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# ENVIRONMENTAL ASSESSMENT

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**DREDGED MATERIAL THALWEG PLACEMENT SITE  
MISSISSIPPI RIVER MILES 301.2 - 301.3  
SAVERTON, MISSOURI**

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**MARCH 1992**

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**ENVIRONMENTAL ASSESSMENT**

**DREDGED MATERIAL THALWEG PLACEMENT SITE  
MISSISSIPPI RIVER MILES 301.2-301.3  
SAVERTON, MISSOURI**

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## ENVIRONMENTAL ASSESSMENT

### DREDGED MATERIAL THALWEG PLACEMENT SITE MISSISSIPPI RIVER MILES 301.2-301.3 SAVERTON, MISSOURI

#### BACKGROUND INFORMATION

The area of the Mississippi River upstream from Lock and Dam 22, near Saverton, Missouri, is recognized as a frequent shoaling area. This has resulted in the need for costly and recurrent dredging to keep that portion of the channel open for navigation. Since 1970, this area between River Mile (RM) 301.7-303.4 has required 9 dredging events [1971, 1973, 1979, 1982, 1983 (2), 1984 (2), and 1989]. Over that time, sedimentation in this area has necessitated the removal of approximately 400,000 cubic yards of dredged material, with each dredging event averaging approximately 45,000 cubic yards. Three of these events were emergency dredging, with channel closures on two occasions. Adjustments and repairs to training structures (wing dams) have led to dramatic reductions in dredging and emergency concerns. Since 1983, two dredging events have occurred (1984 and 1989) for a total of approximately 77,000 cubic yards. The location that is in most urgent need of dredging is approximate RM 301.5-302.0 (plate 1).

A problem associated with all locations requiring chronic dredging is the availability and suitability of placement sites once the dredged material has been removed from the river. Presently, the material (primarily sand) is hydraulically pumped to any of several historic placement sites. Since 1980, placement of dredged material has occurred on the Missouri bankline for beach nourishment (1983 and 1984), in open water on the Illinois side (1982 and 1983), and on an upland site on the Missouri side of the river (1989). Placement of dredged material in the thalweg at this location has not been previously undertaken, necessitating the compilation of this Environmental Assessment (EA).

The thalweg is defined as the line which follows the deepest part of the main channel riverbed. Current literature addressing the environmental impacts of thalweg placement of dredged material generally agrees that, under certain conditions, it can be an environmentally acceptable alternative to terrestrial placement for both long-term and emergency placement requirements. If the proposed site: (1) has an absence of submerged structures, (2) has adequate depth both in the placement area and in the downstream crossing, (3) has a sand dune substrate, and (4) is not located directly upstream of a major tributary, there should be no significant impacts to the aquatic resource resulting from thalweg placement of dredged material.

## I. AUTHORITY AND PURPOSE

In compliance with the National Environmental Policy Act (NEPA) of 1969, this EA was prepared to address impacts associated with utilization of a new (i.e., non-historic) dredged material placement site, namely in the thalweg of the Mississippi River near Saverton, Missouri (RM 301.2). A Section 404(b)(1) Evaluation, in compliance with the Clean Water Act, is attached to this EA as appendix B. Impacts of actual dredging operations have been addressed in earlier reports and in the *Final Environmental Impact Statement for Operations and Maintenance, Upper Mississippi River 9-Foot Navigation Channel, Pools 11-22*, dated July 1974.

Recommendations to investigate the feasibility of thalweg utilization as a dredged material placement alternative, under appropriate conditions, have been received from the On-Site Inspection Team (OSIT), an interagency committee comprised of Federal and State agencies that manage the Upper Mississippi River (UMR).

The authority for this project is given under the River and Harbor Act of July 3, 1930, which authorized the Upper Mississippi River 9-Foot Channel Navigation project.

The purpose of this project is to maintain the commercial navigation 9-foot channel in such a manner to avoid potential loss of life or personal injury that may result from channel closures and subsequent groundings.

## II. PROJECT LOCATION AND DESCRIPTION

The proposed placement site is a deep scour hole located immediately upstream of Lock and Dam 22 at RM 301.2-301.3 (plates 1 and 2), and will encompass an area of approximately 5 to 10 acres depending on the actual water depth at the time of placement and the amount needing to be dredged. The hydrology of the site is such that sediments are alternately accreting and scouring as water levels and velocities fluctuate.

Bathymetric surveys and sediment testing of the proposed site were performed in 1986. To augment and update existing data, sediment samples were again taken in November 1991. This information showing water depths, sample locations, and grain size analyses of both sample dates is displayed on plates 1 through 7. During the November 1991 reconnaissance trip, the proposed placement site was dragged with a grappling hook to ascertain whether boulders, snags, rock piles, stumps, or other submerged structures were present that may be utilized by fish, but none were encountered.

### III. ALTERNATIVES

A. No Action. The No Action alternative would preclude Federal involvement in the project. As a result, no dredging would occur. However, if this area is not dredged soon, it is possible that shoaling could close the channel to commercial navigation. The No Action alternative is not a feasible alternative.

B. Beneficial Use. The beneficial use of dredged material is always pursued, but to date none has occurred at this location. The railroad tracks on the Missouri side, adjacent to the dredge cut area, have proven to be an obstacle to sand removal by users.

C. Terrestrial Placement. The federally owned bottomland hardwood site previously used for historic placement is located between the railroad tracks and the river at RM 302.3 on the Missouri side of the river. However, this site is at or near capacity.

D. Thalweg Placement. This is the preferred alternative. It has been identified as the least costly alternative that is both environmentally acceptable and consistent with sound engineering practices. The average cost per cubic yard for thalweg placement is approximately \$1.90, compared to approximately \$2.30 for other placement alternatives (e.g. upland, lowland, beach, etc.). Under appropriate conditions, thalweg placement avoids impacts to more biologically sensitive/productive areas like upland, wetland, or shallow water habitats. The desirability and preferability of this alternative is further discussed throughout this report.

### IV. AFFECTED ENVIRONMENT

The environment affected by the scope of this project is limited to the aquatic habitat associated with the placement site and an unspecified distance downstream, hereafter referred to as the settling zone.

### V. ENVIRONMENTAL IMPACTS OF THE PREFERRED ALTERNATIVE

Effects of the preferred alternative on natural resources and historic properties are summarized in table EA-1.

A. Historic Properties. A literature and archival search for significant historic properties was conducted for the proposed dredging and dredged material placement sites. The search was required by Dredging Guidance Letter No. 89-01 (March 13, 1989), entitled "Policy and Procedures for the Conduct of Underwater Historic Resource Surveys for Maintenance

TABLE EA-1

Effects of the Preferred Action  
on Natural Resources and Historic Properties

<u>Types of Resources</u>	<u>Authorities</u>	<u>Measurement of Effects</u>
Air quality	Clean Air Act, as amended (42 U.S.C. 165h-7, et seq.)	No significant effect
Areas of particular concern within the coastal zone	Coastal Zone Management Act of 1972, as amended	Not present in planning area
Endangered and threatened species critical habitat	Endangered Species Act of 1973, as amended (16 U.S.C. 1531, et seq.)	No significant impacts anticipated
Fish and wildlife	Fish and Wildlife Coordination Act (16 U.S.C. 661, et seq.)	No significant effect
Floodplains	Executive Order 11988, Flood Plain Management	No effect
Historic and cultural properties	National Historic Preservation Act of 1966, as amended (16 U.S.C. 470, et seq.)	No significant effect
Prime and unique farmland	CEQ Memorandum of August 1, 1980; Analysis of Impacts on Prime or Unique Agricultural Lands in Implementing the National Environmental Policy Act	No effect
Water quality	Clean Water Act of 1977, as amended (33 U.S.C. 1251, et seq.)	No significant effect
Wetlands	Executive Order 11990, Protection of Wetlands, 24 May 1977	No effect
Wild and scenic rivers	Wild and Scenic Rivers Act as amended (16 U.S.C. 1271, et seq.)	Not present in planning area



Dredging and Disposal Activities," as it relates to the chronic dredge cut, and promulgated by Section 106 of the National Historic Preservation Act of 1966 (NHPA), as amended (16 U.S.C. 470, et seq.). As a result of the documents search, the Corps determined that no significant historic, architectural, or archeological resources are located within the proposed project area.

The Corps notified the Illinois State Historic Preservation Officer (SHPO) of the determination that no significant historic properties would be affected by the proposed undertaking. On June 18, 1991, the SHPO concurred with the Corps determination, fulfilling the requirements of NHPA and its implementing regulations, 36 CFR Part 800: "Protection of Historic Properties" (Appendix A).

B. Manmade Resources. The proposed project, located in Pool 22, and the area downstream in Pool 24 may be considered manmade resources since they are natural resources modified by man to facilitate waterborne commerce on the Upper Mississippi River (UMR). The 9-foot river channel is essential to commercial navigation on the Mississippi River. The series of pools and the channel were created and are controlled by operation of the lock and dams in conjunction with other components of the Upper Mississippi River 9-Foot Channel Navigation project. Completion of this project, as with all maintenance dredging operations, will counteract the effects of sediment accretion on channel degradation that serves as an impediment to commercial navigation.

C. Natural Resources. The proposed project will take place exclusively in the aquatic environment. Potential sources of impacts from this project include benthic and nektonic fauna (such as fishes, mussels, and invertebrates) that may utilize the scour hole portion of the thalweg and/or the settling zone.

The main channel region of the UMR is generally rather sterile biologically. The direct biological impacts of thalweg placement on mussels and invertebrates would be minimal. The dynamic nature of the actively moving bedload provides inhospitable conditions for habitation by benthic flora and fauna.

Under certain conditions, main channels can support many species and life history stages of fish. Of particular concern, dense wintering aggregations of channel catfish have been found to inhabit deep holes that contain riprap, rock, stumps, log piles, etc. These structures provide microhabitats or back eddies that serve as protection from the current. The proposed placement site was surveyed for any of the aforementioned submerged structures in November 1991 by dragging the area with a grapple. No obstructions or snags were encountered. Hence, the absence of such microhabitats in the placement site decreases the likelihood that the proposed project would cause any significant, negative impacts to any fish populations there. Further, the placement site is devoid of submergent or emergent vegetation that may attract fish and/or wildlife.

