

FILE COPY

AD-A203 621



US Army Corps
of Engineers
Rock Island District

**DEFINITE PROJECT REPORT
WITH ENVIRONMENTAL ASSESSMENT**

FOR

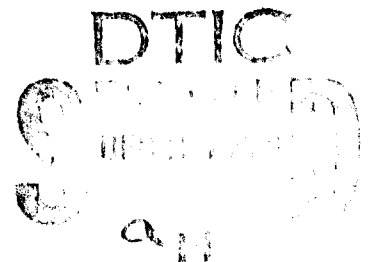
SECTION 14 EMERGENCY STREAMBANK PROTECTION

DES MOINES RIVER

COUNTY ROAD J-12

WAPELLO COUNTY, IOWA

SEPTEMBER 1988



ACKNOWLEDGEMENT

Primary study team personnel from the Rock Island District, U.S. Army Corps of Engineers who contributed to the following study are listed below.

PROJECT MANAGER:	Thomas Bales
HYDROLOGY AND HYDRAULICS:	Thomas Kirkeeng
SURVEYING:	Jim Long
ECONOMIC ASSESSMENT:	Patti Risser
ENVIRONMENTAL ASSESSMENT:	Charlene Carmack
CULTURAL RESOURCES:	Ken Barr
REAL ESTATE ANALYSIS:	John Crooke
LOCAL COOPERATION AGREEMENT COORDINATION:	Martha Alford
ENGINEERING AND DESIGN:	David Borck



Accession For	
NTIS GRA&I	☒
DTIC TAB	☐
Unannounced	☐
Justification	
By <i>per Form 50</i>	
Distribution/	
Availability Codes	
Dist	Avail and/or Special
<i>A-1</i>	



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

28 SEP 1988

CENCR-PD-F (1105-2-10b)

MEMORANDUM FOR: CDR, CENCD-PD-PF (MR. AUSTIN) CHICAGO, ILLINOIS 60605-1592

SUBJECT: Definite Project Report for Section 14 Emergency Streambank Protection, Des Moines River, County Road J-12, Wapello County, Iowa, with Environmental Assessment (CWIS #92307)

1. INTRODUCTION

a. The following letter report is a summary of a study made on providing emergency streambank protection along the right descending bank of the Des Moines River, to curtail erosion which is endangering a portion of County Road J-12 in Wapello County, Iowa.

b. The proposal for emergency streambank protection presented in this report recommends the placement of approximately 5,000 tons of Iowa Class D riprap on a filter fabric blanket, and approximately 1,500 cubic yards of earth fill, along 615 linear feet of the right descending bank of the Des Moines River. The total estimated cost for the project is \$ 160,300, with a benefit-to-cost ratio of 2.6. The project satisfies the criteria for Federal participation and is recommended for construction.

2. STUDY AUTHORITY

The authority for this study is Section 14 of the 1946 Flood Control Act, as amended by the Water Resources Development Act of 1986 (P.L. 99-662). The authority, as amended states:

That the Secretary of the Army is authorized to allot from any appropriations heretofore or hereinafter made for flood control, not to exceed \$ 12,500,000 per year, for the construction, repair, restoration, and modification of emergency streambank and shoreline protection works to prevent damages to highways, bridge approaches, public works, churches, hospitals, schools, and other nonprofit public services, when in the opinion of the Chief of Engineers such work is advisable: Provided, that no more than \$ 500,000 shall be allotted for this purpose at any single locality from the appropriations for any one fiscal year.

3. STUDY SCOPE

The study area as shown on plate 1 (encl 2) is located on the Des Moines River, at River Mile 84.6, in Sec. 24, T. 71 N., R. 13 W., Keokuk Township, Iowa. The study site is located about 5 miles upstream from Eldon, Iowa.

CENCR-PD-F

SUBJECT: Definite Project Report for Section 14 Emergency Streambank Protection, Des Moines River, County Road J-12, Wapello County, Iowa, with Environmental Assessment (CWIS # 92307)

4. DETAIL OF INVESTIGATION

This Definite Project Report contains sufficient detail to allow approval of the project and initiation of the preparation of plans and specifications.

5. PRIOR RELATED STUDIES AND REPORTS

Although there has not been any previous studies for the specific problem area described in paragraph 3 of this report, numerous studies have been made throughout the Des Moines River basin which have produced projects to curtail erosion.

6. PROBLEMS AND NEEDS

a. On September 22, 1987, U.S. Congressman James Leach's Ottumwa, Iowa office informed the Corps that they had been in contact with the Wapello County Engineer's office concerning several complaints from local Wapello County residents about an erosion problem along the right downstream bank of the Des Moines River, approximately 5 miles upstream from Eldon, Iowa, which had placed a portion of County Road J-12 in imminent danger of failure.

b. Subsequently, the Corps received an official request for Section 14 Emergency Streambank Protection assistance by letter dated October 1, 1987, from the Wapello County, Iowa, Engineer, to determine if an economically justified solution could be found for curtailing the erosion at the problem area (See encl 4, the Pertinent Correspondence).

7. EXISTING CONDITIONS

a. Pursuant to the Wapello County Engineer's request, representatives of the Rock Island District, U. S. Army Corps of Engineers, made a site investigation of the problem area on October 1, 1987, to assess the extent of the erosion problem.

b. The problem area is located along an outside bend in the Des Moines River, approximately at River Mile 84.6, an area measuring about 615 linear feet, parallel to County Road J-12. At the time of the above mentioned site investigation, the top of the right descending riverbank measured an average of about 4 feet from the edge of the 26-foot wide gravel road surface. The riverbank measured an average of 19 feet in vertical height above the toe of the bank. Flooding on the river has eroded the lower half of the riverbank causing the upper half of the riverbank to crack off vertically and slide down the slope into the river. The average existing bank slope is approximately a 1 vertical on 1 horizontal (See plates 1 & 2, encl 2).

c. In an effort to warn motorists of a possible road failure, the Wapello County Secondary Roads Department, placed road hazard markers along the river-side shoulder of the road in the study area. The road is used by all types of vehicles and is considered to be a major farm-to-market route. The County's recorded daily traffic count on the road is 130 vehicles.

CENCR-PD-F

SUBJECT: Definite Project Report for Section 14 Emergency Streambank Protection, Des Moines River, County Road J-12, Wapello County, Iowa, with Environmental Assessment (CWIS # 92307)

d. By letter dated February 16, 1988, the Wapello County, Iowa, Engineer was notified by the Rock Island District, U. S. Army Corps of Engineers, that a study was being initiated to determine the economic feasibility of providing Section 14 Emergency Streambank Protection for the problem area.

e. In March 1988, during the course of the study, a Corps survey team was dispatched to obtain survey cross sections of the eroded riverbank. The survey team reported that the erosion had progressed up to the edge of the road, placing it in imminent danger of failure. The obtained cross sections show almost vertical cuts in the bank slope, extending from the top of bank to the water's edge, in several places along the study reach.

f. By comparing recent Corps survey data to historical data furnished by the Wapello County Engineer, it was estimated that up to 60 feet of bankline has been lost to erosion in the study area since the road was originally graded for surfacing in 1942. The County Engineer however, has indicated that most of the estimated erosion loss has occurred over the past 20 years, due to flooding events which have occurred on the river during that period.

8. FUTURE CONDITIONS WITHOUT PROJECT

a. Failure of County Road J-12 in the study area, is imminent without a project to curtail the erosion problem. It is expected that the county road will fail during the year (1989) from flooding on the river, closing it to traffic. Motorists will then be forced to use longer, alternative routes.

9. PLANNING OBJECTIVES

a. National Objective. The plan formulation process to accomplish erosion damage reduction is formulated and directed by a national planning objective consistent with protecting the Nation's environment, pursuant to national environmental statutes, applicable executive orders, and other Federal planning requirements.

(1) Water and land related resources project plans should be formulated to alleviate problems and to take advantage of opportunities in ways that contribute to this objective.

(2) Contributions to the National Economic Development - (NED) are increases in the net value of the national output of goods and services, expressed in monetary units. Contributions to NED are the direct benefits that accrue in the planning area and the rest of the Nation, and include increases in the net value of those goods and services that are marketed, and those that may not be marketed.

b. Specific Objectives.

(1) To prevent economic losses resulting from the closure of County Road J-12 in Wapello County, Iowa.

CENCR-PD-F

SUBJECT: Definite Project Report for Section 14 Emergency Streambank Protection, Des Moines River, County Road J-12, Wapello County, Iowa, with Environmental Assessment (CWIS # 92307)

(2) To preserve and enhance, when practical, existing natural ecological systems and cultural resources and to minimize adverse impacts of flood damage reduction measures on these resources.

10. PLANNING CONSTRAINTS

a. This study is constrained by all laws of the United States and by the State of Iowa, all executive orders of the President, and all engineering regulations of the Corps of Engineers.

b. This study is also constrained by the study authority as stated in paragraph 2 of this report.

11. ALTERNATIVES CONSIDERED

Three alternatives were considered in detail to curtail the erosion in the study area and have been analyzed to determine economic feasibility. The alternatives are as follows:

(1) Riprap on a Filter Fabric Blanket and Earth Fill with Seeding - Approximately 5,000 tons of Iowa Class D riprap on a filter fabric blanket, and approximately 1,500 cubic yards of earth fill, will be placed along 615 linear feet of the right descending bank of the Des Moines River. The new earth fill will be seeded. The total estimated cost of the project is \$ 160,300, with a Benefit-to-Cost ratio of 2.6, and has net benefits totaling \$ 23,900. This project maximizes net benefits and is therefore, the National Economic Development (NED) plan.

(2) Rock Jetties - This project involves constructing 8 jetties, using approximately 13,100 tons of Iowa Class D riprap, keyed 2 feet into the existing bank slope, spaced 100 linear feet apart, having a topwidth of 10 feet, and should extend 50 feet perpendicular to the shoreline into the river. The total estimated cost of the project is \$ 363,000, with a Benefit-to-Cost ratio of 1.16. Net benefits resulting from this alternative total \$ 5,300.

(3) Road Relocation - This alternative consists of relocating the affected segment of roadway approximately 250 linear feet landward. The total estimated cost of this alternative is \$ 214,400, with a Benefit-to Cost ratio of 2.0, and has resulting net benefits amounting to \$ 19,700.

12. SELECTED PLAN

a. Analysis showed that alternative 1, Iowa Class D riprap on a filter fabric blanket and the placement of earth fill with seeding, is the least costly while maximizing net benefits, and would quickly provide an effective means for curtailing the erosion which has placed County Road J-12 in imminent danger.

b. The proposed work consists of clearing 615 linear feet of the existing bank slope of any trees or undesirable vegetation which may have a damaging

CENCR-PD-F

SUBJECT: Definite Project Report for Section 14 Emergency Streambank Protection, Des Moines River, County Road J-12, Wapello County, Iowa, with Environmental Assessment (CWIS # 92307)

effect on the placement of the filter fabric blanket. Approximately 21,000 square feet of filter fabric blanket will be placed on the bank slope up to elevation 615.0 (N.G.V.D.). Approximately 5,000 tons of Iowa Class D riprap will be placed on the filter fabric blanket, to provide a 1 vertical on 3 horizontal slope up to elevation 615.0 (N.G.V.D.). Additionally, approximately 1,500 cubic yards of earth fill will be placed, graded, and shaped to also provide a 1 vertical on 3 horizontal slope, extending from the top of the new riprap at elevation 615.0 (N.G.V.D.), up to the top of the existing riverbank. A layer of filter fabric blanket will be installed at elevation 615.0 (N.G.V.D.), between the top of the new riprap and the bottom of the new earth fill, to preclude any infiltration of the new fill into the new riprap (See plates 2 thru 7, encl 2, for details). A trench, 4 feet wide by 4 feet deep by 40 feet long, will be excavated and filled with Iowa Class D riprap (quantity is part of the above 5,000 ton estimate), to be located beneath the upstream end of the protected bankline, to guard against undercutting (See plates 2 & 3, encl 2, for details). The new earth fill slope will be seeded with an erosion resistant grass mixture.

c. The local sponsor, Wapello County, Iowa, has donated the earth fill materials needed for the proposed project. The materials are from a currently excavated borrow area which is located approximately 2.5 miles northwest of the project area.

d. The total estimated volume of rock and other materials to be placed below the calculated Ordinary High Water elevation of 610.1 (N.G.V.D.) is 1,437 cubic yards, which equates to 2.3 cubic yards placed per linear foot of riverbank. The project will require processing under Section 404 of the Clean Water Act and the preparation of a Section 404(b)(1) Evaluation (See encl 3), and Certification under Section 401 of the Act (See encl 4, the Pertinent Correspondence). The finished riprap project will be physically and chemically stable and non-contaminating.

