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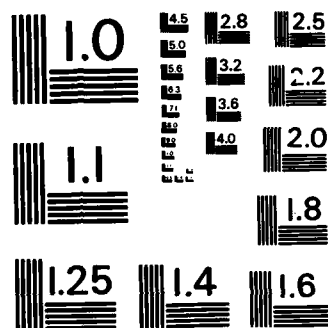
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Final Environmental Impact Statement

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Flood Control

Mississippi River at Prairie du Chien, Wisconsin

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20. ABSTRACT (Continue on reverse side if necessary and identify by block number) The proposed action would consist of a mixture of floodplain evacuation of approximately 130 structures on St. Friol Island, flood proofing for other property owners, continued conformance to floodplain regulations and continued availability of flood insurance within the 100-year floodplain at Prairie du Chien, Wisconsin. Flood damage reduction would be provided by evacuation of residences and businesses, through flood proofing of some structures and by limiting future floodplain development to compatible uses. Open space would be created which would enhance recreational, cultural, historical, and biological environmental		

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elements of the area. Demolition and structural relocations would result in temporary noise, dust, possible water degradation and vegetation losses in the immediate construction site. Adverse social impacts would occur to those residents who are forced to evacuate. These would be most severe to elderly persons and those on fixed incomes. ←

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FINAL
ENVIRONMENTAL IMPACT STATEMENT
FLOOD CONTROL - MISSISSIPPI RIVER
PRAIRIE DU CHIEN, WISCONSIN

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FOREWORD

In a letter dated 15 October 1965, the Mayor of Prairie du Chien, through the Chairman of the Prairie du Chien Flood Committee, requested that the District Engineer (St. Paul District, Corps of Engineers) aid in developing a permanent flood control plan. An initial public hearing was held on 11 January 1966 where Federal, State and local representatives expressed their desire for a flood control project. Following plan formulation in 1970, city officials indicated support for a permanent evacuation plan that would allow compatible use of the floodplain areas, such as for expansion of the park system to complement the existing water-related attractions in the community and further expansion of the historical interpretive complex. The city requested, however, that recreation not be included as a project purpose at that time due to lack of city funds to provide the local cost sharing. (If the Corps were to provide recreation-resource development, 50 percent of the cost of construction would have to be provided by a non-Federal entity.)

Studies were initiated in 1969 and an interim Survey Report was completed in September 1970. That report indicated that the proposed plan was feasible, and described the various elements involved and the alternatives available. It was distributed to all known interests for review and comment. The proposed project for flood control at Prairie du Chien was then recommended by the Chief of Engineers and authorized by the Water Resources Development Act approved on 7 March 1974 (Public Law 93-251). In fiscal year 1975 funds were made available by Congress for initiation of the Phase I General Design Memorandum. Phase I investigations are limited to those studies necessary to provide assurance that the authorized plan, or a modification thereof, reflect the current public desires and meet current standards for economic efficiency, environmental quality, regional development and social well-being. The draft Phase I General Design Memorandum was distributed simultaneously with the draft environmental impact statement.

The draft environmental impact statement attempted to identify the associated environmental, economic and social impacts involved in the proposed project in accordance with the requirements of the National Environmental Policy Act of 1969. It was presented to the public interests in an effort to gain their comments on the proposed plan of action and the various alternatives.

The draft statement was furnished to the President's Council on Environmental Quality on 9 September 1976. The intent was to allow the public the opportunity to review and comment on the draft environmental impact statement.

All comments received on the draft environmental impact statement are presented in this final statement with Corps responses (see page 47). This final statement will be reviewed by higher Corps offices and then furnished to the President's Council on Environmental Quality. A notice of availability will appear in the Federal Register at which time a final 30-day review period will commence. It is expected that this final review will end approximately in January 1978.

Phase 1 studies are being completed concurrent with preparation of this final statement. Detailed plans for implementation of the project will then be developed during subsequent study phases. Studies undertaken would be dependent upon funding from Congress. Actual implementation of the project would probably not occur before January 1979.

Coordination in planning with all known interests is a continuing process and attempts to maintain this coordination are being made. Initial local coordination was maintained through the Prairie du Chien Flood Committee. Early in 1976, a Citizen's Advisory Committee in Prairie du Chien was established. Local representatives will continue to work closely with the Corps throughout all planning phases. Close coordination with the Wisconsin Historical Society, the State Historic Preservation Officer, and the Advisory Council on Historic Preservation has been maintained and will be continued due to the valuable historical nature of the proposed project area. In order to further assure that all interests had an opportunity to express their views regarding the proposed plan, a public meeting was held on 6 December 1976 in Prairie du Chien. (See section 9 of this report for more detailed information on coordination.) Single copies of this report are available at the Corps of Engineers St. Paul District Office, 1135 U.S. Post Office and Custom House, St. Paul, Minnesota, 55101.

SUMMARY
FLOOD CONTROL
MISSISSIPPI RIVER AT
PRAIRIE DU CHIEN, WISCONSIN

() Draft Environmental Statement (X) Final Environmental Statement

1. Name of Action: (X) Administrative () Legislative

2. Description of Action: The proposed action would consist of a mixture of floodplain evacuation, flood proofing, continued conformance to floodplain regulations and continued availability of flood insurance within the 100-year floodplain at Prairie du Chien, Wisconsin, located on the Mississippi River in Crawford County.

3. a. Environmental Impacts: Flood damage reduction on St. Friel Island and on the mainland at Prairie du Chien would be provided by evacuation of residences and businesses, through flood proofing of some structures and by limiting future floodplain development to compatible uses. Open space would be created which would enhance recreational, cultural, historical, and biological environmental elements of the area. Social benefits associated with removing persons from areas subject to frequent flooding would also accrue.

b. Adverse Environmental Impacts: Demolition and structural relocations would result in temporary noise, dust, possible water degradation and vegetation losses in the immediate construction site. Adverse social impacts would occur to those residents who are forced to evacuate. These would be most severe to elderly persons and those on fixed incomes.

4. Alternatives: Alternatives considered were no action, flood warning, emergency protection, permanent floodplain evacuation, flood proofing, flood insurance, levees and floodwalls and upstream reservoir storage.

5. Coordination:

a. A list of those Federal, State and local agencies and citizens and environmental groups who were furnished copies of this draft statement appears on page 44.

b. A list of those who furnished comments on the draft statement appears on page 46.

6. a. Draft statement to CEQ: 9 September 1976.

b. Final statement to CEQ: _____

FINAL
ENVIRONMENTAL IMPACT STATEMENT
FLOOD CONTROL - MISSISSIPPI RIVER
PRAIRIE DU CHIEN, WISCONSIN

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- 5 Selected plan
- 6 Selected plan

FINAL ENVIRONMENTAL IMPACT STATEMENT
FLOOD CONTROL - MISSISSIPPI RIVER
PRAIRIE DU CHIEN, WISCONSIN

1.00 PROJECT DESCRIPTION

Purpose

1.01 The proposed project is intended to reduce economic damage and social problems associated with recurrent flooding of the Mississippi River at Prairie du Chien, Wisconsin, through a combination of evacuation, flood proofing, floodplain regulation measures within the area flooded by the 1965 flood (approximately the 0.8 percent flood) and the continued availability of flood insurance, and flood warning measures.

Authority

1.02 The project for flood damage reduction at Prairie du Chien, Wisconsin, recommended by the Chief of Engineers, was authorized by the Water Resources Development Act approved 7 March 1974 (Public Law 93-251).

Location

1.03 Prairie du Chien is located in Crawford County in southwestern Wisconsin on the left bank of the Mississippi River at mile 635.2 ⁽¹⁾ above the mouth of the Ohio River and 4.2 miles above the mouth of the Wisconsin River (see Technical Appendix, plate 1). A portion of the city is located on a low peninsula of land which is separated from the mainland by Marais de St. Friol, a back channel extending to the upstream end of the city. This part of the city is known locally as the Fourth Ward and is referred to in this report as St. Friol Island. All of St. Friol Island is within the corporate limits of Prairie du Chien except for the extreme northern portion where a sand and gravel operation is located. The city serves as an agricultural trade center and in addition has a number of manufacturing commercial and tourist establishments.

General Description

1.04 The proposed project would combine evacuation, flood proofing, floodplain regulations, flood insurance, and flood warning measures to reduce flood damages resulting from a 0.8-percent flood. The project area includes St. Friol Island and the Prairie du Chien main shoreline (see Technical Appendix, plates 6 and 7). The proposed project is essentially the same as the authorized project (paragraph 1.02), but has been modified in accordance with changes that have occurred since 1969.

(1) Unless otherwise noted, mileages given refer to distances along the Mississippi River above the mouth of the Ohio River.

