iowa and Nebraska each have water quality standards applicable to the Missouri River below the Omaha Tribal reservation. The State of Iowa has assigned the designated uses of Class "B (WW)" significant resource Warm Water aquatic life and Class "A1" primary body contact recreational use to the Missouri River. The State of Nebraska has assigned the designated uses of Class "A" Warm Water aquatic life, agricultural water supply, recreation, public drinking water supply, industrial water supply, and aesthetics to the Missouri River. The proposed project is being certified so that water quality is being maintained consistent with both adjacent states' water quality standards for the Missouri River.

EPA, as provided under Section 401(a)(1) of the CWA, certifies that the project, as described in correspondence from the Corps dated April 16, 2004 and described above, shall comply with applicable provisions of the CWA including Sections 301, 302, 303, 306, and 307. This certification is issued provided that the Corps assures EPA that the conditions outlined in this letter are followed to protect water quality.

General Conditions:

1. The certification does not exempt from and is provisional upon compliance with other statutes and codes administered by federal agencies.

2. This certification will cease to be valid if the project is constructed and/or operated in a manner not consistent with the above project description.

3. This certification will cease to be valid and the Corps must request an updated certification if three years elapse between the date of the issuance of any Corps permit, if

any, and the discharge for which the federal permit is sought.

4. Any future action at this project location, emergency or otherwise, that is not defined in the above project description, is not covered by this approval. All future action shall be coordinated with EPA for approval prior to implementation of such action.

5. Copies of the certification shall be kept on the job site and readily available for reference by tribal, Corps and EPA personnel, the construction supervisor, and construction managers and foremen.

Special Conditions:

1. Channel side slopes shall be no steeper than two feet horizontal to one-foot vertical [2(H):1(V)].

2. Any bank protection materials will conform to the Corps standards. A current and complete list of bank protection materials and sources will be kept on site. The name(s), telephone number(s), and current addresses of all contributors of bank protection materials will be made available to the Corps and EPA upon request.

3. All practicable measures and precautions shall be taken to prevent entry of spilled petroleum products or other deleterious substances into any stream channel, pond, wetland, or other waterbody. These methods include, but are not limited to: off-site, upland, bermed fuel, oil storage, and refueling areas, onsite spill containment equipment, a spill contingency plan, and spill prevention/contaminant training for on-site personnel. All equipment operated within any stream channel, pond, wetland or other waterbody shall be clean and free of fuel and oil leaks. Should a spill of petroleum products or chemicals occur, contact shall be made immediately (within 24 hours) to the National Response Center at 1-800-424-8802, and the Omaha Tribal Environmental Office at (402)837-5291.

4. Upland disposal areas for construction materials or excavated materials shall not include wetland areas.

5. All disturbed streambanks and upland areas, including disposal, equipment staging, and new access road areas, shall be revegetated and/or stabilized with local native vegetation during an optimal seeding period, specifically between November 1 and May 20, to ensure that runoff from the disturbed area does not reach nearby water bodies. If construction is completed outside an optimal seeding period, temporary erosion control protection (e.g., annual rye, bio-artificial ground cover; or other appropriate non-polluting material) shall be used immediately upon completion of construction and shall be maintained until such time as permanent seeding can be completed during an optimal period. Revegetation will be repeated until at least 80 percent of each disturbed area is established in the required vegetative cover.

6. Wherever practicable, when herbaceous vegetation, trees, and shrubs are cleared as the result of construction, they will be replaced in-kind (e.g., tree for tree) with native species and maintained or replanted as necessary with native species. Revegetation will be repeated until at least 80 percent of each disturbed area is established in the required vegetative cover.

7. All practicable measures and precautions shall be taken to prevent pollution impacts of turbidity, pH, temperature, nutrients, suspended solids, floating debris, scum, visible oil and grease, or solvents from equipment leaks and dissolved or emulsified grease concentration to waters of the U.S., including wetlands, during construction and upon completion of the project.

8. Erosion control measures shall be used during construction to prevent erosion of soil surfaces. Measures to be used include, but are not restricted to: sediment dams or berms, anchored hay bales and filter fabric as erosion checks, mulch, and mesh burlap blankets. When using permeable dissipaters, such as filter weave silt fence, they shall be placed on the landscape so as to maximize the control of the erosion/sediment runoff from the disturbed site. They shall have a minimum flow rate of 100 gal/min/ft2, which equates to an Apparent Opening Size (AOS) of 40 (U.S. Sieve). Such measures shall be maintained in place until construction is completed and a ground cover is established to reduce sediment runoff from the site.

9. Construction equipment, activities, and materials shall be kept out of a stream channel, floodplain, pond, wetland, or other waterbody to the maximum extent possible.

10. All waste materials, including construction debris and refuse, such as food and beverage containers, sacks, etc., shall be appropriately disposed of to ensure that it cannot enter a waterway or wetland.

11. Fuels and other maintenance chemicals necessary to complete the project shall be stored away from water bodies and in such a manner that incidental spillage is reduced or temporarily can be contained before reaching any waterbodies. Equipment maintenance areas shall also be located to eliminate the entrance of such materials into the waterbodies.

12. Appropriate measures shall be taken to capture any floating debris released to surface waters as a result of this project.

13. All fill or stabilizing materials shall be free of contaminants which may runoff or leach into surface or groundwater.

14. All fill and stabilizing materials shall meet Corps specification for which they are intended.

EPA certifies this project is acceptable provided construction is accomplished in accordance with the above stated conditions. This certification does not relieve the Corps of the responsibility for any discharge into waters of the U.S. If EPA determines that compliance with the CWA is not maintained, the Corps will be notified and the certification may be withdrawn.

This certification does not relieve the Corps of the responsibility to comply with applicable local, tribal, state, federal regulations or statutes. If you have any question, please contact Jennifer Ousley, of my staff, at (913)551-7498.

Sincerely,

Leo J. Alderman
Director
Water, Wetlands, and Pesticides Division

cc: Tony Provost
Omaha Tribe of Nebraska (via mail)

Robert Harms
U.S. Fish and Wildlife Service (via email)

Carey Grell
Nebraska Game and Parks Commission (via email)

Telephone Conversation Record

January 13, 2004

Christine Schwake

Iowa Department of Natural Resources

(515) 281-6615

Subject: Elutriate sampling at Glover's Point and Hole-in-the-Rock

I asked Chris if the previous parameters they asked us to sample for are still adequate (Ammonia-Nitrogen as N, Chemical Oxygen Demand, Turbidity, Total Suspended Solids, PH, Atrazine, Biochemical Oxygen Demand, Iron, Copper, Lead). She said yes, these are still the things they would like us to sample for.

I then asked Chris how many samples would be adequate for each site. She said we Should just make an effort to get a good representative sample of the soils at the site. Spread them out to cover all of the main areas where we will be digging.

I next asked Chris how deep we needed to sample. At the same time, I explained to her that we can only get down about 6 feet with a hand auger. If we needed to go any deeper, we would need a drill rig and drill crew. This would be very expensive. Chris said that because the area in which we would be working is not likely to contain contaminated sediments caused by upstream industry, using the hand auger would be fine. There really are not any large industrial plants or businesses located upstream that could potentially contaminate the sediments.

Finally, I asked Chris if there is anything else we should do or be aware of before we start collecting samples. She said no, but I gave her my phone number just in case she thinks of something else.