13. HYDRAULIC ANALYSIS AND BANK PROTECTION DESIGN

a. Flow Analysis - A flow frequency relationship is available for the Des Moines River at the Ottumwa, Iowa gage (Station No. 05489500). Flows at this gage are affected by the regulation of Red Rock Dam, 49 miles upstream, as described in the Red Rock Dam Water Control Manual. The Ottumwa gage has a drainage area of 13,374 square miles. The study area near Eldon, Iowa is 9.5 miles downstream of the Ottumwa gage and has a drainage area of 13,459 square miles. Since the drainage areas are so similar in size, the Ottumwa flows were used at the study site with no adjustment necessary. This flow frequency relationship is shown on plate 8 (encl 2). The bank-full flow at the study area is about 31,000 cubic feet per second (cfs) and corresponds to a 10-year event. The average velocity for this flow is 3.1 feet per second (fps).

b. Bank Protection Alternatives - Three alternatives were investigated in this analysis, and are described as follows: (1) Riprap on a rock bedding or on a filter fabric blanket, up to the top of the existing bank, (2) Riprap on a rock bedding or on a filter fabric blanket, up to an elevation above the

CENCR-PD-F

SUBJECT: Definite Project Report for Section 14 Emergency Streambank Protection, Des Moines River, County Road J-12, Wapello County, Iowa, with Environmental Assessment (CWIS # 92307)

Ordinary High Water elevation (O.H.W.), and (3) Rock Jetties, spaced evenly along the bank.

c. Shear Analysis - A riprap layer of 12 inches is the minimum required for riprap placed in the dry, which is the situation at this site. Using this thickness and a stone density of 165 pounds per cubic foot (pcf) results in an average stone diameter (D50) of 0.58 feet. The local boundary shear exerted on the riprap for this D50 was calculated to be 0.10 pounds per square foot (psf) using the following equation:

$$\begin{aligned} & \frac{6V^2}{(32.6 \log 12.2y)^2} = \frac{D50}{D50} \\ & \text{To} = \frac{(32.6 \log 12.2y)^2}{D50} \end{aligned}$$

6 = Unit weight of water
V = Velocity = 3.1 fps
D50 = Avg. stone diameter = 0.58 ft.
y = Flow depth = 16 ft.

Using a non-uniform flow factor of 1.5, the local boundary shear will be (1.5) (0.10) = 0.15 pounds per square foot (psf). The study area is on a bend in the river so a bend effect coefficient of 2.0 was calculated. Therefore, the local boundary shear used for the design will be (2.0) (0.15) = 0.30 pounds per square foot (psf). The riprap design shear for a 12-inch layer at a slope of 1 vertical on 2 horizontal and a D50 of 0.58 feet was calculated to be 1.71 pounds per square foot (psf) using the following equations:

$$\begin{aligned} T &= T \left(1 - \frac{\sin c}{\sin d} \right) \\ T &= a (G_s - G) D50 \end{aligned}$$

1
T = Side slope design shear
c = Side slope angle (26.6)
d = Angle of repose (40)
T = Channel bottom design shear
a = 0.040
D50 = 0.58 ft.
G_s = Unit stone weight (165 pcf)
G = Unit water weight (62.4 pcf)

d. Riprap on Rock Bedding or on a Filter Fabric Blanket Alternative - The required riprap design gradation was determined in accordance with procedures in EM 1110-2-1601 and ETL 1110-2-120. From the above shear analysis, a 12-inch riprap layer should provide adequate protection from future bank erosion since the riprap design shear is greater than the local boundary shear imposed on the bank. The following is the required minimum riprap gradation:

Percent Lighter by Weight	Limits of Stone wt., lbs.
100	86-35
50	26-17
15	13-5

CENCR-PD-F

SUBJECT: Definite Project Report for Section 14 Emergency Streambank Protection, Des Moines River, County Road J-12, Wapello County, Iowa, with Environmental Assessment (CWIS # 92307)

The riprap slope blanket should extend beyond the toe of the bank. The ends of the blanket should extend beyond the limits of the existing erosion. A 6-inch thick bedding layer should be provided under the riprap. For alternative (1), the riprap would extend to the top of the existing bank. For alternative (2), the riprap would extend up to elevation 615.0 (N.G.V.D.) which is 5 feet higher than the calculated Ordinary High Water elevation of 610.1 (N.G.V.D.). It has been determined that alternative (2) will provide adequate curtailment of bank erosion, provided that the upper bank is reshaped with earth fill, and a 6-inch layer of graded rock (gravel) is installed at elevation 615.0 (N.G.V.D.) between the top of the new riprap and the bottom of the new earth fill. This will preclude any infiltration of the new earth fill into the new riprap. It has also been determined that because of the large amount of riprap to be installed on the bank slope at the toe location, beneath the calculated Ordinary High Water elevation of 610.1 (N.G.V.D.), an additional riprap toe blanket will not be necessary.

Experience at other similar projects on the Des Moines River has indicated that 18 inches of Iowa Class D riprap placed on a filter fabric blanket, used in lieu of the 12-inch riprap gradation placed on 6 inches of rock bedding, as mentioned above, is more economical and will equally provide protection to the bank at the study site, and is therefore, recommended. In addition, a layer of filter fabric blanket should be installed at elevation 615.0 (N.G.V.D.), between the top of the new riprap and the bottom of the new earth fill, to preclude any infiltration of the new earth fill into the new riprap. The Iowa Class D riprap used should be material meeting the following size limitations:

Minimum % Larger Than	Stone wt., lbs.
-----	-----
0	250
50	90
90	5

No more than 5 percent should pass through the 1/2-inch sieve.

e. Jetty Design - Jetties were also investigated as alternative (3). The spacing and the layout of the jetties were determined based on prior experience, topographical mapping, and photos of the affected area. A total of 8 jetties were considered, spaced 100 feet apart, to be constructed of Iowa Class D riprap, keyed 2 feet into the existing bankline, having a topwidth of 10 feet, extending 50 feet perpendicular into the river, and should be built up to an elevation of 620.0 (N.G.V.D.).

f. Ordinary High Water Elevation-(O.H.W.) - The O.H.W. elevation corresponds to the 25 percent duration flow. The 25 percent duration flow at the Ottumwa, Iowa, gage, was determined from an analysis of mean daily flow records. An elevation corresponding to that flow was obtained from the rating curve that is available at the gage. That elevation was transferred to the study area by using the slope as indicated on the Des Moines River flow profiles. The calculated O.H.W. elevation for the study area is 610.1 (N.G.V.D.).

CENCR-PD-F

SUBJECT: Definite Project Report for Section 14 Emergency Streambank Protection, Des Moines River, County Road J-12, Wapello County, Iowa, with Environmental Assessment (CWIS # 92307)

g. Flooding Levels - Flood elevations for various frequency flows were found by the same method as was used to calculate the O.H.W. elevation. The frequency flows and elevations for the study area are as follows:

Frequency(yrs.)	Flow(cfs)	Elevation
-----	-----	-----
2	22,500	616.2
5	31,000	618.3
10	31,000	618.3
25	38,000	621.0
50	44,000	622.3
100	50,000	625.0

14. ENVIRONMENTAL ASSESSMENT

a. Major Findings and Conclusions - The purpose of this environmental assessment is to evaluate the impacts of various measures of protection which are proposed to prevent County Road J-12 from failure due to erosion by the Des Moines River. The alternatives considered included relocation of the road, riprapping and reshaping the riverbank with earth fill plus seeding, and rock jetties. The alternatives are described in paragraphs 8 & 11, of this report. A detailed description of the selected plan is described in paragraph 12, the SELECTED PLAN.

An environmental review of the selected alternative indicates that there would be no significant effects on the environment with any effects being short-term and minor. Thus, an Environmental Impact Statement (EIS) will not be prepared. Because the proposed action is subject to the provisions of Section 404 of the Clean Water Act, a 404(b)(1) evaluation for the project has been prepared (See encl 3). Section 401 Water Quality Certification for the proposed plan was obtained from the State of Iowa Department of Natural Resources, Water Quality Planning Section, by letter dated 5 August 1988 (See encl 3, the Pertinent Correspondence).

b. Relationship to Environmental Requirements - The proposed action would comply with Federal environmental laws, Executive Orders and policies including the Clean Air Act, as amended; the Clean Water Act, as amended; the Endangered Species Act of 1973, as amended; the Fish and Wildlife Coordination Act of 1958, as amended; the Land and Water Conservation Fund Act of 1966, as amended; the National Historic Preservation Act of 1966, as amended; the National Environmental Policy Act of 1969, as amended; Executive Order 11988, Floodplain Management; and Executive Order 11990, Protection of Wetlands. Studies conducted under the authority of Section 14 of the Flood Control Act of 1946, as amended, were not selected for review by the State of Iowa under Executive Order 12372, State Single Point of Contact. Therefore, the study is being coordinated with the Governor's Designated Representative for Civil Works, which is the State of Iowa Department of Natural Resources.

CENCR-PD-F

SUBJECT: Definite Project Report for Section 14 Emergency Streambank Protection, Des Moines River, County Road J-12, Wapello County, Iowa, with Environmental Assessment (CWIS # 92307)

The proposed action would not result in the conversion of farmland to non-agricultural uses; therefore, the Farmland Protection Policy Act of 1981 does not apply to this project. Because this segment of the Des Moines River is not a federally recognized wild or scenic river, the project will not conflict with the provisions of the Wild and Scenic Rivers Act of 1968, as amended.

c. Environmental Setting - The Des Moines River is a primary tributary of the Upper Mississippi River system, and flows in a southeasterly direction through the central part of Iowa, joining the Mississippi River at the extreme southeast corner of the State, just below the town of Keokuk. The project area is located on the right descending bank of the Des Moines River, approximately at mile 84.6, and the surrounding landscape is primarily agricultural fields with some wooded edges.

d. Natural Resources - The project site is located along an outside bend of the Des Moines River. The river channel is approximately 700 feet wide in the project area. Substrate at this point is primarily sand and gravel. A detailed description of existing conditions at the project site is contained in paragraph 7, Existing Conditions, of this report.

Vegetation along the streambank consists of a mixture of grasses and forbs, with stands of dogwood (Cornus spp.) and some medium to mature aged bottom-land hardwoods located at the upstream and downstream limits of the project site. Species observed include honey locust (Gleditsia tricanthos), mulberry (Morus rubra), American elm (Ulmus americana), ash (Fraxinus spp.), hackberry (Celtis occidentalis), and wild cherry (Prunus spp.). This habitat could provide some limited food and cover for wildlife species which utilize roadside and edge areas.

There are two Federally recognized endangered animal species listed for this area: the bald eagle (Haliaeetus leucocephalus) and the Indiana bat (Myotis sodalis). The bald eagle feeds during winter months in open tailwater areas of dams along the Mississippi River and its major tributaries. The project site is not located near the tailwater of a dam, and no trees at the site appear to be suitable perch trees for eagles. Suitable habitat for the Indiana bat (loose bark of trees) is not found at the project site. For these reasons, no impacts to these species are expected to result from the proposed action.

e. Environmental Effects - No significant adverse impacts would result from construction of the proposed project. In compliance with Section 404 of the Clean Water Act, a 404(b)(1) evaluation has been prepared (See encl 3).

Temporary disturbances to local wildlife may occur during the construction phase. Two medium sized trees (silver maple and american elm) and a limited number of sapling trees will be unavoidably lost during construction grading and filling. However, the existing conditions along the project reach are of little value to wildlife at present and will be substantially worse if the road collapses into the river. Wapello County has donated the earth fill materials needed for the proposed project from a currently excavated borrow area which is located approximately 2-1/2 miles northwest of the project site.

CENCR-PD-F

SUBJECT: Definite Project Report for Section 14 Emergency Streambank Protection, Des Moines River, County Road J-12, Wapello County, Iowa, with Environmental Assessment (CWIS # 92307)

The top portion of the bank will be seeded after the project is completed. This will reduce the possibility of erosion of the new dirt fill material and help to re-establish plant growth that may be beneficial to wildlife in the future.

Some minor loss of benthic organisms may result from construction of the project. However, after placement of riprap is completed, the affected area should be quickly recolonized. Any impacts to the river system during the construction phase of the project will be minor and offset by the ultimate preservation of the roadway and river bank. The proposed project will reduce erosion of the riverbank, siltation of the channel, and alleviate the possibility of County Road J-12 collapsing into the river.

Temporary increases in turbidity may occur during project construction, but levels of turbidity will return to pre-construction levels or lower since sediments will no longer be eroding into the river system. In addition, there will be a decrease in air quality during the construction phase. However, these are minor impacts and will not permanently affect the area.

f. Economic and Social Effects - The socioeconomic impacts associated with providing streambank protection for County Road J-12 in Wapello County, Iowa, would be positive. Community cohesion in the project area would be positively affected; the proposed streambank protection project would provide for the continued use of the roadway, eliminating the need for travellers to use a longer, more time consuming detour route. In addition, the project would require no residential relocations, and would result in no significant impacts to community or regional growth.

Services to and from the affected area would be positively affected by the project. Placement of streambank protection would aid in maintaining the shortest access route to the affected area, avoiding additional travel expenses and delays in emergency vehicle response times. Public facilities would benefit from reduced damages from flood-related erosion. The project would eliminate this life, health, and safety threat before it necessitated the closing of the roadway.

The resulting project would have no significant impacts on property values or tax revenues. However, without the project, a decrease in property values and related tax revenues could result; the extra travel distance required by a detour route would make affected potential residential and business properties less attractive. The project would also have no noticeable impact on property values or tax revenues. However, without the project, a decrease in property values and related tax revenues could result; the extra travel distance required by a detour route would make affected potential residential and business properties less attractive.

Heavy machinery would generate a temporary increase in noise levels during construction, possibly disturbing nearby residents; however, the project site is located in an area with limited residential or other types of development. No significant long-term noise impacts would result. It should be noted that

CENCR-PD-F

SUBJECT: Definite Project Report for Section 14 Emergency Streambank Protection, Des Moines River, County Road J-12, Wapello County, Iowa, with Environmental Assessment (CWIS # 92307)

without the proposed project, traffic related noise levels would increase along the detour route.

g. Coordination - Coordination with the public and governmental agencies has been maintained during the study process. In accordance with the Fish and Wildlife Coordination Act of 1958, as amended, the Iowa Department of Natural Resources and the U.S. Fish and Wildlife Service, as well as the U.S. Environmental Protection Agency, were contacted by telephone (See encl 4, the Pertinent Correspondence). These agencies indicated agreement with the determination that the proposed project would have no significant adverse effects. Individual agency concerns have been addressed earlier in this report.