Floodplain Regulation

1.05 The proposed plan recommends that Prairie du Chien continue to enforce its existing State-approved floodplain ordinance. This ordinance defines the floodplain as the land that was inundated by the 1965 flood, an area somewhat larger than the 100-year floodplain (that area inundated by a flood having a 1-percent chance of occurrence). Hydrologic studies have been made to determine the 100-year floodplain and Wisconsin State guidelines allow communities to use the 100-year floodplain for regulatory purposes, so the only effect of the city's somewhat larger designated floodplain is to provide the city with more control over incompatible development in the fringes of flood hazard areas.

Flood Proofing

1.06 The proposed plan calls for providing all floodplain property owners, whose properties will not be evacuated, with limited technical and/or financial assistance if they wish to consider flood proofing their structures at their own expense. Such property owners would be provided with technical assistance as to the types of flood proofing measures which might prove most applicable to their individual structures and the relative benefits and costs to be gained from their application. In addition, the city could make available to such property owners loans at or below prevailing market-interest rates to be repaid to the city through special assessments on the properties. Flood proofing measures that would be used would vary depending on the individual structure and its location in the floodplain. These measures would include raising mechanical and electrical equipment out of flood-vulnerable basements, raising houses on their foundations to bring the first-floor elevation 2 feet above the 1-percent chance flood elevation, and installing watertight barriers around ground level structure apertures. Homeowners in the zone of optional flood proofing who, for any reason decline to flood proof their property, as well as those whose houses are flood proofed, would continue to be subject to floodplain regulation.

Floodplain Evacuation

1.07 Under the selected plan, approximately 130 residential structures (22 on St. Friel Island and 38 on the mainland) with access elevations below 625 MSL (1) would be evacuated. These residential structures would be razed and/or moved depending on the economic feasibility. Demolition activities would be designed to assure compliance with all applicable air and water quality standards. Two taverns, the only businesses dependent on local trade, would also be evacuated from St. Friel Island. The remaining uninhabited structures would remain subject to floodplain regulation since it is uneconomical to remove or flood proof them.

1.08 All properties in the evacuation category would be purchased and the owners would be assisted in finding replacement properties. The purchased structures would be cleared from their sites. The evacuated sites would be graded, seeded, and planted with appropriate vegetation for reasons of public safety and aesthetics. Coordination would be undertaken with the Wisconsin Department of Natural Resources with regard to appropriate vegetation for the area.

(1) All elevations in this statement refer to mean sea level datum, 1912 adjustment.

1.09 A significant number of displaced homeowners might wish to relocate their existing homes to new sites. In these cases, individuals would be offered their structures for repurchase at salvage value and advisory assistance would be provided by the Corps of Engineers for carrying out the moving of the structures. It is recommended that renters displaced from dwellings owned by absentee landlords be offered the same choice. If they decline the option, the same option of repurchase would be offered to the absentee landlords.

1.10 All persons who would be displaced from their business locations, homes, and/or homesites as a result of the project would receive the benefits provided for such persons under Public Law 91-646, the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, and applicable State law.

1.11 Public Law 91-646 provides that reasonable expenses for temporary housing and moving personal property would be reimbursed to displaced persons choosing to relocate their houses. If the amount paid by the acquiring agency for purchase of the house to be evacuated were sufficient to cover the costs of buying back the house, purchasing a lot, moving the house and placing it in a decent, safe and sanitary condition, the project would provide no further financial assistance. If this amount were not sufficient the acquiring agency would contribute the difference up to the amount of the replacement housing benefit which the displaced person would be eligible for had he chosen to purchase a comparable replacement dwelling. The payments made to a displaced person relocating a residential structure would be limited to the sum of the following:

1. The amount paid for the purchase of the house to be evacuated.
2. Any replacement housing payment necessary to complete the relocation up to the limit of the individual's eligibility.
3. Reasonable moving expenses consisting of temporary lodging and expenses for moving personal property.

1.12 Public Law 91-646 requires that all person displaced by land acquisition actions of a federally assisted program be fully advised of the relocation benefits available to them to minimize any adverse impacts. In general, the law seeks to provide displaced residents with housing at least equal to that which was vacated. Persons living in substandard housing who are displaced would be assisted in moving into other housing meeting minimum standards with respect to decency, safety, and sanitation. All relocation benefits are entirely separate from, and in addition to, the price paid for the property acquired.

1.13 The evacuation would require the purchase, by local interests, of about 130 residential and business structures partially occupying approximately 17 city blocks. In addition, sufficient residential land in Prairie du Chien would have to be made available, with and without existing dwellings to accommodate all evacuated persons who wish to relocate there. It would be the responsibility of the city to insure that sufficient improved lots for new or relocated dwellings are ready by the time of project implementation to meet the demand for them. Prior to evacuation, the availability of replacement dwellings for all displaced persons would have to be assured. To ease the potential housing shortage which might be caused by the evacuation, it is recommended that all remaining houses, for which it is desirable and feasible, be relocated, renovated, and made available for purchase as replacement housing as part of the project.

1.14 Local interests would be required to furnish the project lands. However, to further assure future wise use of the floodplain and to protect the public investment in this project, the plan calls for Federal ownership of a flowage easement on project lands inundated by the design flood. Enforcement of a sound floodplain management program would remain the responsibility of local interests.

Flood Insurance

1.15 The National Flood Insurance Program under the U. S. Department of Housing and Urban Development offers insurance coverage for urban residences, businesses and other buildings and their contents up to prescribed limitations. Such insurance is available within the floodplain of Prairie du Chien. It would continue to be available with the proposed flood damage reduction plan. A more complete description of this program may be found in paragraphs 6.18 and 6.19.

Flood Warning

1.16 The current flood warning systems which provide notice to the citizens of Prairie du Chien of rising floodwaters would continue. These systems provide adequate time to implement the emergency flood damage reduction measures which are practicable at Prairie du Chien. Generally these measures involve the raising of personal property above flood levels or the evacuation of such property and the inhabitants from the threatened areas. The erection of temporary flood barriers, such as sandbags or levees, is not a practical alternative at Prairie du Chien because the permeability of its sandy soil is so high as to also require substantial interior drainage facilities. The cost of such emergency structures would outweigh the benefits to be gained by their use. The flood warning systems would continue to be especially important to homeowners in the zone of optional flood proofing who, for any reason, decline to have their homes flood proofed. (Also see paragraphs 2.70-2.73)

Recreation Studies

1.17 At present, recreation developments are not recommended as part of the proposed project because there is no local cost-sharing sponsor. The city has, however, expressed an interest in considering recreational development as part of the proposed flood control project. In response, the Corps of Engineers has conducted a conceptual recreation study which addressed and refined the needs of the area. The study findings and recommendations are summarized in appendix F of the draft Phase I General Design Memorandum (GDM) and have been forwarded to city officials. If the city agrees to support the conceptual plan and desires to include more detailed recreation studies in the Phase II GDM, a post authorization change letter would be submitted requesting that the project be changed from a single-purpose to a multiple-purpose flood control project. The environmental impact statement would at that time be revised or supplemented as necessary to discuss the recreational developments. Until a definite recreational plan is identified, a discussion of environmental effects would be speculative and as such is not included in this statement.

Departures From Authorized Project

1.18 The departures from the project document plan fall into two groupings - those relating to St. Friol Island and those involving the mainland of Prairie du Chien.

1.19 The selected plan recommends evacuating only two businesses, both taverns, from St. Friol Island, leaving the remaining businesses subject to floodplain regulation. The adoption of floodplain regulations and occurrence of three major floods since preparation of the authorized plan have combined to reduce both the value and the vulnerability of the businesses which would remain on St. Friol Island. Since neither economic feasibility nor the concerns of public health and safety support the forced speedy evacuation of these island businesses, it is recommended that the mechanism of floodplain regulation evacuate them in time.

1.20 Houses that do not have severely restricted access or severe flooding at flood elevations of 625.0 MSL would not be evacuated. Such residences within the 0.8 percent chance floodplain would be offered the option of partial flood proofing. In addition, since the flooding of the Mississippi River is both slow and predictable weeks in advance, any temporary evacuation of these homes, which would be required by major floods could be safely carried out.

Economics of Proposed Project

1.21 The proposed project has a benefit/cost ratio of 1.10 to 1. It is estimated that flood damage reduction benefits of \$92,500 would result from implementation of the proposed project. Annual costs and benefits were based on a 50-year economic life and 6 3/8 percent interest rate. Costs due to replacement housing payments as mandated in Title II of the Uniform Relocation Assistance and Real Property Acquisition Policies Act (Public Law 91-646) are excluded from the benefit/cost ratio according to Corps of Engineers regulations. Economic data have been extracted from the Phase I GDM and are presented below in table 1.

