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NATIONAL BUREAU OF STANDARDS 1963-A

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US Army Corps  
of Engineers  
Rock Island District

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**INITIAL APPRAISAL REPORT**

FOR

**SECTION 14**

**EMERGENCY STREAMBANK PROTECTION**

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**SHELL ROCK RIVER**

**COUNTY HIGHWAY S-56**

**CERRO GORDO COUNTY,  
IOWA**

JUNE 1986

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DTIC FILE COPY

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REVISED JULY 1986  
AND AUGUST 1986

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ACKNOWLEDGEMENT

Primary study team personnel who are familiar with the technical aspects of the study are listed below:

Study Management	Thomas Bales
Hydraulic Analysis	David Hays
Economic Analysis	Bill Morse
Environmental Analysis	Robert Vanderjack
Cultural Analysis	Kenneth Barr
Engineering Analysis	David Borck



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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

NCRPD-F

SUBJECT: Initial Appraisal Report for Section 14, Emergency Streambank Protection, Shell Rock River, County Road S-56, Cerro Gordo County, Iowa

Commander, North Central Division  
ATTN: NCDPD-PF

1. INTRODUCTION

a. ~~The following letter~~ report summarizes a study for providing Section 14 emergency streambank protection along the west right of the Shell Rock River, south of Plymouth, in Cerro Gordo County, Iowa, (plate 1, Encl 1). By letter dated 30 January 1986, the Cerro Gordo County Engineer officially requested the assistance of the Rock Island District, U.S. Army Corps of Engineers (Encl 2).

b. This initial appraisal report for emergency streambank protection recommends placing riprap material along 425 feet of the right bank of the Shell Rock River to protect County Road S-56 in Cerro Gordo County, Iowa, from imminent failure. The total estimated cost for the project is \$54,500, with a benefit-to-cost ratio of 1.8. The project satisfies the criteria for Federal participation and is recommended for construction under the authority of Section 14 of the 1946 Flood Control Act, as amended.

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 1974. The authority, as amended, is presented below:

That the Secretary of Army is hereby authorized to allot from any appropriations heretofore or hereafter made for flood control, not to exceed \$10,000,000 per year, for the construction, repair, restoration, and modification of emergency streambank and shoreline protection works to prevent damage to highways, bridge approaches, and 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 not more than \$250,000 shall be allotted for this purpose at any single locality from the appropriations for any one fiscal year.

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3. STUDY AREA

The study area, as shown on plate 1, is located at County Road S-56, along the west bank of the Shell Rock River, Section 8, T. 97 N., R. 19 W., Falls Township, Cerro Gordo County, Iowa. The study site is approximately 1/4 mile south of Plymouth, Iowa.

4. DETAIL OF INVESTIGATION

This Initial Appraisal Report for Emergency Streambank Protection is intended to serve as the decision document with sufficient detail to allow approval of the project and preparation of plans and specifications.

5. RELATED STUDIES, REPORTS, AND EXISTING WATER PROJECTS

There have been no previous studies made for this area by the Rock Island District, U.S. Army Corps of Engineers.

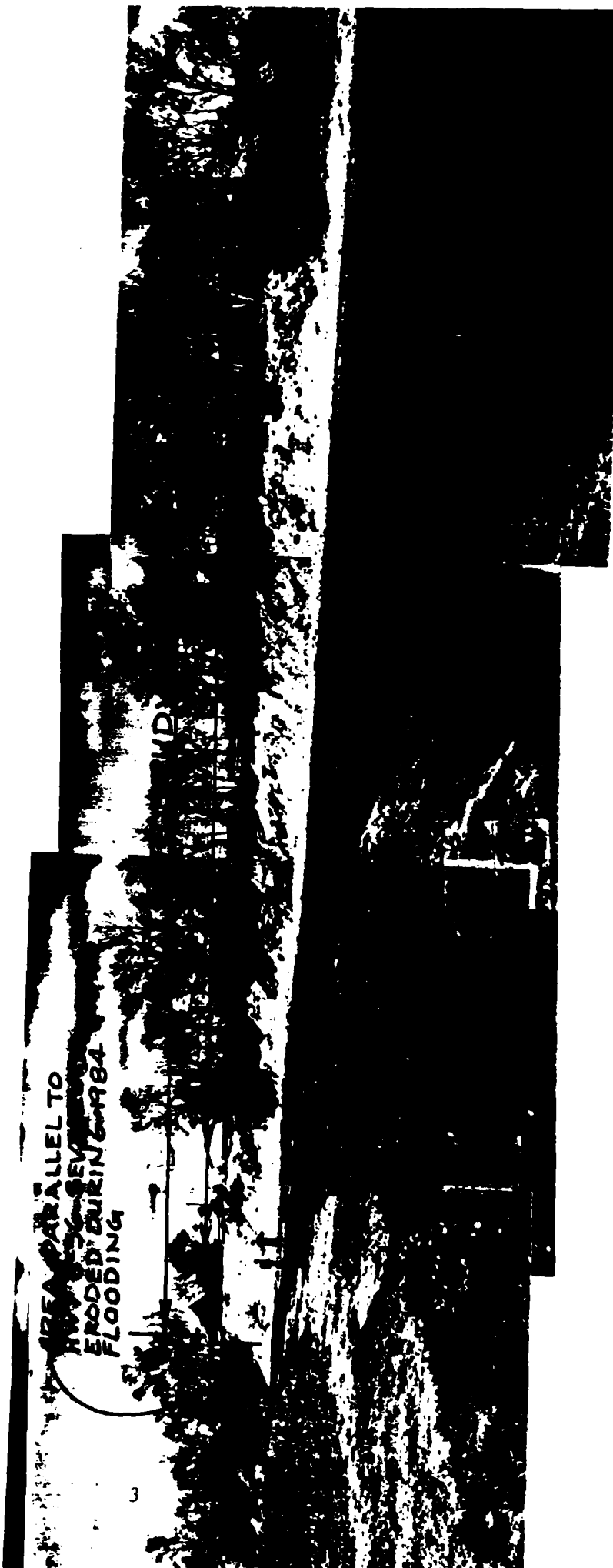
6. EXISTING CONDITIONS

a. A site inspection of the erosion problem was made by Rock Island District, Corps of Engineers, representatives on 1 May 1986, along with a representative from the Cerro Gordo County Engineer's Office.

b. The erosion site is located along a horseshoe bend in the Shell Rock River just south of Plymouth, Iowa. County Highway S-56 is located along the right bank of the river (plate 1). High water in 1984 eroded a substantial amount of the north curve of the river bend which eliminated about 12 feet of the 20-foot bank height for about 60 linear feet parallel to County Highway S-56. Cross sections taken by the county indicate that between the years 1970 to 1983 approximately 23 feet of streambank has been lost to erosion, with about 6 feet of this amount being lost in the spring of 1983. The average rate of erosion is estimated to be approximately 2 feet per year. The erosion-affected bank for the study area is about 425 feet in length. The bank averages 20 feet in height (see figure 1).

c. The Shell Rock River flows in a southeasterly direction through the northeast quarter of the State of Iowa and discharges into the Cedar River, approximately 4 miles north of Cedar Falls. The drainage area at the study site is about 460 square miles. The river basin is rural and agricultural.

d. County Highway S-56, a two-lane asphalt-surfaced road, is a major connecting route to other higher class highways. All types of vehicles use the highway, including school buses and emergency vehicles. The daily traffic count is 1,691 vehicles.



AREA PARALLEL TO  
HWY 26 - SEVERELY  
ERODED DURING 1984  
FLOODING

ROAD

LOOKING WEST AT ERODED  
SHELL ROCK RIVER BANK

FIGURE 1

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e. The riverbank along the south one-half of the riverbend in the study area measures + 200 feet in length and is covered with a fairly dense stand of trees and other low-lying woody vegetation which are beneficial to the existing slope stability (plate 2).

f. The erosion-affected riverbank slope along the northern one-half of the riverbend in the study area has no supporting vegetation, except for the top of the bank which has an + 18-inch layer of topsoil with a grass cover. The remaining portion of the descending riverbank is brown sand on a + 1V on 1H slope. The existing river channel through the study area averages about 75 feet in width, and the streambed is reported to be bedrock. The bank on the opposite side of the river in the study area measures about 6 feet in height above the channel bottom and has a slope of 1V on 1H.

#### 7. FUTURE CONDITIONS WITHOUT PROJECT

The top of the existing riverbank along County Road S-56 in the study area is only an average of 5 feet from the edge of the road pavement. It is expected that without a project to control the erosion, the next significant flooding event on the river will accelerate the existing bank erosion, thereby placing County Road S-56 in imminent danger of failure. If this failure occurs, the road would have to be closed and traffic detoured 10 miles around the site.