15. CULTURAL-RESOURCES

The project area was surveyed by the Office of the State Archaeologist (OSA) in August 1988. No cultural artifacts or evidence of features were found. Based on these results, it was determined that the proposed action will not affect any cultural resources. The State Historic Preservation Officer (SHPO) concurred with this finding in a telephone conversation with the Corps Archaeologist on 12 September 1988 (See encl 4, the Pertinent Correspondence).

16. REAL ESTATE REQUIREMENTS

a. The Project site is located along the right descending bank of the Des Moines River, at County Road J-12, in Wapello County, Iowa. The river has eroded private land and part of the road right-of-way. According to Iowa law, the Des Moines River is classified as having a meandering channel which has rights reverting to the State of Iowa.

b. The Wapello County Engineer was contacted by the Corps regarding lands needed to construct and maintain the proposed project. The County Engineer subsequently made an inspection of the eroded bankline to clarify the proposed project limits. As a result of that inspection, the County Engineer determined that the erosion had taken all of the private land involved and made it now part of the river bed.

c. Based on the above information and conversations with the Rock Island District, Corps of Engineers, Real Estate Attorney Advisor, no real estate costs are indicated for the proposed project.

17. ECONOMIC ASSESSMENT

a. Methodology - This study assesses the feasibility of providing protective action necessary to curtail bank erosion caused by the Des Moines River, that is threatening a portion of County Road J-12, in Wapello County, Iowa. The annual benefits and costs of the action were computed using November 1988 price levels and an 8-5/8 percent discount rate. This analysis assumes the historic rate of erosion to be approximately 2.0 feet per year since 1968. The historic erosion rate was determined by comparing recent Corps survey data to historical data furnished by the Wapello County Engineer.

CENCR-PD-F

SUBJECT: Definite Project Report for Section 14 Emergency Streambank Protection, Des Moines River, County Road J-12, Wapello County, Iowa, with Environmental Assessment (CWIS # 92307)

The period of analysis for this assessment is 50 years.

b. Benefits of Protective Action - The benefits of protective action are derived from a consideration of what would occur if no action were taken. Four potential categories of benefits were examined: (1) Detour costs; (2) Road maintenance costs; (3) Land loss; and (4) Redevelopment.

(1) Detour Costs - As described under paragraph 7, EXISTING CONDITIONS, The County Secondary Roads Department installed road hazard markers along the riverside edge of County Road J-12, in the study area, to warn motorists of the danger of road failure. Without protective action, the erosion will cause failure of the roadway during the project Base year (1989), closing it to traffic. Without replacement of the roadway, motorists will be forced to use longer, alternative routes throughout the period of analysis (50 years). Motorists using detour routes will incur additional expenses related to costs for operating vehicles and opportunity of time costs. Benefits derived from avoided detour costs were computed based on the following:

a. In 1987, the average daily traffic count on County Road J-12 was 130 vehicles, as reported by the Wapello County Engineer. This average daily traffic was broken down by vehicle type, detour days per year, and average number of trips per detour day (See table A).

b. The average extra mileage driven for vehicles using the detour routes is 1.8 miles. Detour mileages were estimated using various combinations of logical origins and destinations for motorists using the affected segment of roadway.

TABLE A
Analysis of 1987 Average Annual Traffic, County Road J-12,
Wapello County, Iowa

VEHICLE TYPE	DETOUR DAYS PER YEAR	AVERAGE DAILY NUMBER OF TRIPS	TOTAL ANNUAL NUMBER OF TRIPS (ROUNDED)
Passenger Cars	365	100.00	36,500
Heavy Trucks	308	30.00	9,240
School Buses	179	6.10	1,090
Mail Vehicles	303	1.00	300
Farm Machinery	120	1.75	210
Emergency Vehicles	365	0.30	110

Total Annual Number of Trips for all Vehicles = 47,450

47,450

----- = 130 Vehicles / day

365 Days

CENCR-PD-F

SUBJECT: Definite Project Report for Section 14 Emergency Streambank Protection, Des Moines River, County Road J-12, Wapello County, Iowa, with Environmental Assessment (CWIS # 92307)

(2) Mail vehicles, farm machinery, and heavy trucks, would have no occupants other than a driver. Passenger cars would have an average of 2.1 occupants; emergency vehicles, 2 occupants. School busses would have an average of 15 occupants, comprised of 1 driver and 14 children.

(3) The opportunity cost of time is the value of work or of leisure activities foregone for travel purposes. For passenger cars the value of time for adults and children was assumed to equal 1/3 and 1/12 of the average hourly wage rate, respectively. The Ottumwa, Iowa, area 1988 average hourly wage rate is approximately \$ 5.76, with 34 percent of the area residents being under the age of 18. Therefore, the opportunity cost of time for passenger cars was assumed to be \$ 1.42 / hour / occupant ($\$ 5.76 \times 0.65 \times 1/3 + \$ 5.76 \times 0.35 \times 1/12 = \$ 1.42$).

(4) Approximate hourly wage rates were used as values of time for school bus drivers (\$ 8.00), mail carriers (\$ 12.00), emergency vehicle drivers (\$ 12.00), farm machine operators (\$ 7.00), and heavy (commercial size) truck operators (\$ 7.00). School buses require an opportunity cost of time amounting to \$ 14.72 / hour for 1 driver and 14 children ($\$ 8.00 + \$ 5.76 \times 1/12 \times 14 = \$ 14.72$).

(5) The 1988 average variable cost for operating passenger cars and mail vehicles is approximately \$ 0.14 / mile; buses, emergency vehicles, and heavy trucks, \$ 0.40 / mile; and farm machinery, \$ 0.75 / mile. These figures were based on average maintenance, repair, accessory, tire, fuel, and oil costs, including taxes on gasoline, oil, and tires.

(6) As shown in tables B and C, detour costs resulting from increased vehicle operating costs and increased opportunity of time costs amount to \$ 17,200 and \$ 10,700, respectively. The total benefit of avoiding these detour costs is \$ 38,600.

TABLE B
Summary of Vehicle Operating Costs Resulting from 1-Year
Road Detour, County Road J-12, Wapello County, Iowa

VEHICLE TYPE	EXTRA MILEAGE PER DAY (A)	TOTAL ANNUAL NUMBER OF TRIPS (B)	OPERATING COST PER MILE (\$) (C)	TOTAL ADDITIONAL OPERATING COST PER YEAR (\$) (A x B x C)
Passenger Cars	2.0	36,500	0.14	10,200
Heavy Trucks	1.2	9,240	0.40	4,400
School Buses	4.0	1,090	0.40	1,700
Mail Vehicles	4.0	300	0.14	200
Farm Machinery	4.0	210	0.75	600
Emergency Vehicles	1.4	110	0.40	100
Total Cost (\$) =				17,200

CENCR-PD-F

SUBJECT: Definite Project Report for Section 14 Emergency Streambank Protection, Des Moines River, County Road J-12, Wapello County, Iowa, with Environmental Assessment (CWIS # 92307)

TABLE C
Summary of Opportunity of Time Costs Resulting from 1-Year Road Detour, County Road J-12, Wapello County, Iowa

VEHICLE TYPE	EXTRA MILEAGE PER DAY (A)	TOTAL ANNUAL NUMBER OF TRIPS (B)	OPERATING COST PER MILE (\$) (C)	TOTAL ADDITIONAL OPERATING COST PER YEAR (\$) (A x B x C)
Passenger Cars	0.05	36,500	2.98	5,400
Heavy Trucks	0.03	9,240	7.00	1,900
School Buses	0.15	1,090	14.72	2,400
Mail Vehicles	0.10	300	12.00	400
Farm Machinery	0.20	210	7.00	300
Emergency Vehicles	0.10	110	23.00	300
Total Cost (\$) =				10,700

(7) Road Maintenance - No net change in road maintenance costs would result from the closure of County Road J-12. Under detour conditions however, the annual maintenance cost for the detour routes would increase by a dollar amount equal to the decrease in maintenance costs for the closed roadway, as explained by the Wapello County Engineer.

(8) Land Loss - Benefits derived from avoided land loss were calculated based on a total land loss of 1.4 acres in 50 years (the period of analysis). Assuming that 0.028 acres of land would be lost each year, and that this land is valued at \$ 1,500 per acre, the annual benefits of avoiding this land loss are negligible (0.028 acres x \$ 1,500/acre = \$ 42).

(9) Redevelopment Benefits - Wapello County, Iowa, does not qualify for redevelopment benefits.

c. Cost of Recommended Action - The Rock Island District identified the least-cost alternative for protecting County Road J-12 from failure due to erosion. This action involves placing Iowa Class D riprap on filter fabric blanket, and placing earth fill with seeding along 615 linear feet of the right descending bank of the Des Moines River, at an estimated total first cost of \$ 160,300. Detailed project first costs and average annual costs, computed at an 8-5/8 percent discount rate over a 50-year period of analysis, are shown in tables D & E. Annual maintenance was calculated assuming that 50 percent of the riprap would be replaced in 25 years (in Year 25 following the project Base year). Because of the short construction period, no interest during construction was calculated. A summary of benefits and costs for the recommended action is presented in table F. As shown, the project is economically justified and is the NED plan.

CENCR-PD-F

SUBJECT: Definite Project Report for Section 14 Emergency Streambank Protection, Des Moines River, County Road J-12, Wapello County, Iowa, with Environmental Assessment (CWIS # 92307)

TABLE D
Detailed Estimate of Construction Costs
(November 1988 Price Levels)

Item	Quantity	Unit	Unit Cost (\$)	Costs (\$)	
				Federal	Non-Federal
Riprap	5,000	ton	20.00	100,000	0
Filter Fabric	21,000	sq. ft.	0.30	6,300	0
Earth Fill	1,500	cu. yd.	6.00	9,000	0
Seeding	0.5	acre	2,000.00	1,000	0
Real Estate (Temporary & Permanent Easement of 0 acres)					0
Subtotal				116,300	0
Contingencies				29,000	
Subtotal				145,300	
Engineering and Design				9,000	
Supervision and Administration				6,000	
Total Project Cost =				\$ 160,300	

TABLE E
Annual Cost of Recommended Action
(8-5/8 Percent Discount Rate, 50-Year Period of Analysis
November 1988 Price Levels)

Description	First Cost (\$)	Annual Cost (\$)
Total First Cost	160,300	
Operation & Maintenance [(pw 25 x 0.5 x \$ 100,000)CRF]		14,100
		600

		Total Annual Cost = 14,700

CENCR-PD-F

SUBJECT: Definite Project Report for Section 14 Emergency Streambank Protection, Des Moines River, County Road J-12, Wapello County, Iowa, with Environmental Assessment (CWIS # 92307)

TABLE F
Summary of Benefits and Costs
(8-5/8 Percent Discount Rate, 50-Year Period of Analysis
November 1988 Price Levels)

Description	Amount (\$)
Project First Cost	160,300
Annualized First Cost	14,100
Annual Maintenance Cost	600
Total Annual Cost	14,700
Average Annual Benefits	38,600
Net Benefits	23,900
Benefit to Cost Ratio	2.6

18. COST APPORTIONMENT

a. Recent legislation passed by Congress and signed by the President of the United States requires that all construction of Section 14 projects awarded after October 1, 1986, be cost-shared between the Federal Government and the non-Federal project sponsor. Project cost-sharing is in accordance with Public Law 99-662 of the Water Resources Development Act of 1986 and is designed to provide consistency among projects and programs and equity among sponsors of comparable works.

b. Under these provisions, the non-Federal project sponsor is to provide without cost to the Federal Government, during the period of construction, all lands, easements, rights-of-way, and dredged material disposal areas, and perform all relocations and alterations of buildings, utilities (other than those portions which pass under or through the project structure), highways, railroads, bridges (other than railroad bridges and approaches thereto), sewers, & related and special facilities determined by the Government to be necessary for the construction of the project. To the extent that any of the lands, easements, or rights-of-way provided above are already owned as part of the facility or structure being protected, the value of such interests shall not be included in the total project costs nor credited towards the non-Federal project sponsor's required contribution. Aerial facilities, supported by poles or other means, which, if damaged, could not normally cause adverse effects to the project structure, will be paid for by the project sponsor.

c. If the value of the allowable contributions provided above represents less than 25 percent of the total project costs, the non-Federal project sponsor shall provide during the period of construction, an additional cash contribution in the amount necessary to bring its total contribution equal to 25 percent of the total project costs.

d. The non-Federal project sponsor shall pay all costs in excess of the Federal statutory cost limitation of \$ 500,000. The cost apportionment for

CENCR-PD-F

SUBJECT: Definite Project for Section 14 Emergency Streambank Protection, Des Moines River, County Road J-12, Wapello County, Iowa, with Environmental Assessment (CWIS # 92307)

this project is shown in the following table.