Recorded By: Luke Wallace
(402) 221-4885

Telephone Conversation Record

Person Contacted: Jennifer Ousley

Date: March 4, 2004

Organization: U.S. Environmental Protection Agency

Telephone: (913) 551-7498

Summary: Ms. Ousley of the U.S. Environmental Protection Agency was contacted regarding 401 water quality certification for the Hole-in-the-Rock project on the Omaha Indian Reservation. She said the 401 water quality certification will need to be obtained from the EPA and not the Nebraska Department of Environmental Quality since the project is on an Indian reservation. She said we need to copy furnish to her a copy of the 404 permit application and attachments and we will receive a response approximately 60 days after she receives the materials. Her address is:

Jennifer Ousley
U.S. EPA (WWPD/WPIB)
901 North 5th Street
Kansas City, KS 66108

Documented by: Kristine Nemec

Exhibit 11

Telephone Conversation Record

Person Contacted: Christine Schwake

Date: March 4, 2004

Organization: Iowa Department of Natural Resources

Telephone: (515) 281-6615

Summary: Ms. Schwake of the Iowa Department of Natural Resources was contacted regarding 401 water quality certification for the Hole-in-the-Rock project on the Omaha Indian Reservation. She said the Iowa Department of Natural Resources serves as a consulting agency to the EPA in the issuance of the certification. She should be copy furnished a copy of the 404 permit application and attachments at:

Christine Schwake
Iowa Department of Natural Resources
Wallace State Office Building
Des Moines, IA 50319-0034

Documented by: Kristine Nemec

Telephone Conversation Record

Person Contacted: Chris Hetzler

Date: July 2, 2004

Organization: Nebraska Department of Environmental Quality (NDEQ)

Telephone: (402) 471-0007

Summary: Mr. Hetzler of the NDEQ was contacted to request the air quality status of Thurston County, Nebraska. He said there is no monitor in Thurston County that tests for attainment with National Ambient Air Quality Standards (NAAQS). However, there is an IMPROVE monitor. The IMPROVE acronym stands for Interagency Monitoring of Protected Visual Environments and air quality data for the monitor can be accessed at: http://vista.cira.colostate.edu/improve/data/dataquery/querywizardclient.aspx and selecting the Omaha Tribe under site location. He said the monitor does test for some nationally regulated pollutants, even if though it doesn't test for federal compliance. For example, it tests for particulates 2.5 micrometers or smaller in size (PM 2.5) and for particulates 2.5-10 micrometers in size (PM 2.5-10).

Documented by: Kristine Nemec

APPENDIX C:
ELUTRIATE SAMPLING RESULTS

CQAB Lab Project # 7017

DEPARTMENT OF THE ARMY
USA Engineering Research Development Center
Chemical Quality Assurance Branch Lab
Omaha, Nebraska

Subject: Elutriate Testing Report Series # 01-01

Project: Hole-In-The-Rock Proposed Dredging Site
Intended Use:
Source of Material: Hole-In-The-Rock Near Macy, NE, Omaha Reservation
Trip # EDXWAO012004

Submitted by: Bill Otto/Luke Wallace
Date Sampled: 01-20-04 , Date Received: 01-20-04
Method of Test or Specification: EPA and Standard Methods

References: 1. Omaha District Request #
2. CQAB Lab #s M040043-001 to M040043-003

-- REMARKS --

1. Three sediment and water samples collected from Hole-In-The-Rock Proposed Dredging Site, near Macy, NE, Omaha Reservation location were received in the laboratory for analyses. No major problem was encountered during the receipt of samples. The samples were analyzed using EPA Methods.

2. Test results are shown on the attached sheets.

3. If you have any question regarding test results, please call Prem N. Arora at (402)444-4318.

Submitted by:

Douglas B. Taggart

DOUGLAS B. TAGGART
Chief, CQAB Laboratory

PNA

Arora/CG/444-4318

DEPARTMENT OF THE ARMY
Corps of Engineers
Environmental Chemistry Branch

Omaha, NE

Project Name:	Hole-in-the-Rock - Proposed Dredging Site (7017)		
MRD LAB Sample No:	M040043-001	Date Taken:	20-JAN-04
Customer Sample ID:	1HIR	Date Received:	20-JAN-04
		Container (Water):	1 L PolyBottles (HIR-Water)
Sample Description:	Water and Sediment	Container (Sediment):	1 gal glass

Analysis	Sediment Result	Units	Receiving Water Result	Units	Elutriate Water Result	Units
Ammonia-Nitrogen as N	u	mg/kg	1.0	mg/L	0.73	mg/L
Chemical Oxygen Demand	-	-	6	mg/L	7	mg/L
Turbidity	-	-	9	NTU	0.4	NTU
Total Suspended Solids	-	-	14	mg/L	-	mg/L
PH	8.5	Units	8.4	Units	8.4	Units
Atrazine	u	mg/kg	u	ug/L	u	ug/L
Biochemical Oxygen Demand	-	mg/L	u	mg/L	u	mg/L
Iron	11800	mg/kg	50	ug/L	60	ug/L
Copper	8	mg/kg	u	ug/L	u	ug/L
Lead	8	mg/kg	u	ug/L	u	ug/L

Definitions

u: Below Sample Detection Limit (MDL x Dilution)

420 South 18th Street Omaha, NE 68102

Fax: (402) 341-5448
Phone: (402) 444-4300

DEPARTMENT OF THE ARMY
Corps of Engineers
Environmental Chemistry Branch

Omaha, NE

Project Name:	Hole-in-the-Rock - Proposed Dredging Site (7017)		
MRD LAB Sample No:	M040043-002	Date Taken:	20-JAN-04
Customer Sample ID:	2HIR	Date Received:	20-JAN-04
		Container (Water):	1 L PolyBottles (HIR-Water)
Sample Description:	Water and Sediment	Container (Sediment):	1 gal glass

Analysis	Sediment Result	Units	Receiving Water Result	Units	Elutriate Water Result	Units
Ammonia-Nitrogen as N	u	mg/kg	1.0	mg/L	0.74	mg/L
Chemical Oxygen Demand	-	-	6	mg/L	9	mg/L
Turbidity	-	-	8.6	NTU	3	NTU
Total Suspended Solids	-	-	14	mg/L	-	mg/L
PH	7.9	Units	8.4	Units	8.3	Units
Atrazine	u	mg/kg	u	ug/L	u	ug/L
Biochemical Oxygen Demand	-	mg/L	u	mg/L	u	mg/L
Iron	25700	mg/kg	50	ug/L	40	ug/L
Copper	28	mg/kg	u	ug/L	u	ug/L
Lead	15	mg/kg	u	ug/L	u	ug/L

Definitions

u: Below Sample Detection Limit (MDL x Dilution)

420 South 18th Street Omaha, NE 68102

Fax: (402) 341-5448
Phone: (402) 444-4300

DEPARTMENT OF THE ARMY
Corps of Engineers
Environmental Chemistry Branch

Omaha, NE

Project Name:	Hole-in-the-Rock - Proposed Dredging Site (7017)		
MRD LAB Sample No:	M040043-003	Date Taken:	20-JAN-04
Customer Sample ID:	3HIR	Date Received:	20-JAN-04
		Container (Water):	1 L PolyBottles (HIR-Water)
Sample Description:	Water and Sediment	Container (Sediment):	1 gal glass

Analysis	Sediment Result	Units	Receiving Water Result	Units	Elutriate Water Result	Units
Ammonia-Nitrogen as N	13	mg/kg	1.0	mg/L	3.8	mg/L
Chemical Oxygen Demand	-	-	6	mg/L	16	mg/L
Turbidity	-	-	9	NTU	3	NTU
Total Suspended Solids	-	-	14	mg/L	-	mg/L
PH	7.7	Units	8.4	Units	8.2	Units
Atrazine	u	mg/kg	u	ug/L	u	ug/L
Biochemical Oxygen Demand	-	mg/L	u	mg/L	u	mg/L
Iron	26200	mg/kg	50	ug/L	50	ug/L
Copper	26	mg/kg	u	ug/L	u	ug/L
Lead	15	mg/kg	u	ug/L	u	ug/L

Definitions

u: Below Sample Detection Limit (MDL x Dilution)

420 South 18th Street Omaha, NE 68102

Fax: (402) 341-5448
Phone: (402) 444-4300

Trip #: EDXWA0Ø12ØØ4

7017

Analytical Request Form

1-20-04.
Hole-in-the-Rock Proposed dredging site, near MACY, NE, Omaha Reservation