#### 8. 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.

National Economic Development (NED) - to enhance the national economic development by increasing the value of the Nation's output of goods and services and improving the national economic efficiency.

b. Specific Objective - To prevent the economic losses associated with the erosion and imminent failure of County Road S-56, adjacent to the Shell Rock River in Cerro Gordo County, Iowa, during the period 1986-2036.

#### 9. PLANNING CONSTRAINTS

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, including the study authority as stated in paragraph 2 of this report.



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#### 10. ALTERNATIVE SOLUTIONS

Alternatives considered included riprap protection, road relocation, and no action. Road relocation would involve encroachments into several residentially developed properties and was not acceptable because of its high cost. Rockfill and/or bedding with riprap was considered to be the appropriate method of bank protection for the study site.

#### 11. SELECTED PLAN

The selected plan is to protect  $\pm 425$  linear feet with  $\pm 1,350$  cubic yards of rockfill and  $\pm 890$  tons of riprap, as shown on plates 2 and 3 (Encl 1). The finished bank slope will be 1V on 2H. The upstream  $\pm 250$  feet of the bank to be protected will be cleared of any trees and brush and be shaped prior to placing bedding and/or rockfill and riprap. The non-riprapped regraded areas at the top of the new slope and other areas along top of bank disturbed by construction will be seeded. The riprap blanket thickness will be 12 inches, and a riprap blanket 5 feet wide by 18 inches thick will be provided at the base of the riprap slope for toe protection. The downstream end of the riprapped bank slope will be warped and tapered back into the existing lower downstream bank slope, as shown on plate 2. The upstream end of bank protection will be constructed so it wraps around the existing upstream bank slope as shown on plate 2.

#### 12. HYDRAULIC ANALYSIS AND RIPRAP DESIGN

a. The nearest stream gage data collection site is located near Northwood, Iowa, upstream from the study site. The drainage area at the gage is 300 square miles. The drainage area at the study site is 460 square miles. Cross-section geometry was estimated from elevations depicted on a plan drawing (scale: 1"=200'), which was provided by the Cerro Gordo County Engineer's Office. This cross section approximation was used in conjunction with Manning's equation to estimate bank-full discharge and velocity. The existing channel slope was estimated from a 7.5-minute, USGS topographical quadrangle map, having 10-foot contours. A roughness value of 0.045 was used. This analysis yielded a discharge of 4,275 cubic feet per second ( $\text{ft}^3/\text{s}$ ) with an average velocity of 4.8 feet per second ( $\text{ft}/\text{s}$ ). This result appears unreasonable, since the maximum flood of record at the gage is  $3,250 \text{ ft}^3/\text{s}$ . Extrapolating this maximum flood to the study site using the commonly used factor (site drainage area/gage drainage area)<sup>0.5</sup> x (gage discharge), yields a maximum flood of record at the site equal to  $4,025 \text{ ft}^3/\text{s}$ .

b. To more reliably estimate expected stream velocities at the site, the maximum "point" velocity measured at the gage during the flood of record was obtained. This velocity is 5  $\text{ft}/\text{s}$  and was used as the design local velocity for the riprap design.

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c. The riprap was designed in accordance with procedures obtained in EM-1110-2-1601 and ETL 1110-2-120. The riprap design shear must exceed the local boundary shear. The local boundary shear and riprap design shear were determined assuming a 12-inch layer of riprap (the minimum allowed thickness). The local boundary shear was determined using the following equation:

$$\tau_o = (1.6) (1.5) \frac{\gamma \bar{v}^2}{\left(32.6 \log_{10} \frac{12.2y}{D_{50}}\right)^2}$$

Where  $\gamma = 62.4$  pcf  
 $\bar{v} = 5$  ft/s  
 $y = 4.5$  ft (average depth)  
 $D_{50} =$  Max, average stone diameter = 0.7 ft.  
1.5 = non-uniform flow factor  
1.6 = bend effect

$$\tau_o = 1.00 \text{ psf}$$

The riprap design shear was determined using the following equation:

$$\tau' = a (\gamma_s - \gamma) D_{50} \left(1 - \frac{\sin^2 \phi}{\sin^2 \theta}\right)^{0.5}$$

Where  $a = 0.040$   
 $\gamma_s = 165$  pcf  
 $\gamma = 62.4$  pcf  
 $D_{50} =$  min. average stone diameter = 0.6 ft.  
 $\phi =$  angle of side slope with horizontal for a side slope of 1.5H:1V  
 $\theta =$  riprap angle of repose = 40°

$$\tau' = 124 \text{ psf} > 1.00 \text{ psf} \therefore \text{O.K.}$$

d. The following is the required minimum riprap gradation:

<u>% Lighter</u> <u>By Weight</u>	<u>Limits of</u> <u>Stone Wt., Lbs.</u>
100	86-35
50	26-17
15	13- 5

The riprap blanket thickness would be 12 inches. The toe of the riprap blanket should extend at least 5 feet from the base of the bank at a thickness of 18 inches (plate 3, Encl 1). Any portion of the riprap blanket that is placed underwater should have a minimum thickness of 18 inches. The slope of the riprap blanket should be no steeper than 1.5H on 1V.

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### 13. ENVIRONMENTAL ANALYSIS

a. The project area is an outside bend of the Shell Rock River approximately one-half mile south of the town of Plymouth in Cerro Gordo County, Iowa. Bank erosion is threatening County Road S-56. The proposed work includes some cut and fill shaping of the bank, followed by bedding rock and riprap along  $\pm$  425 feet of bankline.

b. The top of the existing bank is within a few feet of the road. Right at the road the bank has less than a 1H on 1V slope and is about 20 feet high. Vegetation in this area is sparse. Upstream and downstream the river courses away from the road. For several hundred feet upstream from the road, the bank is composed of sandy materials, is steep, and is severely eroded. The upstream water line is lined with gravel to fist-sized cobble. This material appears to be the residue from erosion of the sandy bank. The upstream vegetation is essentially restricted to the top of the bankline and consists of a light density wooded area with a grass ground cover.

c. Downstream from the road, the bankline is steep, wooded, and appears to be stable. Woody vegetation observed was primarily medium growth to mature box elder (Acer negundo) and Chinese elm (Ulmus pumila). This was interspersed with some sapling/shrub woody growth. The opposite bank is much lower, about 2 feet high, and is the edge of a broad, flat, treeless pasture. The pasture surface appears to be accreted silt, but subsurface materials and the river substrate appear to be sandy.

d. Impacts to natural resources would be minimal and primarily from the loss of a small amount of woody vegetation. In response to conditions of State Water Quality Certification, exposed soils will be seeded for stabilization, any trees removed will be replanted, the removal of trees and shrubs will be minimized, and the identification of construction methods to control erosion and impacts to water quality will be integrated into project planning. The riprap will extend about 20 to 25 feet into the river and may result in some hydraulic readjustment of the opposite bank, which appeared to be composed of primarily sandy subsurface materials.

e. There are no federally listed endangered species recorded for Cerro Gordo County, and the U.S. Fish and Wildlife Service has concurred with a determination of no impact to federally listed endangered species.

f. The District Engineer has determined that damage to a public highway is imminent without immediate action. Sufficient time does not exist to prepare and process a National Environmental Policy Act (NEPA) document. The proposed project is therefore exempted from the requirements of NEPA (ER 200-2-2, para 8a; 33 CFR 230). These same time constraints also are insufficient for preparation and processing of documentation under Section 404 of the Clean Water

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Act. The proposed project is therefore exempted from these requirements under the guidance of paragraph 4-7, ER 1105-2-50. Grading operations will involve existing bank materials, and the overlying bedding rock and riprap will be physically and chemically stable and noncontaminating. State Certification under Section 401 of the Clean Water Act has been received from the Iowa Department of Water, Air, and Waste Management by letter dated 4 June 1986. A copy of their letter can be found in the pertinent correspondence (Encl 2).

g. The proposed project has been coordinated with:

Cerro Gordo County, Iowa, Engineer's Office  
U.S. Fish and Wildlife Service  
U.S. Environmental Protection Agency  
Iowa Conservation Commission  
Iowa State Historic Preservation Officer  
Iowa Department of Water, Air, and Waste Management

Copies of coordination letters and records of telephone and verbal conversations can be found in the pertinent correspondence (Encl 2).

#### 14. CULTURAL RESOURCES

In a letter dated 13 March 1986, the Iowa State Historic Preservation Officer (SHPO) requested that an archeological survey of the proposed Cerro Gordo County, Iowa, emergency bank stabilization project area be conducted prior to land disturbance activities at the site. A walkover survey of the project area, combined with observations along the eroded bank by the District Archeologist on 1 May 1986, failed to identify any cultural features or artifacts. Details of the survey, including an opinion that the proposed project would have No Effect on significant cultural resources, were sent to the SHPO in a letter dated 9 May 1986. The SHPO concurred with the No Effect finding in a letter dated 28 May 1986. Therefore, the proposed bank stabilization project can be constructed without affecting any significant cultural resources.