Table 1 Economic Data for Proposed Project

Total First Cost	\$3,950,000
Federal	3,160,000
Non-Federal	790,000
 Total Average Annual Costs	 \$ 264,000 ¹
Federal	211,000
Non-Federal	53,000
 Total Average Annual Benefits	 \$ 167,000
Flood damage reduction	92,500
Recreation	7,500 ²
Local Employment: redevelopment benefits	67,000
 Residual Average Annual Flood damages	 \$ 85,500

-
1. Includes \$112,000 due to application of P.L. 91-646 that is excluded from the benefit/cost ratio.
 2. Benefits attributed to increased visitation at existing facilities and does not entail project expenditures.

2.00 ENVIRONMENTAL SETTING WITHOUT THE PROJECT

Climate

2.01 The climate of the region is characterized by wide variation in temperature, generally ample rainfall, and moderate snowfall. Daily temperature and precipitation records are available for the Prairie du Chien area since 1891. The monthly mean temperatures at Prairie du Chien vary from 75 F in July to 21 F in January and the mean annual temperature is 49 F. Normal annual precipitation at Prairie du Chien is about 33 inches with a minimum annual precipitation of 18 inches in 1895 and a maximum of 46 inches in 1938. Approximately 62 percent of the annual precipitation normally occurs during the period May through September. The maximum precipitation at Prairie du Chien in 24 hours was about 5 inches in July 1940. The normal annual snowfall totals about 33 inches.

Topography and Soils

2.02 Prairie du Chien is built on an elongated valley deposit which is about 10 miles long and up to 1 1/2 miles wide, with elevations varying from elevation 611 to about elevation 650 feet MSL. The portion of the city landward of the Marais de St. Friel is generally above 625 feet MSL. The residential and business districts on the mainland are generally between elevations 627 and 640 feet MSL. The valley deposit at Prairie du Chien was formed by sand and gravel deposited in the Mississippi trench when melting waters from the glaciers flowed southward. Bordering the Mississippi River Valley are high bluffs on each side of the river rising 500 to 600 feet.

Navigation

2.03 The west channel of the Mississippi River at Prairie du Chien is maintained as part of the Upper Mississippi River 9-foot channel navigation project extending from the mouth of the Missouri River to Minneapolis, Minn. This project was authorized by House Document 290, 71st Congress, 2d session, and House Document 137, 72d Congress, 1st session, to extend the benefits of low-cost water transportation to the Upper Mississippi River basin. The project was planned as an extension of the inland waterway system and its engineering features were based on standards of connecting waterways.

2.04 A 9-foot deep commercial harbor and a 5-foot deep small-boat harbor with authorized lengths of 0.20 mile and 0.15 mile, respectively, were constructed in Prairie du Chien on the east channel under authority of House Document 71, 81st Congress, 1st session. A river wall and small-boat mooring area have also been built on the east channel. According to the Upper Mississippi River Comprehensive Basin Study, access to navigation waters by small boats is limited in many areas of the basin.

Water Supply

2.05 Public drinking water is currently supplied by two wells located on the east side of the city near the bluffs. The wells are drilled to depths of 115 and 138 feet. A 1 million-gallon reservoir is located in the bluffs at the east city limits. The wells are not subject to flooding because of location and elevation. The distribution system serves St. Friel Island and low-lying portions of the mainland and is subject to inundation during the flooding of these areas. However, contamination of the distribution system is not anticipated due to the high water pressure throughout the system. The city is drilling a third well in the industrial park in the northeast portion of the city. This new facility is expected to adequately satisfy future water supply needs. It is located above the 1-percent flood outline and would not be subject to flood hazards.

Water Quality(1)

2.06 The water quality of the Mississippi River in the study area is generally good except for some localized problems. The Black River basin, which empties into the Mississippi River, includes five subbasins. Prairie du Chien is in the Bad Axe subbasin at the southern end of the Black River basin. Applicable water quality standards for the basin have been, or will be, met by municipal and industrial discharges according to their permit schedules. The basin is classified as effluent-limited by the Environmental Protection Agency.

2.07 Nonpoint source pollution is generally not a problem in the Mississippi River; however, some rivers feeding into the Mississippi River have problems due to erosion and runoff from animal waste and fertilizer. Fish and aquatic life standards are met, mineral concentrations are generally acceptable, and dissolved oxygen levels are high on the Mississippi River.

2.08 Four primary and 307 secondary monitoring stations are in the Black River basin. The Bad Axe subbasin has 43 monitoring stations. The stations are surveyed every 5 years, the last survey was undertaken in 1976. Instream water samples are taken and analyzed monthly at 48 stations, including one at lock and dam 11, south of Prairie du Chien near Dubuque, Iowa. Monthly reports on water quality for the past 3 years are available from the Wisconsin Department of Natural Resources.

2.09 The Wisconsin Department of Natural Resources also monitors water supply quality. Chemical analysis from the water distribution system indicates water quality is good with no public health concerns.

(1) General information pertaining to water quality was furnished in response to a Corps inquiry by the U.S. Environmental Protection Agency (letter dated 22 October 1975). Coordination was also maintained with the Wisconsin DNR.

Wastewater Treatment⁽¹⁾

2.10 The Prairie du Chien wastewater treatment plant is on the Mississippi River at the south edge of the city. Recent remodeling of the plant has provided permanent protection with a concrete flood wall at elevation 635.0 feet MSL or 4.9 feet above the maximum flood crest of the 1965 flood of record.

2.11 The sanitary sewer system is composed of vitrified clay pipe. No stormwater drains have ever been connected to the system. Infiltration is negligible except during near record flooding of the Mississippi River. Even during flooding, the city system is good. The subsoil of sand results in rapid dissipation of groundwater after rainfalls. The groundwater level is lower than the sewer system except for the last 3,000 feet of interceptor sewer which is pressure tight and lies from zero to 3 feet below the groundwater level.

2.12 The wastewater treatment plant was recently upgraded through U.S. Environmental Protection Agency programs. It is a secondary plant with a design flow of 2 mgd (million gallons per day) and an average flow of 1.1 mgd. Monthly effluent limits are 30 mg/l (milligrams per liter) for BOD₅ and suspended solids.

2.13 The plant design was projected to 1995 based on an estimated population of 7,250. In 1970, Prairie du Chien had a population of 5,349. The treatment plant and sanitary sewer system are expected to satisfy short- and long-term needs for wastewater collection and treatment.

Public Health and Safety

2.14 The health and safety of residents in the project area are potentially affected during major floods. A serious threat to life is always present. There has been one death directly related to flooding. Other threats to public health and safety are related to traffic congestion, contamination of food, malfunctioning of private sewage system, and vermin and vector control. Isolation of flooded areas could also create hazards in terms of supplying emergency medical, fire and law enforcement services.

Biological Environment

2.15 The Mississippi River in the Prairie du Chien area is a mixture of backwater lakes, wetlands, and the main channel. Terrestrial vegetation consists of various species of hardwoods and profuse ground cover in open areas. The shoreline gradates from terrestrial bottomland hardwoods to emergent, floating and submerged aquatic vegetation. Rooted aquatic vegetation is restricted to backwater areas while the main channel has limited aquatic vegetation due to the depth and current.

(1) From City of Prairie du Chien-Waste Treatment Plant Expansion, Bartels, McMahan, Le May, Haas, and Baule, December 1970.

2.16 Several species of waterfowl nest and feed in the area including wood ducks, mallards, and blue-winged teal. Herons, red-winged blackbirds, yellowthroat warblers, marsh wrens, and other shore and marsh birds inhabit the area. The bottom lands are used as brood-rearing areas for waterfowl hatched in the adjoining uplands. The river is a principle Mississippi Flyway corridor providing resting places for migrating canvasbacks, Canada geese, swans, blue-winged teal, and widgeons.

2.17 The bottom lands provide excellent habitat for aquatic and terrestrial furbearing mammals including raccoons, muskrats, beaver, river otters, and mink.

2.18 The backwater areas provide a lake-type fishery while a river fishery is prevalent in canalized areas. Walleye, sauger, northern pike, large mouth bass, crappie, bluegill, and catfish are abundant and provide a good sport fish diversity. Rough fish are also prevalent. Commercial clamming is practiced in the southern portion of the east channel of the Mississippi River at Prairie du Chien where clambers indicate significant mussel beds are located. As noted in paragraph 2.04, this channel is maintained as a 9-foot deep commercial harbor and a 5-foot deep small boat harbor. Coordination with local interests, including the commercial clambers, has resulted in a revised maintenance dredging plan to minimize adverse impacts of dredging on the mussel beds. Coordination is continuing through the Great River Environmental Action Team.

2.19 The U.S. Fish and Wildlife Service is managing the fish and wildlife resources associated with this area of Mississippi River through the Upper Mississippi River Wildlife and Fish Refuge and does not see any need for further investigation or additional resource development in the planning of a flood control project at Prairie du Chien.