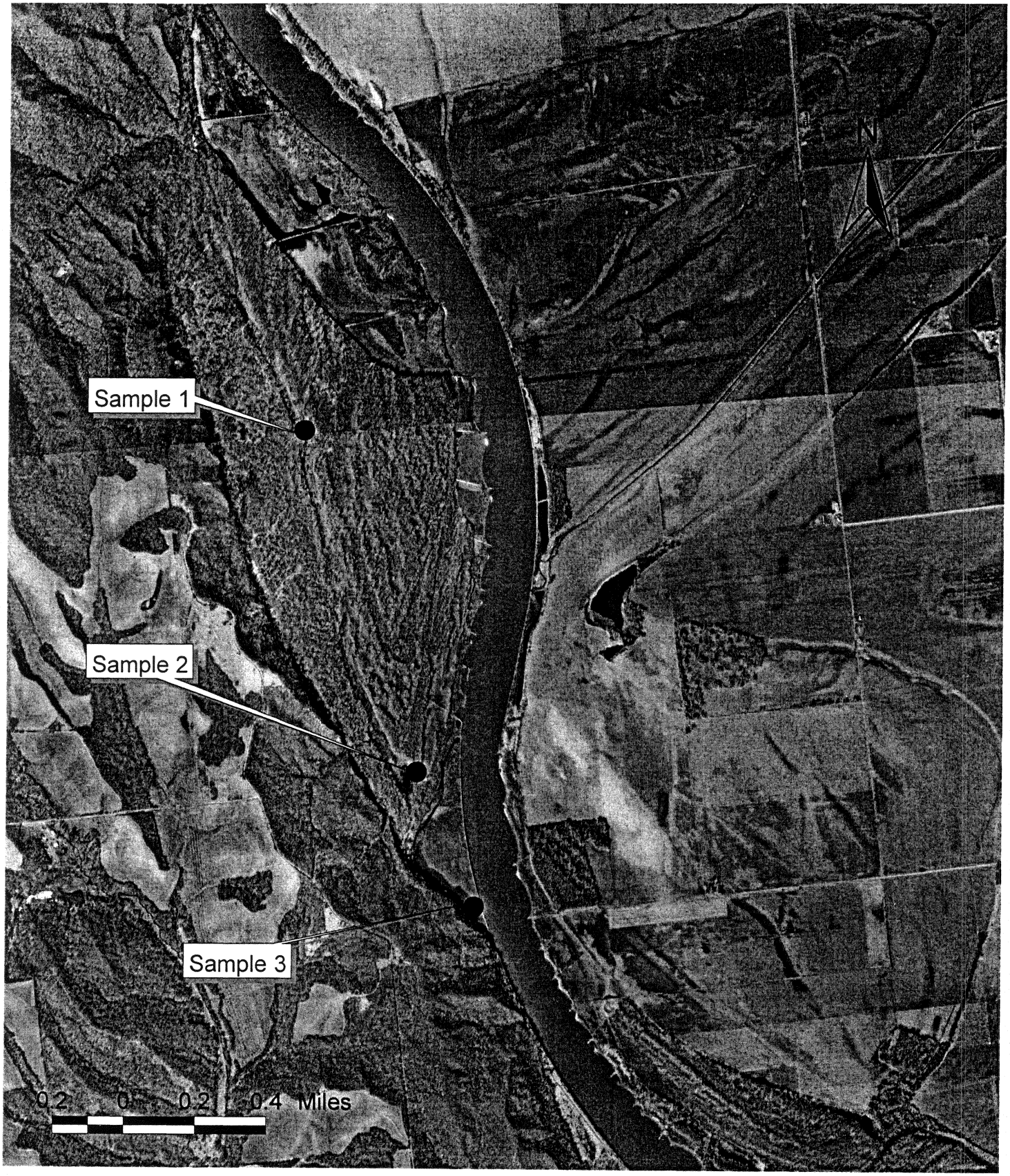
id	DT	Tm	MAT'L	Amt
1HIR	1-20-04	10:45	soil	1gal
2HIR	1-20-04	11:40	soil	1gal
3HIR	1-20-04	12:30	soil	1gal
HIR-WATER	1-20-04	X	WATER	19 L

Collected by - Bill OTTO, Nathan Birks, Larry Ludwig

del. by. Bill Otto

Rec'd by. Ted Hanson 1/20/04 14:50

– For Parameters Contact Luke Wallace @ 221-4885



Elutriate sampling locations for Hole-in-the-Rock
January 20, 2004

APPENDIX D:
SITE PICTURES

January 16, 2004 picture by Ed Brodnicki.
Looking north towards proposed excavation site, with area of open water visible.

January 16, 2004 picture by Ed Brodnicki.
Looking south towards proposed excavation site.

APPENDIX E:
PERMIT ACTIVITY

18. Nature of Activity *(Description of project, include all features)*

Please see Attachments 3-6

19. Project Purpose *(Describe the reason or purpose of the project, see instructions)*

Please see Attachment 3

USE BLOCKS 20-22 IF DREDGED AND/OR FILL MATERIAL IS TO BE DISCHARGED

20. Reason(s) for Discharge

Please see Attachment 3

21. Type(s) of Material Being Discharged and the Amount of Each Type in Cubic Yards

Silty sand, 70,050 cubic yards; elutriate sample results are in Attachment 7

22. Surface Area in Acres of Wetlands or Other Waters Filled *(see instructions)*

70,050 cubic yards of silty sand may be discharged into the Missouri River with a hydraulic dredge

23. Is Any Portion of the Work Already Complete? Yes _____ No __X__ IF YES, DESCRIBE THE COMPLETED WORK

24. Addresses of Adjoining Property Owners, Lessees, etc., Whose Property Adjoins the Waterbody (if more than can be entered here, please attach a supplemental list).

Omaha Indian tribe

25. List of Other Certifications or Approvals/Denials Received from other Federal, State, or Local Agencies for Work Described in This Application

AGENCY	TYPE APPROVAL*	IDENTIFICATION NUMBER	DATE APPLIED	DATE APPROVED	DATE DENIED

*Would include but is not restricted to zoning, building and flood plain permits

26. Application is hereby made for a permit or permits to authorize the work described in this application. I certify that the information in this application is complete and accurate. I further certify that I possess the authority to undertake the work described herein or am acting as the duly authorized agent of the applicant.

SIGNATURE OF APPLICANT _____ DATE _____ SIGNATURE OF AGENT _____ DATE _____

The application must be signed by the person who desires to undertake the proposed activity (applicant) or it may be signed by a duly authorized agent if the statement in block 11 has been filled out and signed.

18 U.S.C. Section 1001 provides that: Whoever, in any manner within the jurisdiction of any department or agency of the United States, knowingly and willfully falsifies, conceals, or covers up any trick scheme, or disguises a material fact or makes any false, fictitious or fraudulent statements or representations or makes or uses any false writing or document knowing same to contain any false, fictitious or fraudulent statements or entry, shall be fined not more than $10,000 or imprisoned not more than five years or both.

APPLICATION FOR DEPARTMENT OF THE ARMY PERMIT *(33 CFR 325)*	OMB APPROVAL NO. 0710-0003 Expires December 31, 2004

The public reporting burden for this collection of information is estimated to average 10 hours per response, although the majority of applications should require 5 hours or less. This includes the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Department of Defense, Washington Headquarters Service Directorate of Information Operations and Reports, 1215 Jefferson Davis Highway, Suite 1204, Arlington, VA 22202-4302; and to the Office of Management and Budget, Paperwork Reduction Project (0710-0003), Washington, DC 20503. Respondents should be aware that notwithstanding any other provision of law, no person shall be subject to any penalty for failing to comply with a collection of information if it does not display a currently valid OMB control number. Please DO NOT RETURN your form to either of those addresses. Completed applications must be submitted to the District Engineer having jurisdiction over the location of the proposed activity.

PRIVACY ACT STATEMENT

Authorities: Rivers and Harbors Act, Section 10, 33 USC 403; Clean Water Act, Section 404, 33 USC 1344; Marine Protection, Research, and Sanctuaries Act, Section 103, 33 USC 1413. Principal Purpose: Information provided on this form will be used in evaluating the application for a permit. Routine Uses: This information may be shared with the Department of Justice and other federal, state, and local government agencies. Submission of requested information is voluntary, however, if information is not provided, the permit application cannot be processed nor can a permit be issued.

One set of original drawings or good reproducible copies which show the location and character of the proposed activity must be attached to this application (see sample drawings and instructions) and be submitted to the District Engineer having jurisdiction over the location of the proposed activity. An application that is not completed in full will be returned.