#### 15. REAL ESTATE REQUIREMENTS

The project involves protection to + 425 linear feet of riverbank, which requires a temporary construction easement of 0.23 acre. A permanent easement of 0.69 acre is needed to allow the local sponsor to operate and maintain the erosion control project. The local sponsor's cost for these easements is estimated at \$3,000. There are no structures within the project limits, and no families or businesses will be displaced by the project.

#### 16. ECONOMIC ANALYSIS

a. Purpose - The purpose of the economic analysis is to study the feasibility of providing Federal action to prevent further riverbank erosion in Cerro Gordo County, Iowa. The erosion is occurring along County Road S-56

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to the right bank of the Shell Rock River located approximately one-half mile south of the town of Plymouth, Iowa, in section 8 of Falls Township. The county road is in immediate danger of being damaged and/or removed by the bank erosion. The analysis evaluates two types of benefits that could result from proposed Federal actions: (1) savings in construction costs and (2) savings in detour costs. The benefits are compared with the costs of providing the Federal action proposed to eliminate the bank erosion.

b. Description of the Problem - The problem is caused by erosion of the riverbank at a sharp bend in the river. The 1984 high water of the river has moved the riverbank approximately 12 feet closer to the county road, resulting in the riverbank eroding to a point approximately 5 feet from the pavement edge. Therefore, the county road is considered to be in imminent danger of failure. Another highwater period such as that experienced in 1984 would endanger, if not remove, a substantial portion of roadway, and the county would very likely need to eliminate traffic for the time needed to remove the hazard and/or repair the roadway. For the purpose of economic analysis, it is assumed that some type of remedial action will be needed from the county if Federal action is not authorized.

c. Results of No Federal Action - Construction Benefits - The results of no Federal action provide the basis for the derivation of benefits. This was discussed with the county to arrive at reasonable assumptions regarding action that might be taken without Federal participation. The county's action would likely be as follows:

(1) After the next year's high water, the county would supply repair and protection measures to cost \$38,300.

(2) After budgeting the financing required for providing a more permanent project, approximately 1 year later the county would supply the construction needed to provide more permanent erosion control and roadway repairs at a cost of \$48,000.

(a) Using an 8-5/8 percent interest rate, the costs of county work first performed were discounted for 1 year and then annualized using a 50-year project life.

(b) The temporary construction provided in item (a) was considered to be used in the construction of a permanent project in June of 1988. Using an 8-5/8 percent interest rate, the costs of the additional construction were discounted for 2 years and annualized using a 50-year project life.

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The results of items (a) and (b) above were added together and were considered to be benefits derived from construction. The method of deriving construction benefits is illustrated by table 1.

TABLE 1

Construction Benefits

<u>Type of Construction</u>	<u>Cost of Construction (\$)</u>	<u>Number of Years to Present Time</u>	<u>Present Worth Factor</u>	<u>Cost of Construction -Yr. 1986 (\$)</u>	<u>Annual Cost Equals Benefit (\$)</u>
Temporary	38,300	1	.9206	35,259	3,090
Permanent	48,000	2	.8475	40,680	<u>3,566</u>
TOTAL					6,656 rounded 6,700

d. Detour Benefits - Detour benefits are derived by considering the costs represented by the increased length of travel and length of time that detours are required. Route location used for detour is shown on plate 4 (Encl 1). Fifty percent of the traffic using County Road S-56 is assumed to be of local origin, with the remainder being through traffic. Information regarding vehicular costs per mile of travel was obtained from a brochure by the U.S. Department of Transportation dated 1984 and updated to current time.

Another type of detour loss is the opportunity cost to the vehicle operator when extra time is required to use the detour. The value of time was assumed to be represented by the median wage as reported by the U.S. Bureau of Census for Cerro Gordo County. The median wage reported for the year 1983 was \$7.91 per hour. This figure was divided by 3 to allow for possible detour time used when opportunity loss was not involved. Therefore, the value of extra time was assumed to be \$2.64 (\$7.91 - 3). The detour time required was based upon the assumption that vehicles would average 40 miles per hour. This amounts to .025 hour per mile, which, when multiplied by \$2.64, equals \$0.066 per mile. The resulting opportunity cost per year is \$406,246 (\$0.066 x 6,157,240).

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Detour losses are further explained by table 2.

TABLE 2  
Detour Losses  
County Road in Section 34

<u>Vehicle Type</u>	<u>Extra Miles Traveled</u>	<u>Average Number of Trips per Day</u>	<u>Miles per Day</u>	<u>Miles per Year</u>	<u>Vehicle Costs Per Mile (\$)</u>	<u>Total Costs Per Year (\$)</u>
Cars	10.0	1,433	14,330	5,216,120	0.15	782,418
Trucks	10.0	254	2,540	924,560	0.35	323,596
School Buses	10.0	2	20	7,280	0.59	4,295
Mail Trucks	10.0	2	20	7,280	0.19	1,383
Total		1,691		6,155,240		1,111,693
Opportunity Costs						<u>406,246</u>
Total Vehicle and Opportunity						1,517,939

In addition to vehicle loss, another detour loss is represented by the added costs for maintaining the routes used by the detoured traffic. Costs of additional road wear and tear, such as adding road surfacing and making road repairs, occur from the added use of roads. The annual value of these costs can be equated to detour benefits.

The methods of computing detour benefits are given in table 3. Losses are assumed to occur over a period of 10 days for each interruption.

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TABLE 3

Detour Benefits

Year of Loss	Detour Loss to Vehicles (\$)	No. of Years to Present Time	Present Worth Factor	Present Worth Detour Loss (\$)	Cost of Maintaining Detour Road (\$)	Present Worth Roadway Costs (\$)
1987	41,701 <u>1/</u>	1	.9206	38,390	1,900	1,749
1988	41,701 <u>1/</u>	2	.8475	35,342	1,900	1,610
Total				73,732		3,359
Capital Recovery Factor				.08765		.08765
Annual Equivalent Benefit				6,463		294
Total Detour Benefit						6,757
					rounded	6,800

1/ \$1,517,937 from table 2 multiplied by  $\frac{10}{364}$

e. Agricultural Losses - There is no cropland or agricultural structures involved with the erosion; therefore, agricultural loss was not included in the analysis.

f. The Cost of Federal Action - Federal action involves grading and sloping the riverbank and placing riprap and rockfill/bedding for a length of bank considered necessary to stop the erosion. Costs include locating, transporting, and placing construction materials. Construction costs were computed as shown by table 4.



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TABLE 4

Cost Estimate  
(May 1986 Price Levels)

<u>Item</u>	<u>Quantity</u>	<u>Unit</u>	<u>Unit Cost (\$)</u>	<u>Federal (\$)</u>	<u>Non-Federal (\$)</u>
Mobilization and Demobilization	1	Job	Sum	3,000	
Site Preparation	350	L.F.	5.00	1,800	
Seeding	0.25	Ac	1,175.00	300	
Rockfill & Bedding Material (including delivery to site)	1,890	Ton	5.50		10,400
*Rockfill & Bedding (installed in place)	1,890	Ton	2.85	5,400	
Riprap (delivered and placed)	890	Ton	20.50	18,300	
Real Estate (easements)					<u>3,000</u>
				28,800	13,400
			25% Contingencies	<u>7,200</u>	
				36,000	
			6% Engineering and Design	2,200	
			8% Supervision and Administration	<u>2,900</u>	
			Total Costs	41,100	13,400
			Total Non-Federal Costs	<u>13,400</u>	
			TOTAL PROJECT COST	54,500	

\*Government contractor will place this material which will be purchased and delivered to the site by the Cerro Gordo County Highway Department.

Annual costs were computed as shown in table 5. The annual cost to vehicles using detour routes was based on the assumption that the detour would be in effect for 1 week during the Federal construction.

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g. Cost Apportionment - Recent Federal policy requires construction cost-sharing for Section 14 projects awarded after 1 October 1986. Project cost-sharing is in accordance with the provisions agreed to by the Administration the Senate majority leadership, and is designed to provide consistency among projects and programs and equity among sponsors of comparable works. Under these provisions, the non-Federal project sponsor would provide, during the period of construction, an amount equal to at least 25 percent of the total project cost. The amount to be provided includes all lands, easements, right-of-way, and utility and facility alterations and relocations required for construction of the project, as well as a cash payment equal to the difference between the value of the above items and 25 percent of the total project cost; except that in no case shall the cash payment be less than 5 percent of the total project cost. The cost apportionment is shown in table 4a.

