

DRAFT ENVIRONMENTAL ASSESSMENT
BEAVER DAM ROCK REMOVAL
MISSISSIPPI RIVER MILE 38.5

ORIGINATING OFFICE
ENVIRONMENTAL ANALYSIS BRANCH
PLANNING DIVISION

MAY 1983

U.S. ARMY CORPS OF ENGINEERS
ST. LOUIS DISTRICT

List of Recipients

U.S. Coast Guard, Second District
Fish and Wildlife Service
U.S. Geological Survey
U.S. Environmental Protection Agency
Missouri Office of Administration
Missouri Department of Natural Resources
Missouri Department of Conservation
Illinois State Clearinghouse
Illinois Department of Transportation
Illinois Historic Preservation Officer
Illinois Natural History Survey
Illinois Environmental Protection Agency
Audubon Council of Illinois, Inc.
Illinois Audubon Society
Illinois Environmental Council
Izaak Walton League of America, Inc.
Illinois Chapter, American Fishery Society
Shawnee Groups, Sierra Club
Southern Illinois University, Carbondale
Editor, Cairo Evening Citizen
Editor, Times
Editor, The Winchester Times
Mayor of Commerce, Missouri
Coalition for the Environment
Conservation Federation of Missouri
The Nature Conservancy
Ozark Chapter, Sierra Club
Audubon Society of Missouri
Missouri Chapter, American Fishery Society

Table of Contents

	<u>Page</u>
ENVIRONMENTAL ASSESSMENT	
1. Introduction.	1
2. Thebes Gap.	1
3. Past Removal Projects.	1
4. The USAE-WES Survey.	1
5. The Aquatic Environment.	2
6. Need for Project.	2
7. Conduct of Work.	3
8. Transient Environmental Considerations.	3
9. Long Term Environmental Considerations.	4
10. Summary.	4
11. List of Preparers.	4
12. References.	4
PLATE 1. Beaver Dam Rock rock removal area, modified from Location Map DACW 43.	5
FINDING OF NO SIGNIFICANT IMPACT.	6
APPENDIX A - ENDANGERED SPECIES ASSESSMENT.	A-1
1. Introduction --	A-1
2. Description of the Study Area.	A-1
3. Project work.	A-1
4. Impacts.	A-1
5. Efforts to Eliminate Adverse Impacts on Species and Habitat.	A-2
6. References.	A-2
7. Coordination Letters.	A-3 thru A-16

DRAFT ENVIRONMENTAL ASSESSMENT
BEAVER DAM ROCK REMOVAL

1. Introduction: The St. Louis District proposes to remove an obstacle to navigation, herein called Beaver Dam Rock, located at River Mile 38.5, in the Lower Mississippi River (PLATE 1). This obstruction is thought to be a bedrock pinnacle, probably part of the Cretaceous McNairy formation. It may be sandstone, conglomerate, limestone, or some combination of these rock types. The rock is indurated, erosion resistant and too hard for removal by dredge. Contract specifications would call for excavation of this rock obstruction down to elevation 290 National Geodetic Vertical Datum (NGVD) by drilling and blasting. The area will be swept with a horizontal beam held at the 290 level to find the rock for blasting and then swept again after blasting. All rock above 10 inches diameter encountered at the 290 level will be removed to below 290 NGVD in the excavation area or to either or both of two designated disposal areas (PLATE 1). An estimated total volume of 13,000 cubic yards of rock which protrudes as much as 4 feet above 290 NGVD is expected to be removed.

2. Thebes Gap: The project is in an area known as Thebes Gap, where the river runs some 7 miles through a narrow flood plain carved into bedrock. This is roughly the stretch of river from Commerce to Grays Point, Missouri. There are a number of obstacles to Mississippi River navigation in this stretch of channel (USAED St. Louis, 1983). Most are thought to be bedrock pinnacles which project into the channel.

3. Past Removal Projects: There have been efforts to remove these rock obstacles down through the years. The first really successful attempt began in 1964 (USAED St. Louis, 1965) and utilized drilling, blasting and dragline removal. Some 39,000 tons of rock were removed from the channel and used for dike repair. The effectiveness of this effort was limited by the capabilities of the survey and sounding technology of the day.

4. The USAE-WES Survey: In 1981, USAE-WES performed a reflection survey of the area (May and Murphy, 1982) with equipment which produced accurate data on depth to river bottom, depth to top of bedrock, and location and shape of rock masses. This survey accurately located and characterized several channel obstacles. PLATE 1 is based on data from this survey. For there to be the desired 9 foot deep, 300 foot wide navigation channel in the Beaver Dam Rock vicinity, under the low flow condition of 54,000 cfs flow, some 13,000 cubic yards of rock which protrude as much as 4 feet above 290 NGVD must be removed.

5. The Aquatic Environment: This stretch of the river, because it is narrow, has some of the highest current velocities normally encountered in the navigation channel. The bottom (other than the bedrock outcrops) is composed of sand to boulder size particles which constantly shift and accumulate or abrade in response to hydrologic factors. This sort of shifting, abrasive environment is difficult for most bottom dwelling organisms and the channel here is thought to be a relatively sterile habitat.