Cost Apportionment
Estimated Total Project Cost = \$ 160,300

Non-Federal

Estimated Total Project Cost	\$ 160,300
25 percent cost-share	x 0.25

Total Non-Federal Cash Contribution	\$ 40,100

Federal

Estimated Total Project Cost	\$ 160,300
Less Non-Federal Share	- 40,100

Total Federal Cost	\$ 120,200

19. PLAN IMPLEMENTATION

a. Corps of Engineers - This report will be processed for approval of the selected plan of action and the authorization of funding for construction. Upon approval and appropriation of funding by the office of the Chief of Engineers, the Rock Island District will be responsible for the preparation of plans and specifications and the construction of the project.

b. Coordination - Details of the proposed project have been coordinated with the following Federal, State, and local agencies:

Wapello County, Iowa, Engineer
Iowa State Historical Department, Office of Historic Preservation
State of Iowa, Department of Natural Resources
U.S. Fish and Wildlife Service
U.S. Environmental Protection Agency

c. Wapello County, Iowa - In compliance with Section 221 of Public Law 91-611, The County will, prior to construction of the project, enter into an agreement (Local Cooperation Agreement) with the Government whereby the County pledges to act as sponsor for the project and carry out the following responsibilities:

(1) Provide, without cost to the Government, during the period of construction, all lands, easements, rights-of-way, and dredged material disposal areas, and perform all relocations and alteration of buildings, utilities - (other than those portions which pass under or through the project structure), highways, railroads, bridges (except railroad bridges and approaches thereto), sewers & related and special facilities determined by the Government to be necessary for the construction of the project. To the extent that any of the lands, easements, or rights-of-way provided under this paragraph are already

CENCR-PD-F

SUBJECT: Definite Project Report for Section 14 Emergency Streambank Protection, Des Moines River, County Road J-12, Wapello County, Iowa, with Environmental Assessment (CWIS # 92307)

owned as part of the facility or structure being protected, the value of such interests shall not be credited towards the local sponsor's required contribution. Aerial facilities, supported by poles or by other means, which, if damaged, could not normally cause adverse effects to the project structure, will be paid for by the County.

(2) Make a cash payment of not less than 5 percent of the total project costs during the period of construction, regardless of the value of the items in (1) above. If the value of the items in (1) above is less than 20 percent of the total project costs, the County shall, during the period of construction, make such additional cash payments as are necessary to bring its total contribution in cash and value of lands, easements, rights-of-way, and utility and facility alterations and relocations, to an amount equal to 25 percent of the total project costs.

(3) Pay all project costs in excess of the Federal statutory limitation of \$ 500,000.

(4) Hold and save the Government free from all damages arising from the construction, operation, and maintenance of the project, except for damages due to the fault or negligence of the Government or its contractors.

(5) Operate, maintain, replace, and rehabilitate the project upon completion in accordance with regulations or directions prescribed by the Government.

(6) Comply with the applicable provisions of the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, approved January 2, 1971, in acquiring lands, easements, and rights-of-way for construction and subsequent operation and maintenance of the project, and inform all affected persons of applicable policies and procedures in connection with said Act.

(7) Comply with Section 601 of Title VI of the Civil Rights Act of 1964 (Public Law 88-352) and Department of Defense Directive 5500.11 issued pursuant thereto and published in Part 300 of Title 32, Code of Federal Regulations, as well as Army Regulation 600-7, entitled "Non-Discrimination on the Basis of Handicap and Programs and Activities Assisted or Conducted by the Department of the Army."

(8) Prior to construction, and in accordance with the provisions of Section 221 of Public Law 91-611, the County will enter into a contract with the Government whereby the County will grant the Government a right to enter, at reasonable times and in a reasonable manner, upon land which the County owns or controls for access to the project for the purpose of inspection, and if necessary, for the purpose of completing, operating, repairing, maintaining, replacing or rehabilitating the project. If an inspection shows that the County for any reason is failing to fulfill its obligations under the Agreement without receiving prior written approval from the Government, the Government will send a written notice to the County. If the County persists in such failure for 30 calendar days after receipt of the notice, then the Government

CENCR-PD-F

SUBJECT: Definite Project Report for Section 14 Emergency Streambank Protection, Des Moines River, County Road J-12, Wapello County, Iowa, with Environmental Assessment (CWIS # 92307)

shall have the right to enter, at reasonable times and in a reasonable manner, upon lands the County owns or controls for access to the project for the purpose of completing, operating, maintaining, replacing, or rehabilitating the project. No completion, operation, repair, maintenance, replacement, or rehabilitation by the Government shall operate to relieve the County of responsibility to meet its obligations as set forth in the Agreement, or to preclude the Government from pursuing any other remedy at law or equity to assure faithful performance pursuant to the Agreement.

The County is willing and able to pay its share of the total project costs. Sufficient funds are on hand or can be raised quickly, and the cash be deposited directly with the Government upon demand by the Government.

The estimated total non-Federal share consists of a cash contribution of \$ 40,100. It is anticipated that the County will have to invest \$ 600 annually to replace lost riprap during the 50-year project life.

20. RECOMMENDATION

I recommend that the plan selected herein to provide Iowa Class D riprap on filter fabric blanket, and earth fill with seeding to protect County Road J-12 from erosion by the Des Moines River in Wapello County, Iowa, be authorized for implementation as a Federal project with a total cost to the United States presently estimated at \$ 120,200.

FOR THE COMMANDER:

4 ENCLS

1. Finding of No Significant Impact (FONSI)
2. Plates
3. 404(b)(1) Evaluation
4. Pertinent Correspondence
5. Distribution List



Neil A. Smart
Colonel, U.S. Army
District Engineer

FINDING OF NO SIGNIFICANT IMPACT (FONSI)

encl 1

**FINDING OF NO SIGNIFICANT IMPACT
SECTION 14 EMERGENCY STREAMBANK PROTECTION
AND ENVIRONMENTAL ASSESSMENT
DES MOINES RIVER, COUNTY ROAD J-12
WAPELLO COUNTY, IOWA**

In accordance with the National Environmental Policy Act, the Rock Island District, Corps of Engineers, has assessed the environmental impacts of the above project. The intent of this project is to provide emergency bank protection along the right descending bank of the Des Moines River, paralleling County Road J-12. The project involves reconstruction and riprapping of approximately 615 linear feet of the bank of the Des Moines River.

This finding of no significant impact is based on the following factors: the project would have only minor and short-term impacts on fish and wildlife resources and on water quality; the proposed project would prevent further deterioration of the existing bank and alleviate the danger of County Road J-12 sloughing off into the river; and no significant social, economic, environmental or cultural impacts are anticipated as a result of the proposed action.

The environmental review process indicates that the proposed action does not constitute major Federal action significantly affecting the environment. Therefore, preparation of an Environmental Impact Statement (EIS) is not required. This determination may be reevaluated if warranted by later developments.

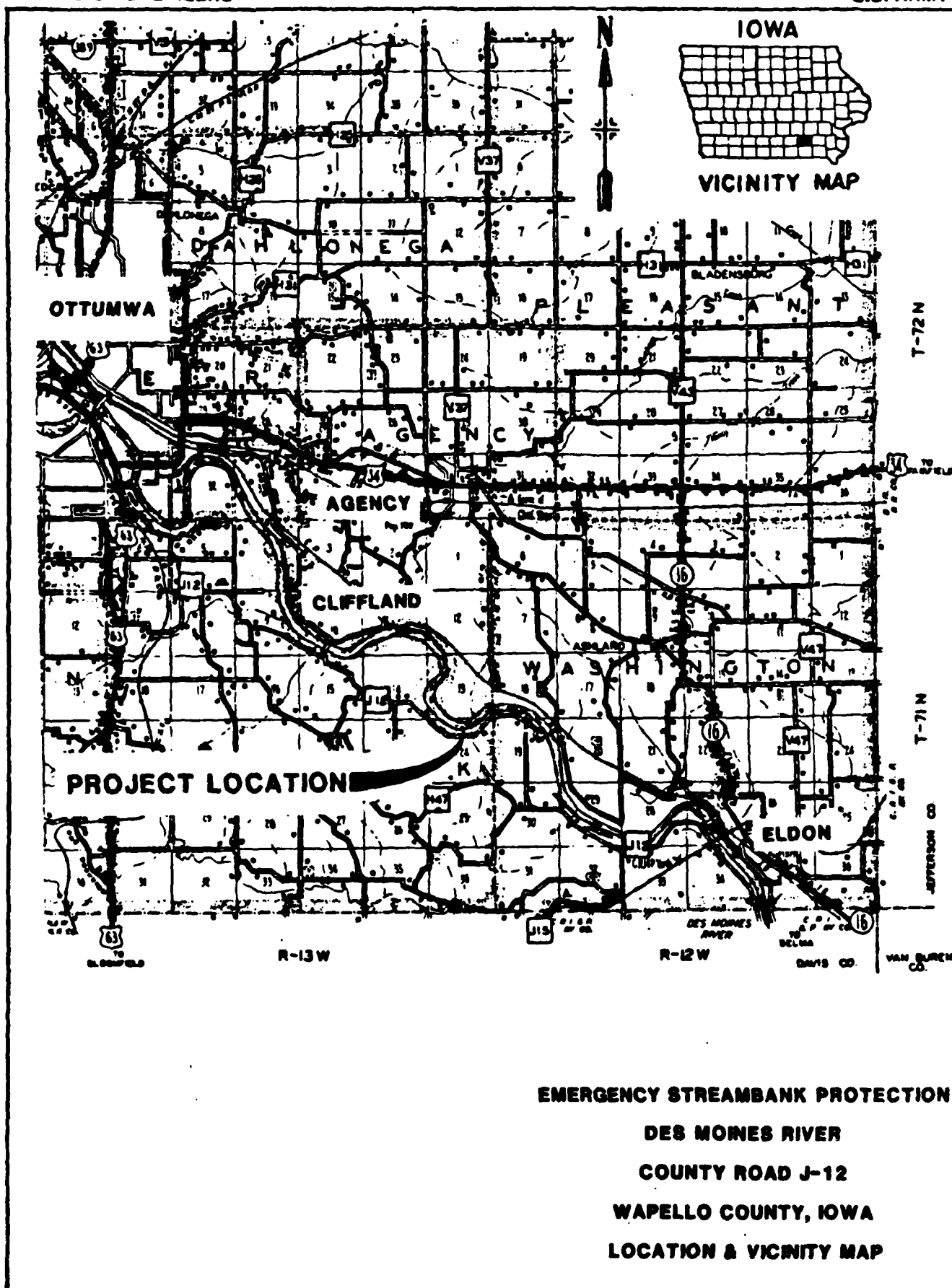
Date

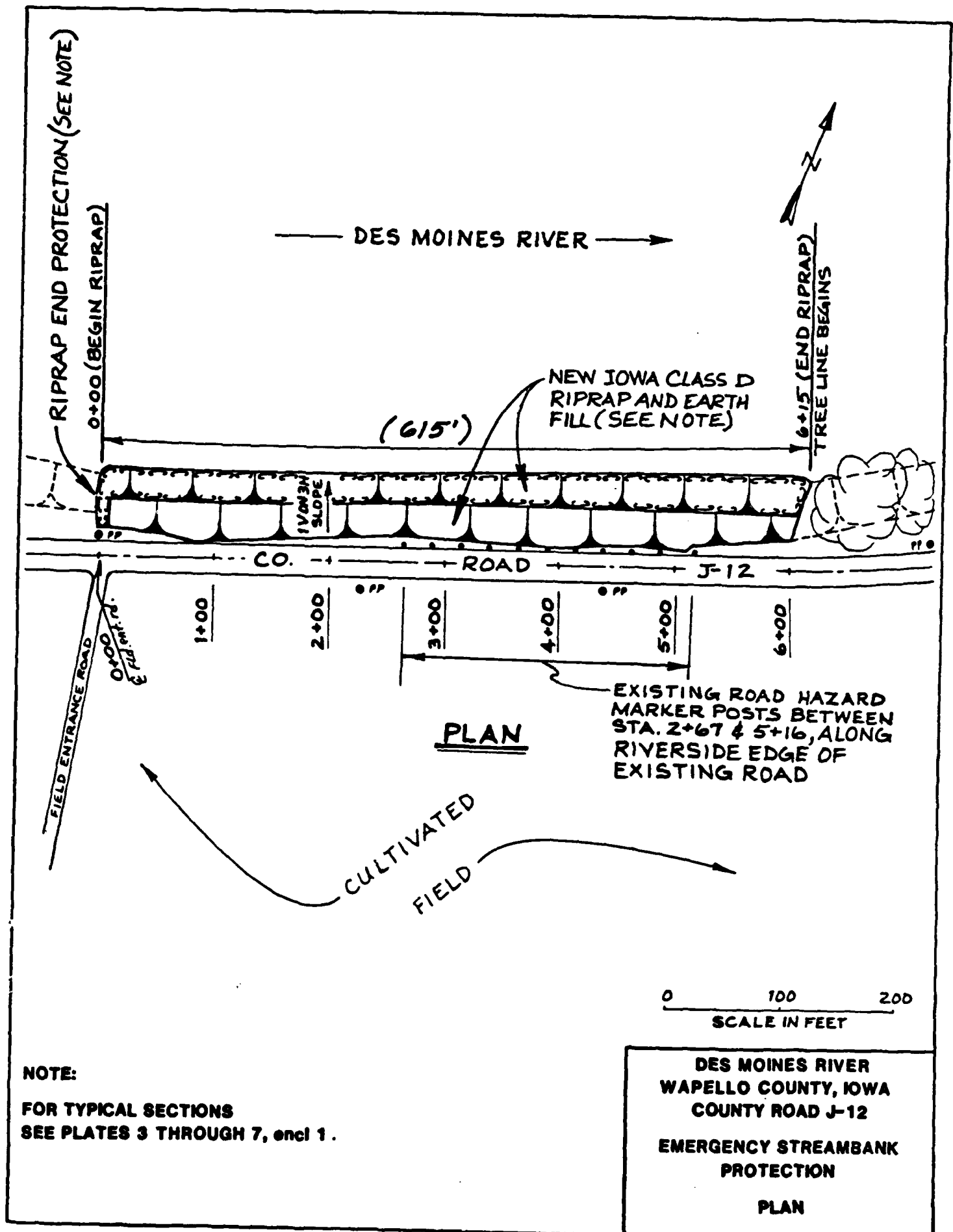
Neil A. Smart
Colonel, U.S. Army
District Engineer