TABLE 4a

Cost Apportionment

Federal

Total Project First Cost	\$ 54,500
Total Non-Federal Share (\$13,400 in Credits & 5% Cash Payment of \$2,725)	- <u>16,125</u>
Total Federal Apportionment	\$ 38,375

Non-Federal

25% of Total Project First Cost	\$ 13,625
Credits (Right-of-Way and Rockfill/Bedding Materials)	- <u>13,400</u>
Basic Cash Contribution	\$ 225
Additional Cash Contribution Needed to Meet 5% Requirement	<u>2,500</u>
Total Non-Federal Cash Contribution	\$ 2,725
Total Non-Federal Apportionment (Consisting of \$13,400 Credit & \$2,725 in Cash Contribution)	\$ 16,125

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TABLE 5

Annual Costs

<u>Description</u>	<u>First Cost (\$)</u>	<u>Annual Cost (\$)</u>
Construction	54,500	
Interest During Construction	N/A	
Detour Cost for Vehicles <u>1,517,937</u> 52	<u>29,191</u>	
TOTAL	83,691	
Annual Cost (.08765) (83,691)		7,336
Annual Operation and Maintenance Cost of Riprap	18,300	
Assume 1/2 replaced every 25 yrs PW <sub>25</sub> x \$9,150 x .08765 = .1264 x 9,150 x .08765		101
TOTAL ANNUAL COSTS		7,437 rounded 7,400

A summary of "with" and "without" conditions and the resulting benefits versus costs is given in table 6.

TABLE 6

Summary of Results

<u>Description</u>	<u>With Project Conditions Annual Costs (\$)</u>	<u>Without Project Conditions Annual Benefits (\$)</u>
Detour Benefits		6,800
Project Costs	7,400	6,700
TOTALS	7,400	13,500
Benefit-to-Cost Ratio =	$\frac{13,500}{7,400} = 1.8$	

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17. 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 the plans and specifications and the construction of the project.

b. Coordination - Coordination is being maintained with the following State and Federal agencies:

Cerro Gordo County, Iowa, Engineer's Office  
U.S. Fish and Wildlife Service  
U.S. Environmental Protection Agency  
Iowa Conservation Commission  
Iowa State Historic Preservation Officer  
Iowa Department of Water, Air, and Waste Management

c. Cerro Gordo County, Iowa

(1) Cerro Gordo County, Iowa, has agreed to act as local sponsor for the proposed project. Initial coordination has been completed. The Local Cooperation Agreement requirements are:

(a) Provide without cost to the United States all real estate interests necessary for the project;

(b) Hold and save the United States free from damages due to the construction, operation, and maintenance of the project, except where such damages are due to the fault or negligence of the United States or its contractors;

(c) Maintain and operate the project, or integral parts thereof, in accordance with regulations prescribed by the Secretary of the Army;

(d) Comply with the applicable provisions of the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, Public Law 91-646, approved 2 January 1971, in acquiring lands, easements, and rights-of-way for construction and subsequent maintenance of the project and inform affected persons of the pertinent benefits, policies, and procedures in connection with said act;

(e) 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, in connection with the maintenance and operation of the project; and

NCRPD-F

SUBJECT: Initial Appraisal Report for Section 14, Emergency Streambank Protection, Shell Rock River, County Road S-56, Cerro Gordo County, Iowa

(f) Contribute all project costs in excess of the Federal statutory limitation of \$250,000.

(g) Provide, prior to advertisement of the construction contract, an amount equal to 25 percent of the estimated total project cost. The amount to be provided shall include all lands, easements, rights-of-way, and utility and facility alterations and relocations required for construction of the project, as well as a cash payment equal to the difference between the value of the above items and 25 percent of the estimated total project cost; provided, however, that in no case shall the cash payment required be less than 5 percent of the estimated total project cost.

(2) In addition, the County must enter into an agreement containing the foregoing items of local cooperation and which will give the Government a right to enter, at reasonable times and in a reasonable manner, upon land which it owns or controls, for access to the project for the purpose of inspection. If such inspection shows that the County for any reason is failing to operate and maintain the project in accordance with the assurances hereunder and has persisted in such failure after a reasonable notice in writing by the Government delivered to the Cerro Gordo County Engineer, the Government shall have the further right, as stated above, to enter upon the land for the purpose of operating and maintaining the project. Operation or maintenance by the Government in such event shall not 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.

The estimated total non-Federal cost apportionment consists of \$13,400 for real estate easement costs, rockfill/bedding materials and delivery, plus a cash contribution of \$2,725. It is anticipated that the Cerro Gordo County will have to invest \$101 annually to replace riprap during the 50-year project life.

#### 18. RECOMMENDATION

I recommend that the plan selected herein to provide bedding rock and riprap material to protect County Road S-56 from erosion by the Shell Rock River in Cerro Gordo County, Iowa, be authorized for implementation as a Federal project with a total cost apportionment to the United States presently estimated at \$38,375.

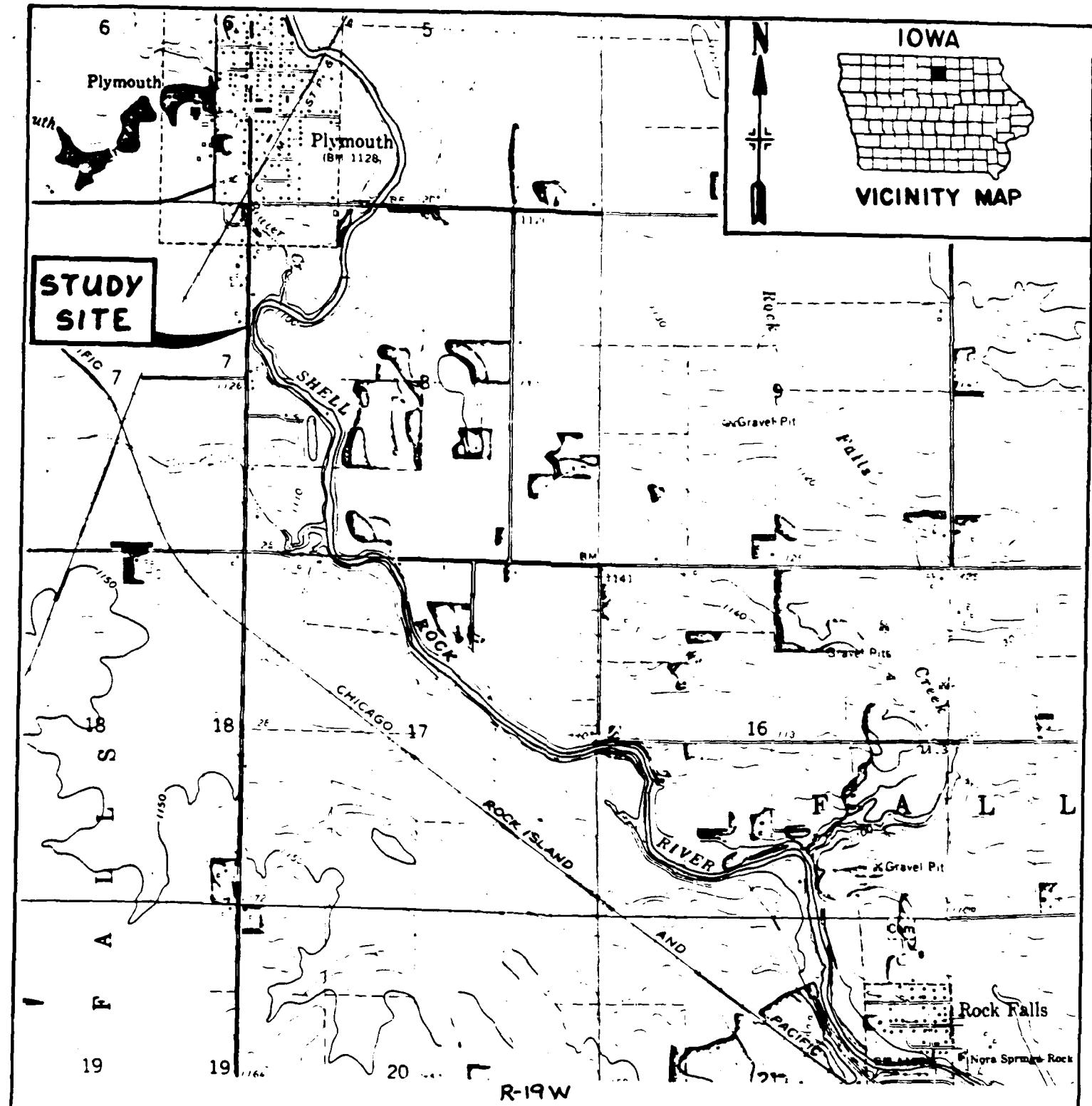
- 3 Encls  
1. Plates  
2. Pertinent Correspondence  
3. Dist. List