The rock pinnacles may offer organisms some respite from swift, abrasive currents. They also offer solid substrate for attachment and perhaps cracks and crevices for cover as well. With present available technology, sampling benthic organisms from Beaver Dam Rock is both difficult and dangerous; thus, we have no observational data on what benthic organisms, if any, currently inhabit this rock area.

Rock outcroppings are "structure" which may be attractive to fish of many species. Fishes can use the rock areas to escape the full force of the current while migrating upstream. These rock areas may also provide spawning sites for species which utilize firm substrate for egg deposition. Anecdotal information supplied by commercial fishermen suggests that fish do use the Thebes Gap area rock structures. They report taking significant numbers of channel catfish, flathead catfish, blue catfish, carp, buffalo fishes and paddlefish from around rock outcroppings (Janacek, Gale and Kenney letters, APPENDIX A). The USFWS (See Janacek letter, APPENDIX A) has classified the rock outcrop to be removed as belonging to Resource Category 2. The planning goal for this category is "no net loss of in-kind habitat value." This goal would be met by disposal of larger broken rock in the designated disposal areas (PLATE 1) to form a rock reef. Coordination of the project has included a site visit by FWS, IDOC, MDOC and Corps personnel. A coordination meeting between FWS, IDOC, MDOC and Corps personnel, 20 April 1983, was also helpful in determining the most environmentally sound course of action.

6. Need for Project: One grounding of a tow on Beaver Dam Rock has been reported (USAED St. Louis, 1983). Additional groundings can be anticipated in the future, but data are not available on which to base a prediction of frequency. Such groundings produce economic loss associated with damage to the tow, channel blockage and salvage efforts. There is also the potential for serious injury or loss of life.

Perhaps the most serious environmental consequence associated with grounding of a tow is the possibility of a destructive spill. It is not difficult to imagine a major spill of an environmentally damaging substance. If the project is carried out successfully, the chances for this particular type of disaster approach zero.

7. Conduct of Work: The work would be done under contract. The contract would specify that the work be done in accordance with laws and regulations governing work in the river and blasting. Coordination with Coast Guard, U.S. Fish and Wildlife Service, and state Departments of Conservation would be specified. Contract specifications would insure that the work is conducted in a safe manner with minimum disruption to navigation and the environment.

The contract period would be 360 days to allow the contractor to select the most desirable work period within seasonal flow changes, etc. The actual period of work would be about 60 days under best conditions. The contractor would not block navigation except for short periods when actually blasting. Blasting would be constrained by specifications protecting the nearby town of Commerce from excessive blast vibration.

The contractor would find the rocks by sweeping the bottom with a horizontal beam held at 290 NGVD. On finding an obstruction, the contractor would drill and set an appropriate number of charges, then blast. After blasting, the contractor would again sweep the area at the 290 level. Any large pieces of rock encountered (10 inches in diameter or larger) would be removed and placed in a specified disposal area.

8. Transient Environmental Considerations: The work of the project will have an immediate temporary impact on the environment. During the time the contractor would be on the river, work activities would disturb whatever tranquility is to be found along an active navigation channel. Other users of the river environment, both human and animal, might find the area unattractive while work is in progress.

Drilling, blasting and rock recovery operations would kill some aquatic organisms and displace others. Major fish migrations and spawning activities which might be disrupted by the project occur mostly in the spring. This is also when the major downstream passage of fish larvae and pelagic eggs occurs (USAED St. Louis, 1982). Accordingly, the contract would specify no work during the period 1 March through 15 June.

It is expected that the activities of sweeping the bottom to find the pinnacles, drilling and then placing charges will cause fishes to move out of the immediate area. It is not expected that substantial fish kills will be caused by blasting and associated activities. The nature of the sediments in the area is such that no significant water quality change (either immediate or long term) is expected to be caused by the project.

9. Long Term Environmental Considerations: Lowering of the rock obstructions from their maximum elevation of 294 to 290 NGVD will remove rock habitat from the channel. However, disposal of the larger pieces of rock in the two designated disposal areas will create a similar amount of new exposed rock habitat. Even though benthic organisms living on the rocks will likely be killed or broken free by the project work, the rock structures created by disposal work will be quickly recolonized by settlers from nearby dikes and bedrock structures. It is expected that the new rock structures will act as fish attractors.

The proposed work would remove habitat from a place where it impacts navigation and put it outside the channel where it will not. No significant long term adverse environmental impacts should result from this action.

10. Summary: From an environmental point of view, the effects of removing Beaver Dam Rock, a navigation obstruction, by drilling, blasting and disposal outside the channel are these: (a) the action would lower the possibility of a future environmental disaster by removing a possible cause of tow grounding, (b) temporary environmental perturbations caused by the project work are expected to be insignificant, (c) the project involves displacement of habitat, rather than destruction of habitat, and no long term adverse consequences are expected.

11. List of Preparers: This Environmental Assessment was prepared by Jim Thomerson, PhD, Fishery Biologist, 15 years academic environmental consulting experience, 1.5 years as Natural Resources Planner with St. Louis District Corps of Engineers.