Other potential impacts concern: (1) downstream areas that may contain spawning habitat (particularly below Lock and Dam 22 and around Cattel Island RM 299.9-301.1); (2) sport fishing areas below the dam; and (3) a documented mussel bed located at approximate RM 299.5-300.2R that has been designated an official sanctuary by the State of Missouri.

The channel and backwater/side channel area around Cattel and Taylor Islands on the Illinois side of the river are listed as important wildlife habitats in the 1984 document entitled *Resources Inventory, Upper Mississippi River*.

The area adjacent to the project on the Illinois side is a public hunting area. If possible, dredging will be scheduled to avoid the migratory waterfowl hunting season and the spring spawning season.

Studies and experiments have been conducted where sand was dyed (tagged) and incorporated into the disposal stream to track the movement of dredged material after thalweg placement. Results from these studies concluded that dredged material placed in the thalweg remained in the thalweg. No evidence was found of significant migration of dredged sand into biologically sensitive main channel borders, side channels, backwaters, or sloughs.

Further, the amount of dredged material associated with an average dredging event constitutes a minor addition to the bedload of sand already moving down the thalweg. Therefore, no long-term, significant, negative impacts to downstream sport fishing areas, spawning habitats, mussel beds, or wildlife habitats will result from project implementation.

The preferred placement alternative contains no rookery, critical wildlife habitat, popular sand beaches, water-oriented recreation facilities, public park or recreation areas, or popular water sport areas, or affects access to any side channel.

Endangered Species. Four federally endangered species may inhabit the general project area: bald eagle (*Haliaeetus leucocephalus*), gray bat (*Myotis grisescens*), Indiana bat (*Myotis sodalis*), and fat pocketbook pearly mussel (*Potamilus capax*).

The area is utilized as feeding, perching, and roosting habitat for bald eagles at RM 300.6-301.2 on the Missouri side. No riverside vegetation will be disturbed. Therefore, the proposed action will not impact eagle use in the area.

Both bat species are known to utilize caves and/or other riparian habitats in their life histories. The proposed project will not interfere with, influence, or otherwise impact any bat species or their critical habitats.

Valves of the fat pocketbook pearly mussel have been collected in the vicinity of the mussel sanctuary mentioned earlier in this report. Although no significant impact to this species is anticipated, project

planning and implementation will include post-placement monitoring of sediment transport to determine if this placement method is suitable at this location.

No mines or mineral resources will be impacted if the proposed project is enacted.

#### VI. ENVIRONMENTAL IMPACTS OF NONPREFERRED ALTERNATIVES

Given the fact that the historic placement site for this recurring dredge cut is either at or near capacity, further utilization for dredged material placement would result in environmentally unacceptable impacts to the bottomland hardwood and the fauna that utilize it. As the site is "over utilized," mortality to the trees would increase if sediments are stacked higher and higher up their trunks. Over-filling of bottomland hardwoods can result in the transition from a forested wetland to an upland habitat.

#### VII. PROBABLE ADVERSE ENVIRONMENTAL IMPACTS WHICH CANNOT BE AVOIDED

There will be losses to benthic organisms at the placement site. However, due to the rather biologically sterile nature of the main channel region, these losses will be minimal and insignificant. Considering the general adaptability of the benthos to sediment deposition, rapid recolonization is expected for those organisms that do utilize the proposed placement site.

Turbidity levels will increase during placement activities. However, settling velocities of the sediments (coarse to fine sands) dredged from the main channel should generally be sufficiently high to limit the downstream influence of turbidity generated by thalweg placement. The direct biological impacts of placement in the thalweg, as well as secondary impacts from turbidity generated by the placement process, appear to be minimal.

The bottom topography will be altered following dredged material placement. Experimental sites concerning thalweg placement at Savanna Bay, Duck Creek, Whitney Island, and Gordon's Ferry reveal that the topographically distinguishable placement pile will be eradicated after the first period of high water flow.

#### VIII. COMPLIANCE WITH ENVIRONMENTAL QUALITY STATUTES

Tabular summation of compliance can be found in table EA-2.

A. Endangered Species Act of 1973, as amended. The project will not impact any endangered species, with the possible exception of *P. capax*.

TABLE EA-2

Relationship of Plans to Environmental Protection  
Statutes and Other Environmental Requirements

<u>Federal Policies</u>	<u>Compliance</u>
Archaeological and Historic Preservation Act, 16 U.S.C. 469, et seq.	Full compliance
Clean Air Act, as amended, 42 U.S.C. 1857h-7, et seq.	Full compliance
Coastal Zone Management Act, 16 U.S.C. 1451, et seq.	Not applicable
Endangered Species Act, 16 U.S.C. 1531, et seq.	Full compliance
Estuary Protection Act, 16 U.S.C. 1221, et seq.	Not applicable
Federal Water Project Recreation Act, 16 U.S.C. 460-1(12), et seq.	Full compliance
Fish and Wildlife Coordination Act, 16 U.S.C. 601, et seq.	Full compliance
Land and Water Conservation Fund Act, 16 U.S.C. 460/-460/-11, et seq.	Not applicable
Marine Protection Research and Sanctuary Act, 33 U.S.C. 1401, et seq.	Not applicable
National Environmental Policy Act, 42 U.S.C. 4321, et seq.	Full compliance
National Historic Preservation Act, 16 U.S.C. 470a, et seq.	Full compliance
Rivers and Harbors Act, 33 U.S.C. 403, et seq.	Full compliance
Watershed Protection and Flood Prevention Act, 16 U.S.C. 1001, et seq.	Not applicable
Wild and Scenic Rivers Act, 16 U.S.C. 1271, et seq.	Full compliance
Flood Plain Management (Executive Order 11988)	Full compliance
Protection of Wetlands (Executive Order 11990)	Full compliance
Environmental Effects Abroad of Major Federal Actions (Executive Order 12114)	Not applicable
Farmland Protection Act	Full compliance
Analysis of Impacts on Prime and Unique Farmland (CEQ Memorandum, 11 Aug 80)	Full compliance

## NOTES:

- a. Full compliance. Having met all requirements of the statute for the current stage of planning (either preauthorization or postauthorization).
- b. Partial compliance. Not having met some of the requirements that normally are met in the current stage of planning. Partial compliance entries should be explained in appropriate places in the report and referenced in the table.
- c. Noncompliance. Violation of a requirement of the statute. Noncompliance entries should be explained in appropriate places in the report and referenced in the table.
- d. Not applicable. No requirements for the statute required; compliance for the current stage of planning.

Post-placement monitoring of the mussel sanctuary will help determine if future thalweg placement at this location is advisable.

B. National Historic Preservation Act of 1966, as amended. Project plans have been coordinated with the Illinois State Historic Preservation Agency, and the project may proceed in full compliance with the National Historic Preservation Act and all other legislation concerning historic properties. There are no significant historic properties involved with this project.

C. Federal Water Project Recreation Act. No opportunities for recreational development or aspects of the proposed project conducive to recreational development have been identified.

D. Fish and Wildlife Coordination Act. Project plans have been coordinated with the U.S. Fish and Wildlife Service and the Missouri Department of Conservation. Responses from these organizations can be found in Appendix A - Pertinent Correspondence. The Illinois Department of Conservation also was contacted but did not respond.

E. Wild and Scenic Rivers Act of 1968, as amended. This portion of the Mississippi River is not listed as either wild or scenic.

F. Executive Order 11988 (Flood Plain Management). The project will not impact any floodplain. Therefore, the proposed plan is judged to be in full compliance.

G. Executive Order 11990 (Protection of Wetlands). The preferred placement site will not impact any wetlands. Utilization of the preferred site will avoid impacts to wetlands that might otherwise be used as placement alternatives.

H. Clean Water Act (Sections 401 and 404), as amended. Because dredged or fill material will be placed into the waters of the United States, a Section 404(b)(1) Evaluation has been prepared and will accompany this EA. Certification under Section 401 of the Act from the States of Missouri and Illinois has been received.

I. Clean Air Act, as amended. No aspects of the proposed project have been identified that will result in violations to air quality standards. Exhaust emissions and fugitive dust particle levels will actually be lower than could be expected from terrestrial placement and subsequent shaping of the placement pile.

J. Farmland Protection Policy Act of 1981. The proposed project will not result in the conversion of any prime, unique, or State or locally important farmland to nonagricultural uses.

K. National Environmental Policy Act of 1970, as amended. The compilation of this EA fulfills NEPA compliance.

L. National Economic Development (NED) Plan. The NED Plan is the plan which best satisfies the Federal planning objectives of increasing the value of the Nation's output of goods and services and produces the most improvement to the national economic efficiency. The proposed plan is considered the best to fulfill the NED objective.

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

The Mississippi River is a vital component of the national transportation infrastructure, and with timely and appropriate maintenance will continue to serve recreational, commercial, and environmental interests for the long term.

Without this short-term use of the aquatic environment, the navigation channel will continue to deteriorate from shoaling, eventually closing the channel to commercial traffic.

X. ANY IRREVERSIBLE OR IRRETRIEVABLE COMMITMENTS OF RESOURCES IF PROJECT IS IMPLEMENTED

Fuel consumed, manpower expended, and the commitment of construction materials are considered to be irretrievable.

XI. SOCIAL AND ECONOMIC EFFECTS OF PROPOSED ACTION

A. Community and Regional Growth. No significant effects to community or regional growth would result from the project.

B. Community Cohesion. There would be no impacts to community cohesion since the project does not directly impact a human community.

C. Displacement of People. The project would necessitate no residential displacements.

D. Property Values and Tax Revenues. No significant impacts on property values or tax revenues in the project area would result from the proposed project.

E. Public Facilities and Services. The proposed thalweg placement of dredged material would positively impact public facilities and services. Maintenance of the 9-foot channel is essential for commercial navigation on the UMR.

F. Life, Health, and Safety. The project would help maintain the commercial navigation 9-foot channel and reduce the potential for personal

injury to lock and dam personnel and towing industry personnel resulting from channel closures and subsequent groundings.

G. Business and Industrial Growth. A small increase in business and industrial activity would be noticed during project construction. However, no long-term effects on business or industrial activity would result. The utilization of this placement site would necessitate no business or industrial relocations.

H. Employment and Labor Force. Thalweg placement of dredged material at Saverton, Missouri, would have no impacts on employment in the project vicinity. No permanent effect on area employment would result.

I. Farm Displacement. No farms or farmlands would be affected by the proposed placement of dredged material in Saverton, Missouri.