*William C. Burns*

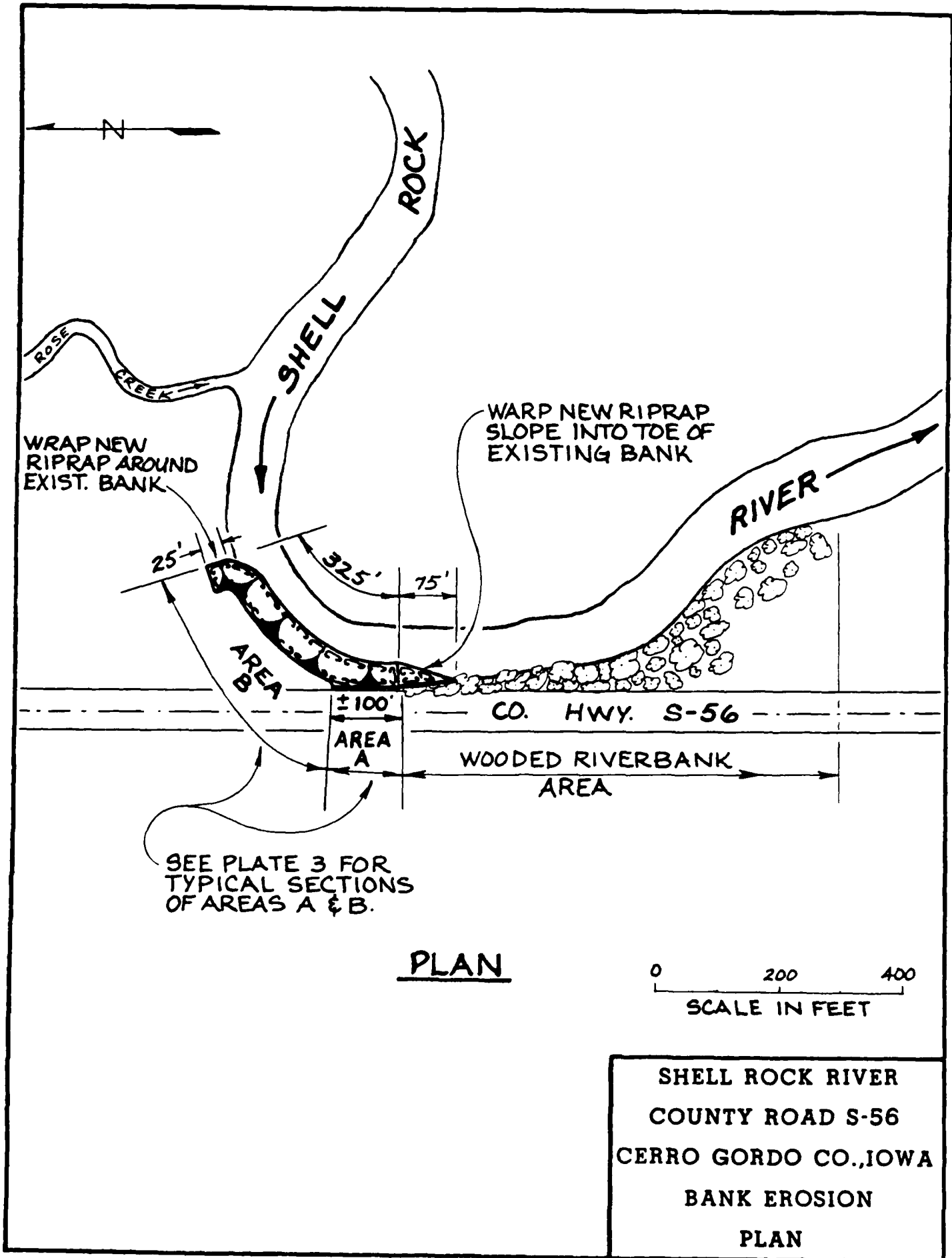
WILLIAM C. BURNS  
Colonel, Corps of Engineers  
Commanding

PLATES

Encl 1



**SHELL ROCK RIVER  
 COUNTY ROAD S-56  
 CERRO GORDO CO., IOWA  
 BANK EROSION  
 STUDY LOCATION**



WRAP NEW  
RIPRAP AROUND  
EXIST. BANK.

WARP NEW RIPRAP  
SLOPE INTO TOE OF  
EXISTING BANK

25'

325'

75'

AREA  
B

±100'

AREA  
A

CO. HWY. S-56

WOODED RIVERBANK  
AREA

SEE PLATE 3 FOR  
TYPICAL SECTIONS  
OF AREAS A & B.