12. References:

May, J.R. and Murphy, W.L. 1982. Concurrence and Volume Determination of Rock Underlying Selected Reaches of the Mississippi River. USAED Waterways Experiment Station, Vicksburg.

USAED St. Louis, 1965. Thebes Gap, Mississippi River Channel Rock Removal.

_____. 1982. Fishery Impact Assessment, Lock and Dam No. 26 (Replacement) Hydroelectric Power Study.

_____. 1983. Mississippi River Between the Ohio and Missouri Rivers (Regulating Works).

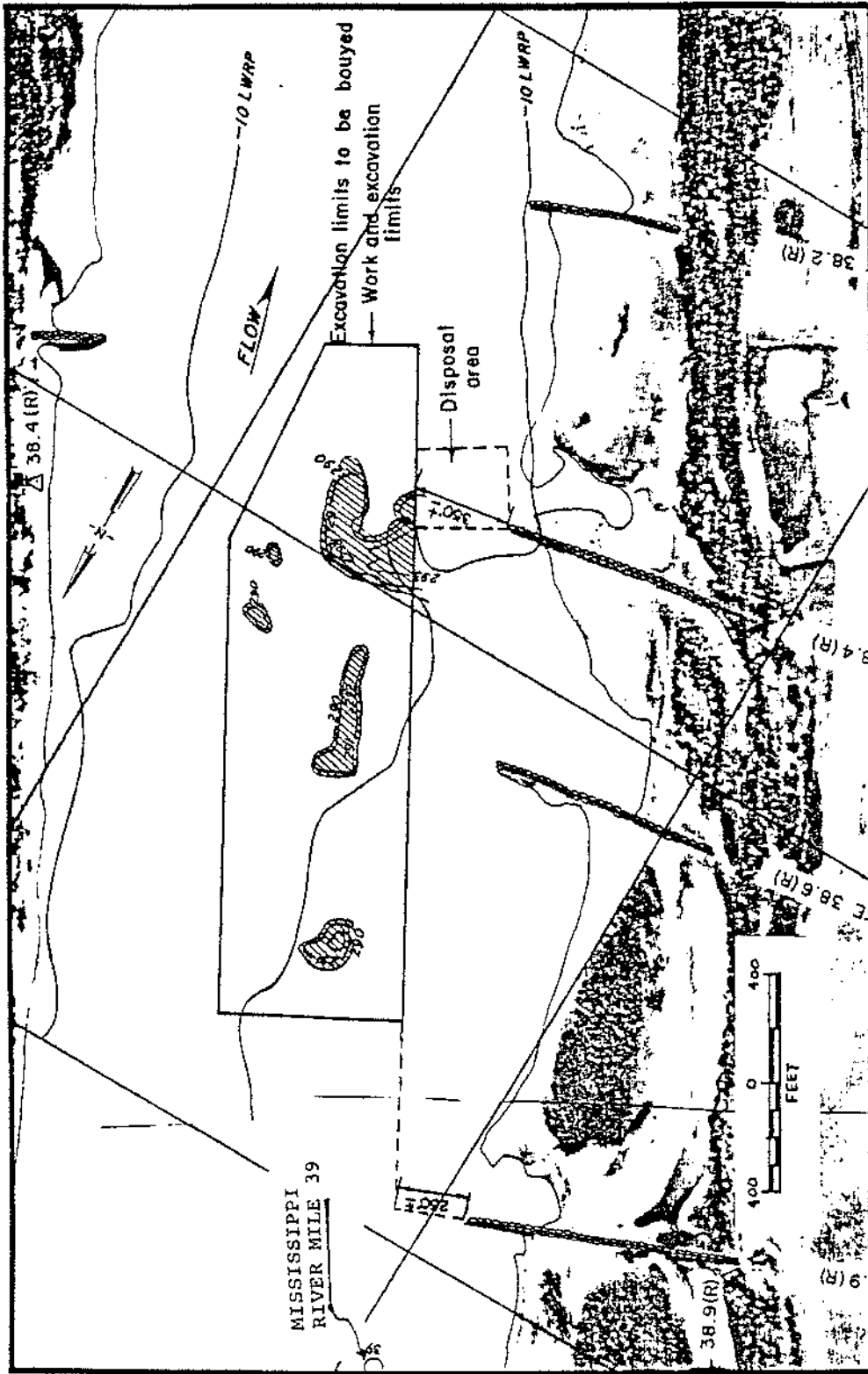


PLATE 1. Beaver Dam Rock removal area, modified from Location Map DACW 43.

FINDING OF NO SIGNIFICANT IMPACT

LOWERING OF BEAVER DAM ROCK BY BLASTING

SCOTT COUNTY, MISSOURI.

1. I have reviewed and evaluated the documents concerning the proposed action of lowering Beaver Dam Rock by blasting and rock disposal. I have also evaluated other pertinent data and information which addresses the various practicable alternatives relative to my decision on this action. As part of this evaluation, I have considered:

- a. Excavating Beaver Dam Rock by blasting;
- b. Excavating Beaver Dam Rock by dredging without blasting; and
- c. "No action".