J. Noise Levels. The completed project would not impact noise levels in the project vicinity. Thalweg placement of dredged material has lower noise levels than terrestrial placement because no heavy equipment is required for moving or shaping the material at the site.

K. Aesthetics. The aesthetic appeal of any type of dredging activity is low; however, dredging will be very short-term. This project will not require heavy equipment for moving and shaping the placement pile, thereby improving the aesthetics compared to land placement. In addition, the long-term aesthetics of thalweg placement are generally better than those of terrestrial placement.

## XII. RELATIONSHIP TO LAND USE PLANS

The proposed project does not involve the use of any land (non-aquatic). Further, if implemented, the project will not significantly alter or conflict with current recreational or commercial usage. A portion of the site is within the 600-foot restricted area directly upstream of Lock and Dam 22.

## XIII. CONCLUSIONS

Dragging the proposed site revealed an absence of submerged structures and vegetation. Substrate samples show the site to consist of coarse to fine sands. The site is not located directly upstream of a major tributary. The placement pile will disappear after the first flood event. Furthermore, the dam should not impede the downstream movement of dredged sediments. When the first high water event occurs after placement, open dam gates will allow normal down-thalweg movement of materials. Finally, if pre-placement bathymetric surveys indicate adequate depth in the placement

area, implementation of the project will not significantly affect natural resources.

#### XIV. COORDINATION

Coordination with State and Federal governmental agencies was undertaken by letter early in the planning process (appendix A). The following agencies have been contacted:

Illinois Department of Conservation  
Illinois State Historic Preservation Agency  
Illinois Environmental Protection Agency  
Illinois Department of Transportation  
U.S. Fish and Wildlife Service  
U.S. Environmental Protection Agency  
Missouri Department of Conservation

The U.S. Fish and Wildlife Service, in response to our coordination letter, expressed concerns about tailwater spawning and the freshwater mussel sanctuary downstream from Lock and Dam 22 (appendix A). Unless channel closure is imminent, dredging will be scheduled to avoid the spring spawning season. Also, post-placement monitoring of the dredged materials will be undertaken to ascertain whether thalweg placement at this location will impact the mussel sanctuary. Impacts to the sanctuary are not anticipated, but should they occur, thalweg placement at this location will be reevaluated.

The Missouri Department of Conservation response (appendix A) expressed no objections to the proposed site. They did recommend using the dredged material to create a low profile island on the Illinois side of the river rather than thalweg placement. However, no concurrence with this recommendation has been received from the U.S. Fish and Wildlife Service or the Illinois Department of Conservation.



## FINDING OF NO SIGNIFICANT IMPACT

I have reviewed the information provided in this Environmental Assessment, along with data obtained from Federal and State agencies having jurisdiction by law or special expertise, and from the interested public. I find that the placement of dredged material in the thalweg of the Mississippi River channel at approximate River Mile 301.2 near Saverton, Missouri, will not significantly affect the quality of the human environment. Therefore, it is my determination that an Environmental Impact Statement is not required. This determination will be reevaluated if warranted by later developments.

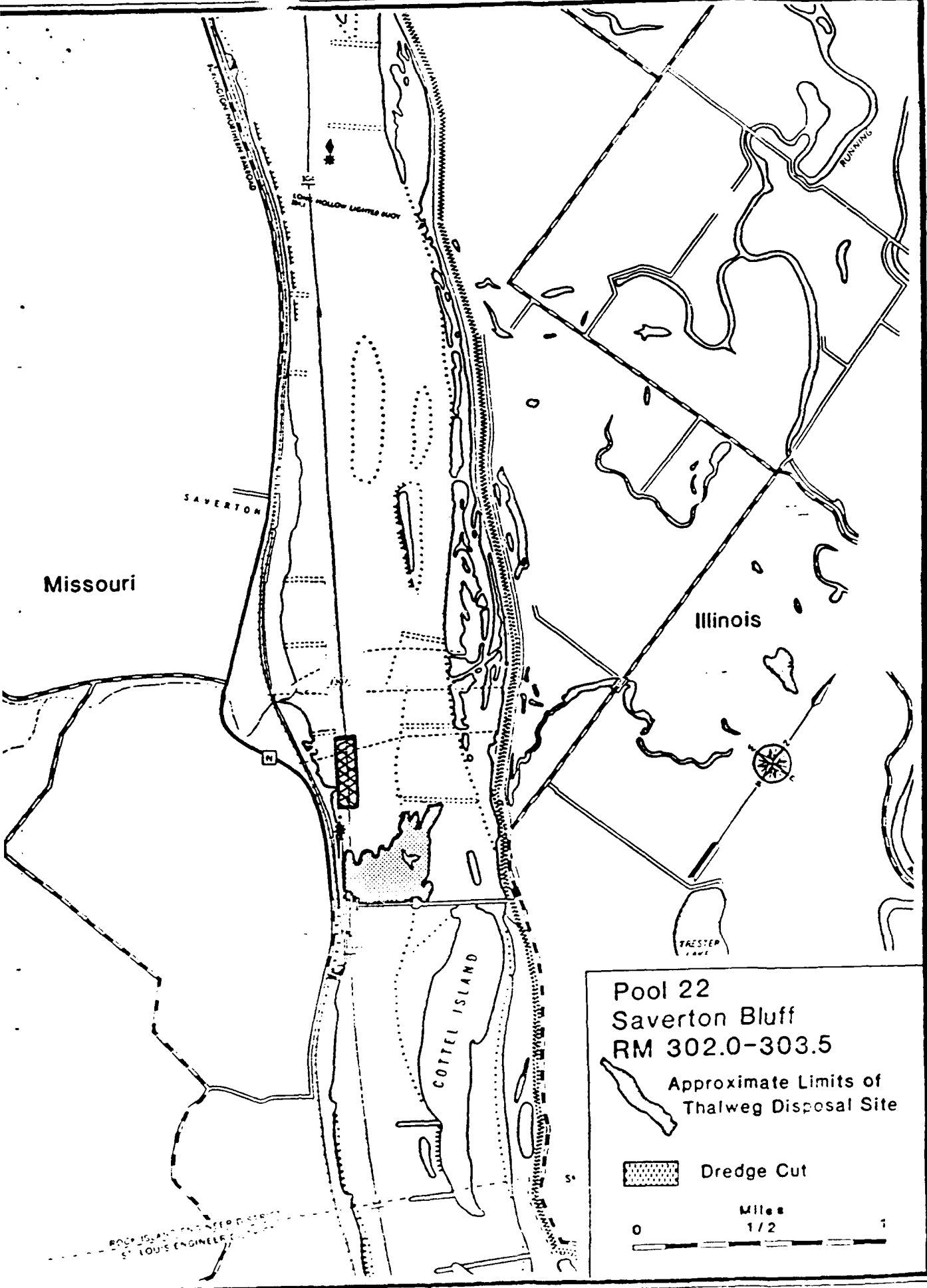
Factors that were considered in making this determination that an Environmental Impact Statement was not required were as follows:

- a. The On-Site Inspection Team recommended that thalweg placement be investigated for feasibility at this location.
- b. Hydrologic and morphometric conditions have been met that are necessary for thalweg placement suitability.
- c. Impacts to wildlife and aquatic communities will be minimal and offset by not using terrestrial placement.
- d. No wetland, agricultural land, or other property will be affected by this project.
- e. The site is renewable by nature as the thalweg is alternately accreting and scouring as water levels and velocities fluctuate.
- f. Early and on-going coordination with State and Federal agencies has been maintained during the planning process to address any potential concerns that may arise from this project.