2.20 St. Friol Island is primarily upland, fringed with marsh and slough habitat. The island is sparsely populated with residences, small businesses, and light industry. Most of the project area is poor wildlife habitat due to human settlement and constant disturbance. However, wood ducks, marsh birds, and muskrats can be found. The sloughs and channels support a good fishery and are heavily fished throughout the year.

Threatened and Endangered Species

2.21 The Federal Register dated 26 September 1975 and all updates regarding threatened and endangered animal species have been consulted. The fresh water bivalve mollusk - Lampsilis higginsii (Higgins eye pearly mollusk) was placed on the endangered species list in the Federal Register dated 14 June 1976. This species exists in the east channel of the Mississippi River adjacent to the proposed project area. The Northern Bald Eagle (Haliaeetus leucocephalus alascanus) is listed as endangered. However, a modification to list the species as threatened has been proposed by the U. S. Fish and Wildlife Service (Federal Register dated 14 June 1976). This species could visit the proposed project area.

2.22 The 16 June 1976 Federal Register and all updates have been consulted regarding threatened and endangered plant species. No plant species listed are known in the proposed project area.

Land Use

2.23 The land-use pattern at Prairie du Chien has been greatly influenced by topography. Development has been hampered by steep, hilly lands to the east and low, poorly drained lands along the river. Approximately 311.4 acres of undeveloped land and 104.2 acres of commercial and residential lands are flooded by the intermediate regional flood (see Technical Appendix, plate 4).

2.24 Land resources management consists of city zoning codes and ordinances. To comply with State floodplain regulations, the city amended its codes and ordinances to include a floodplain district. The Wisconsin Department of Natural Resources approved the amendments in 1971. All filling and building in the floodplain require a special exceptions use permit. Decisions are made by the local board of appeals. The board keeps the Department of Natural Resources informed of any proposed development in floodplain areas. The Department of Natural Resources sees no need to upgrade the city ordinance.

2.25 Land use categories in Prairie du Chien are listed in table 2. The largest single category of land use is residential. Floodplain lands have a disproportionate amount of land that is vacant in recognition of the flood hazard. Sixty-two percent of the island and 58 percent of the mainland within the 1965 flood outline are in open space and roadways as opposed to 22 percent for the land above the 1965 flood outline. Immediately developable residential land within Prairie du Chien (101.8 acres) is available outside the floodplain plus an additional 193.1 acres of unimproved residential land. Improved commercial and industrial land is also available outside the floodplain.

Table 2. Summary land use, Prairie du Chien, Wisc.
(acres)

<u>Category</u>	<u>St. Friol Island</u>	<u>1965 Flood Outline</u>	<u>Above 1965 Flood Outline</u>	<u>Total</u>
<u>Residential</u>				
Single family dwellings	14.7	45.6	226.9	327.2
Improved land	NA ^{1/}	NA	101.8	101.8
Unimproved land	NA	NA	193.1	193.1
Multiple family dwellings	-	-	12.1	12.1
Improved land	-	-	5.7	5.7
Unimproved land	-	-	21.3	21.3
<u>Commercial</u>				
Developed	10.5	1.4	58.0	69.9
Undeveloped	NA	NA	52.0	52.0
<u>Industrial</u>				
Developed	27.6	4.5	86.4	118.5
Undeveloped	NA	NA	150.9	150.9
<u>Public & quasi public</u>	0.7	24.7	165.8	191.2
<u>Parks and Open</u>	51.5	-	20.5	72.0
<u>Historical & Archeological</u>	22.8	1.0	2.0	25.8
<u>Agricultural</u>	-	-	153.0	153.0
<u>Roadways & vacant floodplain</u>	205.4	106.0	354.3	667.7
<u>Total Land</u>	333.2	183.2	1643.8	2160.2

^{1/} Not applicable due to floodplain zoning ordinance.

Recreation Resources

2.26 The city of Prairie du Chien owns land on St. Friol Island which is developed and operated for recreational purposes. Existing facilities include a private marina, a municipal riverside park, several boat launching ramps, a municipal swimming pool, and 40 acres of open space. (See table 3).

Table 3. Existing Park and Recreation Resources Inventory,
Prairie du Chien, Wisconsin

<u>Area</u>	<u>Facilities</u>	<u>Acreage</u>	<u>Estimated Annual Visitation</u>
Lawler Park	20 picnic tables 2 picnic shelters Playground equipment 2 boat launching ramps Sanitary facilities	5.2	15,000
Ball Park	2 lighted diamonds Sanitary facilities	3.5	15,000
Washington Playground	Minimal playground equipment	1	250
Municipal Pool	75-foot by 45-foot pool Attached change shelter	0.5	50,000
Municipal Open Space Area	Rodeo complex	40	5,000
Private Marina	85 mooring slips Houseboat rentals Boat retail and repair services	10	-

2.27 Current recreation use on St. Friel Island is generated from various sources. City and neighboring residents account for a large share of the use of the local park and recreation resources. On weekends, these resources, which provide good access to the Mississippi River, attract users from a distance of 25 to 50 miles away.

2.28 Landmarks of the early development of the Upper Mississippi River Valley remain on St. Friel Island as reminders of its early development. These landmarks attract many visitors from various parts of the country, generating tourism dollars and contributing to tourist-service related business in the project area.

2.29 Current use demands have exceeded the capacities of existing public-use facilities in the project area. Municipal facilities constructed in the 1930's are in need of rehabilitation and expansion to meet current and projected needs. Existing public use facilities need major structural improvements to insure proper sewage treatment. Present vehicular traffic circulation is also not conducive to public use access to and from the island and needs updating.

Cultural Resources

Introduction

2.30 In compliance with Section 106 of the National Historic Preservation Act of 1966 and Executive Order 11593, the National Register of Historic Places has been consulted and as of 16 November 1976, the following sites in the general project area have been designated as important historical and/or cultural sites:

1. The Astor Fur Warehouse
2. The Michael Brisbois House
3. The Dousman Hotel
4. The Rolette House
5. The Second Fort Crawford
6. The Villa Louis

Of the above, the Rolette House has been designated a National Historic Place, while the other buildings are recognized as Historic Landmarks. The Michael Brisbois House, the Rolette House, and the Villa Louis are owned by the State Historical Society of Wisconsin; the remaining are privately owned.

2.31 In addition to these 6 federally-protected buildings, another 39 historic and pre-historic sites were found to be located in the project area by the State Historical Society of Wisconsin while conducting a cultural resource reconnaissance under contract with the Corps of Engineers. As one result of this reconnaissance, the Principal Investigator has recommended that portions of St. Friel Island and portions of the adjacent mainland be designated as a National Historic District. The St. Paul District Corps of Engineers will proceed with obtaining a determination of eligibility from the National Park Service during the Phase II Advanced Engineering and Design stages of the project.

2.32 The information which follows is taken from the final reconnaissance report, "Prairie du Chien: A Historical Study", of October, 1976, by the State Historical Society of Wisconsin. The study presents Prairie du Chien in its regional and long term cultural context, and then concentrates specifically on the identification of prehistoric and historic sites located on St. Friel Island and the portions of the mainland which will be affected by the proposed project.

2.33 Throughout historic and pre-recorded time, many diverse groups of people passed through the Prairie du Chien area or made it their permanent home. Its location near the confluence of the Mississippi and Wisconsin Rivers undoubtedly provided a strategic advantage in terms of defense, trade, and transportation.

2.34 In pre-historic times, St. Friol Island was an attractive spot along the river for fishing, hunting and the cultivation of plants. A probable village or campsite and numerous burial mounds are evidence of this early occupation. During historic times several woodland Indian tribes, including the Fox, Sauk, and Winnebago, had villages in the area, although their archaeological remains have not been found. These people were encountered by the first Europeans to visit the area, Father Jacques Marquette and the explorer Louis Joliet, who explored and opened the Fox-Wisconsin River waterway. From the mouth of the Wisconsin River they probably visited or passed by the site of present day Prairie du Chien.

2.35 Fur traders soon followed their path and Prairie du Chien became the second oldest Euro-American settlement in Wisconsin (only Green Bay is slightly older). From 1635 on, the locality was a regular camping ground and rendezvous point, if not a permanent settlement. As the fur trade developed, canoes loaded with supplies and trade goods came down the trans-Wisconsin waterway each fall; exchanges were made; and furs moved eastward.