PLAN

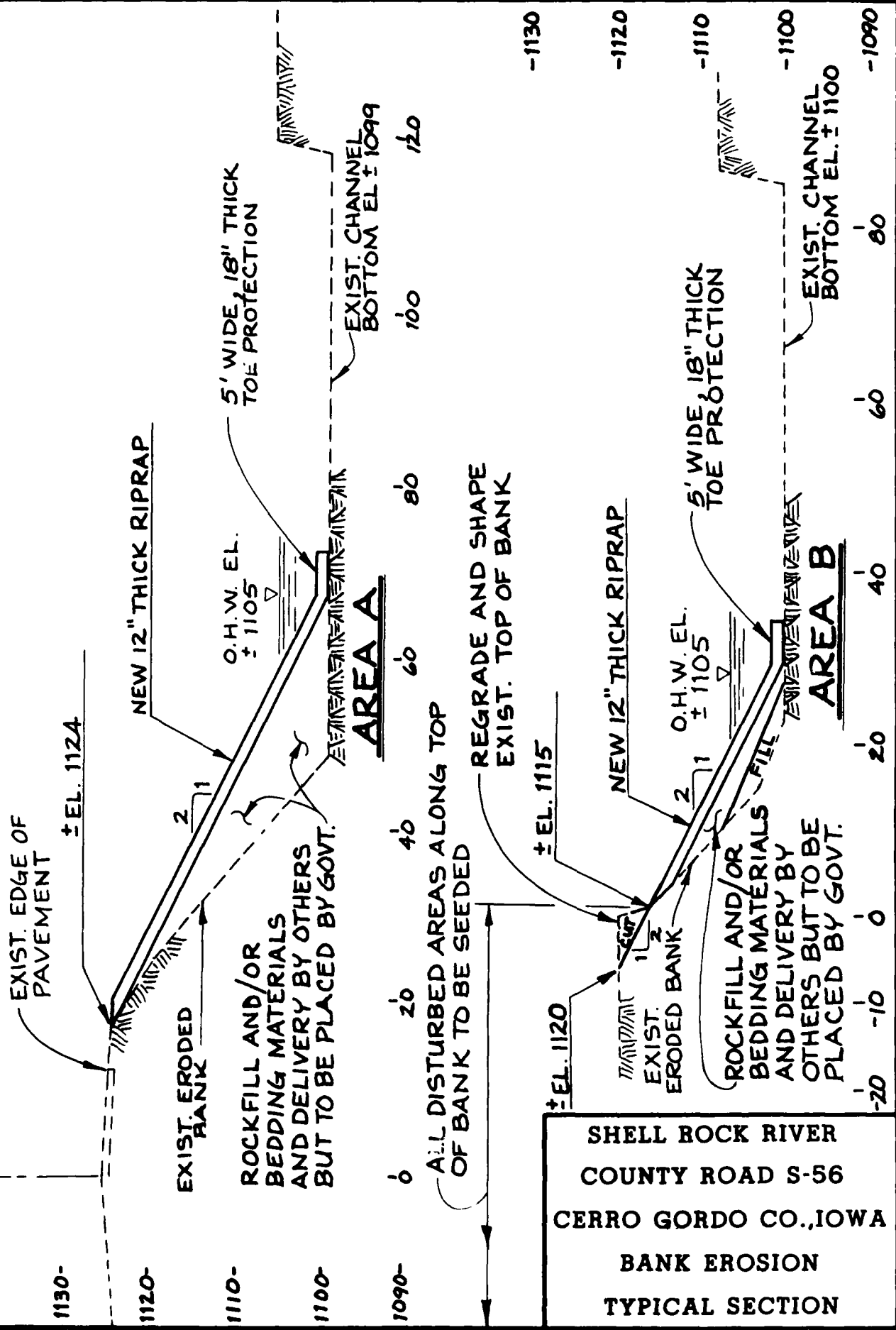
0 200 400  
SCALE IN FEET

SHELL ROCK RIVER  
COUNTY ROAD S-56  
CERRO GORDO CO., IOWA  
BANK EROSION  
PLAN

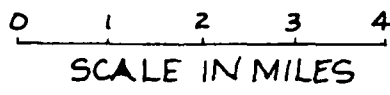
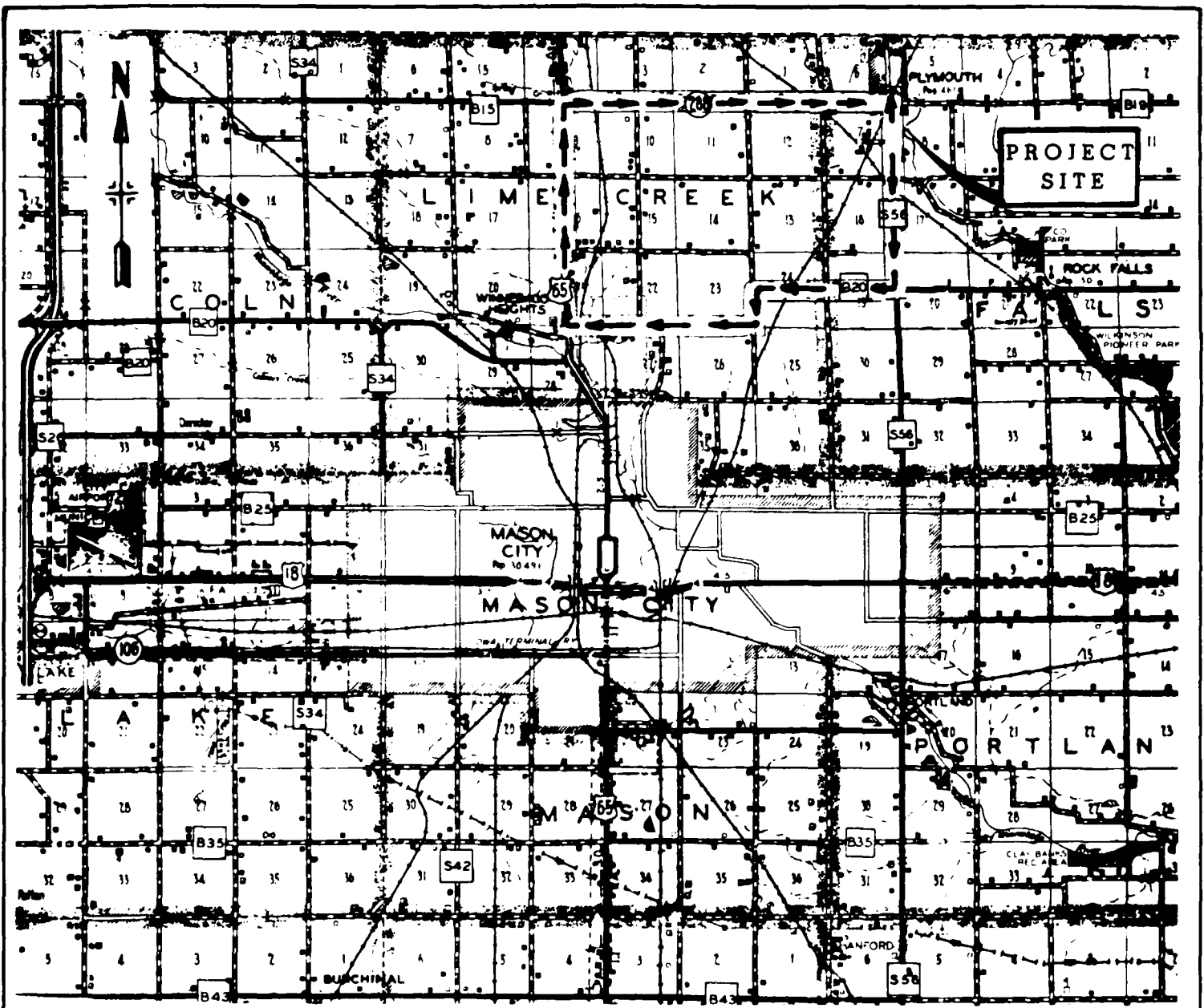


# SHELL ROCK RIVER

HIGHWAY 9-56



SHELL ROCK RIVER  
COUNTY ROAD S-56  
CERRO GORDO CO., IOWA  
BANK EROSION  
TYPICAL SECTION



--->>> DETOUR ROUTE

SHELL ROCK RIVER  
 CERRO GORDO CO., IOWA  
 DETOUR ROUTE  
 FOR PROJECT SITE  
 SECTION 8

PERTINENT CORRESPONDENCE

Encl 2

W. G. DAVISON, P. E. & L. S.  
**CERRO GORDO COUNTY ENGINEER**

COURT HOUSE  
220 NORTH WASHINGTON  
MASON CITY IOWA

January 30, 1986

District Engineer  
U.S. Army Engineer District, Rock Island  
Clock Tower Building  
Rock Island, ILL 61201

Dear Sir:

This letter is to seek the assistance of the U.S. Army Corps of Engineers under Section 14 of the 1946 Flood Control Act, in providing erosion protection to Cerro Gordo County, Ia.

Your consideration of this request will be greatly appreciated. In the event that you desire additional information, please contact my office.

Very truly yours,



W. G. Davison, P.E. & L.S.  
Cerro Gordo Co. Engineer

WGD/ckm  
CC: J Nichols  
Enc: Letter of 12-11-85

W. G. DAVISON, P. E. & L. S.  
**CERRO GORDO COUNTY ENGINEER**

COURT HOUSE  
220 NORTH WASHINGTON  
MASON CITY, IOWA

June 3, 1986

District Engineer  
U.S. Army Engineer District, Rock Island  
Attn: Planning Division  
Clock Tower Building - P.O. Box 2004  
Rock Island, Illinois 61202-2004

Dear Sir:

The County of Cerro Gordo, Iowa has reviewed the draft of the proposed Local Cooperation Agreement covering streambank erosion control on the Shell Rock River at S-56 in Section 8-97-19. The Agreement includes the following obligations to be carried out by Cerro Gordo County:

- a. Provide without cost to the United States all real estate interests necessary for the project;
- b. Hold and save the United States free from damages due to the construction, operation, and maintenance of the Project, except where such damages are due to the fault or negligence of the United States or its contractors;
- c. Maintain and operate the Project, or integral parts thereof, in accordance with regulations prescribed by the Secretary of the Army;
- d. 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 right-of-way for construction and subsequent maintenance of the Project and inform affected persons of the pertinent benefits, policies, and procedures in connection with said Act;
- e. 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, in connection with the maintenance and operation of the project; and
- f. Contribute all Project costs in excess of the Federal statutory limitation of \$250,000. The County agrees that, in the event non-Federal funds are required pursuant to this paragraph, it will, prior to award of any contract covering the work, provide such non-Federal Funds upon receipt of and in accordance with a written request therefore from the undersigned Contracting

U.S. Army Engineer District  
June 3, 1986  
Page 2

Officer or his successor.

g. In addition to subparagraph f. above, the County agrees to cost-share 25 percent of the total project costs, which may include the costs of rights-of-way and other items for this type of project, with no less than 5 percent of the total project costs being a cash payment.

The County hereby gives the Government a right to enter, at reasonable times and in a reasonable manner, upon land which it owns or controls, for access to the Project for the purpose of inspection. If such inspection shows that the County for any reason is failing to operate and maintain the Project in accordance with the assurances hereunder and has persisted in such failure after a reasonable notice in writing by the Government delivered to the County Engineer of the Cerro Gordo County, the Government shall have the further right, as stated above, to enter upon the land for the purpose of operating and maintaining the project. Operation or maintenance by the Government in such event shall not 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.

This is to advise that the County has not seen or reviewed any final report for this project and reserves the right to withdraw from participation following review.

Sincerely,



---

Willard Gisel, Chairman  
Board of Supervisors  
Cerro Gordo County, Iowa



**TELEPHONE OR VERBAL CONVERSATION RECORD**

For use of this form, see AR 340-15; the proponent agency is The Adjutant General's Office.

DATE

9 JUNE 1986

SUBJECT OF CONVERSATION

SECT 14 AUTHORITY, SHELL ROCK RIVER, CERRO GORDO CO., IOWA

INCOMING CALL

PERSON CALLING	ADDRESS	PHONE NUMBER AND EXTENSION
PERSON CALLED	OFFICE	PHONE NUMBER AND EXTENSION

OUTGOING CALL

PERSON CALLING BOB VANDERJACK	OFFICE NCRPD-E	PHONE NUMBER AND EXTENSION EXT. 385
PERSON CALLED DOUG JANKE	ADDRESS IOWA CONS. COMMISSION (WILDLIFE BIOLOGIST)	PHONE NUMBER AND EXTENSION (515) 456-3730

SUMMARY OF CONVERSATION:

1. I HAD CALLED MR JANKE EARLIER AND HAD EXPLAINED THE PROPOSED PROJECT AND THAT BECAUSE OF THE EMERGENCY NATURE OF THE PROBLEM THERE WOULD BE NO NEPA DOCUMENT PREPARED AND THERE WOULD BE NO SECT. 404 PUBLIC NOTICE.
2. MR JANKE HAD VISITED THE PROJECT SITE AND SAID THAT HE DIDN'T THINK HIS AGENCY WOULD HAVE ANY OBJECTIONS TO THE PROJECT.