---

Date

John R. Brown  
Colonel, U.S. Army  
District Engineer



**Plate 1** Saverton Bluff - General Location Map

Thalweg Disposal Site  
RM 301.2-301.5

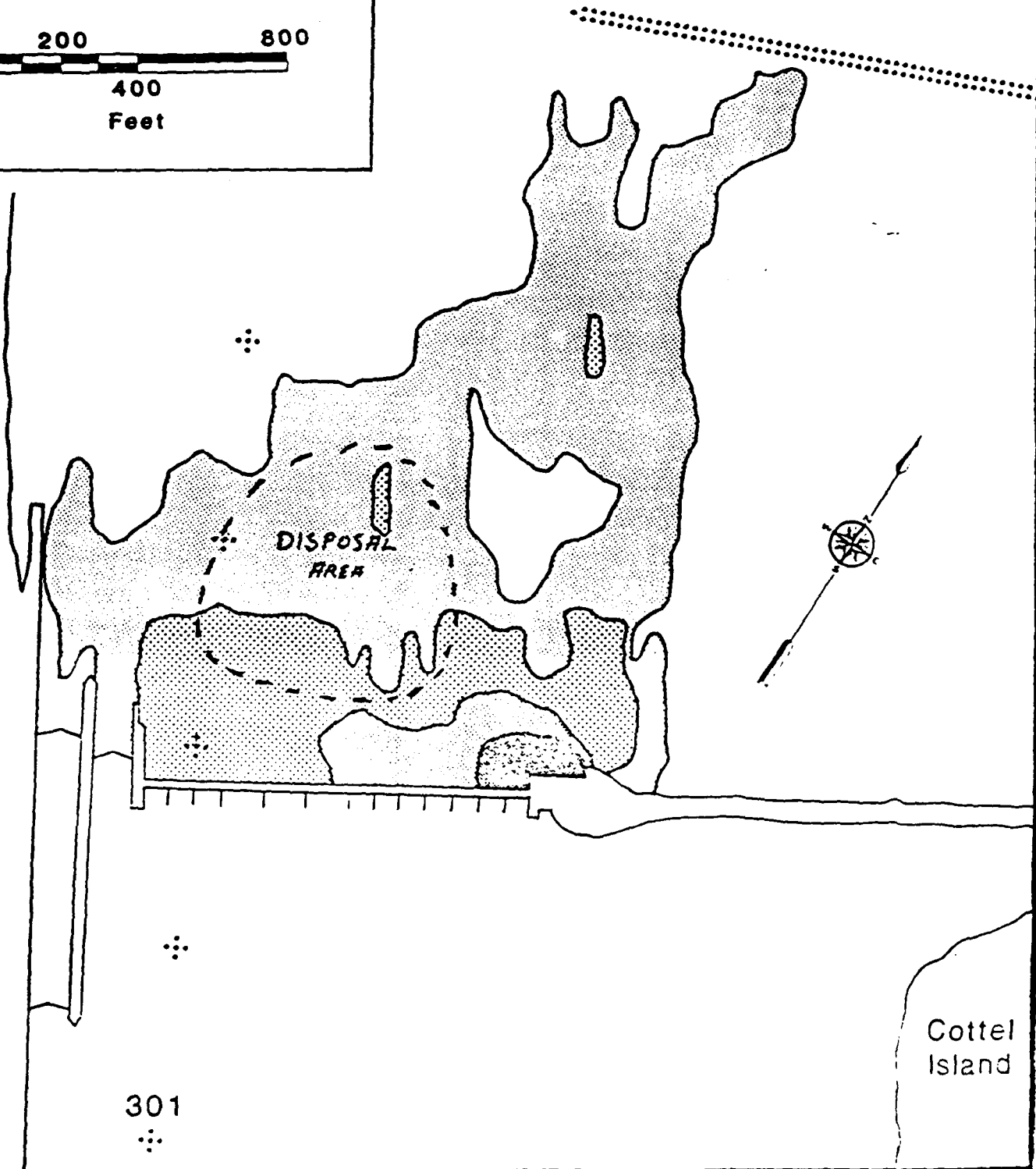
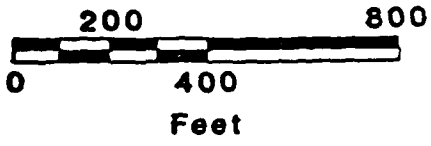
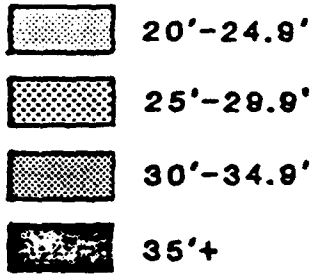
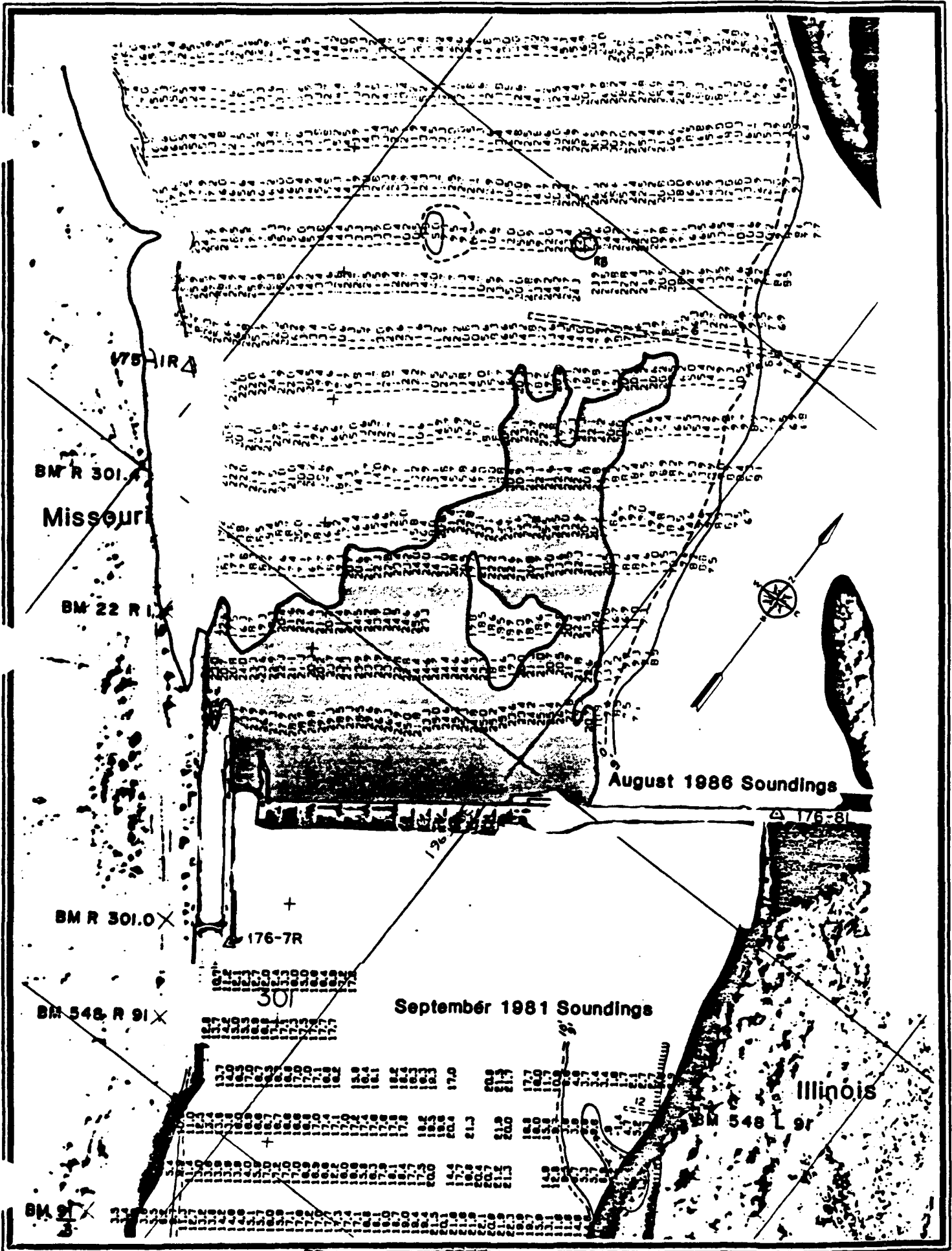
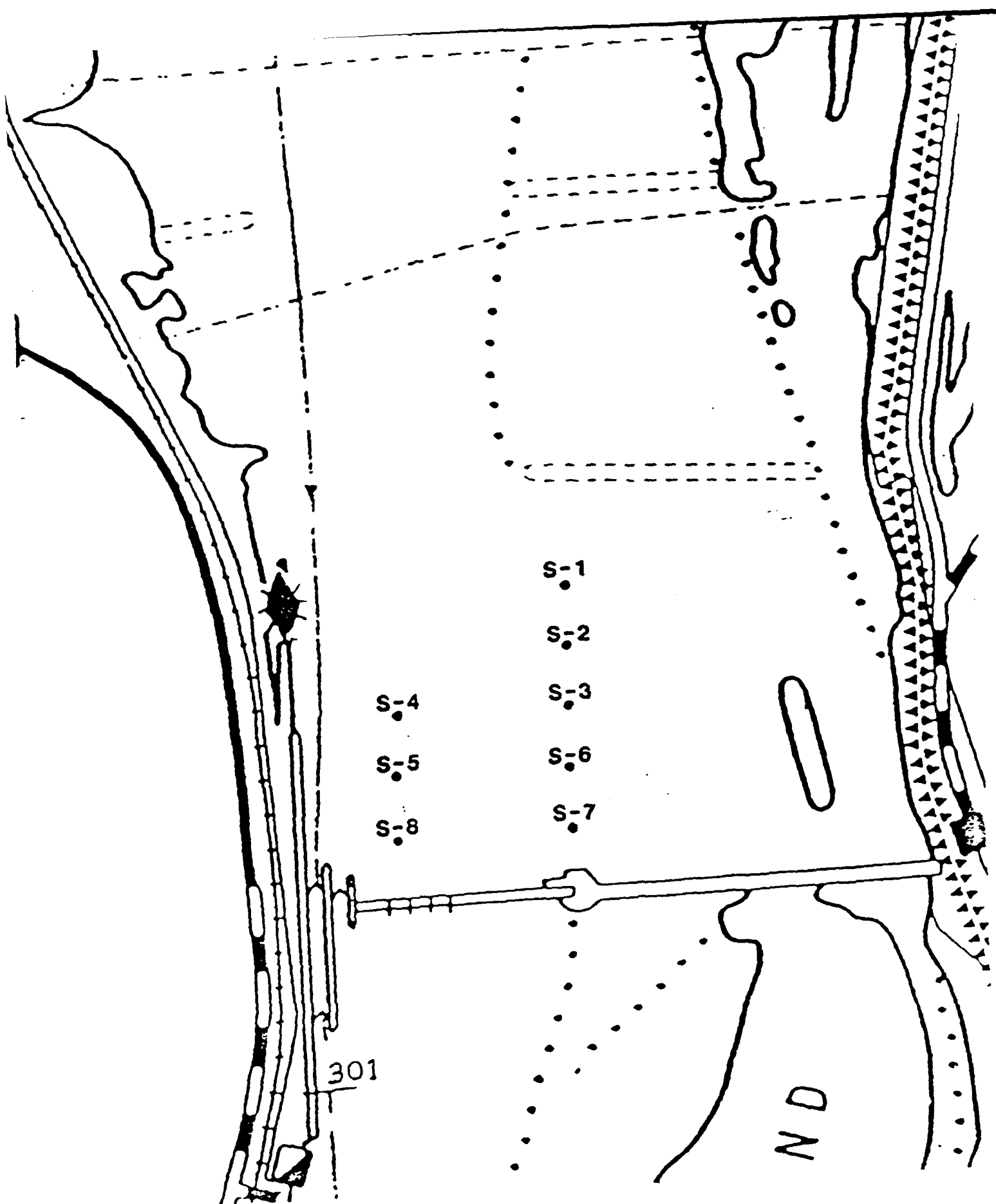