Encl 1

PLATES

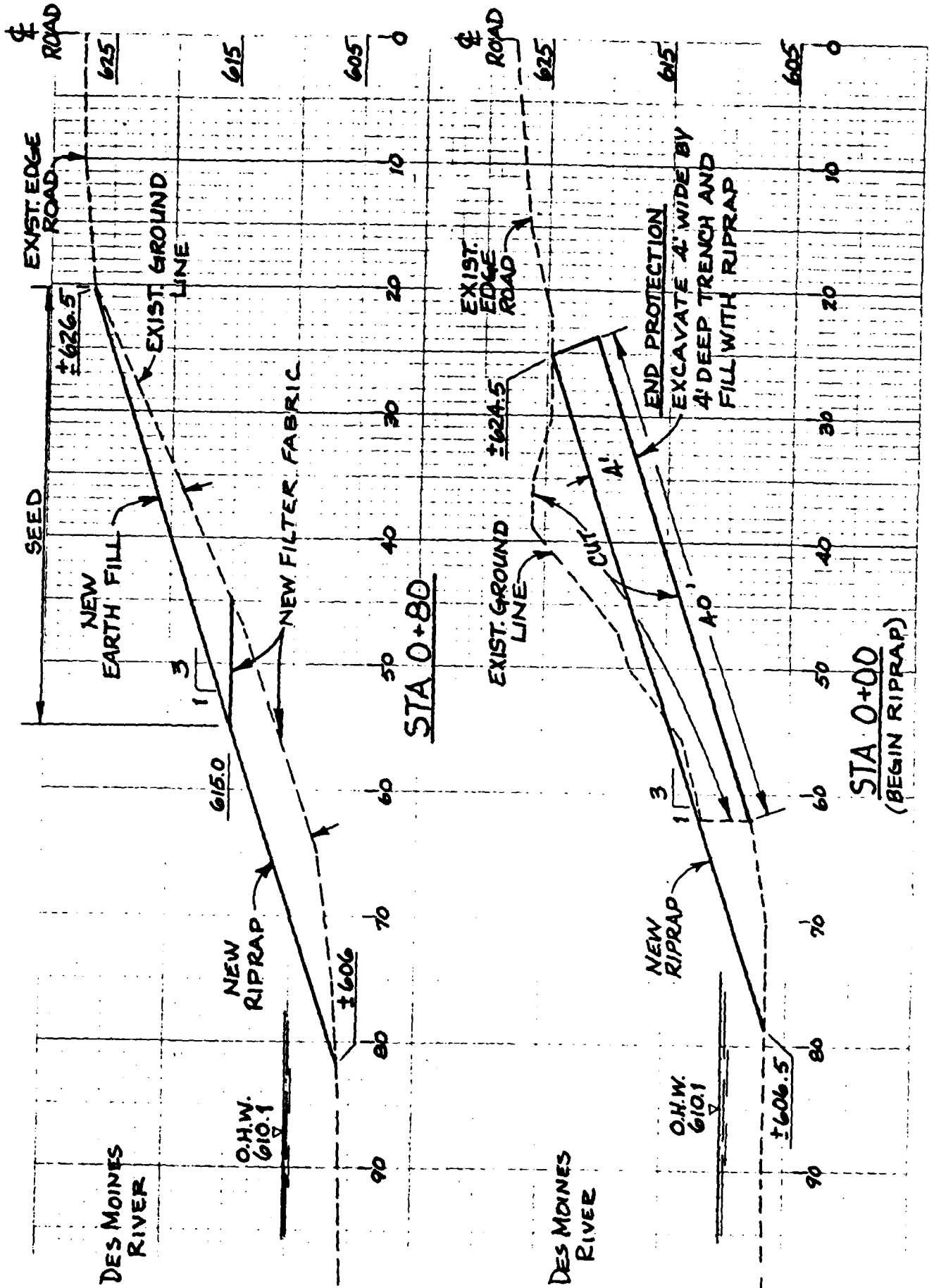
encl 2





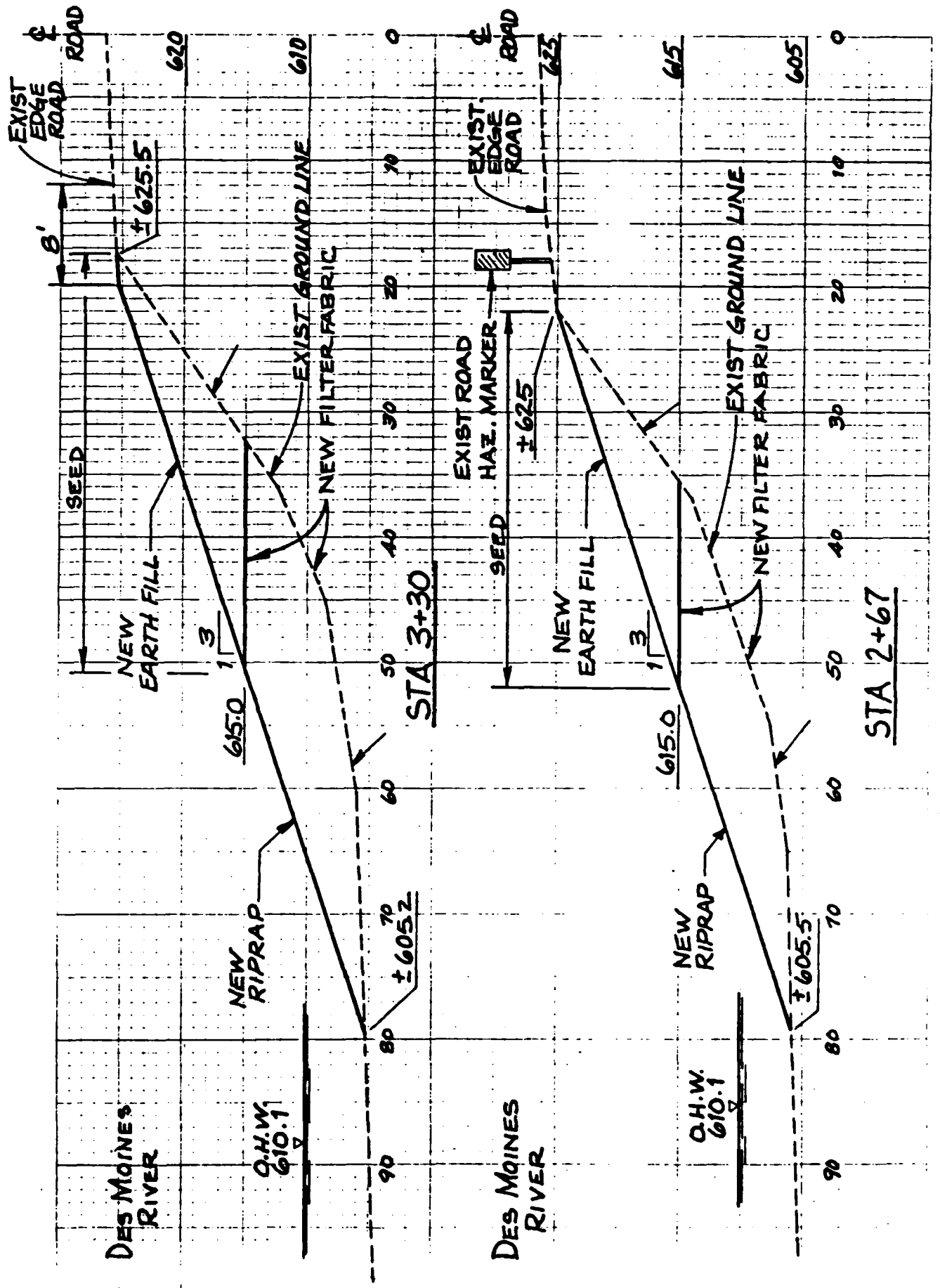
DIRTZGEN CORPORATION
MADE IN U.S.A.

DES MOINES RIVER

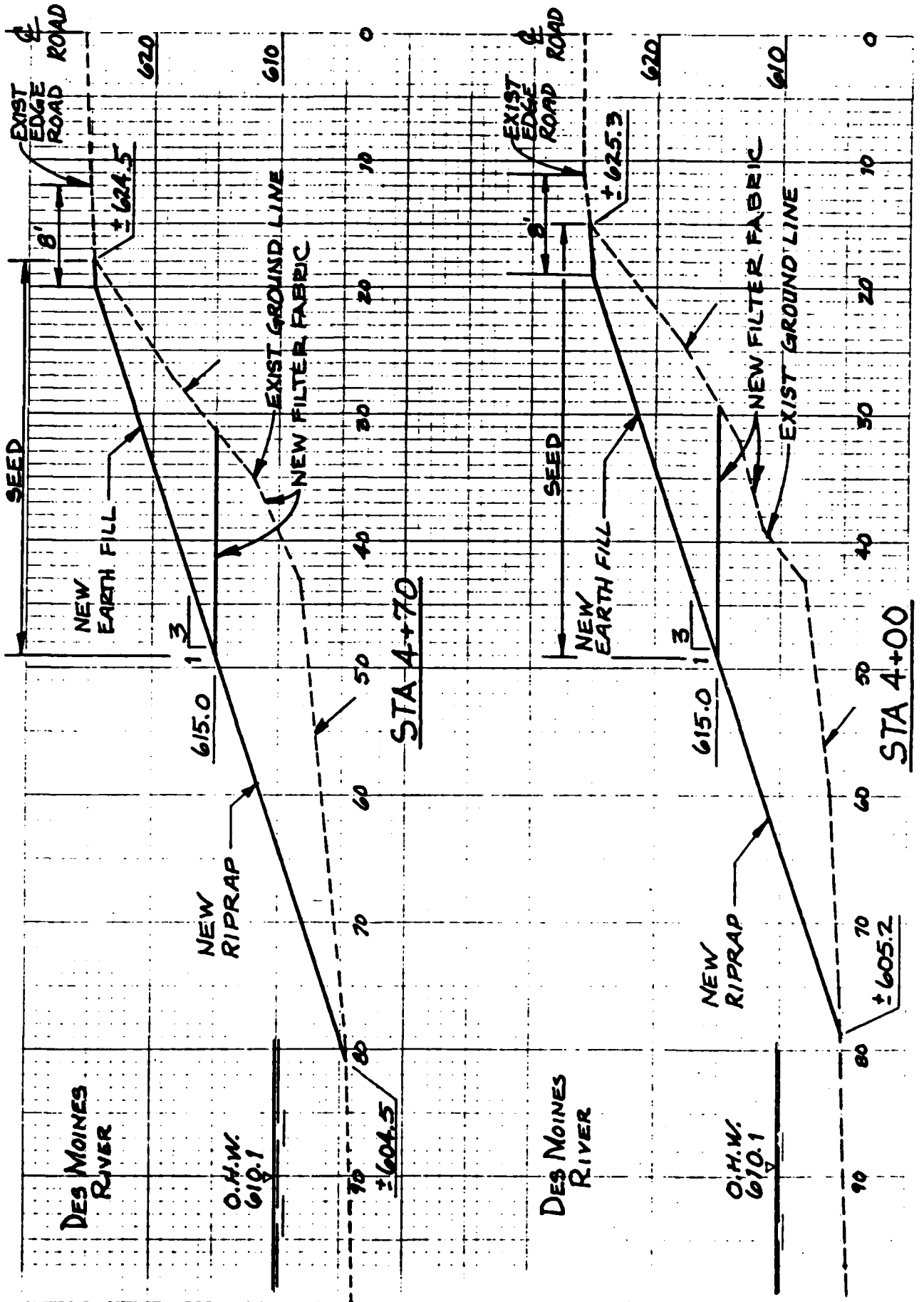


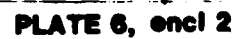
DIETZGEN CORPORATION
MADE IN U.S.A.