2.36 In 1689, a French Canadian, Nicholas Perrot, arrived and erected Fort St. Nicholas as a depot for furs. He claimed the valuable territory for the King of France. The French traders named the locality the Prairie Des Chiens (Prairie of the Dogs) in honor of Chief Alim of Big Dog, the head of the Fox Indian Village at Prairie du Chien. The area became a British possession by the Treaty of Paris in 1763. George Rogers Clark's conquest of the Old Northwest gave Virginia a claim to the region in 1778. The territory was formally ceded by Virginia to the United States in 1784. It became part of the Northwest Territory in 1800, the Illinois Territory in 1809, the Michigan Territory in 1813, the Wisconsin Territory in 1836, and finally the State of Wisconsin in 1848.

Prehistoric Sites

2.37 Presently there are no pre-historic sites in the Prairie du Chien area that are on the National Register; however, the Villa Louis Mound the Brisbois Mounds, and a mound near the Rolette House are owned and protected by the State Historical Society of Wisconsin. Numerous pre-historic sites were located as a result of the cultural resource reconnaissance conducted by the State Historical Society of Wisconsin. Although many of the mounds have been greatly disturbed or destroyed by modern construction, these sites may still yield important information regarding the cultures they represent.

2.38 There is no evidence of nomadic big game hunters in and around Prairie du Chien, although there is evidence of them elsewhere in southwest Wisconsin. Referred to as Paleo-Indian, they followed the mammoth, mastodon, bison, and caribou as early as 13,000 B.C. until 8,500 B.C. Few of their campsites are known because of short time occupation and later disturbance.

2.39 With the extinction of the larger animals, a more diversified subsistence was developed based on the hunting of smaller mammals and gathering of local plant foods on a seasonal basis. Accompanying this change in adaptation was an increased number of specialized tools for obtaining and preparing food, such as atlatls (throwing sticks) and grinding tools. This period, known as Archaic, dates from 9,000 - 1,000 B.C. One known Archaic site within the project area is the gravel pit on the north end of St. Friol which has obviously been greatly disturbed. Another site where artifacts have been recovered is on the northern end of the island. These artifacts included copper projectile points representative of what is referred to as the "Old Copper Culture," dating from 3,000 - 1,000 B.C.

2.40 The next period, known as Woodland, dates from 1,000 B.C. - 1634 A.D. This adaptation is characterized by greater dependence on plant foods including domesticates, although hunting and fishing were still a major food source. Sites were occupied for longer periods of time, with a number of functionally differentiated sites, such as regional centers, base camps, small seasonal camps, and mortuary sites consisting of elaborate burial mounds. These various sites are associated with a cultural tradition referred to as Hopewell. The center of the Hopewell tradition was in the Ohio River Valley. These people spread out along the Ohio, Mississippi and Illinois Rivers and lived in villages along the rivers.

2.41 The Prairie du Chien area is well represented by this cultural tradition. Both village and mound sites were located during the contracted reconnaissance. At one time there were numerous mounds on St. Friol Island. Only a few now remain, the others having been leveled or destroyed by modern construction. As already mentioned, the Villa Louis and Brisbois House were built on mounds, probably Hopewell. Two other houses were reported to have been built on mounds although these may be artificial mounds constructed to raise the houses above the floodplain. Several other mounds still stand on the island near the Brisbois and Rolette houses.

2.42 A group of mounds on the mainland called the Trade Silver Mound Group is being recommended for inclusion in the Historic District. This mound was named because of the quantities of historic trade silver such as bracelets, brooches, rings, and earrings as reported in 1884 after one of the mounds was excavated. The original mounds were apparently Hopewellian, with the historic materials added with later intrusive burials. This mound group has been leveled by industrial development, but subsurface remains may be undisturbed.

2.43 Historic maps indicate the location of another leveled mound on St. Friol Island known as either Ancient Mound or Mendenhall Mound. The body of Dr. C. Mendenhall, one of the post surgeons, was intrusively buried in this mound. A prominent mound group existed near the site of the Second Fort Crawford. There seems to be some question concerning the number of mounds, although the evidence indicates there were probably three. There are several other sites where local informants reported mounds to have stood or where artifacts have been recovered.

2.44 A possible village site with associated Hopewell artifacts was located on the mainland in relatively undisturbed condition. Also identified with this site are mounds from the Effigy Period, dating from 400 - 1200 A.D. These burial mounds differ from Hopewell mounds in that they are low earthen mounds constructed in the form of birds, mammals, or reptiles. This tradition appears to be a local development primarily in Wisconsin and adjacent portions of northern Illinois, northeastern Iowa and southeastern Minnesota. The distinctive mounds are widespread in southwestern Wisconsin but are usually farther back from and above the major river valley. An important group of Effigy mounds has been preserved in Effigy Mounds National Monument, across the river from Prairie du Chien.

Historic Sites

2.45 The Astor Fur Warehouse (c. 1835) on St. Friol Island was one of the foremost establishments of John Jacob Astor's American Fur Company. This old rock warehouse indicates the prominence of Prairie du Chien as a fur trading center of the early Northwest. Prior to the American occupation of the area, Prairie du Chien was an important fur trading center for the native Indians, who supplied the French and British with furs in exchange for European goods.

2.46 The Michael Brisbois House (1308) is reputed to have been the home of this French Canadian fur trader, who came to Prairie du Chien in 1781 as one of its first permanent settlers. The two-and-a-half story dwelling of coursed ashlar contains many original furnishings from the fur trade era.

2.47 The Rolette House (early 19th Century) was the home of one of the most important and influential early settlers. Joseph Rolette, a French Canadian, was a prominent fur trader in the late 1700's and early 1800's. He served as the principal agent for the American Fur Company from 1820 to 1826. The house is a two-story frame building with a gabled roof. The original house was discovered inclosed by a larger building, its front and rear walls altered. Today the exterior has been restored, and the Wisconsin Historical Society has plans for further restoration.

2.48 The owner of Villa Louis, Hercules Louis Dousman, came to Prairie du Chien in 1826 as John Jacob Astor's confidential agent. An excellent businessman, Dousman expanded his interests to land speculation and lumbering, becoming one of America's earliest millionaires. When Fort Crawford was moved to the mainland, Dousman purchased the old fort. In 1843, he built a red brick Georgian style house for his bride,

Jane Fisher Rolette, widow of his partner. It was referred to as "the house on the mound" because it was built on a large Indian burial mound. In 1872, the home was remodeled into a Victorian styled, cream-colored, brick mansion named Villa Louis. In the 1930's the Villa and accompanying outbuildings, Dousman's office, carriage house, ice house, and preserve house, were restored by Dousman's descendents and many heirlooms returned to the home making it one of the most authentically furnished historic houses in America.

2.49 The Dousman Hotel (1864) attests to the importance of Prairie du Chien as a railroad center. It was built by the Milwaukee and Mississippi Railroad for the comfort of its passengers. The hotel was a stopping point for thousands of immigrants enroute to Minnesota and the Dakotas following the Civil War. It was also a fashionable stop-over for those traveling the Mississippi River by steamboat.

2.50 When the Second Fort Crawford was built (1829) the location was changed from St. Friol Island to the Mainland. The only remaining building, the restored post hospital, now houses a medical museum. During the period 1829 - 1833, the hospital was the scene of experiments conducted by Dr. William Beaumont which contributed to the understanding of the digestive process. Zachary Taylor, who later became President of the United States, commanded the fort during the famous Black Hawk Indian War of 1832 which drew national attention to Fort Crawford. The fort was abandoned in 1856, though temporarily reoccupied during the Civil War.

2.51 In addition to the National Registered buildings, numerous other historic buildings and sites were located during the cultural resource reconnaissance. These include Indian burials from the historic period, military cemeteries, sites of the early Fort Nicholas and Fort Shelby-McKay-Crawford, the Indian Agency house, three log cabins that were later inclosed by more recent homes, the site of a log jail, site of Rolette's stone warehouse, the site of Diamond Joe Warehouse, a railroad depot, a grain elevator, and two gristmill sites. These sites are considered potentially significant for understanding the cultural history of Prairie du Chien as the center of growth of the town moved from St. Friol Island to Lower Town, then to Upper Town. Ten other buildings are being examined for possible architectural-historical significance.

2.52 Most of the sites will not be endangered by the proposed project, but recognition of them is important in understanding the cultural context of the area. A discussion of impacts of the proposed project on these cultural resources can be found in Section 4, paragraphs 4.09-4.15.

Streamflow

2.53 Stage and discharge data are available for the Mississippi River from the U. S. Geological Survey gage at McGreagor, Iowa, located 1.6 miles downstream from Prairie du Chien at mile 633.6. Records are available from a gage in Prairie du Chien, mile 635.2, which was discontinued in 1957. Records by the Corps of Engineers are available from 1938 to the present at locks and dams 9 and 10, miles 647.9 and 615.1, respectively.