Plate 2: Saverton Bluff - Contour Map



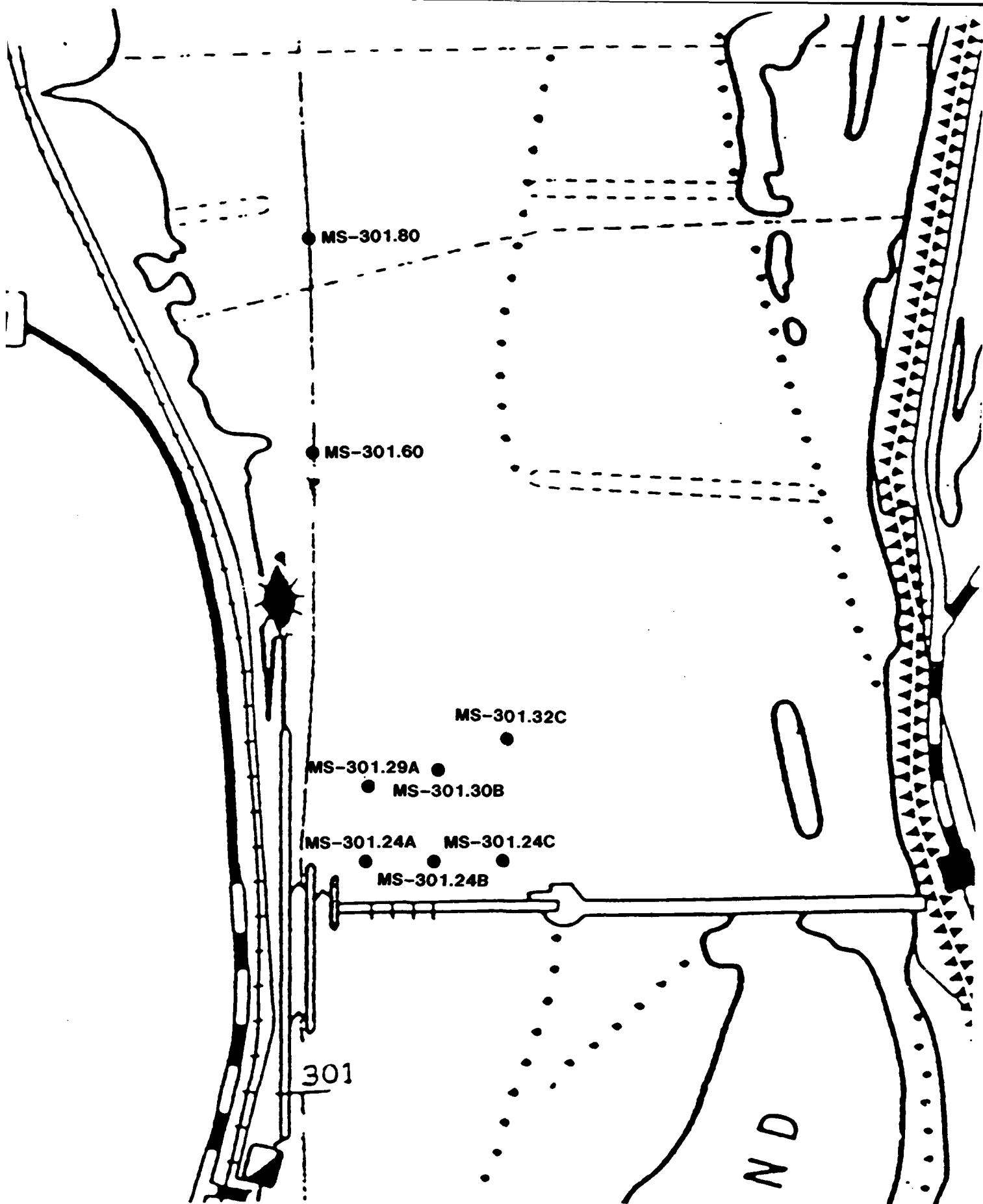
**Plate 3 Saverton Bluff - Sounding Map**

COPY AVAILABLE TO DTIC DOES NOT PERMIT FULLY LEGIBLE REPRODUCTION



Sediment sampling stations at the Saverton site MAY 1987

COPY AVAILABLE TO DTIC DOES NOT PERMIT FULLY LEGIBLE REPRODUCTION



L/D 22 sediment sampling stations on 1 Nov 91

COPY AVAILABLE TO DTIC DOES NOT PERMIT FULLY LEGIBLE REPRODUCTION

MISSISSIPPI RIVER - SAVERTON BLUFF  
GRAIN-SIZE ANALYSIS OF SEDIMENT SAMPLES  
SUMMARY OF TESTING (1987 Sampling)

U.S. STANDARD SIEVE SIZE OR NUMBER	PERCENT FINER BY WEIGHT								
	S-1	S-2	S-3	S-4	S-5	S-5 (DUP)	S-6	S-7	S-8
1/2"	--	--	--	--	100.0	100.0	--	100.0	--
3/8"	100.0	--	--	100.0	99.8	99.9	100.0	99.9	100.0
#4	99.2	100.0	100.0	99.3	96.7	98.6	99.9	97.9	99.9
#8	94.4	99.9	99.6	96.6	89.8	91.1	99.2	97.2	95.9
#16	74.7	97.0	95.8	82.9	62.0	62.2	93.4	94.3	77.0
#30	29.7	85.1	73.7	33.8	22.0	23.2	64.3	74.0	32.6
#50	7.3	31.6	12.6	1.8	2.6	2.9	9.4	22.2	3.4
#70	2.7	7.5	1.9	0.4	0.8	0.9	1.5	8.0	1.5
#100	0.7	2.1	0.2	0.2	0.3	0.3	0.2	4.6	0.5
#200	0.4	2.1	0.2	0.1	0.1	0.1	0.1	4.6	0.1
#230	0.3	1.8	0.2	0.1	0.1	0.1	0.1	4.0	0.1

Classification    A        A        A        B        D        C        A        A        A

Notes:

1. Visual classification of soils as stated below is in accordance with "The Unified Soils Classification System (USCS)".
  - A. SP brown medium to fine sand
  - E. SP brown medium sand
  - C. SP brown coarse to medium sand
  - D. SP brown coarse to medium sand, trace gravel
2. Laboratory testing was performed in accordance with EM 111021906 dated 30 Nov 70, revised 01 May 80. All samples were oven dried at 105 degrees C drying temperature. Sample designated (DUP) is a duplicate sample.
3. Only samples S-2 and S-7 had sufficient fines (in form of clay balls) to be washgraded.

COPY AVAILABLE TO DTRC DOES NOT PERMIT FULLY LEGIBLE REPRODUCTION

MISSISSIPPI RIVER  
 LOCK AND DAM 22  
 SAMPLES COLLECTED: 1 NOVEMBER 1991

GRAIN SIZE ANALYSIS OF SEDIMENT SAMPLES  
 SUMMARY OF TESTING

U.S. Standard Sieve Size or Number	Percent Finer by Weight								
	MS-		(DUP) MS-		MS-		MS-		
Sample No.	301.24A	301.24B	301.24B	301.24C	301.32A	301.32B	301.32C	301.6	MS- 301.8
1"								100.0	
3/4"								94.3	
1/2"								93.5	
3/8"	100.0	100.0	100.0	100.0	100.0	100.0	100.0	92.5	99.7
# 4	99.3	99.3	99.2	95.5	99.9	93.7	100.0	89.6	96.6
# 8	96.3	97.1	96.4	88.9	98.5	91.1	99.8	84.7	91.7
# 16	93.1	93.3	91.8	71.1	90.2	85.9	97.2	73.3	78.0
# 30	84.4	66.1	62.9	35.8	38.5	28.4	54.9	30.0	32.1
# 40	28.6	37.7	39.4	26.1	24.0	16.0	37.1	14.9	14.9
# 50	14.2	10.6	11.4	10.4	6.5	4.1	11.0	2.8	2.3
# 70	3.4	5.4	4.9	3.2	2.0	1.2	1.4	.8	.3
# 100	1.6	4.2	3.7	.7	1.0	.7	.7	.5	.1
# 200	.9	3.8	3.4	.4	.7	.6	.7	.4	.1
# 230	.6	3.7	3.2	.4	.7	.6	.7	.4	.1
Class.	(a)	(b)	(b)	(a)	(b)	(c)	(b)	(d)	(a)

Notes:

1. Visual classification of soils as stated below is in accordance with "The Unified Soils Classification System (USCS)".
  - (a) SP Brown medium to fine sand trace gravel
  - (b) SP Brown medium to fine sand
  - (c) SP Brown medium to fine sand with gravel
  - (d) SP Brown gravelly medium to fine sand
2. Laboratory testing was performed in accordance with EM 1110-2-1906 dated 30 Nov 70, revised 1 May 80 and 20 Aug 86. All samples were oven dried at 110 degrees centigrade. Sample designated (dup) is a duplicate sample.



**PERTINENT CORRESPONDENCE**

**A**

**P**

**P**

**E**

**N**

**D**

**I**

**X**

**A**

ENVIRONMENTAL ASSESSMENT

DREDGED MATERIAL THALWEG PLACEMENT SITE  
MISSISSIPPI RIVER MILES 301.2-301.3  
SAVERTON, MISSOURI

APPENDIX A  
PERTINENT CORRESPONDENCE

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U.S. Department of the Interior, Fish and Wildlife Service, Rock Island Field Office, dated June 13, 1991	A-10
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JOHN ASHCROFT  
Governor

FREDERICK A. BRUNNER  
Director



STATE OF MISSOURI  
DEPARTMENT OF NATURAL RESOURCES

Division of Energy  
Division of Environmental Quality  
Division of Geology and Land Survey  
Division of Management Services  
Division of Parks and  
Historic Preservation

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DIVISION OF ENVIRONMENTAL QUALITY  
P.O. Box 176  
Jefferson City, MO 65102  
314-751-3241

July 31, 1985

Colonel William C. Burns  
District Engineer  
Rock Island District, Corps of Engineers  
Clock Tower Building  
P.O. Box 2004  
Rock Island, Illinois 61204

Dear Colonel Burns:

The Department of Natural Resources, Water Pollution Control Program, has reviewed your request for water quality certification for the proposed maintenance dredging in the navigation channel of the Mississippi River at ten locations between river miles 300 and 361.4; which are adjacent to Ralls, Marion, Lewis and Clark Counties, Missouri. This office certifies that the proposed activity apparently will not violate applicable Water Quality Standards, 10 CSR 20-7.031.

Water Quality Standards must continue to be met during the operation. If a violation of the Standards is found to exist because of this operation, the certification may be withdrawn.

This certification is being issued under Section 401 of Public Law 95-217, the Clean Water Act of 1977.

Sincerely,

WATER POLLUTION CONTROL PROGRAM

James F. Penfold  
Chief, Compliance/Review Section

JFP/JM/jc



217/782-0610

Rock Island District Corps of Engineers  
Maintenance Dredging -- Mississippi River  
Log #C-1061-90

April 10, 1991

Mr. James H. Blanchar, P.E.  
Chief, Operations Division  
Rock Island District  
Corps of Engineers  
Clock Tower Building  
Rock Island, Illinois 61201

Dear Mr. Blanchar:

This Agency received a request on November 13, 1990, from Rock Island District Corps of Engineers requesting necessary comments for environmental consideration concerning the maintenance dredging of the Mississippi River between miles 580.7 and 300.0 for navigational purposes. We offer the following comments.