FIG. 1-1



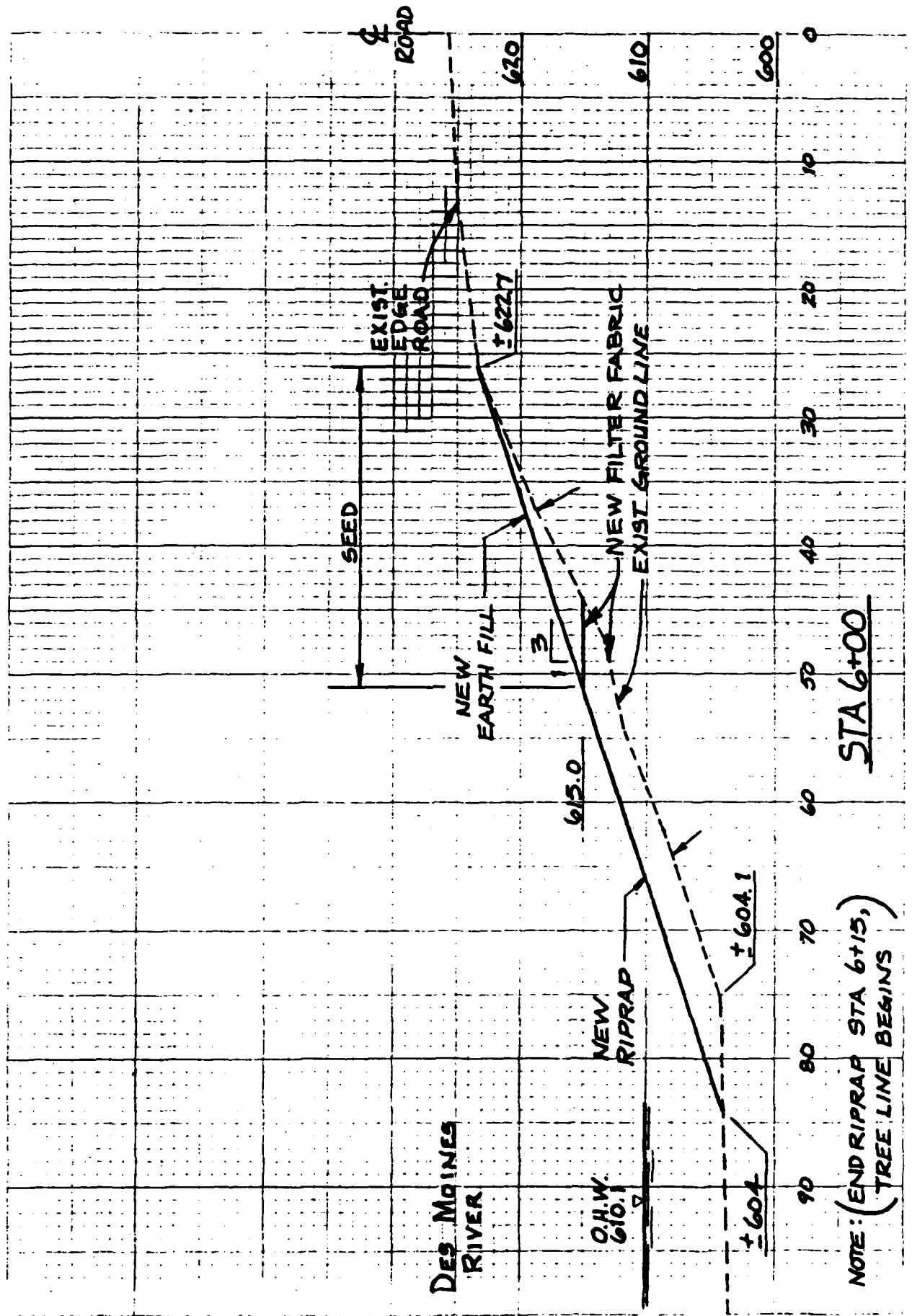
DIETZGEN CORPORATION
MADE IN U.S.A.

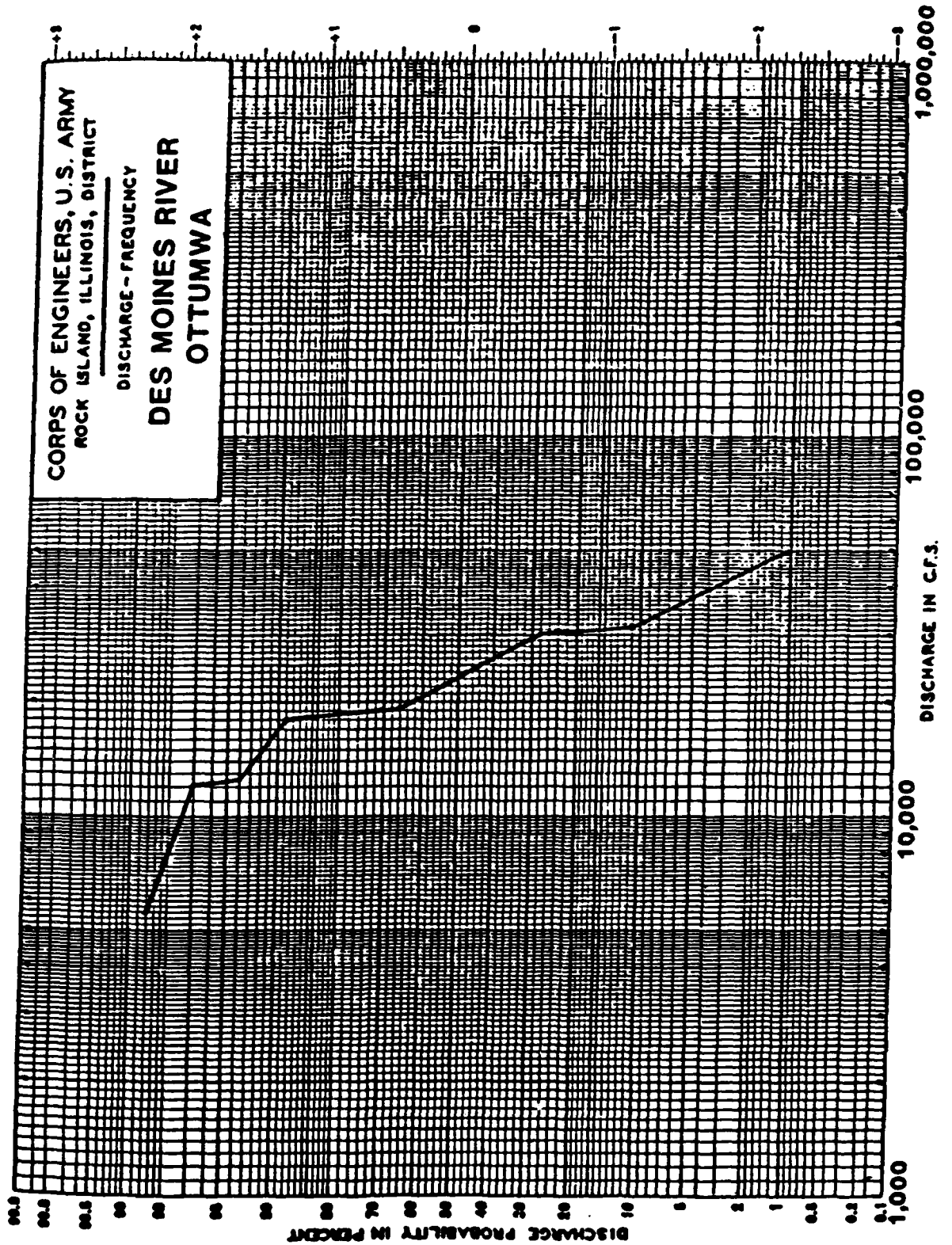




DIETZEN CORPORATION
MADE IN U.S.A.

DESIGNED BY: [illegible]
CHECKED BY: [illegible]





404 (b) (1) EVALUATION

encl 3

DEFINITE PROJECT REPORT
AND ENVIRONMENTAL ASSESSMENT
FOR
SECTION 14 EMERGENCY STREAMBANK PROTECTION
DES MOINES RIVER, COUNTY ROAD J-12
WAPELLO COUNTY, IOWA

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

TABLE OF CONTENTS

<u>Subject</u>	<u>Page</u>
I. Project Description	1
Location	1
General Description	1
Authority and Purpose	1
General Description of Dredged and Fill Material	1
Description of the Proposed Discharge Sites	1
Description of Disposal Method	1
II. Factual Determinations	2
Physical Substrate Determinations	2
Water Circulation, Fluctuation, and Salinity Determinations	2
Suspended Particulate/Turbidity Determinations	2
Contaminant Determinations	2
Aquatic Ecosystems and Organism Determinations	2
Proposed Disposal Site Determinations	3
Determination of Cumulative Effects on the Aquatic Ecosystem	3
Determination of Secondary Effects on the Aquatic Ecosystem	3
III. Findings of Compliance with the Restrictions on Discharge	4

DEFINITE PROJECT REPORT
AND ENVIRONMENTAL ASSESSMENT
FOR
SECTION 14 EMERGENCY STREAMBANK PROTECTION
DES MOINES RIVER, COUNTY ROAD J-12
WAPELLO COUNTY, IOWA

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

I. Project Description.

A. Location. The proposed erosion control project is located in the NW 1/4 of the NE 1/4 of Section 24, T. 71 N., R. 13 W., Wapello County, Iowa, along the right descending bank of the Des Moines River.

B. General Description. Erosion of the right descending bank along an outside bend of the Des Moines River is endangering a portion of County Road J-12. The proposed protection plan involves placement of riprap and earth fill along approximately 615 linear feet of riverbank, grading the material to a 1 vertical on 3 horizontal slope, and reseeding the earth filled upper slope to stabilize it and prevent further erosion of the riverbank.

C. Authority and Purpose. This study is authorized by Section 14 of the 1946 Flood Control Act, as amended. The purpose is to stabilize the eroding bank and prevent damage and/or loss of County Road J-12.

D. General Description of Dredged and Fill Material. Approximately 5,000 tons of Iowa Class "D" riprap will be deposited at the site. This riprap will be composed of boulders or quarried rock. In addition to the riprap, approximately 1,500 cubic yards of earth fill will be placed, graded and shaped to a 1 vertical on 3 horizontal slope, from the top of the riprap to the top of the existing riverbank.

E. Description of the Proposed Discharge Site. The placement of fill will be along 615 linear feet of the right descending bank of the river, adjacent to County Road J-12. Placement of riprap will extend up to elevation 615.0 United States Geological Survey (N.G.V.D) with fill dirt placed on top of the riprap up to the elevation of the existing roadway. Along the project reach approximately 1,437 cubic yards (2.3 cubic yards/foot) of riprap will be placed below the Ordinary High Water elevation of 610.1 (N.G.V.D). Aquatic habitat at the site is unvegetated sand and gravel. Construction will be initiated as soon as possible to alleviate the emergency. The project will take about 1 month to complete and should be finished by Fall of 1989.

F. Description of Disposal Method. The fill material will be placed at the construction site by mechanical means. Riprap may extend as far as 40 feet out into the river in places along the 615-foot reach of the project. A small bulldozer or grader will be used to re-grade

the dirt fill placed on the top portion of the bank and to restore the roadway shoulder along County Road J-12.

II. Factual Determinations.

A. Physical Substrate Determinations. The substratum at the site is mainly composed of sand and gravel, and ranges from nearly horizontal to moderately sloping.

B. Water Circulation, Fluctuation, and Salinity Determinations. Water chemistry, clarity, color, odor, taste, dissolved gas levels, nutrients, and eutrophication will not be affected by the project. Salinity determinations are not applicable to the area. Circulation, flow, velocity, stratification, and hydrologic regime will not be affected. Normal water fluctuations and current pattern will not be altered by the project.

C. Suspended Particulate/Turbidity Determinations. There will be a minor temporary increase in suspended particulates and turbidity during construction, but levels of turbidity will return to pre-construction levels or lower since sediments will no longer be eroding into the river system.

D. Contaminant Determinations. No contaminants will be introduced into the aquatic system since the fill material would be clean quarried rock and dirt fill. Neither the fill nor its placement will cause relocation or increases of contaminants in the aquatic system. Certification of the project under Section 401 of the Clean Water Act has been granted by the Iowa Department of Natural Resources in a letter dated 5 August 1988 (see encl 4, Pertinent Correspondence).

E. Aquatic Ecosystem and Organism Determinations. The effect on plankton, benthos, nekton and the aquatic food web will be minimal since the site occupies only a small fraction of the Des Moines River. Mudflats, coral reefs, and riffle and pool complexes are not present in the project area. Some minor localized loss of benthic organisms may result from construction activity. However, long-term impacts should be beneficial since riprap placement will increase substrate diversity at the site and provide habitat for some aquatic organisms. Some temporary disturbances of local wildlife may occur during the construction phase. However, the existing conditions along the project reach are of little value to wildlife at present. Reshaping and seeding of the area should stabilize the bank and promote vegetative growth that will be beneficial to wildlife in the future.

There are two federally recognized endangered species listed for this area: the bald eagle (Haliaeetus leucocephalus) and the Indiana bat (Myotis sodalis). The bald eagle feeds in open tailwater areas below dams on the Mississippi River and its major tributaries. The project site is not located near any tailwaters and none of the trees adjacent to the site appear to be suitable perch trees for eagles. Suitable habitat for the Indiana bat (loose bark of trees) is not present in

the project area. Phone conversations with the U.S. Fish and Wildlife Service (included in the Pertinent Correspondence section of this report) indicated that these two species should not be affected by the proposed action.

F. Proposed Disposal Site Determinations. The fill material will be obtained from approved existing borrow sites while the riprap will be obtained from an approved quarry site near the project area. This will ensure that State water quality standards will not be violated because of project-related activities. The proposed project will have no adverse affects on municipal or private water supplies; recreational or commercial fisheries; or water-related recreation, aesthetics, parks, national historic monuments, or similar preserves.

G. Determination of Cumulative Effects on the Aquatic Ecosystem. Implementation of the project will cause no significant cumulative impact to the aquatic ecosystem.

H. Determination of Secondary Effects on the Aquatic Ecosystem. No adverse secondary effects are expected. Implementation of the project may increase fisheries habitat through the placement of riprap, increasing the overall water quality by reducing sediment deposition in the channel.

III. Findings of Compliance with the Restrictions on Discharge.

A. No significant adaptations of the guidelines were made relative to this evaluation.

B. Aside from No Federal Action, three alternatives were considered. These were: relocation of the existing road; construction of rock jetties; and placement of riprap and earth fill. It was determined that placement of riprap and earth fill was operationally feasible and environmentally acceptable, and this was selected as the least costly alternative.

C. Toxic effluent standards and Section 307 of the Clean Water Act will not be exceeded.

D. The U.S. Fish and Wildlife Service has concurred with the determination that federally listed endangered species will not be affected.

E. Municipal and private water supplies, fisheries, aquatic life, recreation, aesthetics, and economic values will not be significantly affected.

F. Potential adverse impacts on the aquatic ecosystem will be minimized by using uncontaminated fill material.

G. On the basis of the guidelines, the proposed disposal site for the discharge of dredged or fill materials is specified as complying with the requirements of these guidelines.