2. The possible consequences of these alternatives have been studied for environmental, cultural, social and economic effects, and engineering feasibility. Significant factors bearing on my review include:

a. A study by a team of Corps of Engineers personnel determined that Beaver Dam Rock constituted an obstacle to navigation in the Mississippi River. For the navigation channel to be free of obstruction under low flow conditions, the bottom of the channel must be no higher than 290 feet NGVD. A Corps survey of the area determined that various parts of Beaver Dam Rock project as much as 5 feet above this level into the channel.

b. At least one grounding of a tow on Beaver Dam Rock has already occurred.

c. Economic loss, loss of life and environmentally destructive spills are all possible results of a future grounding on Beaver Dam Rock.

d. Aquatic habitat will be destroyed by the blasting, but similar habitat will be created outside the channel by rock disposal to form new rock structures.

e. Any aquatic organisms living on the rocks are expected to be killed or at least displaced. Recolonization of the new rock structures will be rapid. No substantial fish kills are expected to result from this project.

f. No Federally endangered species will be adversely impacted by the rock removal.

g. No Cultural resources will be impacted by the project.

h. The socio-economic impacts of the project will be minimal.

i. The rock structure is too large and too hard to be removed by dredging alone.

j. The "no action" alternative of allowing the rock obstacle to remain in the navigation channel is infeasible since there exists the possibility of loss of life or environmentally destructive spills due to grounding of tows or other vessels on Beaver Dam Rock.

k. The blasting and removal of Beaver Dam Rock down to 290 NGVD is the most cost effective alternative to alleviate the possible loss of life or environmentally destructive spills due to grounding.

3. Based on my analysis and evaluation of the alternative courses of action as presented in this environmental assessment, I have determined the blasting and removal of Beaver Dam Rock above 290 NGVD will not have a significant effect on the human environment. No environmental impact statement will be prepared before proceeding with this action.

GARY D. BEECH
Colonel, CE
District Engineer

APPENDIX A
 ENDANGERED SPECIES ASSESSMENT
 BEAVER DAM ROCK REMOVAL

1. Introduction: In a Planning Aid Letter of 24 February 1983, the US Fish and Wildlife service provided the St. Louis District with the following list of Federally endangered species which may occur in the project area (Inclosure 1).

<u>Classification</u>	<u>Common Name</u>	<u>Scientific Name</u>	<u>Habitat</u>
Endangered	Bald Eagle	<u>Haliaeetus leucocephalus</u>	Wintering
Endangered	Higgins' Eye Pearly Mussel	<u>Lampsilis higginsii</u>	Rivers

2. Description of the Study Area: Thebes Gap is a narrow section of Mississippi River flood plain some 7 miles long (including roughly the stretch of river from Commerce to Grays Point, Missouri) and 1 mile or less in width. The river bottom includes bedrock, erosional remnants and boulders, some of which are hazards to navigation. One of these is a group of obstructions extending some 5 feet above 290 NGVD, at about River Mile 38.5, known as Beaver Dam Rock. The river is flanked by wing dikes on both sides in the project area and there is sedimentation behind the dikes.

There have been grounding of tows on Beaver Dam Rock and other similar areas in the channel with attendant economic loss. Additional economic loss, loss of life or injury and environmentally damaging spills may attend future groundings.

3. Project Work: The projection of Beaver Dam Rocks above 290 NGVD is an obstruction and hazard to navigation. The proposed solution is removal of the pinnacles by drilling, placing charges, blasting and then sweeping the bottom to find and remove large rock which remains above 290 NGVD. The work would be done under a 360 day contract and is estimated to involve some 60 days of actual on-site work.

4. Impacts.

Bald Eagle: This portion of the Mississippi River and adjacent areas are used as a wintering ground by Bald Eagles. Eagles are generally most abundant in January or February, and may reach a density of over one eagle per river mile in the project area (Sanderson et al., 1975-1981). It is anticipated that project work will take place during the summer months, while eagles are naturally absent from the area.

If this comes about, there will be no impact on Bald Eagles. If the project work should take place while eagles are present, the work activity may make a short stretch of the river temporarily unattractive to Bald Eagles. There will be no significant impact on eagles.

Higgins' Eye Pearly Mussel: It is unlikely that Higgins' Eye mussels actually inhabit the project area. To quote Havlik (1980) "Lampsilis higginsii apparently has never been recorded in the Mississippi River from the junction of the Ohio River, R. M. O, to the mouth of the Illinois River, R. M. 218."

5. Efforts to Eliminate Adverse Impacts on Species and Habitat. No impact on either habitat or endangered species is anticipated.

6. References:

Havlik, M.E., 1980. The Historic and Present Distribution of the Endangered Naiad Mollusk Lampsilis higginsii (Lea, 1857). Bull. Am. Malacological Union, Inc. 1980:19-22.

Sanderson, G.C., F.C. Bellrose and R. Compton, 1975-1981. Waterfowl Census on the Mississippi River from St. Louis, Missouri to Cairo, Illinois (seven annual reports). Illinois Natural History Survey Report(s) to USAED St. Louis.