Based on the information included in this submittal, it is our engineering judgement that the proposed project may be completed without causing water pollution as defined in the Illinois Environmental Protection Act, provided the project is carefully planned and supervised.

These comments are directed at the effect on water quality of the construction procedures involved in the above described project and is not an approval of any discharge resulting from the completed facility, nor an approval of the design of the facility. These comments do not supplant any permit responsibilities of the applicant towards this Agency.

This Agency hereby issues certification under Section 401 of the Clean Water Act (PL 95-217), subject to the applicant's compliance with the following conditions:

1. The applicant shall not cause:
  - a. violation of applicable water quality standards of the Illinois Pollution Control Board, Title 35, Subtitle C: Water Pollution Rules and Regulations;
  - b. water pollution as defined and prohibited by the Illinois Environmental Protection Act; and
  - c. interference with water use practices near public recreation areas or water supply intakes.
2. The applicant shall provide adequate planning and supervision during the project construction period for implementing construction methods, processes and cleanup procedures necessary to prevent water pollution and control erosion.



3. Site specific evaluation is required for each dredging and disposal site. This evaluation should be detailed in the Dredge Site Inspection Report form presently being used by the Rock Island District. This format includes the following six main categories:
  - a. I Dredge Site Information
  - b. II Proposed Disposal Site Information
  - c. III Inspection Techniques
  - d. IV Conclusions Regarding Proposed Disposal Site
  - e. V Recommended Disposal Location (complete if proposed site unsuitable)
  - f. VI Inspection Team

The disposal site inspection team should include personnel of the Illinois Department of Conservation or the U.S. Fish and Wildlife Service and the Illinois EPA to determine if selective placement could be used to preserve or enhance the environment. The Rock Island District, Corps of Engineers has supplied maps to this Agency indicating the dredge and disposal sites used during maintenance dredging. We request that this procedure continue in the future.

4. Documentation for each site should include information for both material analysis of dredge and disposal sites. Grain size analysis and gradation curves should be supplied to this Agency for each site used during the 1991-1993 period.
5. Open water or bank disposal is permitted if the dredged material is considered reasonably settleable, environmentally acceptable, and free from unnatural or significant levels of fines, clays or other materials capable of causing violations of Part 302 of Subtitle C. The following criteria should be used to define non-polluted material:
  - a. material free from toxic levels of contaminants;
  - b. material which will not cause an effluent or condition resulting in offensive discharges, accounting for background concentrations and levels of contaminants affected by ordinary levels during periods of discharge activities; and
  - c. materials which have settling velocities of components of sand or larger sized materials, [larger than 0.062 mm, or #230 U.S. sieve for at least 80% (by weight)].

All dredge material not meeting the above criteria are considered not appropriate for open water disposal or bank disposal.



Page 3

6. Polluted material and material containing large amounts of fines must be disposed of in confined areas. Treatment of polluted materials can include primary settling devices or structures, or other means necessary to prevent violation of applicable water quality standards. For all polluted dredge materials a supernatant test must demonstrate that any substantial release of chemical constituents would not result in violation of water quality standards as affected by ordinary levels of background concentrations or be considered toxic for the following parameters: total suspended solids, volatile suspended solids, ammonia, zinc, lead.
7. All other dredging activities, such as small boat harbor dredging, etc., will be applied for on a case-by-case basis.
8. Interim reports shall be submitted in April following each dredging season, starting with April 1991. Said report shall include dredge site and disposal area locations along with pertinent data collected for each site.
9. This certification expires on December 31, 1993.

This certification does not grant immunity from any enforcement action found necessary by this Agency to meet its responsibilities in prevention, abatement, and control of water pollution.

Very truly yours,

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

TGM:BY:bjh/307q/51,53

cc: IEPA, DWPC, Records Unit  
DWPC, Field Operations Section, Region 1, 3 and 5  
IDOT, Division of Water Resources, Springfield  
USEPA, Region V  
USFWS, Rock Island  
IDOC



REPLY TO  
ATTENTION OF

DEPARTMENT OF THE ARMY  
ROCK ISLAND DISTRICT, CORPS OF ENGINEERS  
CLOCK TOWER BUILDING - P.O. BOX 2004  
ROCK ISLAND, ILLINOIS 61204-2004

MAY 6, 1991

Planning Division

SEE DISTRIBUTION LIST

The Rock Island District of the U.S. Army Corps of Engineers has identified the need for a new long-term dredged material placement site to accommodate 9-foot channel maintenance material dredged from approximate Mississippi River Miles 301.5-302.0. A placement site that can hold approximately 40,000 cubic yards every 4 years is needed to replace the historic site at Saverton, Missouri, which is now full.

Because of the lack of identified beneficial use sites or any other nearby environmentally acceptable sites, the Rock Island District is recommending that thalweg disposal of dredged material be considered. The District proposes that dredged material be placed immediately upstream of Lock and Dam 22. The enclosed map shows the proposed location for thalweg disposal (enclosure 1).

Bathymetric surveys and sediment testing of the proposed disposal site were performed in 1986. This information also is displayed in enclosure 1. This preliminary information indicates that the river bottom consists primarily of medium to fine sands that are part of an actively moving bed load. Past studies have shown that this type of environment usually has no significant aquatic resources (i.e., mussel beds). Unless there is sufficient evidence to suggest the presence of any significant resources, further field investigations at this site are not anticipated.

The Rock Island District anticipates distribution of an Environmental Assessment and Public Notice regarding this action later this year. At this time, we are requesting information regarding the location of any significant resources that could preclude the use of this site for thalweg disposal. Federally endangered species, wetlands, cultural resources, mussel beds, and fish spawning areas are of particular importance.

In addition to the proposed site, we are willing to consider any other operationally satisfactory placement sites that are located within about one mile of the dredge cut. If you know of any potential placement site, please send a description of its location, along with any comments you may have.

Please provide your comments regarding the proposed site within 30 days of the date of this letter. Address your comments or questions to Mr. Jon Duyvejonck of our Environmental Analysis Branch, telephone 309/788-6361, Ext. 6308. Written comments may be sent to the following address:

District Engineer  
U.S. Army Engineer District, Rock Island  
ATTN: Planning Division (Jon Duyvejonck)  
Clock Tower Building - P.O. Box 2004  
Rock Island, Illinois 61204-2004

Sincerely,

ORIGINAL SIGNED BY  
Dudley M. Hanson, P.E.  
Chief, Planning Division

Enclosure



## DISTRIBUTION LIST

Mr. Dan Salee  
Illinois Department of Conservation  
P.O. Box 149  
Aledo, Illinois 61231

Mr. Theodore Hild  
Deputy State Historic Preservation Officer  
Illinois State Historic Preservation Agency  
Old State Capitol  
Springfield, Illinois 62704

Mr. Bernard P. Killian  
Director  
Illinois Environmental Protection Agency  
2200 Churchill Road  
Springfield, Illinois 62706

Mr. Dennis Kennedy  
Illinois Department of Transportation  
Division of Water Resources  
3215 Executive Park Drive  
P.O. Box 19484  
Springfield, Illinois 62794-9484

Mr. Richard Nelson  
Field Supervisor  
U.S. Fish and Wildlife Service  
1830 Second Avenue  
Rock Island, Illinois 61201

Mr. Al Fenedick  
U.S. Environmental Protection Agency  
Region 5  
230 South Dearborn  
Chicago, Illinois 60604

Mr. Gordon Farabee  
Missouri Department of Conservation  
P.O. Box 180  
Jefferson City, Missouri 65102



# Illinois Department of Transportation

Division of Water Resources  
3215 Executive Park Drive / P.O. Box 19484 / Springfield, Illinois / 62794-9484

May 16, 1991

**District Engineer**

U.S. Army Corps of Engineers, Rock Island District  
Clock Tower Building - P. O. Box 2004  
Rock Island, Illinois 61204-2004

**Attention: Mr. Jon Duyvejonck, Planning Division**

**Gentlemen:**

Thank you for your May 6, 1991 letter concerning proposed thalweg disposal of dredged material in the Mississippi River at approximate river miles 301 and 561.

We are not aware of any important resources that would preclude the use of the site for thalweg disposal. Depending on findings by the Illinois Department of Conservation and the Illinois Environmental Protection Agency, we anticipate that the proposed dredged material disposal operations will qualify for approval under Illinois Department of Transportation, Division of Water Resources Permit No. 17603.

Thank you for providing us with the opportunity to review the proposed work. Please feel free to contact Mike Diedrichsen of my staff at 217/782-3862 if you have any questions or comments.

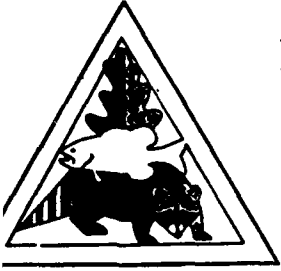
Sincerely,

A handwritten signature in cursive script that reads "Dennis L. Kennedy" with "D.L.K." written below it.

Dennis L. Kennedy, P.E., Head  
Technical Analysis and Permit Unit

DLK:MLD:pw/2439R

cc: Illinois Dept. of Conservation  
Illinois Environmental Protection Agency



# MISSOURI DEPARTMENT OF CONSERVATION

MAILING ADDRESS  
P.O. Box 180  
Jefferson City, Missouri 65102-0180

STREET LOCATION  
2901 West Truman Boulevard  
Jefferson City, Missouri

Telephone: 314/751-4115  
JERRY J. PRESLEY, Director

June 5, 1991

Mr. Dudley M. Hanson  
Chief, Planning Division  
Rock Island District, Corps of Engineers  
P. O. Box 2004  
Rock Island, Illinois 61201

Re: Dredging Mississippi Mile 301-302

Dear Mr. Hanson:

Members of the Department staff reviewed the proposal for disposal of dredged material at Mississippi River mile 301-302. It is our recommendation that rather than disposing of the material in the deep water immediately upstream of Lock and Dam 22, you consider creating a low profile island on the Illinois side of the river, upstream of the dike at river mile 301.6. The island could, as it vegetates, be important for migratory birds while providing shallow water habitat for fish. Further, we would recommend the island be approximately two feet above flat pool with flat sides to maximize shallow water.