DATE

Neil A. Smart
Colonel, U.S. Army
District Engineer

PERTINENT CORRESPONDENCE

encl 4

CONVERSATION RECORD

TIME
2:45

DATE
22 Sept. 87

TYPE

☐ VISIT

☐ CONFERENCE

☒ TELEPHONE

☐ INCOMING

☒ OUTGOING

ROUTING

NAME/SYMBOL

INT

Hansen PD

Farnham PD-F

Falkett PD

Location of Visit/Conference:

NAME OF PERSON(S) CONTACTED OR IN CONTACT WITH YOU

Senja Larsen

ORGANIZATION (Office, dept., bureau, etc.)

Cong. Leach's
Ottumwa Office

TELEPHONE NO.

(515)
682-8547

SUBJECT

Streambank Erosion - Des Moines River

SUMMARY

Mr. Larsen said that their office was informed of a serious bank erosion problem along the Des Moines River. Told her of a request we had from the Wapello County Engineers about a similar problem that could in fact be the same problem.

I called the Wapello Co. Engineer, Wendell Folkerts, and he said problem was (5) five miles upstream of Eldon on south side of river. Sec 29, T 71N, R 3W. It is a gravel county road and (J-12) and problem has gotten worse over last 6 months. He has had some complaints from local people.

Called Mr. Larsen and told her of problem location. She said it sounds like the same area. Told her I would arrange meeting with Co. Engn to inspect problems.

Arranged site investigation with Co. Engn for 1 Oct 27 @ 10 am at Co. Engn Office.

Called Mrs. Larsen, she was busy. Left message of my meeting arrangement with Co.

ACTION REQUIRED

PD-F (Ross) to make site inspection on 1 Oct 87

NAME OF PERSON DOCUMENTING CONVERSATION

SIGNATURE

DATE

Joseph H. Ross PD-F

22 Sept. 87

ACTION TAKEN

SIGNATURE

TITLE

DATE

30273-101

U.S. G.P.O. 1985-485-494

CONVERSATION RECORD

OPTIONAL FORM 271 (12-76)
DEPARTMENT OF DEFENSE

OFFICE OF

WAPELLO COUNTY ENGINEER

536 MILL STREET
OTTUMWA, IOWA
TELEPHONE
515-684-5425

Wendell Folkerts, P.E.
Engineer

October 1, 1987

District Engineer
U.S. Army Engineer District, Rock Island
ATTN: Planning Division
Clock Tower Bldg. - P. O. Box 2004
Rock Island, Illinois 61204-2004

Dear Sir:

In accordance with the provisions of Section 14 of the Flood Control Act of 1948, as amended, which authorizes the federal government to initiate investigations and studies to be made in the interest of emergency streambank and shoreline protection, the Wapello County Secondary Roads Department hereby makes formal application for a study of the Des Moines River, Wapello County, Iowa.

The Wapello County Secondary Roads Department can provide the following local cooperation and participation.

1. Provide without cost to the United States all necessary land, easements and rights-of-way, access routes and relocation of utilities necessary for project construction and subsequent operation and maintenance.
2. Hold and save the United States free from claims for damages which may result from construction and subsequent maintenance of the project, except damages due to the fault or negligence of the United States or its contractors.
3. Assume full responsibility for all project costs in excess of the federal cost limitation of \$500,000.
4. Assure maintenance and repair during the useful life of the works as required to serve the project's intended purpose.
5. Provide a cash contribution of 5 percent of the project cost.
6. If the value of the sponsor's contribution above does not exceed 25 percent of the project cost, provide a cash contribution to make the sponsor's total contributions equal 25 percent.

Yours very truly,

WAPELLO COUNTY SECONDARY ROADS DEPARTMENT



Wendell W. Folkerts, P.E. & R.L.S.
Wapello County Engineer

jmw

TELEPHONE OR VERBAL CONVERSATION RECORD		DATE
For use of this form, see AR 340-15; the proponent agency is The Adjutant General's Office.		3/31/88
SUBJECT OF CONVERSATION		
Wapello Co. Section 14 - Coordination with USFWS		
INCOMING CALL		
PERSON CALLING	ADDRESS	PHONE NUMBER AND EXTENSION
PERSON CALLED	OFFICE	PHONE NUMBER AND EXTENSION
OUTGOING CALL		
PERSON CALLING	OFFICE	PHONE NUMBER AND EXTENSION
PERSON CALLED	ADDRESS	PHONE NUMBER AND EXTENSION
Charlene Carmack	PD-E	x576
Wayne Fischer	FWS	793-5800
SUMMARY OF CONVERSATION:		
I called Wayne to discuss endangered species and fish and wildlife concerns on the Wapello Co. (Co. Road J-12) Section 14 project. I informed him that the District considered this to be an emergency action and does not propose to prepare a NEPA document for the project. I also gave him the location of the project, described the project area, and outlined the proposed action (riprapping and/or rock jetties on lower part of slope; reshaping earth on upper part of bank). Wayne informed me that two federally endangered species are listed for this area - the bald eagle (<u>Haliaeetus leucocephalus</u>) and the Indiana bat (<u>Myotis sodalis</u>). He indicated that the proposed action as described did not seem likely to have any effect on the bald eagle, and probably not on the Indiana bat either. Wayne noted that some loss of terrestrial habitat would result from the action, but also indicated that riprapping below the water surface would also have a net positive effect on fisheries, or that at least no long-term detrimental effect would be expected to occur. He also noted that for this type of project the FWS normally recommends reseeding earth areas with grass species beneficial to wild life.		
CHARLENE CARMACK Community Planner		

+

TELEPHONE OR VERBAL CONVERSATION RECORD		DATE
For use of this form, see AR 340-15; the proponent agency is The Adjutant General's Office.		4/6/88
SUBJECT OF CONVERSATION		
Wapello Co. Sec. 14 - Coordination with USEPA		
INCOMING CALL		
PERSON CALLING	ADDRESS	PHONE NUMBER AND EXTENSION
PERSON CALLED	OFFICE	PHONE NUMBER AND EXTENSION
OUTGOING CALL		
PERSON CALLING	OFFICE	PHONE NUMBER AND EXTENSION
C. Carmack		
PERSON CALLED	ADDRESS	PHONE NUMBER AND EXTENSION
Mike Bronowski	USEPA Region 7 Kansas City	913/200 2223
SUMMARY OF CONVERSATION:		
I called Mike to discuss the above project. I described the area of erosion and proposed repair work (riprapping and/or rock jetties on lower portion of bank; soil shaping on upper portion). Mike stated that he saw no problem with the action as described.		
CHARLENE CARMACK Community Planner		

WAPELLO COUNTY ENGINEER

536 MILL STREET
OTTUMWA, IOWA
TELEPHONE
515-684-5425

Wendell Folkerts, P.E.
Engineer

George Barnett
Asst. to Engineer

July 6, 1988

Colonel Neil A. Smart
District Engineer
U.S. Army Engineer District, Rock Island
Clock Tower Building, P. O. Box 2004
Rock Island, Illinois 61204-2004

Dear Colonel Smart:

The County of Wapello, Iowa, has reviewed the draft of the proposed Local Cooperation Agreement covering streambank erosion control on the Des Moines River at County Road J-12 in Section Twenty-Four (24), Township Seventy-One (71) North, Range Thirteen (13) West in Wapello County, Iowa. The Agreement includes the following obligations to be carried out by the County:

- a. Provide, without cost to the Government, during the period of construction, all lands, easements, rights-of-way, and dredged material disposal areas, and perform all relocations and alteration of buildings, utilities, highways, railroads, bridges (except railroad bridges), sewers, and related and special facilities determined by the Government to be necessary for construction of the project. To the extent that any of the lands, easements or rights-of-way provided under this paragraph are already owned as part of the facility or structure being protected, the value of such interests shall not be included in total project costs nor credited towards the local sponsor's contribution required
- b. Make a cash payment of not less than five (5) percent of total project costs during the period of construction, regardless of the value of the items in a. above. If the value of the items in a. above is less than twenty (20) percent of total project costs, the County of Wapello, Iowa, shall, during the period of construction, make such additional cash payments as are necessary to bring its total contribution in cash and value of lands, easements, rights-of-way, and utility and facility alterations and relocations, to an amount equal to twenty-five (25) percent of total project costs.
- c. Pay all project costs in excess of the Federal statutory limitation of \$500,000.
- d. Hold and save the Government free from all damages arising from the construction, operation, and maintenance of the project, except for damages due to the fault or negligence of the Government or its contractors.

Page Two
July 6, 1988
Colonel Neil A. Smart

- e. Operate, maintain, replace, and rehabilitate the project upon completion in accordance with regulations or directions prescribed by the Government.
- f. Comply with the applicable provisions of the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, Public Law 91-646, approved January 2, 1971, in acquiring lands, easements, and rights-of-way for construction and subsequent operation and maintenance of the project, and inform all affected persons of applicable benefits, policies, and procedures in connection with said Act.
- g. Comply with Section 601 of Title VI of the Civil Rights Act of 1964 (Public Law 88-352) and Department of Defense Directive 5500.11 issued pursuant thereto and published in Part 300 of Title 32, Code of Federal Regulations, as well as Army Regulation 600-7, entitled "Non-Discrimination on the Basis of Handicap and Programs and Activities Assisted or Conducted by the Department of the Army."
- i. Prior to construction, and in accordance with the provisions of Section 221 of Public Law 91-611, the County of Wapello, Iowa, will enter into a contract with the Government whereby the County of Wapello, Iowa, will grant the Government a right to enter, at reasonable times and in a reasonable manner, upon land which the County of Wapello, Iowa, owns or controls for access to the project for the purpose of inspection, and if necessary, for the purpose of completing, operating, repairing, maintaining, replacing or rehabilitating the project. If an inspection shows that the County of Wapello, Iowa, for any reason is failing to fulfill its obligations under the Agreement without receiving prior written approval from the Government, the Government will send a written notice to the County of Wapello, Iowa. If the County of Wapello, Iowa, persists in such failure for thirty (30) calendar days after receipt of the notice, then the Government shall have a right to enter, at reasonable times and in a reasonable manner, upon lands the County of Wapello, Iowa, owns or controls for access to the project for the purpose of completing, operating, repairing, maintaining, replacing, or rehabilitating the project. No completion, operation, repair, maintenance, replacement, or rehabilitation by the Government shall operate to relieve the County of Wapello, Iowa, of responsibility to meet its obligations as set forth in the Agreement, or to preclude the Government from pursuing any other remedy at law or equity to assure faithful performance pursuant to the Agreement.

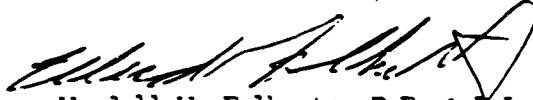
The County of Wapello, Iowa, is willing and able to pay its share of the total project costs. Sufficient funds are on hand or can be raised quickly, and the cash payment can be deposited directly with the Government upon demand by the Government.

Page Three
July 6, 1988
Colonel Neil A. Smart

This is to advise that if the Definite Project Report for this project is approved substantially in its present form as reviewed by higher authority, the County of Wapello, Iowa, is willing, and legally and financially able, to sign the referenced Local Cooperation Agreement which includes the obligations set forth above.

Sincerely,

THE COUNTY OF WAPELLO, IOWA

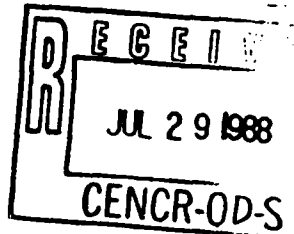


Wendell W. Folkerts, P.E. & R.L.S.
Wapello County Engineer

jmw

IOWA DEPARTMENT OF NATURAL RESOURCES

CONSTRUCTION PERMIT



As provided under Chapter 111 of the Code of Iowa, the Department of Natural Resources, Wallace State Office Building, Des Moines, Iowa 50319-0034, hereby grants

TO: Wapello Co. Sec. Roads Dept., c/o A.A. Mr. Wendell Follserts, P.E., Co. Eng.

OF: 536 Mill Street, Ottumwa, IA 52501

permission to do the following work subject to stipulations stated herein and in the documents submitted in applying for this permit which is now on file in the Central Office of the Department of Natural Resources. Note - Any special conditions and stipulations contained in this permit will take precedence over plans/specifications provided by the applicant.

The Conservation Officer in charge of the area, Roderick Pickens, R.R. 6, Bloomfield, IA 52537, telephone number (515) 664-1482, shall be notified prior to the beginning of the construction and upon its completion so that he may ascertain that the state's rights are being protected.

This permit is granted subject to the permittee obtaining all other permits from this department or any other governmental agency which may have jurisdiction in this area. Permittee is reminded of permit requirements of the U.S. Army Corps of Engineers and the Flood Plain Section of the Department of Natural Resources in regard to dredging, filling, or construction activity. If it has not already been done, contact with these agencies should be made by permittee to determine if permits from them are required for this project.

Permit authorizing the placement of approximately 5,000 tons of native stone riprap and 1,500 c.y. of earth materials needed to construct the project along 615 ft. of the Des Moines River, Wapello County, Iowa. The project will curtail erosion which is threatening a portion of County Road J-12.

Location given as NW 1/4 of Section 27, T71N, R13W, along the south bank of the Des Moines River, Wapello County, Iowa.

A Flood Plain Permit pursuant to 455B of the Iowa Code will be required by this agency for this project and will be received in the near future.

This Permit Expires: 12/31/1990

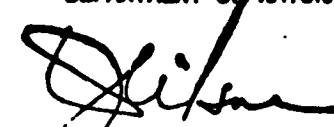
The Permittee is presumed to be familiar with all laws, ordinances, and regulations that may affect employees, materials, or equipment used in or upon the work. The Permittee shall indemnify and save harmless the state of Iowa, Department of Natural Resources, and all its officers and agents from claims or liability of any character arising out of any acts or damages that might result from the installation or construction of the project described in this permit.