December 22, 1982

Engineering Division

(Copy of letter requesting information and comment on rock removal work sent to: US Fish and Wildlife Service, Coast Guard and Environmental Protection Agency; Missouri Department of Conservation, Department of Natural Resources and Clean Water Commission; Illinois Department of Conservation and Environmental Protection Agency. Letters of response follow:)

I am enclosing the following information and location map to your agency for coordination and comment on planned removal of navigation obstacles (rock outcroppings) from the Mississippi River.

It is the intention of the St. Louis District to contract for removal of the submerged obstacles which pose a hazard to navigation during periods of low water (flows less than 54,000 cfs).

U.S. Army Engineer-Waterways Experiment Station performed an overwater survey during the period April 27, 1981, through May 12, 1981. Two river sections were surveyed: The first extends from near Commerce to Gray's Point, Missouri, Thebes Gap, river mile 38.0 to 46.0, and the second from Grand Tower, Illinois, to Wittenberg, Missouri, river mile 78.0 to 81.5. Data was obtained by conducting a reflection survey. This type of survey has the capacity to determine depth to river bottom, alluvial thickness (top-of-rock depth) and, under proper conditions, structural details of the rock.

Underwater drilling, blasting and relocation of rock may be used for removal of obstacles in the two sections surveyed, however, only the Beaver Dam location, river mile 33.0 is being addressed at this time. The obstacles at Beaver Dam are to be removed to -11 feet below the low water reference plane. Originally, a plan to relocate these obstacles by dredging was considered, but subsequent exploratory activities indicated that these outcrops were too hard and too extensive.

Any additional information, if available, can be forwarded upon request. Your comments are respectfully requested no later than February 14, 1983.

Sincerely,

SIGNED

Jack R. Niemi, P.E.
Chief, Engineering Division

Enclosure

CF:
ED READING FILE

WJG
ED-DG
BERTOGLIO

~~ED-DG~~
DAVIS

~~ED-D~~
HUGHEY

ED-X
JOHNSON
JK
NIEMI



United States Department of the Interior

FISH AND WILDLIFE SERVICE
Marion
~~SOUTHERN~~ ILLINOIS SUB OFFICE(ES)
Rural Route 3 - Box 198-A
Marion, Illinois 62959

IN REPLY REFER TO:

Commercial: 618-457-3659
FTS: 958-6659

February 24, 1983

Colonel Gary D. Beech
District Engineer
St. Louis District
Corps of Engineers
210 Tucker Blvd., North
St. Louis, MO 63101

Dear Colonel Beech:

This is our Planning Aid Letter for the Mississippi River Navigation, Rock Removal, Regulating Works project. Our comments are prepared under provisions of the Fish and Wildlife Coordination Act, Endangered Species Act and National Environmental Policy Act. They are intended to assist the Corps of Engineers in avoiding or minimizing project effects on fish and wildlife resources as stipulated in the Scope of Work for the Fiscal Year 1983 transfer agreement on this project.

DESCRIPTION OF THE PROJECT

In a letter dated December 22, 1982 your staff indicated an intent to contract for removal of submerged obstacles (rock outcroppings) from the Thebes Gap reach of the Mississippi River navigation channel. These obstacles reportedly pose a hazard to navigation during periods of low water (i.e., when flows are less than 54,000 cfs). That letter further indicated that two river sections were surveyed using a reflection method. The first section extends from near Commerce to Grays Point, Missouri (River Mile 38.0 to 46.0) and the second from Grand Tower, Illinois, to Whittenburg, Missouri (River Mile 78.0 to 81.5). We understand that underwater drilling, blasting and the relocation of rock may be used for removal of obstacles in the two sections surveyed; however, the Corps of Engineers is only addressing the Beaver Dam location (River Mile 38.0) at this time. The obstacles at Beaver Dam will be removed to 11 feet below the low water reference plane. We understand further that approximately 10,100 cubic yards of rock would be removed from the navigation channel using the techniques previously defined.

DESCRIPTION OF THE PROJECT AREA

Thebes Gap is a narrow section of the Mississippi River floodplain between the Commerce Hills of Missouri and the highlands of Southern Illinois. It is 7 miles in length and does not exceed one mile in width at any point. The navigation obstructions encountered at the Thebes Gap project site consist of bedrock, erosional remnants and locally derived boulders.

The river is flanked by wing dikes on both the Illinois and Missouri sides of the river. Sedimentation is evident behind dikes; however, the primary deposition zone in the project area is in the dike field on the Missouri side (RM 37.4 - 39.7). According to your staff, the channel bed at Thebes Gap is composed mostly of bedrock. The existence of a poised river and erosion-resistant rocks are reported to have created a condition of channel stability.

FISH AND WILDLIFE RESOURCES IN THE PROJECT AREA

The rock removal site is flanked by Burnham Island on the Illinois side of the river and Power Island on the Missouri side. The former is owned by the Illinois Department of Conservation (IDOC) and is vegetated primarily with cottonwood/willow, mixed lowland hardwoods, mixed forbs and smartweed. Remnants of former side channels around Burnham Island form important non-flowing, shallow water habitat. Power Island has been leveed and converted to cropland.