(ITEMS 1 THRU 4 TO BE FILLED BY THE CORPS)

1. APPLICATION NO.	2. FIELD OFFICE CODE	3. DATE RECEIVED	4. DATE APPLICATION COMPLETED

(ITEMS BELOW TO BE FILLED BY APPLICANT)

5. APPLICANT'S NAME	8. AUTHORIZED AGENT'S NAME AND TITLE *(an agent is not required)*
U.S. Army Corps of Engineers, Omaha District	
6. APPLICANT'S ADDRESS	**9. AGENT'S ADDRESS**
106 South 15th Street Omaha, NE 68102	
7. APPLICANT'S PHONE NUMBERS WITH AREA CODE	**10. AGENT'S PHONE NUMBERS WITH AREA CODE**
a. Residence	a. Residence
b. Business (402) 221-4628	b. Business

11. STATEMENT OF AUTHORIZATION

I hereby authorize _____ to act in my behalf as my agent in the processing of this application and to furnish, upon request, supplemental information in support of this permit application.

APPLICANT'S SIGNATURE DATE

NAME, LOCATION AND DESCRIPTION OF PROJECT OR ACTIVITY

12. PROJECT NAME OR TITLE *(see instructions)*

Hole-in-the-Rock Backwater Restoration

13. NAME OF WATERBODY, IF KNOWN *(if applicable)*	14. PROJECT STREET ADDRESS *(if applicable)*
Missouri River	
15. LOCATION OF PROJECT	
Thurston (COUNTY) NE (STATE)	

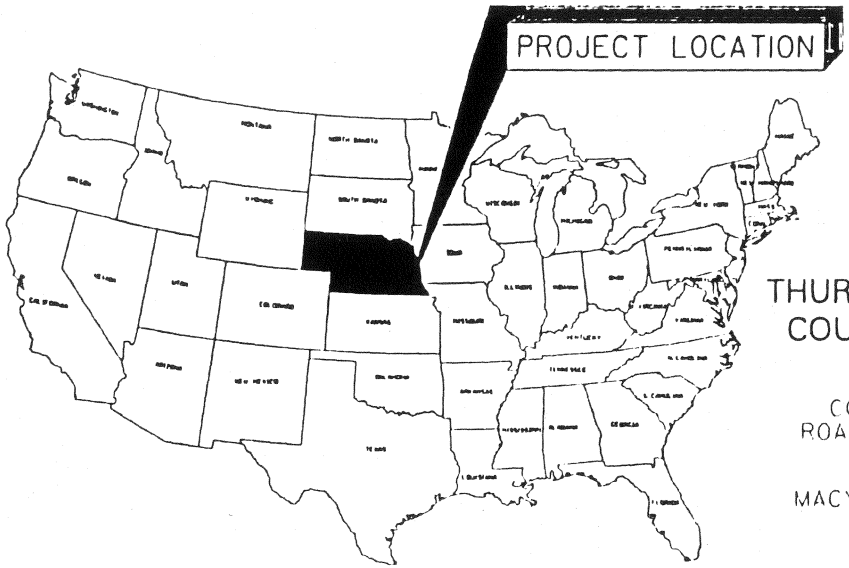
16. OTHER LOCATION DESCRIPTIONS, IF KNOWN (see instructions)

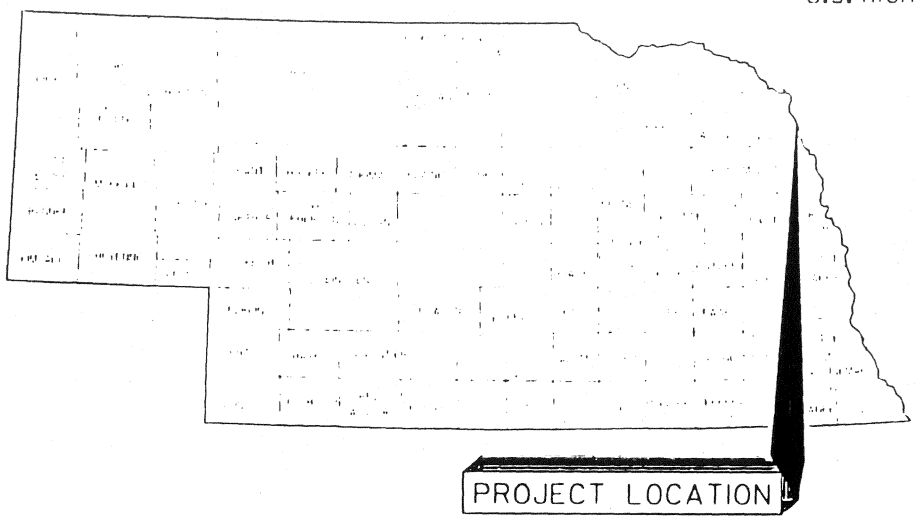
Sec. 36, T 26 N, R 9 E & Sec. 1, T 25 N, R 9 E. The site is on the Omaha Indian Reservation near RM 706.