Bob Vanderjack



COMMISSIONERS

BAXTER FREESE, Chairman - Wellman  
RICHARD THORNTON, Vice-Chairman - Des Moines  
JOHN D FIELD - Hamburg  
SAM KENNEDY, III - Clear Lake  
MARIAN PIKE - Whiting  
WILLIAM B RIDOUT - Estherville  
THOMAS E SPAMN - Dubuque



Larry J. Wilson — Director  
Wallace State Office Building, Des Moines, Iowa 50319-0034  
515/281-5145

An EQUAL OPPORTUNITY Agency

June 2, 1986

Mr. Doyle W. McCully  
Chief, Engineer Division  
U.S. Army Corps of Engineers  
Clock Tower Building  
P.O. Box 2004  
Rock Island, Illinois 61204-2004

RE: Application by the Rock Island Corps of Engineers  
and Adair County Engineers Office to Curtail Stream  
Bank Erosion on the Middle River, Adair County, Iowa

Dear Mr. McCully:

The Iowa Conservation Commission has reviewed the proposed stream bank erosion protection located on the Middle River in NW1/4, Section 36, T76N, R30W, Adair County, Iowa. This proposed work is to curtail erosion and protect County Road P-48 bridge abutment, wingwall and approach road from failure.

The Middle River at this location is classed as a non-meandered stream and not under the jurisdiction of this agency from a permit standpoint. No permit is required from this agency to complete this work.

We are by copy of this letter, notifying Adair County that no permit is required from this department for this project.

Sincerely,

LARRY J. WILSON, DIRECTOR  
IOWA CONSERVATION COMMISSION

L44/slb

cc: Mr. Don Lynam, P.E.,  
Adair County Engineer  
Mr. Eric Sansgaard,  
Conservation Officer, Adair County

TELEPHONE OR VERBAL CONVERSATION RECORD For use of this form, see AR 340-15; the proponent agency is The Adjutant General's Office.		DATE
		29 MAY 1986
SUBJECT OF CONVERSATION SECT 14 AUTHORITY, COUNTY ROAD S-52, CERRO GORDO CO., IOWA		
INCOMING CALL		
PERSON CALLING	ADDRESS	PHONE NUMBER AND EXTENSION
PERSON CALLED	OFFICE	PHONE NUMBER AND EXTENSION
OUTGOING CALL		
PERSON CALLING BOB VANDERJACK	OFFICE NCRPD-E	PHONE NUMBER AND EXTENSION (309) 788-6361/385
PERSON CALLED JIM WAHL	ADDRESS IA. CONS. COMMISSION (CERRO GORDO CO., FISHERY BIOL.)	PHONE NUMBER AND EXTENSION (515) 357-3517
SUMMARY OF CONVERSATION:		
<p>1. I EXPLAINED THE PROPOSED PROJECT TO MR. WAHL AND ALSO THAT BECAUSE OF THE EMERGENCY NATURE OF THE PROBLEM THERE WOULD BE NO NEPA DOCUMENT PREPARED AND THERE WOULD BE NO SECT. 404 PUBLIC NOTICE.</p> <p>2. MR WAHL WAS FAMILIAR WITH THE PROJECT AREA AND SAID HE DIDN'T THINK THERE WOULD BE ANY ADVERSE EFFECTS OR THAT HIS AGENCY WOULD OBJECT TO THE PROJECT.</p> <p style="text-align: right;">Bob Vanderjack</p>		

<b>TELEPHONE OR VERBAL CONVERSATION RECORD</b> For use of this form, see AR 340-15; the proponent agency is The Adjutant General's Office.	DATE <b>23 MAY 86</b>
---	--------------------------

SUBJECT OF CONVERSATION  
**SECT 14 AUTHORITY, SHELL ROCK RIVER, CERRO GORDO, CO., IA.**

INCOMING CALL		
PERSON CALLING	ADDRESS	PHONE NUMBER AND EXTENSION
PERSON CALLED	OFFICE	PHONE NUMBER AND EXTENSION

OUTGOING CALL		
PERSON CALLING <b>BOB VANDERSACK</b>	OFFICE <b>NCRPD-E</b>	PHONE NUMBER AND EXTENSION <b>X-385</b>
PERSON CALLED <b>Darrel Hayes</b>	ADDRESS <b>IOWA C.C. PLANNING DIVISION</b>	PHONE NUMBER AND EXTENSION <b>(515) 281-8675</b>

SUMMARY OF CONVERSATION

1. I EXPLAINED TO MR. HAYES THAT WE WERE CONSIDERING A STREAM BANK EROSION PROJECT ON THE SHELL ROCK RIVER IN CERRO GORDO CO.
2. I ASKED IF THE SHELL ROCK RIVER WAS CLASSIFIED AS A MEANDERING STREAM AND IF THE ROCK ISLAND DISTRICT WOULD NEED A PERMIT FROM THE IOWA CONSERVATION COMMISSION.
3. MR HAYES SAID THE SHELL ROCK RIVER WAS NOT CLASSIFIED AS A MEANDERING STREAM AND NO PERMIT WOULD BE NEEDED.

*Bob Vandeyack*

<b>TELEPHONE OR VERBAL CONVERSATION RECORD</b> <small>For use of this form, see AR 340-15; the proponent agency is The Adjutant General's Office.</small>		DATE 2 JUNE 1986
SUBJECT OF CONVERSATION SECT 14 AUTHORITY, COUNTY ROAD S-52, CERRO GORDO CO., IOWA		
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
BOB VANDERSACK	NCRPD-E	X-385
PERSON CALLED	ADDRESS	PHONE NUMBER AND EXTENSION
BOB BARBER	U.S. E.P.A. KANSAS CITY, KANSAS	(913) 236-2823
SUMMARY OF CONVERSATION: 1. I EXPLAINED THE PROPOSED PROJECT TO MR BARBER AND ALSO THAT BECAUSE OF THE EMERGENCY NATURE OF THE PROBLEM THERE WOULD BE NO NEPA DOCUMENT PREPARED AND THERE WOULD BE NO SECT. 404 PUBLIC NOTICE. 2. MR BARBER RECOMMENDED THAT, IF TECHNICALLY FEASIBLE, THE AMOUNT OF FILL BE REDUCED AND THE FINAL BANKLINE SLOPE BE STEEPENED SO AS TO REDUCE THE AMOUNT OF ENCROACHMENT INTO THE RIVER CHANNEL. <div style="text-align: right; margin-top: 20px;">           Bob Vanderjack         </div>		

**TELEPHONE OR VERBAL CONVERSATION RECORD**

For use of this form, see AR 340-15; the proponent agency is The Adjutant General's Office.

DATE

10 JUNE 1986

SUBJECT OF CONVERSATION

SECT 14 AUTHORITY, SHELL ROCK RIVER, CERRO GORDO, CO., IOWA

INCOMING CALL

PERSON CALLING

ADDRESS

PHONE NUMBER AND EXTENSION

PERSON CALLED

OFFICE

PHONE NUMBER AND EXTENSION

~~OUTGOING CALL~~ OFFICE VISIT

PERSON CALLING

OFFICE

PHONE NUMBER AND EXTENSION

BOB VANDERSACK

NCRPD-E

X-385

PERSON CALLED

ADDRESS  
U.S. FISH & WILDLIFE SERVICE  
Rock Is., IL FIELD OFFICE

PHONE NUMBER AND EXTENSION

WAYNE FISHER

(309) 793-5800

SUMMARY OF CONVERSATION:

1. THE ROCK ISLAND FIELD OFFICE OF THE U.S. FISH AND WILDLIFE SERVICE WAS VISITED ON 9 JUNE 1986.
2. MAPS AND DRAWINGS OF THE PROPOSED SUBJECT PROJECT HAD PREVIOUSLY BEEN SUPPLIED TO THE U.S. FISH AND WILDLIFE SERVICE.
3. PHOTOGRAPHS OF THE PROJECT SITE WERE OBSERVED AND THE PROJECT WAS DISCUSSED INCLUDING THE FACTS THAT NO NEPA DOCUMENT WOULD BE PREPARED AND NO SECT 404 PUBLIC NOTICE WOULD BE ISSUED BECAUSE OF THE EMERGENCY NATURE OF THE PROBLEM.
4. MR FISHER SAID THAT HE DIDN'T THINK HIS AGENCY WOULD OBJECT TO THE PROJECT AND CONCURRED THAT NO EFFECT ON ANY FEDERALLY LISTED ENDANGERED SPECIES WOULD BE ANTICIPATED BECAUSE OF THE PROJECT.