I recognize that it will be necessary for the Illinois Department of Conservation and U. S. Fish and Wildlife Service to concur before this can occur.

If you have questions or wish further input, please contact William H. Dieffenbach of my staff.

Sincerely,

DAN F. DICKNEITE  
PLANNING DIVISION CHIEF

cc: U. S. Fish and Wildlife Service  
Rock Island, IL

IL Department of Conservation  
Attn: Bill Bertrand

A-9  
COMMISSION



## United States Department of the Interior

Fish and Wildlife Service  
Rock Island Field Office (ES)  
1830 Second Avenue, Second Floor  
Rock Island, Illinois 61201



In Reply Refer to:

COM: 309/793-5800  
FTS: 782-5800

June 13, 1991

Colonel John R. Brown  
District Engineer  
U.S. Army Engineer District, Rock Island  
ATTN: Planning Division (Jon Duyvejonck)  
Clock Tower Building - P.O. Box 2004  
Rock Island, IL 61204-2004

Dear Colonel Brown:

This letter is in response to your May 6, 1991, request for comment on proposed thalweg disposal in Pools 22 and 12, at approximate Mississippi River miles 301.2 and 561.5 respectively. Your correspondence indicated that environmental assessments would be prepared for both actions.

Our concerns for the Pool 22 site involve tailwater fish spawning and the proximity of a designated freshwater mussel sanctuary downstream from Lock and Dam 22. Tailwater habitats adjacent to navigation dam stilling basins are presumed to provide suitable habitat for certain fish species requiring coarse substrate and higher velocities for spawning. Depending on the timing of the proposed action and river discharge, tailwater spawning success could be adversely affected by disposal immediately upstream of the gated portion of the dam.

Endangered species known from the project area include the bald eagle (Haliaeetus leucocephalus), Gray bat (Myotis grisescens), Indiana bat (Myotis sodalis) and fat pocketbook pearly mussel (Potamilus capax). The proposed action is not expected to affect the bald eagle or bat species. The State of Missouri has designated the mussel bed located between approximate river miles 299.5R and 300.2R as an official sanctuary, and has closed it to harvest. Valves of the fat pocketbook pearly mussel have been collected in the vicinity.

Although this mussel bed has survived commercial harvest, navigation, variable flows, and sediment bedload conditions, the fate of a significant quantity of sand placed or redirected into the mainstem bedload should be closely monitored during and after the dredging action. Project planning and implementation should

include provisions for sediment monitoring to determine future suitability of this disposal method at this site.

Regarding the Pool 12 site, we remain concerned about impacts to Crooked Slough aquatic habitat. Your statement regarding the improbability of movement is noted. However, the bathymetry of the proposed thalweg site indicates that some fluvial factor has prevented accretion to date. This leads us to conclude that material placed in this location will track with other bedload components to unidentified downstream locations.

Endangered species known from the Pool 12 vicinity include the bald eagle, Iowa Pleistocene snail (Discus macclintocki), northern wild monkshood (Aconitum noveboracense), and the Higgins' eye pearly mussel (Lampsilis higginsii). While no effects to the bald eagle, Pleistocene snail, or monkshood would be expected, project planning should include a mussel survey of the proposed disposal site, and a general habitat inventory of the proposed disposal site and nearby downstream habitat. Should other alternatives be developed requiring upland site selection, effects to federally listed species will be reconsidered for both Pools 12 and 22.

This letter provides comment under the authority of the Fish and Wildlife Act of 1958 and the Endangered Species Act of 1973, as amended. We thank you for the early opportunity to comment on the proposed actions and look forward to assisting the Rock Island District in meeting the challenge of long term dredged material site planning.

Sincerely,

  
Richard C. Nelson  
Field Supervisor

cc: IADNR (Tom Boland)  
ILDOC (Dan Sallee)  
MODOC (Gordon Farabee)

RC:sjg



**Illinois Historic  
Preservation Agency**

Old State Capitol      Springfield, Illinois 62701      (217) 782-4836

Suite 4-900      State of Illinois Center      100 W. Randolph      Chicago, IL 60601      (312) 814-1409

---

785-4997

OUN COUNTY  
Mississippi River Miles 301.5 - 302.0  
and Dam 22

IHPA LOG #910508008TRW

18, 1991

Dudley M. Hanson, P.E.  
Chief, Planning Division  
District Engineer  
Army Engineer District, Rock Island  
Attention: Planning Division  
Rock Tower Building - Post Office Box 2004  
Rock Island, Illinois 61204-2004

Re: IHPA

Thank you for requesting comments from our office concerning the possible effects of the project referenced above on cultural resources. Our comments are required by Section 106 of the National Historic Preservation Act of 1966, as amended, and its implementing regulations, 36 CFR 800: "Protection of Historic Properties".

Our staff has reviewed the specifications and assessed the impact of the project as submitted by your office. We have determined, based on the available information, that no significant historic, architectural or archaeological resources are located within the proposed project area.

You are requested to retain this letter in your files as evidence of compliance with Section 106 of the National Historic Preservation Act of 1966, as amended.

Sincerely,



Theodore W. Hild  
Deputy State Historic  
Preservation Officer

TRW:bb1065A/30

CLEAN WATER ACT  
SECTION 404(b)(1) EVALUATION

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REPLY TO  
ATTENTION OF

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DEPARTMENT OF THE ARMY  
ROCK ISLAND DISTRICT, CORPS OF ENGINEERS  
CLOCK TOWER BUILDING - P.O. BOX 2004  
ROCK ISLAND, ILLINOIS 61204-2004

DREDGED MATERIAL THALWEG PLACEMENT SITE  
MISSISSIPPI RIVER MILES 301.2-301.3  
SAVERTON, MISSOURI

CLEAN WATER ACT  
SECTION 404(b)(1) EVALUATION

MARCH 1992



DREDGED MATERIAL THALWEG PLACEMENT SITE  
MISSISSIPPI RIVER MILES 301.2-301.3  
SAVERTON, MISSOURI

APPENDIX B  
CLEAN WATER ACT  
SECTION 404(b)(1) EVALUATION

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DREDGED MATERIAL THALWEG PLACEMENT SITE  
MISSISSIPPI RIVER MILES 301.2-301.3  
SAVERTON, MISSOURI

APPENDIX B  
CLEAN WATER ACT  
SECTION 404(b)(1) EVALUATION

SECTION 1 - PROJECT DESCRIPTION

LOCATION

The proposed dredged material placement site is located in the thalweg of the Mississippi River, just downstream of Saverton, Missouri, UTM, Zone 15, 4,388,700 - 800 N; 650,240 - 340 E using the Hull, Illinois-Missouri, 7.5' USGS Quadrangle (see plate 1 of this document).

GENERAL DESCRIPTION

The availability of engineeringly suitable, environmentally acceptable dredged material placement sites, at locations requiring chronic dredging, presents a constant challenge to those Federal and State agencies charged with managing the Upper Mississippi River. Historic sites for this dredging area either have become less environmentally acceptable, or are at or near capacity. Experimental thalweg placement test sites have proven to be both cost-effective and environmentally responsible, provided the placement site meets certain parameters (see BACKGROUND INFORMATION section in the EA).

AUTHORITY AND PURPOSE

The authority and purpose of the evaluation portion of this document is to comply with Section 404 of the Clean Water Act, pertaining to guidelines for placement of dredged or fill material into the waters of the United States.

GENERAL DESCRIPTION OF THE DREDGED MATERIAL

Sampling of the sediments in the proposed placement site was undertaken in May 1987 and November 1991. Complete detailed results can be found on

plates 6 and 7 of this document. Generally, the thalweg at this location is comprised of coarse to fine sands with small amounts of gravel. The amount of fines in the sediments of both the dredge cut and the placement site is very low. The percentage of material passing a No. 230 sieve, from the 1991 sampling, ranges from 0.1 to 3.7. This size description closely matches the grain size analysis of the sediments sampled in 1991 from the general location of the dredge cut at approximate River Miles (RM) 301.6 to 301.8 (plate 7).

The amount of material needing to be dredged is approximately 40,000 cubic yards every 4 years. The general location where dredging will most likely occur is Mississippi RM 301.5 to 302.0.

#### DESCRIPTION OF THE PROPOSED PLACEMENT SITE

The type of site being proposed is unconfined, open-water placement in the thalweg and involves only the aquatic environment.

The location of the proposed placement site is approximate Mississippi RM 301.2 to 301.3, immediately upstream of Lock and Dam 22 (plate 1 of this document).

The size of the placement site will depend upon the actual water depth at the time of dredging. Greater water depth allows the dredged material to be stacked higher, thereby reducing the acreage required to accommodate the total amount dredged. However, an estimate of the placement size is approximately 5 to 10 acres.

It is anticipated that dredging at this location may be required during the 1992 dredging season. If historical averages hold true, the amount to be dredged should be approximately 40,000 cubic yards and will require about 5 days to complete, working 24 hours a day.

Soundings taken in 1986 indicate that water depths in and near the proposed site range from 20 to 30 feet. Bathymetric surveys of the site will be undertaken in 1992 to assure that a minimum adequate depth of 20 feet is present prior to deposition.

Not present in the placement site are any structure or structures that could be utilized by fish as microhabitats. The actively moving sand bedload there makes living conditions unattractive to aquatic flora and/or fauna.

#### DESCRIPTION OF THE PLACEMENT METHOD

The thalweg placement technique places dredged material in deep-water areas which will not significantly add to the sand bedload presently moving in

the thalweg. Before thalweg placement begins, bathymetric surveys will be used to determine the existing bottom topography and to verify the location of the deep hole selected for dredged material placement. A hydraulic cutterhead dredge in combination with a booster pump, when needed, will transport the dredged material to the placement site. At the placement location, belly anchors and/or tenders will position the home pontoon to assure an anchoring effect on the discharge pipe. The discharge pipe can then move independently of the dredge by adjusting the anchors or by inserting sections of pipe in the pipeline. During and after dredged material placement, bathymetry will be conducted to determine size and disposition of the placement pile.