Floods

2.54 Floods on the Mississippi River at Prairie du Chien generally occur from spring snowmelt following a heavy accumulation of snow and often with late winter rainfall on frozen ground, but may also be the consequence of intense, long-duration, widespread summer rain. The larger floods (table 4) have generally been produced by melting snow or a combination of melting snow and spring rains. Mississippi River flooding at Prairie du Chien is characterized by a very slow rise with stages remaining at high levels for extended periods.

2.55 The maximum flood of record at Prairie du Chien occurred on 24 April 1965 when a stage at elevation 630.7 was recorded. On this date, the river crested 7.4 feet above flood stage, about 4 feet above the previous record set in 1952. The 1965 flood at Prairie du Chien had a peak flow of 276,000 cfs (cubic feet per second) with the river remaining above flood stage for 22 continuous days. Prior to the 1965 flood, the two largest floods were the historical 1880 and the record 1952 floods, representing elevations of 626.9 and 626.4 respectively. The discharge for the 1952 flood was recorded at 197,500 cfs.

2.56 Major flooding has been experienced three times at Prairie du Chien since 1965. In 1967, flooding occurred on St. Friel Island and low-lying portions of the mainland with flows reaching 170,000 cfs, resulting in a stage at elevation 626.1. On 22 April 1969, the second highest flood on record occurred and attained an elevation of 627.0. As in previous record floods, flooding was caused by spring snowmelt in the upper drainage basin. The 1969 discharge at Prairie du Chien is estimated at 215,000 cfs. The river remained above flood stage for a total of 16 days. In 1975, a flood crested on 4 May at an elevation of 626.4 and a discharge of about 193,000 cfs. Some flooding also occurred in 1971 and 1973.

2.57 Based upon analyses of discharge records for the 30-year period, 1937-66, at the McGregor gage adjusted to 107 years of record, 1859-1965, at Dubuque, Iowa, frequencies of occurrence of peak discharges have been developed. Table 5 summarizes peak Mississippi River discharges that have occurred or can be expected at selected frequencies at Prairie du Chien.

Table 4. Floods of Record, Mississippi River at Prairie du Chien,
Wisconsin, 1880 - 1975

Date	Discharge (cfs)	Stage(1)	Elevation(2)
June 1942	113,800	17.4	622.8
April 1971	138,000	17.7	623.1
May 1916		18.3	623.7
Sept 1938	97,800	18.4(3)	623.8(3)
Oct 1881		19.0	624.4
Apr 1922		19.4	624.8
Apr 1920		19.5	624.9
May 1888		20.1	625.5
March 1973	151,000	20.1	625.5
Apr 1967	170,000	20.7	626.1
Apr 1951	185,700	20.8	626.2
May 1975	193,000	21.0	626.4
Apr 1952	197,500	21.0	626.4
June 1880	195,000	21.5(3)	626.9(3)
Apr 1969	215,000	21.6	627.0
Apr 1965	276,000	25.3	630.7

(1) City datum in feet. Gage Zero = 605.37

(2) Elevations are mean sea level datum, 1912 adjustment.

(3) Stage affected by Wisconsin River flows.

Table 5 - Flood frequency data, Mississippi River at Prairie du Chien,
Wisconsin

Frequency (percent)	Peak discharge (cfs)	Remarks
50.0	100,000	Flood damages begin.
20.0	140,000	
10.0	170,000	1967 flood.
5.0	197,500	1952 flood.
3.3	215,000	1969 flood.
0.8	276,000	1965 flood.
	400,000	Standard project flood.

2.58 The standard project flood represents the discharge hydrograph for runoff that may be expected from the most severe combination of meteorologic and hydrologic conditions that are considered reasonably characteristic of the geographical region involved, excluding extremely rare combinations. Because derivation of a standard project flood for the Mississippi River at Prairie du Chien by means of a single-unit hydrograph for the total drainage area of 67,500 square miles would give results of questionable value, a method which compares and adjusts derived standard project floods with those at other locations

on the lower Minnesota and the Upper Mississippi Rivers was used. Based on the above methodology, the standard project flood at Prairie du Chien would have a peak flow of 400,000 cfs which compares with a maximum flow of record of 276,000 cfs. Plate 3 identifies various flood outlines for the area.

Socioeconomic

Population

2.59 The population of Crawford County has declined steadily since 1940 (table 6). Because of the county's agricultural nature, this population decline is attributed to consolidation of farms and migration to urban areas. Prairie du Chien has been the recipient of some of this migration.

Table 6. Historical and projected population of Prairie du Chien and Crawford County

<u>Year</u>	<u>Prairie du Chien</u>		<u>Crawford County</u>	
	<u>Number</u>	<u>Percent Change</u>	<u>Number</u>	<u>Percent Change</u>
1940	4,622	-	18,328	-
1950	5,392	+ 16.6	17,652	- 3.7
1960	5,649	+ 4.8	16,351	- 7.4
1970	5,540	- 1.9	15,252	- 6.7
1973	5,760	+ 4.0	15,844	+ 4.1
1980	5,850	+ 1.6	15,780	- 0.4
2000	6,050	+ 3.4	16,370	+ 3.7
2030	6,290	+ 4.0	15,600	- 4.7

Education

2.60 According to the 1970 census, the educational background of those persons over 30 years-of-age in Prairie du Chien is as follows:

	<u>Number</u>	<u>Percent</u>
Elementary (grades 1-8)	1128	36.0
Some high school	393	12.5
High school graduate	1093	34.8
Some college	240	7.6
College graduate	283	9.0
Median years of education	12.0	-

2.61 The median years of education for Prairie du Chien is similar to that for the State, i.e., 12.1 years. Crawford County, however, has a median educational level of 10.8 years. At present, the local public school system serves both the town and adjacent rural communities. Private education facilities were available until 1974. These are no longer in operation. The University of Wisconsin-La Crosse and the Western Wisconsin Technical Institute are both located in La Crosse, approximately 60 miles north of Prairie du Chien, and offer post high school educational opportunities.

Employment

2.62 During the decade from 1960 to 1970 employment in Prairie du Chien has changed rapidly. Although total employment has increased by only 2 percent (table 7), the importance of various employment categories has changed significantly. Manufacturing, which employed 31 percent of the labor force in 1960 suffered a 49-percent decline by 1970. This was due primarily to the closing in 1965 of a metal working plant that had been located within the 1965 flood outline. Substantial employment gains were made in wholesale and retail trade, professional and related services, and the construction industry. The service industries showed the largest gain (68 percent) followed by wholesale and retail trade (43 percent).

Table 7. Employment and Industry, Prairie du Chien.

<u>Industry</u>	<u>1960</u>		<u>1970</u>		<u>Percent change from 1960-1970</u>
	<u>Number</u>	<u>Percent of total employed</u>	<u>Number</u>	<u>Percent of total employed</u>	
Wholesale & retail trade	452	21	646	30	+43
Professional and related services	332	16	557	26	+68
Manufacturing	657	31	338	16	-49
Construction	118	5	160	7	+ 6
Public Admin.	80	4	78	4	- 3
Finance, Insurance, Business & Repair	114	5	75	4	-34
Transportation, Communications, Public Service	97	5	106	5	+ 9
Other	251	12	179	8	-29
Total	2101	-	2139	-	+ 2

2.63 Although agricultural employment has continually declined in Crawford County since 1940 (table 8) it continues to account for the largest percentage of employment in the county. In 1940, 54 percent of the labor force was employed in agriculture while this had declined to 28 percent by 1970. Professional, and wholesale retail trade have been steadily increasing in importance in the county and in 1970 represented 18 and 20 percent, respectively, of those employed. The decline in employment associated with manufacturing was the result of the closing of the metal working plant in Prairie du Chien. Total employment has been decreasing in the county since 1950. Thirteen percent fewer people were employed in 1970 than in 1950 which is approximately equal to the population decrease over the same period.

Table 8. Employment by Industry, Crawford County, Wisconsin.

Category	1940		% Change		1950		% Change		1960		% Change		1970	
	Number	% Total	1940-1950	% Total	Number	% Total	1950-1960	% Total	Number	% Total	1960-1970	% Total	Number	% Total
Agriculture	3104	54	-10		2804	44	-24		2139	35	-27		1562	28
Medical, Professional	443	8	- 3		455	7	+43		655	11	+56		1024	18
Manufacturing	523	9	+94		1015	16	+ 5		1067	18	-36		685	12
Wholesale, Retail trade(1)	574	10	+51		865	13	- 9		786	13	+38		1088	20
Services (2)	381	7	+39		371	6	+ 8		399	7	-22		310	6
Transportation, Communication	200	4	+41		281	4	-36		179	3	-10		161	3
Public Admin. Municipal Serv.	133	2	+24		165	3	+ 8		178	3	+11		197	3
Other	328	6	+46		474	7	+28		607	10	-11		542	10
Total	5686	100	+13		6430	100	- 7		6010	100	- 7		5569	100

(1) Includes food services.