17. DIRECTIONS TO THE SITE

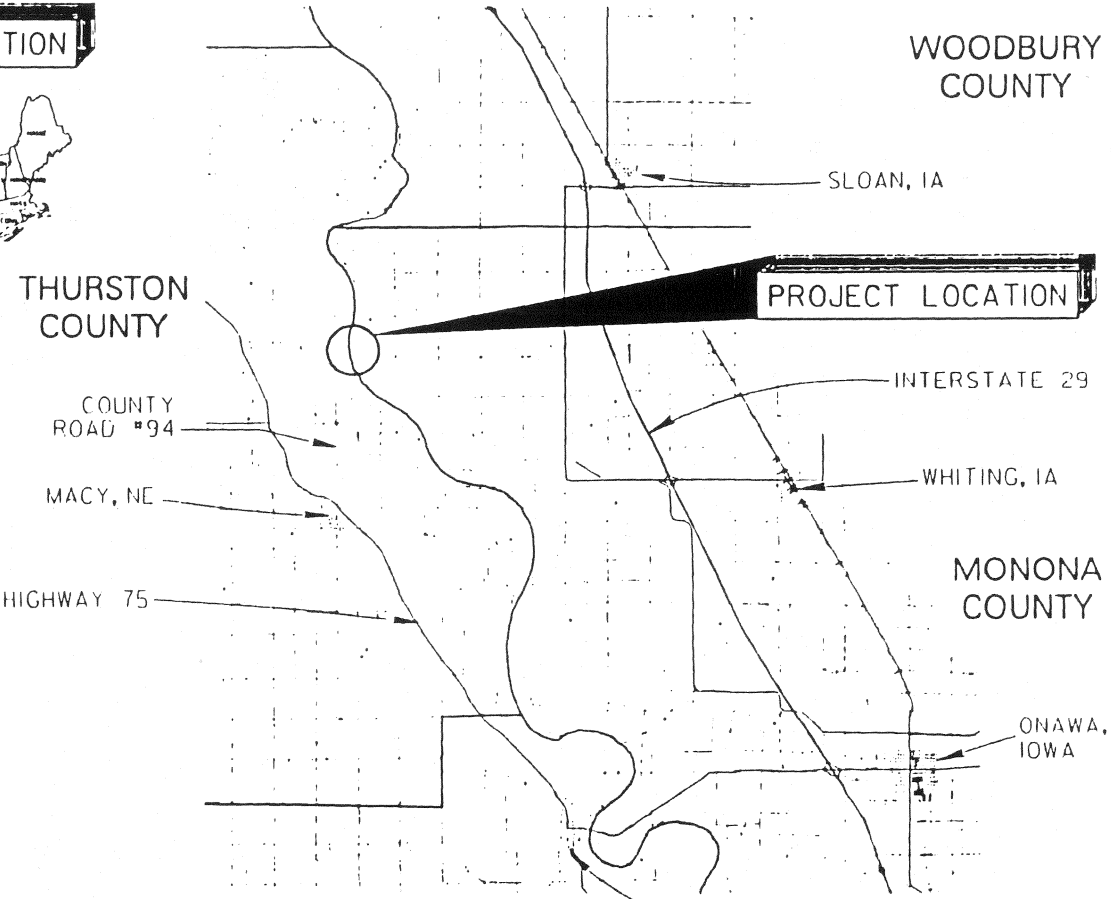
Please see Attachments 1-2

REVISIONS	SYMBOL	DESCRIPTIONS	DATE	APPROVED





NEBRASKA



VINCINITY, MAP

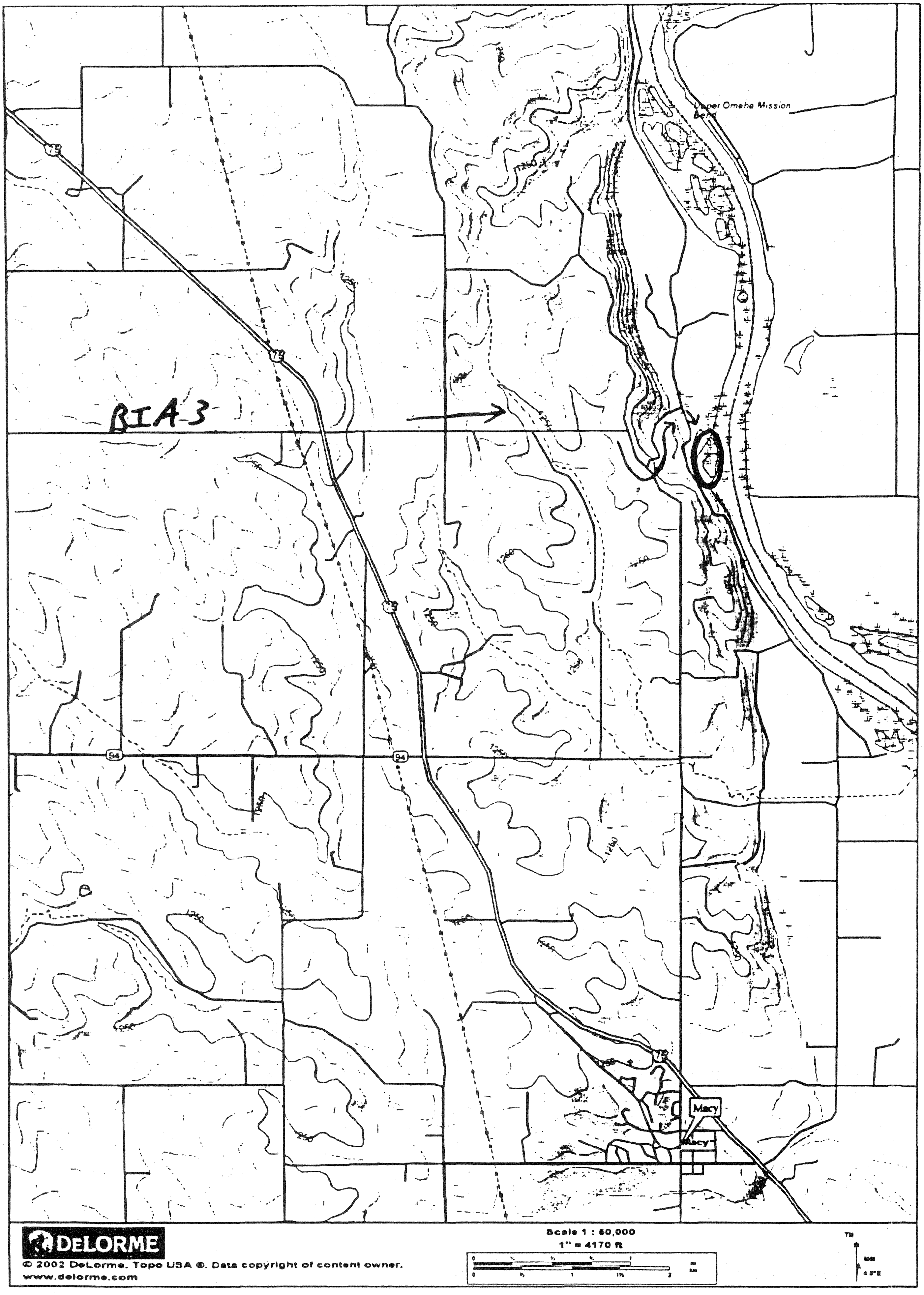
N

Attachment 1

LOCATION PLAN

NO SCALE

Sheet No.	Computer File: loc.dgn	Spec No. DACW45-99-B-00XX	U S ARMY ENGINEER DISTRICT CORPS OF ENGINEERS OMAHA, NEBRASKA	FISH AND WILDLIFE MITIGATION, MISSOURI RIVER HOLE-IN-THE-ROCK PROJECT LOCATION MAP	Submitted by: Chief SED & CHAN. STAB. Section	Designed by: R.G.P.	Checked by: J.I.R.
1	Date: JAN. 2003	Contract No. DACW45-00-00xx				Reviewed by: J.I.R.	Drawn by: R.G.P.
	Drawing Code: PUBDATA\RICKP\X						


BIA 3
Upper Omaha Mission Bend
94
94
75
Macy
Macy
DELORME
© 2002 DeLorme. Topo USA ®. Data copyright of content owner.
www.delorme.com
Scale 1 : 50,000
1" = 4170 ft

U.S. Army Corps of Engineers
Hole-in-the-Rock Backwater Restoration
Application for Department of the Army Permit

18. Nature of Activity

The existing outlet channel to the river has accumulated sediment in the last 20-30 years and would be excavated to ensure adequate connectivity to the Missouri River. The backwater channel would be excavated as shown on Attachments 3-5 (Alternative #2 on Attachment 5). The type of equipment used for excavation will be the contractor's decision and is currently unknown. The contractor may either haul the excavated silty sand to an offsite upland area to be disposed of or they may use a hydraulic dredge to discharge the approximately 70,050 cubic yards of silty sand into the Missouri River. The discharge of hydraulic dredge material will occur only during the period when the Missouri River flows are greater than 25,000 cfs, which corresponds to a Blair gage reading of 12.85 feet. The end of the discharge pipe will be submerged in the thalweg, approximately 25 feet from the right bank. The outfall will be suspended 4-6 feet off the riverbed, in an area where the water is a least 11 feet deep. Discharges typically are above 25,000 cfs from 1 April to 30 November. In addition, approximately 7,200 tons of stone will be removed from a 450-foot long section of an existing rock revetment to create an outlet for the channel. Most of the stone will be given to the Corps of Engineers' Operations Division to be used in other projects. Any remaining stone will be pushed down to make the revetment shorter and wider. Disturbed areas along the channel will be seeded with a mixture of oats to provide temporary erosion control and switchgrass, big bluestem, prairie cordgrass, Canada wildrye, and Western wheatgrass for wildlife habitat and permanent erosion control.

The backwater would be designed to provide maximum benefits to native fish. For example, the design would include a permanent connection to the Missouri River at the outlet and two 300-foot long overwintering holes that would be the same width as the bottom of the backwater. These overwintering holes would have a depth of 10 to 12 feet deep during the winter when the flows are significantly lower in the main channel of the river. A total of 25 downed cottonwood trees would also be placed evenly along the shoreline of the backwater with the exception of the portion of the northern shoreline that is directly adjacent to the bluff line. The trees would have all or a portion of the crown intact and be a minimum of 20 feet tall with a minimum diameter at breast height (DBH) of 12 inches. The trees would be placed with the top portion of the tree in the backwater at a slight downstream angle and the bottom portion of the tree on the bank. Five of the trees would be anchored by burying the lower 1/3 of the trunk to a depth of 3 feet below the ground surface. The five trees that are anchored would be evenly spaced around the backwater. Valuable wildlife habitat would also be provided by the submergent and emergent aquatic vegetation that should grow on the relatively shallow slopes constructed on the riverward side of the backwater. The substrate provided by this vegetation, along with that provided by the downed trees, would benefit the production of aquatic invertebrates that would in turn provide food to a number of different fish species and their young. It would also provide cover, spawning, rearing, and feeding habitat to fish.