Date of Issue: JULY 27, 1988

Permit Number: 88-79

cc: U.S. Army Corps of Engineers
Conservation Officer Supervisor
Conservation Officer
Fish and Wildlife Section
Iowa DNR Flood Plain Section

DEPARTMENT OF NATURAL RESOURCES


By: _____
Director



TERRY E. BRANSTAD, GOVERNOR

DEPARTMENT OF NATURAL RESOURCES
LARRY J. WILSON, DIRECTOR

August 5, 1988

Mr. Wendell Folkerts P.E.
Wapello County Engineer
536 Mill Street
Ottumwa, IA 52501

SUBJECT: Request for State Section 401 Certification

Emergency streambank protection on the Des Moines River
Wapello County, Iowa

Water Quality Designation: The Des Moines River is a Class A and Class B(warm) river. This waterbody is protected for primary and secondary contact recreational uses and for fish, wildlife, aquatic, and semiaquatic uses.

Dear Mr. Folkerts:

This department has received and reviewed the request for State certification pursuant to Section 401 of the Clean Water Act. State Section 401 certification is required for the issuance of the Corps of Engineers Section 404 permit. Section 401 certification is this Department's concurrence that this project is consistent with Iowa's Water Quality Standards.

This letter certifies that this department has determined that there is reasonable assurance the proposed activity will be conducted in a manner which will not violate water quality standards of the State of Iowa.

A copy of this letter is being forwarded to the District Corps of Engineers office for their information.

Sincerely,

Kathleen D. Thies
for
RALPH TURKLE
WATER QUALITY PLANNING SECTION

RT:LTR.36A/pg

cc: Dudley M. Hanson, District Engineer, Rock Island Corps of Engineers
Darrell Hayes, DNR Coord & Info Div.
Martin Konrad, DNR Fish & Wildlife Div.
Dave Claman, DNR Flood Plain Permits

TELEPHONE OR VERBAL CONVERSATION RECORD		DATE
For use of this form, see AR 340-15; the proponent agency is The Adjutant General's Office.		8/15/88
SUBJECT OF CONVERSATION		
Wapello Co. Road J-12 Sec. 14 Bank Stabilization		
INCOMING CALL		
PERSON CALLING	ADDRESS	PHONE NUMBER AND EXTENSION
PERSON CALLED	OFFICE	PHONE NUMBER AND EXTENSION
OUTGOING CALL		
PERSON CALLING	OFFICE	PHONE NUMBER AND EXTENSION
Darryl Hayes	Iowa DNR	515/281-8675
PERSON CALLED	ADDRESS	PHONE NUMBER AND EXTENSION
SUMMARY OF CONVERSATION:		
I called Darryl to discuss fish and wildlife coordination on the above project. I explained that we are preparing an EA for this action and informed him that the EA would be circulated for public review as part of the letter report when completed. Darryl noted that the application for a flood plain construction permit had been routed through DNR's fish and wildlife division. He indicated that he saw no problems with the project regarding fish and wildlife concerns.		
CHARLENE CARMACK Community Planner		

+0

0

TELEPHONE OR VERBAL CONVERSATION RECORD		DATE
For use of this form, see AR 340-15; the proponent agency is The Adjutant General's Office.		12 Sept 82
SUBJECT OF CONVERSATION		
Wapello Co. IA. Sect 14 Bank stab archeology		
INCOMING CALL		
PERSON CALLING	ADDRESS	PHONE NUMBER AND EXTENSION
Ken Barr	NCR PDE	x349
PERSON CALLED	OFFICE	PHONE NUMBER AND EXTENSION
Kay Simpson	IA. SHPD	
OUTGOING CALL		
PERSON CALLING	OFFICE	PHONE NUMBER AND EXTENSION
PERSON CALLED	ADDRESS	PHONE NUMBER AND EXTENSION
SUMMARY OF CONVERSATION:		
Called Kay^{ad} told her that archeological survey conducted by O.S.A. failed to identify any properties. & She gave verbal clearance. Written clearance will come after review of survey Report. Ken Barr Dist. Archeologist		

DISTRIBUTION LIST
FOR
DEFINITE PROJECT REPORT
SECTION 14 EMERGENCY STREAMBANK PROTECTION
DES MOINES RIVER, COUNTY ROAD J-12
WAPELLO COUNTY, IOWA
WITH
ENVIRONMENTAL ASSESSMENT

encl 5

DISTRIBUTION LIST
FOR
DEFINITE PROJECT REPORT
SECTION 14 EMERGENCY STREAMBANK PROTECTION
DES MOINES RIVER
COUNTY ROAD J-12
WAPELLO COUNTY, IOWA
WITH
ENVIRONMENTAL ASSESSMENT

NC
COPIES*

HONORABLE CHARLES E. GRASSLEY, UNITED STATES SENATE
WASHINGTON, DC 20510

HONORABLE TOM HARKIN, UNITED STATES SENATE
WASHINGTON DC 20513

HONORABLE CHARLES GRASSLEY, UNITED STATES SENATOR
116 FEDERAL BUILDING, DAVENPORT IA 52801

HONORABLE TOM HARKIN, UNITED STATES SENATOR
3148 FEDERAL BLDG, 131 E 4TH ST
DAVENPORT IA 52801

HONORABLE JIM LEACH, HOUSE OF REPRESENTATIVES
WASHINGTON, D.C. 20515

HONORABLE JIM LEACH, REPRESENTATIVE IN CONGRESS
322 WEST 3RD STREET, DAVENPORT, IA 52801

DIRECTOR, ADVISORY COUNCIL ON HISTORIC PRESERV
OLD PO BLDG #809, 1109 PENNSYLVANIA AVENUE NW
WASHINGTON DC 20004

DIRECTOR, US DEPT OF COMMERCE
OFFICE OF ENVIRONMENTAL AFFAIRS, ROOM 3425
WASHINGTON DC 20235

FEDERAL EMERGENCY MANAGEMENT ADMIN, 500 C STREET SW
ROOM 713, WASHINGTON DC 20472

OFFICE OF ENVIRONMENTAL PROJ REVIEW, DEPARTMENT OF INTERIOR
18TH & C STREETS NW - ROOM 4241, WASHINGTON DC 20240

18

DIRECTOR, OFFICE OF HABITAT PROTECTION
NATIONAL MARINE FISHERIES SERVICE, NCAA
WASHINGTON DC 20235

DR. DAVID CLAPP, CENTER FOR ENVIRONMENTAL
HEALTH AND INJURY CONTROL / F-29, CENTER
FOR DISEASE CONTROL, ATLANTA GA 30333

*Copy furnished to the Dept. of the Interior
for the Bureau of Reclamation*

*SINGLE COPIES DISTRIBUTED EXCEPT AS INDICATED

MR RICHARD NELSON - FIELD SUPVR, U.S. FISH & WILDLIFE SERVICE
1830 SECOND AVE. - 2ND FLOOR, ROCK ISLAND, IL 61201

DIVISION ADMINISTRATOR, FEDERAL HIGHWAY ADMINISTRATION
PO BOX 627, 6TH AND KELLOGG STREET
AMES IA 50010

DIRECTOR, FARMERS HOME ADMINISTRATION
US DEPT OF AGRICULTURE, FEDERAL BLDG., ROOM 273
DES MOINES, IA 50309

WILLIAM R MOERER, SOIL CONSERVATION SERVICE
1309 E MARY ST, CTTCPWA IA 52501

STATE CONSERVATIONIST, SOIL CONSERVATION SERVICE LSQA
693 FEDERAL BLDG, 210 WALNUT STREET
DES MOINES IA 50303

2

GEOLOGICAL SURVEY BUREAU, ENERGY AND GEOLOGICAL RESOURCES DIVN
ICWA DEPT OF NATURAL RESOURCES, 123 NORTH CAPITOL STREET
ICWA CITY IA 52240

WATER RES. RESEARCH CENTER, ATTN DR AL AUSTIN
355 TOWN ENGINEERING BUILDING, ICWA STATE UNIVERSITY
AMES IA 50010

MR. JAMES GRITMAN - REG. DIRECTOR, US FISH & WILDLIFE SERVICE
FEDERAL BUILDING, FORT SNELLING
TWIN CITIES MN 55111

MR LARRY CAVIN-CHIEF, ENVIRONMENTAL REVIEW BRANCH
US ENVIRONMENTAL PROTECTION AGENCY, 726 MINNESOTA AVE
KANSAS CITY KS 64101

3

DIRECTOR, FEDERAL EMERGENCY MANAGEMENT AGENCY
REGION VII, 911 WALNUT STREET - ROOM 300
KANSAS CITY MO 64106

HONORABLE TERRY E. BRANSTAD,
GOVERNOR OF IOWA
STATE CAPITOL
DES MOINES, IOWA 50319

-SINGLE COPIES DISTRIBUTED EXCEPT AS INDICATED

AC
COPIES.

REGIONAL DIRECTOR, REGION VIII
FEDERAL RAILROAD ADMINISTRATION, 2903 FEDERAL OFFICE BLDG
KANSAS CITY MO 64106

LEE W LARSON - M/CR2, NWS CENTRAL REGION HYDR
601 E 12TH STREET - ROOM 1836, KANSAS CITY MO 64106

REGIONAL FORESTER, FOREST SERVICE
US DEPT OF AGRICULTURE, 310 W WISCONSIN AVE-SUITE 500
MILWAUKEE WI 53203

MR STEVEN R MC CANN - DIRECTOR, IOWA DEPT OF ECONOMIC DEVELOPMENT
DIVN OF COMMUNITY PROGRESS, 200 EAST GRANT
DES MOINES IA 50319 4

MR LARRY WILSON - DIRECTOR, DEPT OF NATURAL RESOURCES
WALLACE STATE OFFICE BLDG, 900 EAST GRANT AVENUE
DES MOINES IA 50319 2

DIRECTOR, IOWA DEPARTMENT OF TRANSPORTATION
OFFICE OF POLICY, 900 LINCOLN WAY
AMES, IA 50010

DIRECTOR, IOWA DEPT OF SOIL CONSERVATION
WALLACE STATE OFFICE BLDG, 900 EAST GRANT AVENUE
DES MOINES IA 50319

MR DAVID CROSSON, STATE HISTORIC PRESERVATION OFFICER
HISTORICAL BLDG/CAPITOL COMPLEX, EAST 12TH & GRANT AVENUE
DES MOINES IA 50319

KAY SIMPSON, STATE HISTORICAL SOCIETY OF IOWA
CAPITOL COMPLEX, EAST 12TH & GRANT AVENUE
DES MOINES IA 50319

HONORABLE DON E GETTINGS, IOWA SENATOR-33RD DISTRICT
513 LYNWOOD CIRCLE, OTTUMWA IA 52501

HONORABLE JEAN LLOYD-JONES, IOWA SENATOR-23RD DISTRICT
160 OAKRIDGE AVE, IOWA CITY IA 52240

-SINGLE COPIES DISTRIBUTED EXCEPT AS INDICATED

Copy available to DTIC does not
narrow field of this reproduction

AC
CCPIE

HONORABLE DANIEL JAY, IOWA REPRESENTATIVE-66TH DISTRICT
604 WILDMOOD LANE, CENTERVILLE, IA 52544

HONORABLE CHARLES N. PONCY, IOWA REPRESENTATIVE-65TH DISTRICT
653 NORTH COURT ST., OTTUMWA, IA 52501

HONORABLE GEORGE R. SWEARINGEN, IOWA REPRESENTATIVE-63RD DISTRICT
1103 SOUTH MAIN, SIGOURNEY, IA 52591

HONORABLE HAROLD VAN MAANEN, IOWA REPRESENTATIVE-64TH DISTRICT
RR #5, OSKALOOSA, IA 52577

AREA XV REGAL PLNG COMMISSION, 226 WEST MAIN STREET
OTTUMWA IA 52501

CHAIRMAN, WAPELLO COUNTY BOARD OF SUPERVISORS
COUNTY COURT HOUSE, OTTUMWA, IOWA 52501

COUNTY ENGINEER, WAPELLO COUNTY
536 MILL STREET, OTTUMWA, IA 52501

ROBERT R WILKINSON, WAPELLO CO ZONING OFFICE
315 BONITA, OTTUMWA IA 52501

CHAIRMAN, WAPELLO COUNTY SOIL AND WATER
CONSERVATION DISTRICT, 1309 EAST PARY
OTTUMWA, IOWA 52501

OTTUMWA PUBLIC LIBRARY, 129 N COURT STREET
OTTUMWA IA 52501

-SINGLE COPIES DISTRIBUTED EXCEPT AS INDICATED

Copy available to DTIC does not
permit fully legible reproduction
permit fully legible reproduction

JANE ELDER, THE SIERRA CLUE
214 N HENRY ST SUITE 203, MADISON WI 53703

THE OTTUMWA COURIER, OTTUMWA, IA 52501

NEWS ROOM, RADIO STATION KEIZ
OTTUMWA IA 52501

NEWS ROOM, RADIO STATION KLEE
OTTUMWA IA 52501

*SINGLE COPIES DISTRIBUTED EXCEPT AS INDICATED

COMMANDER, US ARMY ENGINEER DISTRICT, ROCK ISLAND, CLOCK
TOWER BLDG., ROCK ISLAND, IL 61204-2004

ATTN: CENCR-DE	CENCR-PD-E
CENCR-RE	CENCR-PD-P
CENCR-ED	CENCR-CD
CENCR-ED-D	CENCR-OD
CENCR-ED-H	CENCR-IM-C (3)
CENCR-PD	CENCR-PA

Copy available to DTIC does not
permit fully legible reproduction