Aquatic areas behind rock dikes provide important fish habitat, as well as a mud-water interface attractive to shorebirds, furbearers and a wide variety of other wildlife species. The project area is near the Horseshoe Lake Conservation Area, managed by the Illinois Department of Conservation, and consequently receives fairly high waterfowl use. Waterfowl census data collected by the Illinois Natural History Survey indicates that the reach of the Mississippi River from Cape Girardeau, Missouri to Cairo, Illinois supports large numbers of the most common species of waterfowl. These include Canada goose, mallard, common goldeneye, common merganser, coot and various diving ducks.

Fishery information at the project site is limited. However, the type of substrate to be removed appears to be important to aquatic organisms. Evidence of this is found in the publication The Ecology of Running Waters by H.B.N. Hynes (University of Toronto Press, 1970) with the comment, "In general, it can be stated that the larger the stones, and hence the more complex the substratum, the more diverse is the invertebrate fauna." That publication also observed that in larger rivers where the bed is relatively smooth, fish of many species tend to congregate near obstructions and islands of solid material, such as rock and rubble. Interviews with commercial fishermen seem to confirm this, as significant catches are reported around the rock outcroppings. Species most commonly harvested include channel catfish, flathead catfish, blue catfish, carp, buffalo fishes and paddlefish.

FISH AND WILDLIFE MITIGATION MEASURES

The U.S. Fish and Wildlife Service's Mitigation Policy (Federal Register Vol. 46, No. 15, Pages 7644-7663; January 23, 1981) is used by the Service in the evaluation of impacts to land and water developments and in subsequent recommendations to mitigate adverse impacts. Briefly, this policy reflects the goal that the most important fish and wildlife resources should receive the greatest level of mitigation when the environment of a particular area is changed. By designating four resource categories, the Service can vary the degree of mitigation it recommends according to the value and scarcity of the habitat at risk.

Based on available information on similar mid-channel rock formations, this habitat type would fall into Resource Category 2. The planning goal of this category is "no net loss of in-kind habitat value." The guidelines for meeting this goal direct the Service to recommend ways to immediately rectify or reduce impacts, or eliminate them over time.

With this mitigation goal in mind, we inspected the rock removal site on February 1, 1983 in the company of personnel from the Corps of Engineers, IDOC and Missouri Department of Conservation (MDOC). We surveyed river depths to locate areas in which fish reefs could be constructed with the rock removed from the main channel. Scour holes are of particular interest, since studies by the Minnesota Department of Natural Resources indicate that wintering catfish use rock filled depressions off the end of wing dikes. Three suitable reef sites were located just downstream from Dikes 38.9R, 38.6R and 38.0L (Figure 1). Depths ranged from 48 to 53 feet at the time of our inspection (12.7 Commerce Gage). Properly constructed in deeper water, these rock clusters should replace the rock habitat lost in the main channel and meet the mitigation goal for Resource Category 2.

Shock waves from rock blasting could cause a fish kill and temporarily disrupt benthic communities. A series of minor detonations immediately prior to the rock blasting may move the fish away from the rock outcroppings and minimize losses. It may also be possible to pack and shape the charge so as to largely direct the shock wave into bed rock, thereby minimizing impacts in the water column. By scheduling the blasting during high flows in the spring, when fish are more dispersed, disruptions to aquatic communities can be minimized. Blasting techniques that would cause the least environmental disturbances should be investigated prior to issuing invitations for bid. The IDOC, MDOC and this Service have a keen interest in this aspect of the project. In this regard, we would like to be kept informed of your construction schedule, so as to monitor project effects on fish and wildlife. We would also appreciate a copy of the reflection survey and encourage the Corps of Engineers to follow up with further surveys as input into the monitoring study.

FISH AND WILDLIFE PROBLEMS AND NEEDS IN THE PROJECT AREA

The wing dikes in the project area have altered sediment deposition and erosional patterns, with an ensuing loss of shallow, slackwater and side channel habitats. These habitats are extremely important to fish and wildlife in this reach of the river. In this regard, we are encouraged with the Corps of Engineer's interest in structural modifications which will preserve or increase habitat diversity. There is also an absence of detailed studies of the aquatic life in the main channel area at Thebes Gap, especially in the area of the rock outcrops and boulders.

ENDANGERED SPECIES

To facilitate compliance with Section 7(c) of the Endangered Species Act of 1973, as amended, Federal Agencies are required to obtain from the Fish and Wildlife Service information concerning Threatened and Endangered species, listed or proposed to be listed, which may be present in an area of a proposed action. We, therefore, furnish the following list of species which may be present on this reach of the Mississippi River:

<u>Classification</u>	<u>Common Name</u>	<u>Scientific Name</u>	<u>Habitat</u>
Endangered	Bald eagle	<u>Haliaeetus leucocephalus</u>	Wintering
Endangered	Higgins' Eye	<u>Lampsilis higginsii</u>	Rivers

There is no designated critical habitat in the project area at this time. However, in accordance with Section 7(c) of the Act, the Federal agency responsible for actions authorized, funded, or carried out in furtherance of a construction project that significantly affects the quality of the human environment, is required to conduct a biological assessment. The purpose of the assessment is to identify listed or proposed species likely to be adversely affected by their action and to assist the Federal agency in making a decision as to whether they should initiate consultation. Section 7(d) underscores the requirement that a Federal agency shall not make any irreversible or irretrievable commitment of resources during the consultation period which in effect would deny the formulation or implementation of reasonable alternatives regarding their actions on any Endangered or Threatened species.