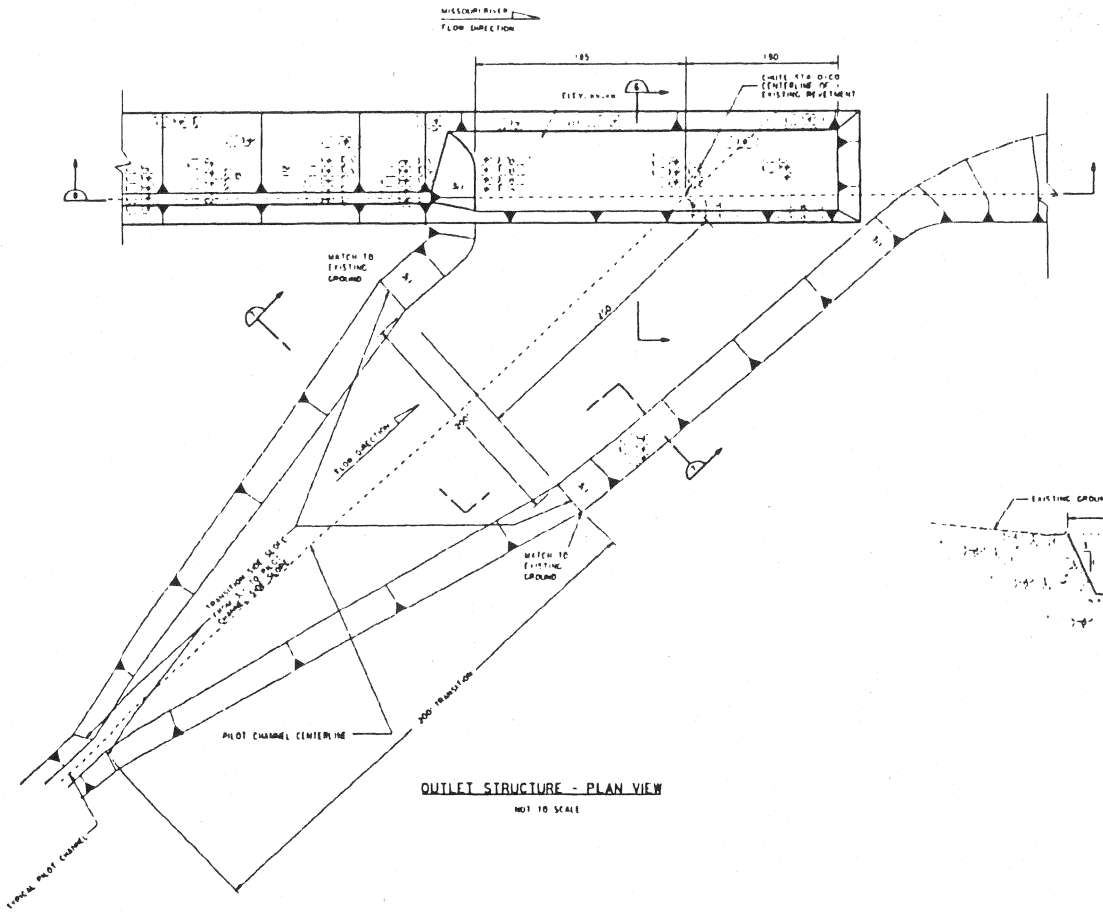
19. Project Purpose

The proposed project is part of the Missouri River Bank Stabilization and Navigation Fish and Wildlife Mitigation Project, authorized by the Water Resources Development Acts of 1986 and 1999. The purpose of the proposed project is to mitigate for aquatic and terrestrial losses that resulted from past channeling efforts on the Missouri River as part of the Missouri River Bank Stabilization and Navigation Project. The restoration of a backwater would restore one component of this ecosystem.

20. Reasons(s) for Discharge

Approximately 70,050 cubic yards of silty sand may be discharged into the river with a hydraulic dredge if the contractor chooses not to transport the material offsite and dispose of it on upland areas. The contractor may choose to discharge the excavated material in the river if there are insufficient non-wetland areas located nearby within a reasonable haul distance and it would be more economical than conventional methods.

REVISIONS	SYMBOL	DESCRIPTIONS	DATE	APPROVED

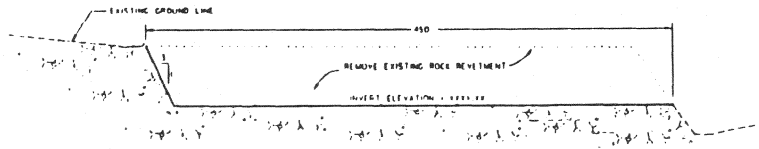


OUTLET STRUCTURE - PLAN VIEW

NOT TO SCALE

NOTES:

1. MATERIAL PLACED BELOW THE PILOT CHANNEL INVERT ELEVATION DOES NOT REQUIRE BACKFILLING.
2. MWS = NORMAL NAVIGATION STAGE 9 APR - NOVEMBER
3. THE WATER SURFACE ELEVATIONS SHOWN ON THE DRAWINGS DESIGNATED AS MWS ARE THE EXPECTED RIVER STAGE ELEVATIONS DURING THE "NORMAL" NAVIGATION RELEASES (THE MONTHS OF APRIL THROUGH NOVEMBER). THE EXPECTED RIVER GAGE ELEVATION CAN AND WILL FLUCTUATE PLUS OR MINUS SEVERAL FEET THROUGHOUT THE YEAR. THE FLUCTUATIONS ARE THE RESULTS OF THE COMBINATION OF RELEASES FROM THE MISSOURI RIVER MAIN STEM SYSTEM AND UNCONTROLLED TRIBUTARIES THAT ENTER THE MISSOURI RIVER UPSTREAM OF THE PROJECT. THE CORPS OF ENGINEERS WILL NOT REGULATE THE FLOWS BEING RELEASED FROM THE MAIN STEM DAMS FOR THIS PROJECT. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO ANTICIPATE THESE CONDITIONS. THE ACTUAL AND FORECASTED RIVER STAGE ELEVATIONS AT THIS PROJECT CAN BE OBTAINED FROM THE U.S. ARMY CORPS OF ENGINEERS RESERVOIR CONTROL CENTER BY CALLING (402) 697-2675 OR THE WEB SITE HTTP://WWW.NWD-MR.USACE.ARMY.MIL/RCC/INDEX.HTML.



SECTION

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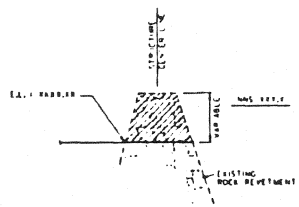

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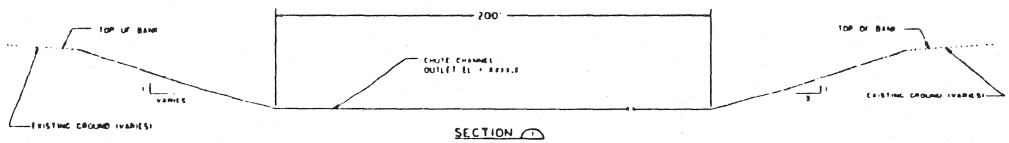


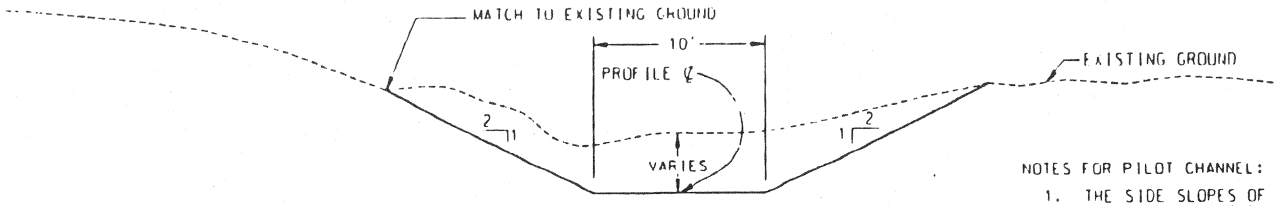
SECTION

NOT TO SCALE

Attachment 4

Sheet No.	Computer File:	Spec No.	U S ARMY ENGINEER DISTRICT CORPS OF ENGINEERS OMAHA, NEBRASKA	FISH AND WILDLIFE MITIGATION, MISSOURI RIVER HOLE-IN-THE-ROCK PROJECT OUTLET STRUCTURE	Submitted by:	Designed by:	Checked by:
5	SHEE15.DGN	DACW45-99-B-00XX				R.G.P.	J.I.R.
	Date: JAN. 2003	Contract No. DACW45-00-00xx			Chief SED & CHAN. STAB. Section	Reviewed by: J.I.R.	Drawn by: R.G.P.
	Drawing Code: PUBDATA\RICKP\X						