(2) Medical and Professional excluded.

2.64 Unemployment - Unemployment in 1970 was 5 percent for the city and 5.1 percent for the county compared to a State average of 4.0 percent for the same time period. Crawford County qualified as an Economic Development Area under category 8 (suffering from substantial unemployment) on September 1971.

2.65 Per Capita Income - In 1970, Prairie du Chien's per capita income was only 80 percent of the State average (table 9). It was, however, 14 percent greater than the average per capita income of Crawford County.

Table 9. Per Capita Income for project area, 1970.

<u>Total</u>	<u>State of Wisconsin</u>			<u>Crawford County</u>	<u>Prairie du Chien</u>
	<u>Rural non-farm</u>	<u>Rural farm</u>	<u>Urban</u>		
\$3,046	\$2,645	\$2,413	\$3,293	\$2,149	\$2,452

2.66 The 1970 census indicates a total of 735 persons having incomes below the 1970 poverty levels (184 families and 167 unrelated individuals). This represents 13.5 percent of the Prairie du Chien population. The comparable State and county figures are 7.4 and 19.5 percent, respectively.

Housing

2.67 Prairie du Chien is the second oldest community in Wisconsin and residential dwellings reflect the community's age. As improvements and maintenance are limited in some areas by floodplain zoning, the older homes in the floodplain will deteriorate beyond use.

Industry

2.68 The principal industries located at Prairie du Chien include a farm-fertilizer plant and a cleaning and abrasive product manufacturing plant recently located in the community. In addition, the industrial base is composed of a dairy, a manufacturing company, a prefabricated home contractor, and numerous other small industrial concerns.

Transportation

2.69 The Prairie du Chien area is served by two railroads providing freight service. One railroad freight station is located in the floodplain and is inaccessible during floods. A network of two-lane paved highways serves the local area and Interstate Highway No. 90 is located 60 miles to the north at La Crosse, Wisconsin. The area is also served by several inter- and intra-State trucking companies. The city also has a municipal airport (which has no commercial service).

Nature of Flood Damages

2.70 Flood problems at Prairie du Chien are well defined. The frequent flooding experienced has created a sense of frustration and anxiety within the community. The long durations of Mississippi River floods have forced families from their homes for as long as 3 weeks. Many of these people are elderly and have little income, making it difficult and in many cases impossible to relocate as a means of alleviating their plight. Flooding at Prairie du Chien has also resulted in reduced property values, further imposing an economic hardship on property owners as well as on the community.

2.71 Damages resulting from high-water conditions begin when discharges on the Mississippi River exceed 100,000 cfs (cubic feet per second). The slow rise of the river allows ample warning of impending flood stages; however, the damages are compounded by the long period that floodwaters remain above flood stage. Business damages include losses to stock, equipment, buildings, wages, and business profits. Residential damages include physical damage to dwellings and personal property and costs associated with evacuation, emergency quarters, and reoccupation. Other public damages include flood fighting costs, damage to the municipal sewer system facilities, and increased expense of normal municipal functions. Approximately 5 percent of the annual flood damages incurred are public damages.

2.72 Damage estimates based on a 100-year flood are presented below.

Table 10. Estimated flood damages for 100-year flood, Prairie du Chien, Wisconsin, 1975 conditions, October 1976 prices.

<u>Category</u>	<u>Damages</u>
Discharge	265,000 cfs
Elevation	630.2 feet MSL
Damages:	
Residential	\$1,630,200
Commercial	526,700
Public	123,100
Total	\$2,280,000

2.73 Approximately 311.4 acres of undeveloped land and 104.2 acres of residential and commercial land are flooded by the intermediate regional flood. An estimated 913 people who live or work in this area are affected by such a flood.

Existing Projects

2.74 No Federal flood control projects have been constructed at Prairie du Chien. However, the city is situated on the left bank of pool 10 of the existing Mississippi River 9-foot channel project which provides for a channel of 9-foot depth at low water with widths suitable for long-haul, common carrier service from the mouth of the Missouri River to Minneapolis, MN. (See paragraph 2.03.) In addition, a 9-foot deep commercial harbor and a 5-foot deep small boat harbor were constructed in Prairie du Chien on the east channel as noted in paragraph 2.04.

2.75 The Corps of Engineers maintains and operates six reservoirs in the headwaters of the Mississippi River basin above Prairie du Chien. However, only a small percentage of the drainage area is controlled and their operation has little or no effect on flood peaks at Prairie du Chien.

2.76 Although no non-Federal projects for flood control have been built at Prairie du Chien, the city is well-organized for emergency activities required during periods of high water. Because of the nature of the floodplain, emergency levees are not practical or feasible. (See paragraph 1.16.) Pumps of sufficient capacity to handle the increased flows in the sanitary sewer system due to seepage infiltration are kept available for emergency conditions. The primary emergency operation performed by the community during flood stages is the temporary evacuation of families and household goods from the threatened areas. Experienced personnel to supervise the evacuation of families, storage facilities, and equipment for moving household materials are available. A well-organized and experienced local Civil Defense unit and a National Guard company are located in Prairie du Chien.

2.77 The Wisconsin Historical Society is maintaining and restoring the historic landmarks located on St. Friol Island, including the Villa Louis.

3.00 RELATIONSHIP OF THE PROPOSED ACTION TO LAND USE PLANS

3.01 In an effort to improve the public health, safety, convenience and general welfare of city residents, the Prairie du Chien City Council adopted floodplain zoning regulations (City Ordinance No. 461) under authority granted by Sections 62.23(7) and 87.30 of Wisconsin Statutes. This ordinance is designed to prevent incompatible development from reoccurring within the 100-year floodplain.

3.02 City and State interests plan to develop the evacuated floodplain on St. Friol Island for recreation and tourism purposes as demands for these uses increase. They have also indicated the vacated areas along the mainland would be managed to assure that future uses would be aesthetically compatible with the recreational nature of the area.

2.93 Relocation of evacuated persons to non-flood areas should not cause significant land use changes as sufficient improved and unimproved residential lands are presently available within the city. (See paragraph 2.25.)

2.94 The proposed plan would keep the floodplain in a biologically more productive state through the regulation of non-conforming uses. In general the proposed project recommends no change in the existing city's floodplain management ordinance, and possible changes in floodplain regulation would be independent of project implementation.

2.95 The proposed plan will have the effect of returning the landscape to a condition more nearly like it was in the past. This effect will be compatible with and beneficial to the use of parts of the area for historical interpretation.

4.00 ENVIRONMENTAL IMPACT OF THE PROPOSED ACTION

4.01 Implementation of the proposed flood control project would result in some biological, economic, and social impacts. Most effects would be of a beneficial nature.

4.02 Temporary increases in noise, vehicle traffic, erosion, and dust, all considered adverse, would be anticipated during the construction phase of the project. Although adverse, these impacts would be minor in nature.

4.03 Long-term beneficial effects would accrue to the natural environment and aesthetic qualities of the area. During construction, conditions would be unsightly and the loss of some natural vegetation would be expected. However, following removal, razing, and/or flood proofing of the floodplain structures, subsequent landscaping and revegetation and enforcement of existing floodplain regulations would allow the area to revert to a more pleasing or natural condition. Flood proofed structures would not be entirely aesthetic in appearance (e.g. may appear "perched") but should be no worse than existing conditions where structures are damaged due to flooding.

4.04 The proposed plan would involve the demolition of some residential buildings which are not relocated. Since many of these structures are very old, asbestos could have been utilized as a construction material. Demolition or relocation activities would be designed to assure compliance with all applicable air quality standards including the National Emission Standards for Asbestos. Therefore, adverse impacts on air quality during these activities should be minor in nature, or at least short-term.

4.05 Any structures which are evacuated would be investigated with regard to any abandoned septic systems or oil storage tanks utilized for heating. All abandoned oil storage tanks would be pumped out or removed from the evacuated area to prevent oil from entering the Mississippi River in the event of future flooding. Any septic systems which were abandoned would be cleaned or sealed or removed. Wells in evacuated areas would also be sealed. These precautions should prevent adverse impacts on the water quality of the Mississippi River during and following the evacuation phase of the project.

4.06 Evacuated persons, if relocated within the city would be serviced by public water and sewage facilities which would be an improvement over existing private facilities and would reduce potential health problems associated with existing services. In addition, abandonment of old septic systems should contribute to improved water quality.

4.07 As noted in paragraph 2.21, the freshwater bivalve mollusk (Lampsilis higginsii), an Endangered species, exists in the Mississippi River and the northern Bald Eagle (Haliaeetus leucocephalus alascanus) which is proposed as a Threatened species, may exist at times in the proposed project area. Since the proposed project is not structural and would involve no dredging there would be no adverse impacts upon the mollusk species. No significant impacts on the Bald Eagle are anticipated.