The biological assessment is to be completed within 180 days of initiation and before contracts are entered into or construction begun. When conducting an assessment, the following steps should be taken:

1. Conduct an on-site inspection of the area affected by the proposed activity or program, which may include a detailed survey of the area to determine if species are present and whether suitable habitat exists for either expanding the existing population or potential reintroduction of populations.
2. Interview recognized experts on the species at issue, including those within the Fish and Wildlife Service, State conservation department, universities and others who may have data not yet found in scientific literature.
3. Review literature and other scientific data to determine the species' distribution, habitat needs and other biological requirements.
4. Review and analyze the effects of the proposal on the species, in terms of individuals and populations, including consideration for the cumulative effects of the proposal on the species and its habitat.
5. Analyze alternative actions which may provide conservation measures.

SUMMARY AND CONCLUSIONS

In summary, the following measures would minimize this and potential future project effects on fish and wildlife resources:

1. fish reefs in or near the scour holes behind Dikes 38.9R, 38.6R and 38.0L constructed with large boulders removed from the main channel
2. studies of aquatic communities at the rock outcrop habitat in the Thebes Gap reach
3. coordination of the construction schedule and especially the blasting dates with the IDOC, MDOC and this Service
4. a monitoring study of project effects on fish and wildlife resources and the fishery use of reefs if constructed

The details of reef locations and their configuration should be coordinated with the IDOC, MDOC and this Service as project plans are developed. We appreciate the cooperation the Corps of Engineers has extended and look forward to working further with your staff on this project.

Sincerely yours,



Joseph A. Janeczek
Assistant Field Supervisor

cc: IDOC
MDOC



UNITED STATES
ENVIRONMENTAL PROTECTION AGENCY
REGION V
230 SOUTH DEARBORN ST
CHICAGO, ILLINOIS 60604

ED- P

REPLY TO ATTENTION OF:

Mr. Jack R. Niemi, P.E.
Chief, Engineering Division
St. Louis District, Corps of Engineers
210 Tucker Boulevard, North
St. Louis, Missouri 63101

10 JAN 1983

Dear Mr. Niemi:

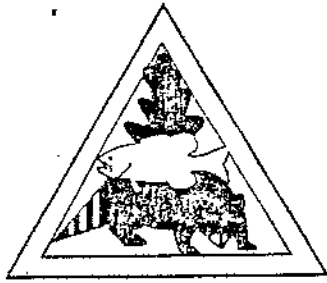
We have reviewed the information concerning the removal of navigation obstacles from the Mississippi River. This information and a location map were sent to us in your letter dated December 22, 1982. You requested our comments on the proposed work.

Our initial impression of the proposed removal of rock at the Beaver Dam location (RM 38.0) is that the environmental impact of the project will be minor. The project will increase turbidity and, during blasting, may result in some fish kills in and around the blasting area. Turbidity increases should be minor since the work is in an area of solid rock and does not require the dredging of fine-grained sediments. The number of fish killed during blasting should also be minor if drilling and other work takes place immediately before the actual explosions occur. If not, perhaps some noise and physical disturbance could be employed to scare fish from the area before detonation of explosives. We also recommend that the work take place at a time when fish spawning is not in progress and the number of fish eggs and larvae in the area are at a minimum. Coordination with the appropriate State agency and the U.S. Fish and Wildlife Service is necessary in this regard.

Thank you for the opportunity to comment on the proposed project. Please continue to coordinate with us whenever you feel it is necessary. Mr. James Hooper of my staff may be called at 312/886-6594 if you have any questions about our review.

Sincerely yours,

Barbara Taylor Backley, Chief
Environmental Review Branch
Planning and Management Division



MISSOURI DEPARTMENT OF CONSERVATION

MAILING ADDRESS:
P.O. Box 180
Jefferson City, Missouri 65102

STREET LOCATION:
2901 North Ten Mile Drive
Jefferson City, Missouri

Telephone 314/751-4115
LARRY R. GALE, Director

February 10, 1983

Handwritten notes and initials: "EMO" and "ED-DG" with a checkmark.

Colonel Gary D. Beech
District Engineer
St. Louis District, Corps of Engineers
210 North Tucker Blvd.
St. Louis, Missouri 63101

Attn: Engineering Division

Dear Colonel Beech:

This responds to your December 22, 1982 letter inviting comment from our agency on the planned removal of rock outcroppings from the Mississippi River in the vicinity of River Mile 38.

My staff appreciated the opportunity to conduct an on-site investigation with Mr. Greg Bertoglio of your staff on February 1, 1983. Since we have had little previous experience with subsurface blasting, it is difficult to predict impacts to the aquatic ecosystem. Through continued close coordination with your staff, I am sure methods can be found to assure that adverse impacts are minimized.