REVISIONS	SYMBOL	DESCRIPTIONS	DATE	APPROVED

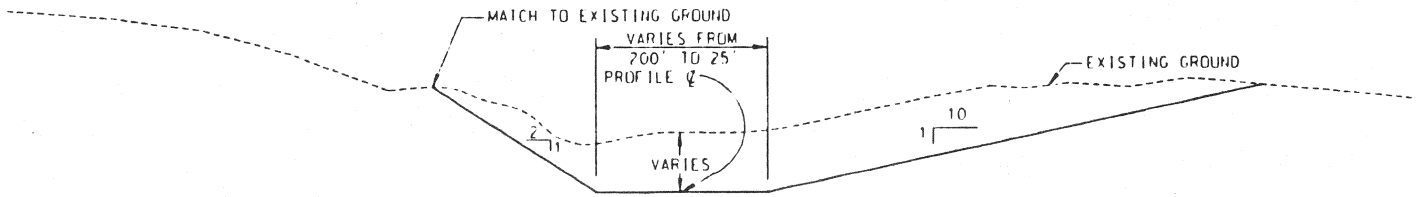


ALTERNATIVE #1 - PILOT CHANNEL
TYPICAL CROSS-SECTION

NOT TO SCALE

NOTES FOR PILOT CHANNEL:

1. THE SIDE SLOPES OF THE PILOT CHANNEL ARE 1V ON 2H. STOP EXCAVATION WHEN THE SIDE SLOPE INTERSECTS THE EXISTING GROUND LINE.
2. THE PILOT CHANNEL SHALL FOLLOW THE ALIGNMENT SHOWN ON THE PLAN AND PROFILE SHEETS.

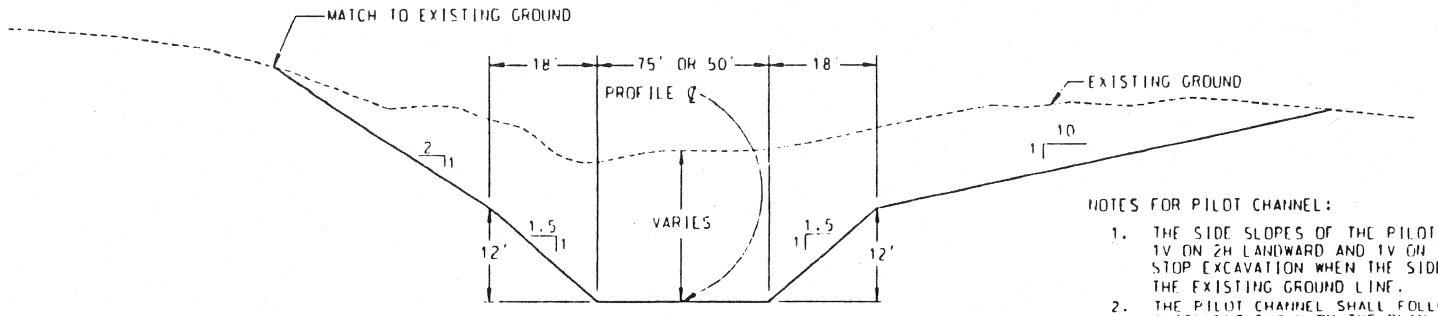


ALTERNATIVE #2 - PILOT CHANNEL
TYPICAL CROSS-SECTION

NOT TO SCALE

NOTES FOR PILOT CHANNEL:

1. THE SIDE SLOPES OF THE PILOT CHANNEL ARE 1V ON 2H LANDWARD AND 1V ON 10H RIVERWARD. STOP EXCAVATION WHEN THE SIDE SLOPE INTERSECTS THE EXISTING GROUND LINE.
2. THE PILOT CHANNEL SHALL FOLLOW THE ALIGNMENT SHOWN ON THE PLAN AND PROFILE SHEETS.



ALTERNATIVE #2 - PILOT CHANNEL (with 12' hole)
TYPICAL CROSS-SECTION

NOT TO SCALE

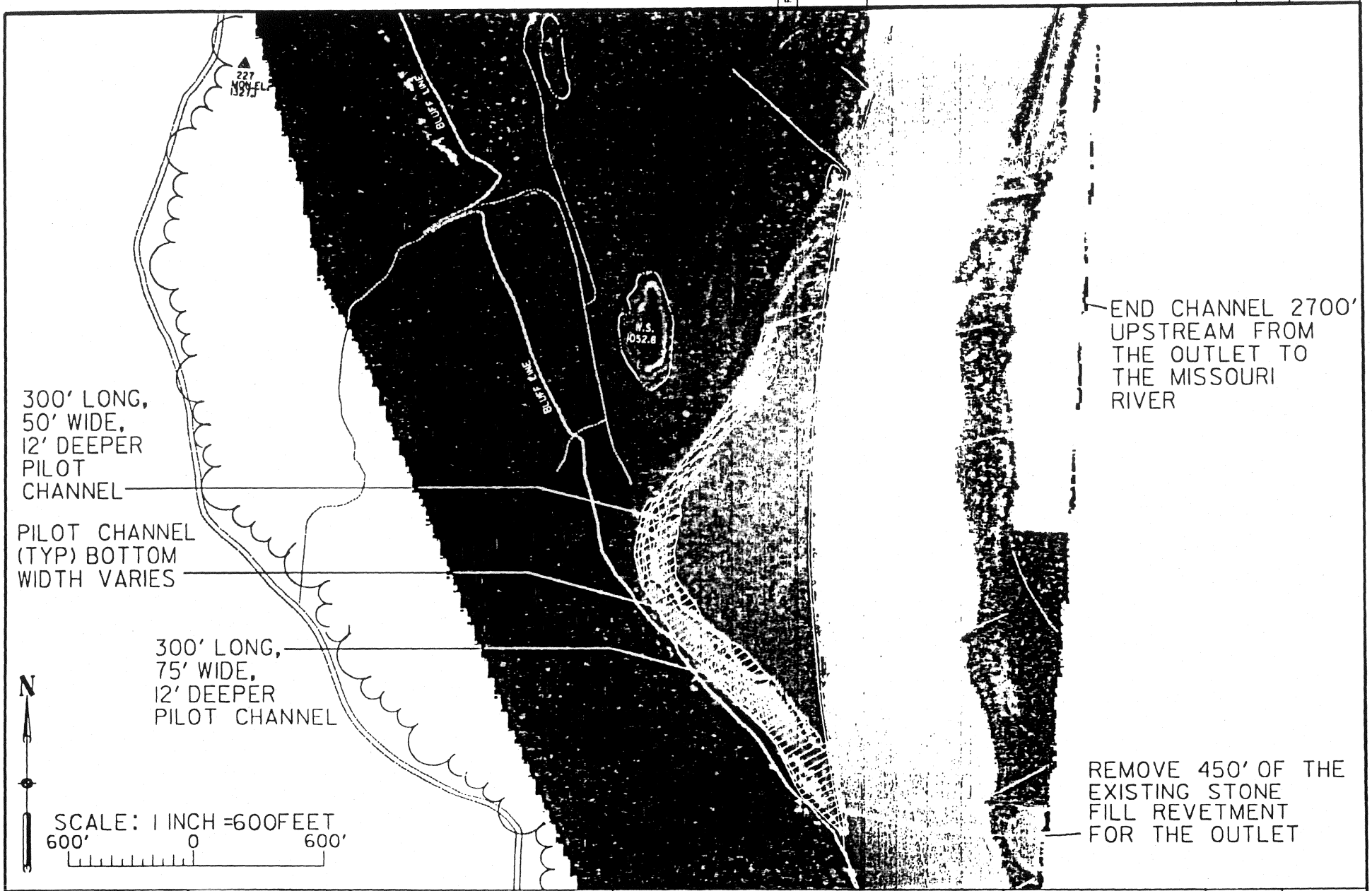
NOTES FOR PILOT CHANNEL:

1. THE SIDE SLOPES OF THE PILOT CHANNEL ARE 1V ON 2H LANDWARD AND 1V ON 10H RIVERWARD. STOP EXCAVATION WHEN THE SIDE SLOPE INTERSECTS THE EXISTING GROUND LINE.
2. THE PILOT CHANNEL SHALL FOLLOW THE ALIGNMENT SHOWN ON THE PLAN AND PROFILE SHEETS.