## SECTION 2 - FACTUAL DETERMINATIONS

### PHYSICAL SUBSTRATE DETERMINATIONS

a. Substrate Elevation and Slope. Flat pool at the placement site is 459.5 feet mean sea level (MSL). Bathymetric surveys will be taken prior to dredging to determine the actual water depth and the size of the site that is suitable for placement.

b. Sediment Type. Particle size comparison of the placement site substrate and the material to be dredged is found earlier in this Evaluation (see GENERAL DESCRIPTION OF THE DREDGED MATERIAL). The comparison reveals great similarity in particle size, color, and the amount of fines present.

c. Dredged/Fill Material Movement. The height of the placement pile will depend upon water depth at the time of placement. However, at no time will the peak or top of the pile encroach on the 9-foot navigation channel. A minimum of 10 feet will be maintained between the surface of the water and the top of the placement pile. The scour hole will be filled or partially filled with dredged material, but the topographically distinguishable pile will disappear after the first flood. When the dredged material does move, it will migrate down river in the thalweg. Experimental thalweg placement sites at Duck Creek, Savanna Bay, Gordon's Ferry, and Whitney Island traced tagged sand and concluded that dredged material placed in the thalweg remained in the thalweg. No evidence was found of large-scale migration of dredged sand into biologically sensitive main-channel borders, backwaters, or sloughs.

d. Physical Effects on Benthos. The thalweg of the Upper Mississippi River is generally biologically rather sterile. The dynamic nature of the actively moving bedload of the thalweg provides relatively inhospitable conditions for benthic organisms. Therefore, the direct biological impacts of thalweg placement would be minimal.

e. Action Taken To Minimize Impacts. The placement of dredged material in the thalweg avoids greater environmental impacts associated with wetland or shallow water placement.

Dredging quantities will be kept to a minimum to still maintain safe navigation. No over dredging will occur.

Pre-placement soundings will locate the area of adequate depth for this placement technique.

## WATER CIRCULATION, FLUCTUATION, AND SALINITY DETERMINATIONS

a. Water. The proposed action would have a temporary and insignificant effect on water quality in the Mississippi River. Salinity gradient impacts do not apply to this project. Water chemistry, water temperature, pH, clarity, color, odor, taste, dissolved gas levels, nutrient levels, or organic matter influxes will either be nonexistent or will cause insignificant and temporary impacts to aquatic organisms. Aquatic vegetation is absent in the project area and, hence, will not be affected. Impacts to the human population concerning the suitability of this water body for human consumption, recreation, and aesthetics will be negligible or nonexistent.

b. Current Patterns and Water Circulation. Minor changes in current patterns or flows may result from dredging operations on the Mississippi River for the purpose of channel maintenance. However, this is a temporary, short-term, and acceptable consequence of maintaining a safe channel for recreational and commercial navigation.

Lock and Dam 22 is located directly downstream from the proposed placement site. However, the dam should not impede downstream movement of deposited sediments. When the first high water event occurs following placement, open dam gates will allow normal down-thalweg movement of dredged materials and allow current patterns and circulation to return to pre-placement conditions.

c. Normal Water Level Fluctuation. The proposed project will have no effect on water level fluctuation since sediment is being removed (dredged) from one location and then redeposited in a downstream location. The residency time of the placement pile will be short and will end with the first high water event following placement. Therefore, no impacts will occur with regard to prolonged periods of inundation, exaggerated extremes of high or low water, or other water level modifications as a result of this action.

d. Salinity Gradient. Not applicable.

e. Actions Taken to Minimize Impacts. Appropriate usage of the thalweg for dredged material placement will result in lessened environmental impacts compared to terrestrial placement and is further explained in other portions of this document.

## SUSPENDED PARTICULATE/TURBIDITY DETERMINATIONS

a. Effects on Physical and Chemical Properties of the Water Column. Grain size analyses for the dredged material and the placement site sediments are included on plates 6 and 7. Because the sediments are sand with very little silt, settling rates will be rapid, making the discharge

plume small and short-lived. Therefore, impacts on turbidity levels, suspended particulate levels, light penetration, dissolved oxygen, toxic metals, organic influxes, pathogens, and aesthetics will be minor and insignificant with only short-term duration.

b. Effects on Biota. Considering the short light penetration depths in the main channel, usable light for photosynthesis reaches depths of approximately 18 inches. Given the water velocities and light penetration levels of this main channel thalweg site, primary production by photosynthetic organisms is currently extremely low or nonexistent. Hence, impacts to the plant community will be negligible and insignificant. Generally, the thalweg is rather sterile biologically; therefore, impacts to sight feeders and suspension/filter feeders will be insignificant and temporary.

c. Action Taken to Minimize Impacts. No over-dredging will occur. Dredging quantities will be kept to the minimum amount necessary to maintain the 9-foot navigation channel.

#### CONTAMINANT DETERMINATIONS

The sandy material to be dredged is of large enough particle size so that contaminant binding is negligible. Historically, sediment sampling of sandy dredged material has shown an insignificantly low level of contamination, since contaminants have a greater affinity for smaller-sized particles.

#### AQUATIC ECOSYSTEM AND ORGANISMIC DETERMINATIONS

a. Effects on Plankton and Nekton. Only short-term and minimal impacts are anticipated. The thalweg is not rich biologically, and this site is not significantly utilized as an over-wintering site for channel catfish since it is devoid of any type of structure that might be used as microhabitats to escape the current. If possible, dredging will be scheduled around the spring spawning season.

b. Effects on Benthos. (See PHYSICAL SUBSTRATE DETERMINATIONS,  
d. Physical Effects on Benthos). The benthic community is dynamic and possesses a high adaptability to sediment deposition.

c. Effects on Aquatic Food Web. Given the general low contamination levels associated with sandy dredged material, no significant impacts are anticipated to any life stage of any benthic species. Further, the proposed action will not cause or establish the proliferation of any undesirable competitive species that may usurp resident species. No significant reduction or elimination of any food chain organism will occur if this placement site is used.

d. Effects on Special Aquatic Sites. There are no refuges, wetlands, mudflats, vegetated shallows, coral reefs, or riffle and pool complexes in the project area.

A mussel sanctuary on the Missouri side of the river is located at RM 299.5 to 300.2R. No significant impact to this sanctuary is anticipated. It is predicted that the placement material will migrate down the thalweg and not impact the near shore area. Project implementation will include post-placement monitoring of sediment transport to determine if this placement method is suitable at this location.

e. Threatened and Endangered Species. Coordination with the States of Illinois and Missouri and with the U.S. Fish and Wildlife Service has revealed that, with the possible exception of the fat pocketbook pearly mussel (*Potamilus capax*), the use of the thalweg for dredged material placement at this location will not affect any threatened or endangered species. The mussel sanctuary is a known location where valves of the fat pocketbook pearly mussel have been collected. Monitoring of the dredged material movement will occur both during and after the dredging operation to determine the potential impacts to the mussel sanctuary and the future suitability of this placement method at this location.

f. Other Wildlife. The dredging operation, if possible, will be scheduled to avoid the fall waterfowl migration period. This will avoid conflicts with resident and transient waterfowl and the associated recreational pursuit of duck/goose hunting.

g. Actions Taken to Minimize Impacts. Concurrent and post-placement sediment monitoring, avoidance of the spring spawning season, and avoidance of the fall waterfowl migration period will avoid impacts to the downstream mussel sanctuary, below the dam fish spawning activities, and waterfowl and waterfowl hunters.

#### PROPOSED PLACEMENT SITE DETERMINATIONS

a. Mixing Zone Determinations. Description of the discharge plume and settling rates as they pertain to turbidity and suspended particulates is found earlier in this Evaluation (Effects on Physical and Chemical Properties of the Water Column).

A description on contaminants is found earlier in this evaluation under CONTAMINANT DETERMINATIONS.

A mixing zone is that volume of water at a placement site required to dilute contaminant concentrations associated with a discharge of dredged material for an acceptable level.



The large volumetric capacity of this scour hole will provide a more than adequate mixing zone for any contaminated sediments that may be present. However, as mentioned earlier, most contaminants have affinities for finer sediments than are found at either the dredge cut or the placement location.

b. Determination of Compliance with Applicable Water Quality Standards. Section 401 Water Quality certification, in compliance with the Clean Water Act, is covered under an existing water certification permit from the States of Illinois and Missouri (appendix A).

c. Potential Effects on Human-Use Characteristics. Implementation of the proposed project will have no adverse effect on municipal or private water supplies; recreational or commercial fisheries; water-related recreation or aesthetics; parks; national monuments; or other similar preserves.

#### DETERMINATION OF CUMULATIVE EFFECTS ON THE AQUATIC ECOSYSTEM

Utilization of the thalweg at this location for dredged material placement will cause only negligible and short-term impacts to any component of the aquatic ecosystem.

#### DETERMINATION OF SECONDARY EFFECTS ON THE AQUATIC ECOSYSTEM

Keeping the dredged sand in the thalweg eliminates impacts to more biologically productive and politically sensitive areas such as main channel borders, backwaters, and wetlands.

No other secondary effects on the aquatic ecosystem are anticipated. This determination is subject to reevaluation if warranted by Federal, State, or local agency comment, as well as input from the general public.

**SECTION 3 - FINDINGS OF COMPLIANCE OR NONCOMPLIANCE  
WITH THE RESTRICTIONS ON PLACEMENT**

1. No significant adaptations of the 404(b)(1) guidelines were made relative to this evaluation.

2. Alternatives which were considered in addition to the proposed action were as follows:

- a. No action
- b. Beneficial use
- c. Terrestrial placement

3. Certification under Section 401 of the Clean Water Act has been obtained from the State of Missouri, Department of Natural Resources, Division of Environmental Quality and the Illinois Environmental Protection Agency. The project will thus be in compliance with the water quality requirements of the States of Illinois and Missouri.

4. The project will not introduce toxic substances into the waters of the United States or result in appreciable increases in existing levels of toxic materials.

5. No significant impact to federally listed endangered or threatened species is anticipated from this project.

6. The project is located along a freshwater inland river system. No marine sanctuaries are involved or will be affected.

7. No municipal or private water supplies will be affected. There will be no adverse impacts to recreational or commercial fishing. No adverse changes to the ecology of the river system will result from this action.

8. Because no construction materials will be used in this project, no contamination of the river is anticipated.

9. No other practical alternatives have been identified. The proposed actions are in compliance with Section 404(b)(1) of the Clean Water Act, as amended. The proposed actions will not significantly impact water quality and will improve the integrity of an authorized navigation system.

\_\_\_\_\_  
Date

John R. Brown  
Colonel, U.S. Army  
District Engineer

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