The following points are relevant to this activity:

- There is little information regarding the population of fishes in this river reach. It is generally believed that the main channel of the river does not contain good fish habitat. River reaches with rock outcroppings may, however, be the exception. Commercial fishermen reportedly fish these outcroppings with considerable success. Our staff will seek to verify this information by contacting area commercial fishermen.
- By law (RSMo. 252.220), the approval of this agency is required before explosives are used in waters of the state. In this regard, please provide sufficient advance notice so we will have an opportunity to issue written approval and to schedule a Conservation Agent and biologist to be present when blasting occurs.
- If a substantial fish kill is documented, it may be necessary to reimburse the state as per Chapter 3 of the Wildlife Code.

A-11

COMMISSION

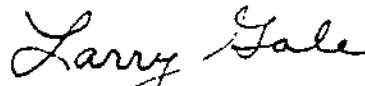
Missouri Department Of Conservation

Colonel Gary D. Beech
February 10, 1983
Page Two

- The prospect of using the loosened material to construct underwater reefs or fish habitat downstream of dikes 38.9R, 38.6R and 38.0L is encouraging. Such structures could help offset habitat losses resulting from removing the rock outcroppings. Further coordination with your staff will be necessary to determine details of this proposal.

We appreciate the early and thorough coordination on this project. If you wish to further discuss these comments, please contact Mr. Norman P. Stucky at the above address.

Sincerely,



LARRY R. GALE
DIRECTOR

cc: U. S. Fish and Wildlife Service
Carbondale, Illinois

Illinois Department of Conservation
Springfield, Illinois

Department of Conservation

Working Together

DEPARTMENT OF CONSERVATION • 501 SOUTH SECOND STREET • SPRINGFIELD 62766
MISSOURI DEPARTMENT OF CONSERVATION • 1001 160TH NO. LASALLE 64501
MISSOURI DEPARTMENT OF CONSERVATION • 1001 160TH NO. LASALLE 64501

February 9, 1983

Mr. Jack R. Niemi, P.E.
Chief, Engineering Division
St. Louis District Corps of Engineers
210 Tucker Boulevard, North
St. Louis, MO 63101

RE: Removal of Rock Outcroppings
Miss. River Mile 38.0

Dear Mr. Niemi:

Your letter of December 22, 1982, informed the Department of your plans to remove navigation obstacles from several sites on the Mississippi River. At this time, efforts are being concentrated on the Beaver Dam location, River Mile 38.0.

Department staff accompanied Corps staff on a visit to the proposed site on February 2, 1983. Based on that visit, we have the following comments:

1. It is our understanding rock removal would occur to elevation 292, 9 feet below 301 L.W.R.P. If feasible, efforts will be made to obtain an additional 3 foot depth (elevation 289).
2. Some of the rock removed from the site will be used to repair dike 38.4R.
3. Department files, conversations with Illinois commercial fishermen and recent research conducted by the Missouri Department of Conservation indicates good fisheries habitat exists in the proposed blasting area for catfish and paddlefish. In a mutual effort to satisfy navigation needs and to maintain a diverse fisheries habitat in the area, we would propose a meeting between our staffs to explore ways to replace habitats lost as a result of the rock removal. Several plans we believe worthy of discussion include
 - . developing large rock piles (using stone greater than 2 feet in diameter) in scour holes at the end and down-

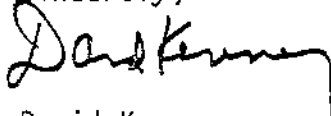
stream of existing dikes such as 38.6R, 38.9R and 38.0L,
. construction of reefs within the existing dike fields.

4. In addition to discussions on replacing lost habitats, we would also like to determine the feasibility of developing a monitoring program at this site. Information on blasting mortality to fish, blasting timing, repopulation of the site after rock removal, use of new habitats created with the rock debris are all possible topics. We believe a joint monitoring effort would prove highly beneficial when planning rock removal at future sites.

In order to have timely communication between our agencies on these matters, please schedule future meetings directly with Mr. Bill Boyd, Southern Streams Program Manager, R.R. #2, Box 62A, Nashville, Illinois 62263.

The Department appreciates the opportunity to comment and discuss the project with your staff.

Sincerely,



David Kenney

DK:RWL:ss

cc: Bill Boyd



217/782-0610

St. Louis District Corps of Engineers
Rock Removal - Mississippi River
Log #C-759-82

January 27, 1983

Mr. Jack R. Niemi, P.E.
Chief, Engineering Division
St. Louis District Corps of Engineers
210 Tucker Boulevard
St. Louis, Missouri 63101

Dear Mr. Niemi:

This responds to your letter of December 22, 1982 concerning the removal of rock outcroppings at Mississippi River mile 38.0 in Alexander County.

The Agency has no objection to the drilling, blasting and relocation of rock at this location during periods of low flow.

The Agency appreciates this opportunity to provide comments on the proposed project. If we may be of further assistance, please contact Bruce Yurdin of my staff.

Very truly yours,

Thomas G. McSwiggin
Thomas G. McSwiggin, P.E.
Manager, Permit Section
Division of Water Pollution Control

by A. Kella

TGM:BY:ct/6200C,27

cc: IEPA, Records
IDOT, DWR, Springfield