Bob Vandersack



department of water, air and waste management

June 4, 1986

Bob Vanderjack  
Rock Island District  
Army Corps of Engineers  
Clock Tower Building  
P.O. Box 2004  
Rock Island, IL 61204-2004

Re: Request for State Section 401 Certification  
Section 14, 1946 Flood Control Act (as amended)  
Emergency Streambank Stabilization on Shell Rock River near Phymouth  
Border of Section 7 & 8, T97N, R19W, Cerro Gordo County, Iowa  
Water Quality Designation: Class A/B (w) and  
High Quality Resource Water ---- these waters are to be protected for  
wildlife, fish, aquatic and semi-aquatic life and primary contact uses.  
High Quality Resource Waters are to have their physical and biological  
integrity preserved and enhanced.

Dear Mr. Vanderjack:

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 the project is consistent with Iowa's Water Quality Standards.

This letter certifies, subject to the following conditions, 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 Flood Plain Construction Permit is not needed from this Department by the Corps of Engineers, since the Federal government is generally exempt from this state permitting requirement. However, the local sponsor, Cerro Gordo County, who will be responsible for project maintenance, is required to apply for a Flood Plain Construction Permit.

Conditions:

1. All soil left exposed due to construction shall be reseeded for erosion control purposes.
2. Any trees removed as a result of construction shall be replanted.
3. Removal of woody vegetation and shrubs shall be only that necessary to place the riprap.
4. The applicant is responsible for implementing construction methods and

Bob Vanderjack  
Rock Island District  
Army Corps of Engineers  
Rock Island, IL  
June 4, 1986  
Page 2

site cleanup necessary for incidental erosion control and prevention of other forms of water pollution.

Sincerely,

PROGRAM DEVELOPMENT DIVISION

*Michael K. Anderson*

Michael K. Anderson  
Environmental Engineer  
Rules Development Branch

MKA:ss1/RDW154S02.02

cc: RIDCOE (William C. Burns)  
Jeff Simmons, WAWM

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INITIAL APPRAISAL REPORT FOR SECTION 14  
EMERGENCY STREAMBANK PROTECTION  
SHELL ROCK RIVER, COUNTY HIGHWAY S-56  
CERRO GORDO COUNTY, IOWA

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WASHINGTON DC 20510

HONORABLE CHARLES W. BASSLEY, UNITED STATES SENATOR  
721 FEDERAL BUILDING, 210 W. LENTZ STREET  
DES MOINES, IA 50319

HONORABLE TIM HARKIN, UNITED STATES SENATOR  
737 FEDERAL BUILDING, 210 W. LENTZ STREET  
DES MOINES, IA 50319

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WASHINGTON DC 20511

HONORABLE MARKET B. FULLER, REPRESENTATIVE IN CONGRESS  
309 POLK OFFICE BUILDING, MADISON CITY, IA 50401

MR. JACK RILEY, NATIONAL PARK SERVICE, POE  
ROCKY MT. SIGNIFICANT, P.O. BOX 1288  
DENVER, CO 80221

DIRECTOR, NATIONAL COUNCIL ON HISTORIC PRESERVATION  
OLD POST OFFICE #85, 1100 PENNSYLVANIA AVENUE NW  
WASHINGTON DC 20004

DR. ALLAN HIRSH - DIRECTOR, OFFICE OF FEDERAL ACTIVITIES (A-104)  
US ENVIRONMENTAL PROTECTION AGENCY, 401 M STREET SW  
WASHINGTON DC 20460

JACK M. FRITZMAN, ADMINISTRATION OF ENVIRONMENTAL QUALITY  
FEDERAL ENERGY REGULATORY COMMISSION, 801 N. CAPITOL ST. A  
WASHINGTON DC 20549

DEPT OF HEALTH & HUMAN SERVICES, DR. M. L. H. HUMPHREY, MD  
200 INDEPENDENT AVENUE NW, WASHINGTON DC 20037

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DEPARTMENT OF INTERIOR, WASHINGTON, DC 20241

18

DIRECTOR, OFFICE OF HABITAT RESTORATION, NATIONAL MARINE FISHERIES SERVICE  
NOAA, WASHINGTON, DC 20235

DIRECTOR, WATER RESOURCE MANAGEMENT  
DIVISION OF PARASITIC DISEASES, CENTER FOR DISEASE CONTROL  
ATLANTA, GA 30333

MR RICHARD NELSON - FIELD SUPERVISOR, U.S. FISH & WILDLIFE SERVICE  
1830 SECOND AVENUE - ONE FLOOR, ROCK ISLAND, IL 61201

STATE CONSERVATIONIST, WILDLIFE CONSERVATION SERVICE USDA  
493 FEDERAL BLVD, 210 WILSON STREET  
DES MOINES, IA 50309

2

DIRECTOR, IOWA GEOLOGICAL SURVEY  
WATER RESOURCES DIVISION, P.O. BOX 1230  
IOWA CITY, IA 52240

CHIEF, COMPLIANCE - NOTING CHIEF, ENVIRONMENTAL REVIEW BRANCH  
U.S. ENVIRONMENTAL PROTECTION AGENCY - 505 VII, 700 MINNESOTA AVE  
KANSAS CITY, KS 66101

3

REGIONAL DIRECTOR, REGION 3, U.S. FISH AND WILDLIFE SERVICE  
FEDERAL BUILDING EAST ANNELING, TWAIN ESTATES, MN 55111

2

REGIONAL HYDROLOGIST, NATIONAL WEATHER SERVICE  
CENTRAL REGION HEADQUARTERS, NOAA, 1111 12TH ST ROOM 1836  
KANSAS CITY, MO 64112

REGIONAL FORESTER, FORESTRY DIVISION  
U.S. DEPT OF AGRICULTURE, 311 W. WISCONSIN AVE - SUITE 500  
MILWAUKEE, WI 53202

2

DIVISION CHIEF, U.S. ARMY ENGINE DIVISION NORTH CENTRAL  
ATTN: ENLTOPK BRANCH (CONTRACTS), 134 SOUTH CLARK ST  
CHICAGO, IL 60604-1192

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HONORABLE TERRY BRANTAG, GOVERNOR OF IOWA  
STATE CAPITAL, DES MOINES, IA 50319

OFFICE FOR PLANNING & PROGRAMMING, CAPITAL ANNEX  
ATTN: A. THOMAS WALLACE, 523 EAST 12TH STREET  
DES MOINES, IA 50319

4

DIRECTOR, IOWA DEPARTMENT OF TRANSPORTATION  
OFFICE OF POLICY, 800 LINCOLN WAY  
AMES, IA 50010

STEPHEN HALLAU - EXECUTIVE DIRECTOR, IOWA DEPT OF WATER AIR & WASTE MGT  
HENRY A WALLACE BUILDING, 400 EAST GRAND AVENUE  
DES MOINES IA 50319

2

DIRECTOR, IOWA WATER RESOURCES INSTITUTE  
355 IOWA ENGINEERING BUILDING, IOWA STATE UNIVERSITY  
AMES IA 50010

DR. LOWELL SOIKO - DEPUTY, STATE HISTORIC PRESERVATION OFFICE  
HISTORICAL BUILDING, EAST 12TH & GRAND AVENUE  
DES MOINES, IA 50319

DR. JOE TIFFANY, OFFICE OF STATE ARCHAEOLOGIST  
EAST LAWN BUILDING, UNIVERSITY OF IOWA  
IOWA CITY IA 52242

HONORABLE ARTHUR L. BRANTAG, SENATOR, STATE OF IOWA  
R.R. #1, P.O. #10, STRA SPRINGS, IA 50488

HONORABLE ALVIN V. MILLER, IOWA SENATOR  
BOX 287, VENTURA, IA 50482

HONORABLE BETTY JEAN CLARK, IOWA REPRESENTATIVE  
Rm 2 - BOX 70, ROCKWELL, IA 50479

HONORABLE JOHN NEONINCA, IOWA REPRESENTATIVE  
200 N. CRESCENT DRIVE, MASON CITY IA 50401

HONORABLE LOWELL E. MOULDER, IOWA REPRESENTATIVE  
Rm 1 - BOX 96, KENNETT IA 50441

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MR LARRY WILSON - DIRECTOR, IOWA CONSERVATION COMMISSION  
WALLACE STATE OFFICE BLDG, 800 WEST GRAND AVENUE  
DES MOINE IA 50319

COUNTY ATTORNEY, CLEAR LAKE COUNTY COURT HOUSE  
MASON CITY IA 50401

BOARD OF SUPERVISORS, CLEAR LAKE COUNTY COURT HOUSE  
MASON CITY IA 50401

COUNTY CLERK, CLEAR LAKE COUNTY COURT HOUSE  
MASON CITY IA 50401

COUNTY ENGINEER, CLEAR LAKE COUNTY COURT HOUSE  
MASON CITY IA 50401

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

ATTN: NCDRE-R           NCRPD-E  
      NCRDE               NCRPD-P  
      NCRED               NCROD  
      NCRED-D            NCRCD  
      NCRED-H            NCRAS-L (3)  
      NCRPD

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