Attachment 5

Sheet No	Computer File: SHEET6.DGN	Spec. No. DACW45-99-B-00XX	U S ARMY ENGINEER DISTRICT CORPS OF ENGINEERS OMAHA, NEBRASKA	FISH AND WILDLIFE MITIGATION: MISSOURI RIVER HOLE-IN-THE-ROCK PROJECT MISCELLANIOUS DETAILS	Submitted by: Chief SED & CHAN STAB Section	Designed by: R.G.P.	Checked by J.I.R.
6	Date: JAN. 2003	Contract No. DACW45-00-00xx				Reviewed by: J.I.R.	Drawn by: R.G.P.
	Drawing Code: PUBDATA\RICKP\X						

REVISIONS	SYMBOL	DESCRIPTIONS	DATE	APPROVED



Sheet No.	Computer File:	Spec. No.			
3	SHEET3.dgn	DACW45-99-B-00XX	U S ARMY ENGINEER DISTRICT CORPS OF ENGINEERS OMAHA, NEBRASKA	FISH AND WILDLIFE MITIGATION: MISSOURI RIVER HOLE-IN-THE-ROCK PROJECT ALTERNATIVE #2 - SITE PLAN	Designed by: R.G.P. / Checked by: J.I.R.
	Date: JAN. 2003	Contract No. DACW45-00-00xx		Submitted by: Chief SED. & CHAN. STAB. Section	Reviewed by: J.I.R. / Drawn by: R.G.P.
	Drawing Code: PUBDATA\RICKP\X				

Attachment 6

CQAB Lab Project # 7017

DEPARTMENT OF THE ARMY
USA Engineering Research Development Center
Chemical Quality Assurance Branch Lab
Omaha, Nebraska

Subject: Elutriate Testing Report Series # 01-01

Project: Hole-In-The-Rock Proposed Dredging Site
Intended Use:
Source of Material: Hole-In-The-Rock Near Macy, NE, Omaha Reservation
Trip # EDXWAO012004

Submitted by: Bill Otto/Luke Wallace
Date Sampled: 01-20-04 , Date Received: 01-20-04
Method of Test or Specification: EPA and Standard Methods

References: 1. Omaha District Request #
2. CQAB Lab #s M040043-001 to M040043-003

-- REMARKS --

1. Three sediment and water samples collected from Hole-In-The-Rock Proposed Dredging Site, near Macy, NE, Omaha Reservation location were received in the laboratory for analyses. No major problem was encountered during the receipt of samples. The samples were analyzed using EPA Methods.

2. Test results are shown on the attached sheets.

3. If you have any question regarding test results, please call Prem N. Arora at (402)444-4318.

Submitted by:

Douglas B. Taggart

DOUGLAS B. TAGGART
Chief, CQAB Laboratory

Arora/CG/444-4318

DEPARTMENT OF THE ARMY
Corps of Engineers
Environmental Chemistry Branch

Omaha, NE

Project Name:	Hole-in-the-Rock - Proposed Dredging Site (7017)		
MRD LAB Sample No:	M040043-003	Date Taken:	20-JAN-04
Customer Sample ID:	3HIR	Date Received:	20-JAN-04
		Container (Water):	1 L PolyBottles (HIR-Water)
Sample Description:	Water and Sediment	Container (Sediment):	1 gal glass

Analysis	Sediment Result	Units	Receiving Water Result	Units	Elutriate Water Result	Units
Ammonia-Nitrogen as N	13	mg/kg	1.0	mg/L	3.8	mg/L
Chemical Oxygen Demand	-	-	6	mg/L	16	mg/L
Turbidity	-	-	9	NTU	3	NTU
Total Suspended Solids	-	-	14	mg/L	-	mg/L
PH	7.7	Units	8.4	Units	8.2	Units
Atrazine	u	mg/kg	u	ug/L	u	ug/L
Biochemical Oxygen Demand	-	mg/L	u	mg/L	u	mg/L
Iron	26200	mg/kg	50	ug/L	50	ug/L
Copper	26	mg/kg	u	ug/L	u	ug/L
Lead	15	mg/kg	u	ug/L	u	ug/L

Definitions

u: Below Sample Detection Limit (MDL x Dilution)

420 South 18th Street Omaha, NE 68102

Fax: (402) 341-5448
Phone: (402) 444-4300

DEPARTMENT OF THE ARMY
Corps of Engineers
Environmental Chemistry Branch

Omaha, NE

Project Name:	Hole-in-the-Rock - Proposed Dredging Site (7017)		
MRD LAB Sample No:	M040043-001	Date Taken:	20-JAN-04
Customer Sample ID:	1HIR	Date Received:	20-JAN-04
		Container (Water):	1 L PolyBottles (HIR-Water)
Sample Description:	Water and Sediment	Container (Sediment):	1 gal glass

Analysis	Sediment Result	Units	Receiving Water Result	Units	Elutriate Water Result	Units
Ammonia-Nitrogen as N	u	mg/kg	1.0	mg/L	0.73	mg/L
Chemical Oxygen Demand	-	-	6	mg/L	7	mg/L
Turbidity	-	-	9	NTU	0.4	NTU
Total Suspended Solids	-	-	14	mg/L	-	mg/L
PH	8.5	Units	8.4	Units	8.4	Units
Atrazine	u	mg/kg	u	ug/L	u	ug/L
Biochemical Oxygen Demand	-	mg/L	u	mg/L	u	mg/L
Iron	11800	mg/kg	50	ug/L	60	ug/L
Copper	8	mg/kg	u	ug/L	u	ug/L
Lead	8	mg/kg	u	ug/L	u	ug/L

Definitions

u: Below Sample Detection Limit (MDL x Dilution)

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DEPARTMENT OF THE ARMY
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Omaha, NE

Project Name:	Hole-in-the-Rock - Proposed Dredging Site (7017)		
MRD LAB Sample No:	M040043-002	Date Taken:	20-JAN-04
Customer Sample ID:	2HIR	Date Received:	20-JAN-04
		Container (Water):	1 L PolyBottles (HIR-Water)
Sample Description:	Water and Sediment	Container (Sediment):	1 gal glass

Analysis	Sediment Result	Units	Receiving Water Result	Units	Elutriate Water Result	Units
Ammonia-Nitrogen as N	u	mg/kg	1.0	mg/L	0.74	mg/L
Chemical Oxygen Demand	-	-	6	mg/L	9	mg/L
Turbidity	-	-	8.6	NTU	3	NTU
Total Suspended Sclids	-	-	14	mg/L	-	mg/L
PH	7.9	Units	8.4	Units	8.3	Units
Atrazine	u	mg/kg	u	ug/L	u	ug/L
Biochemical Oxygen Demand	-	mg/L	u	mg/L	u	mg/L
Iron	25700	mg/kg	50	ug/L	40	ug/L
Copper	28	mg/kg	u	ug/L	u	ug/L
Lead	15	mg/kg	u	ug/L	u	ug/L

Definitions

u: Below Sample Detection Limit (MDL x Dilution)

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Trip #: EDXWA0012004

(7017)

Analytical Request Form

1-20-04.

Hole-in-the-Rock Proposed dredging site, near Macy, NE, Omaha Reservation

id	DT	Tm	MAT'L	Amt
1HIR	1-20-04	10:45	soil	1gal
2HIR	1-20-04	11:40	soil	1gal
3HIR	1-20-04	12:30	soil	1gal
HIR-WATER	1-20-04	x	WATER	19 L

Collected by - Bill Otto, Nathan Birks, Larry Ludwig

del. by - Bill Otto

Rec'd by - Ted Shannon 1/20/04 14:50

- For Parameters contact Luke Wallace @ 221-4885