4.08 No significant impacts to the existing transportation networks of the proposed project area are expected to occur with implementation of the proposed project. However, secondary impacts to traffic within new dwelling areas could occur. Until a definite area for relocation is determined, these potential impacts cannot be identified.

Cultural Resource Impacts

4.09 The information presented in the following paragraphs is provided in order to indicate our compliance with Section 106 of the National Historic Preservation Act of 1966, with Executive Order 11593 for the Protection and Enhancement of the Cultural Environment, and with the "Procedures for the Protection of Historic and Cultural Properties" (36 C.F.R. Part 800, as amended).

4.10 Six properties which are currently listed in the National Register of Historic Places are located within the area of environmental impact of the proposed action (see Section 2). According to the "Criteria of Effect" (36 C.F.R. Part 800.8), it has been determined that the undertaking will result in beneficial changes in the quality of the historical, architectural, archaeological and cultural properties which are listed in the National Register. These benefits will result from the removal of non-historical structures from the area surrounding the listed properties and from the termination of modern residential and commercial development. The State Historic Preservation Officer of Wisconsin concurs with this determination of no adverse effect. (See letter of comment on page 63.) A review of this determination has been requested from the Executive Director of the Advisory Council on Historic Preservation (Exhibit 1).

4.11 Additional properties and sites which are not currently listed in the National Register of Historic Places may be eligible for inclusion in the Register. Because of the number and extent of these sites, the Principal Investigator of the cultural reconnaissance study has recommended to the Corps of Engineers and the State Historic Preservation Officer that parts of St. Friel Island and portions of the adjacent mainland be designated as a National Historic District. According to the "Procedures for Requesting Determinations of Eligibility" (36 C.F.R. Part 63), it is the responsibility of the St. Paul District Corps of Engineers to seek the necessary determination of eligibility

prior to making decisions which might affect significant cultural resources. The St. Paul District will fulfill this responsibility as a part of a cultural resource survey which will be carried out in conjunction with the Phase II Advanced Engineering and Design studies for the Prairie du Chien flood control project. The results of the survey and the determination of eligibility will be coordinated with the State Historic Preservation Office, the National Park Service and the Advisory Council on Historic Preservation.

4.12 As mentioned in Section 2.31, 39 prehistoric and historic sites were identified during the cultural resources reconnaissance. With few exceptions the proposed project would not have direct impact on the various sites and structures.

4.13 The exceptions to the above statement would occur in two circumstances under which there could potentially be direct impact on known cultural resources. There are some structures slated for removal which are located on or adjacent to known archaeological sites. When those buildings are moved or destroyed, the design specifications will prohibit any ground surface disturbance beyond that which occurred during the original construction of the building. In any instances where this is not possible, the Corps of Engineers will inform the State Historic Preservation Officer and will make arrangements for mitigation of any potentially adverse impacts. The second set of circumstances of potential direct impact involves those houses built over and around log cabins or other structures which date to the early 1800's. Following acquisition of the property and relocation of the current occupants, but prior to removal of the buildings, determinations of the historical significance of the log structures will be obtained by the Corps of Engineers. The necessary work to assess these direct impacts will be carried out at the earliest opportunity during the implementation stages of the project, and will be coordinated with the appropriate Federal and State agencies.

4.14 There is an integral effect of the proposed undertaking which has potential for impact on cultural resources. The relocation of homes and families into areas of Prairie du Chien above 0.08-percent floodplain, and possibly other communities, will result in the construction of new foundations and probably some entirely new houses. This construction may have adverse impacts on presently unknown prehistoric and historic archaeological sites. However, the sites of construction activity are not known and will be determined by the individual citizens of Prairie du Chien, not by the Corps of Engineers. Implementation of the proposed project consists of purchasing the land and structures in the relocation areas. At the time of purchase Corps involvement with relocation ends and individuals may find new housing in Prairie du Chien, or elsewhere. The Corps of Engineers recognizes the existence of these potential secondary impacts of the proposed undertaking; however, we are not currently aware of any effective way to monitor what will be private actions.

Social Impacts

4.15 Social effects of the project would be significant, variable (depending upon each resident's situation), and somewhat undefined. Probably the major factor influencing how the plan affects a resident is whether floodplain regulation - flood insurance - flood warning, floodproofing, or permanent evacuation (as distinct from temporary evacuation during floods) were applied in the individual case. The ensuing paragraphs will outline some of the foreseeable effects of the three plan components, both in general terms and as they apply to Prairie du Chien specifically.

Floodplain Regulation - Flood Insurance - Flood Warning

4.16 This component of the plan is essentially the same as the base condition, although the component may well change after the project is implemented since the focus may change from preventing growth in flood damages to a program designed to outright prevent residential (or other highly damage-prone) development or redevelopment in the floodplain. With the project, the emphasis within this component probably would therefore shift toward more restrictive floodplain ordinances and away from as great a reliance on other measures (e.g. "flood fights"). It is important to note that the component is already in effect in the project area and that its impacts have already been felt to some degree. In some areas, floodproofing or evacuation would therefore only substitute their impacts for those of this component.

4.17 The primary thrust of this component is toward floodplain regulation - flood insurance. Flood warning is a very important part of this component, but has limited effectiveness in controlling flood damage since only the more portable belongings can be removed prior to the flood. (It is more useful at Prairie du Chien than at many communities, however, since Mississippi River stages can be predicted relatively further and more accurately in advance.) Although flood warning is a part (to varying degrees) of any structural or non-structural plan for reducing flood damages, it is generally most applicable and important with this component. Social effects include apprehension during forecasts of major floods (and community disruption if actual flood-readiness measures are undertaken) and concern for the predictive capabilities of the participating agencies.

4.18 The floodplain regulation-flood insurance portion of this plan component follows from a considerable body of Federal, State and local laws, ordinances, administrative directives, etc. The various aspects of the subcomponent are interrelated (e.g. floodplain regulation is required for participation in the flood insurance program) and can be tailored to the characteristics of the community once minimum standards are met.

4.19 One socially significant effect of floodplain regulation-flood insurance is that structural improvements within the floodplain are discouraged. This results from improvements being more expensive since they must meet certain building codes. Also, flood insurance (and thus another expense) would probably be needed for any major improvement. At the extreme, certain improvements may not be possible since it may be infeasible to comply with the regulations. In areas of lesser water depth, however, the effects would not be as great.

4.20 Discouraging of both improvements and major maintenance would result in a general physical deterioration of the neighborhood in time. Certain properties would be removed or demolished, particularly in the areas of greater water depth. In time, the neighborhood would have a considerable number of vacated lots, and many social ties would be disrupted and changed. Aesthetic values would suffer. The out-migration would probably comprise predominantly the younger sectors of the population and those of means. The poor and the elderly would be those most likely to remain. At the same time, the neighborhood may receive an influx of transient young people, such as students or those recently out of school, who are attracted by low rental rates, etc. This could be expected to create some degree of strife in the neighborhood.

4.21 Some effects of this component, such as the apprehension at immediately facing, moving, to a new dwelling, are similar to those felt by persons who would be evacuated from the floodplain. One of the major differences is that with evacuation the duration of stress for the community is shorter; it may be more intense (e.g. because people don't want to move); the instantaneous level of effect is greater for the community during the evacuation effort; and the area would not evolve to a new social structure.

4.22 The effects of this component would, therefore, generally be adverse for floodplain residents, at least until they adjusted to the new social structure or to their new home located outside of the floodplain. The long-term effects at that time may be viewed as either beneficial or adverse. Social effects for the non-floodplain residents would be beneficial since they would incur fewer costs in emergency services, "flood fights", or for structural controls.

Flood Proofing

4.23 As explained earlier, floodproofing involves modifications to structures to withstand the effects of floods; in Prairie du Chien, primarily in areas of shallow flood depths on the mainland. Social effects would include disturbance and disruption during construction, although these effects should be of lesser magnitude than those in evacuation areas. There would also continue to be disruption during flood periods, although less than with floodplain regulation, but, of course, greater than with evacuation.

4.24 Some social effects for residents would result from aesthetic consequences, e.g. the "perched" appearance of buildings or the somewhat stark effect of watertight coverings. Generally, however, the social effects of this component would not be as great as for the other two components since social ties and community cohesion would be less affected. Also, this component should result in no immediate displacement of persons (although there may be in the long-term as with the regulation - insurance component).

Floodplain Evacuation

4.25 Areas subject to the permanent evacuation component of the plan for Prairie du Chien would feel the most dramatic social effects. Some of the effects are only partially identified, in part because large scale evacuations have little precedent. The effects would also be most significant in terms of numbers of people since this component would involve a maximum of about 130 residences with some 285 residents, or about 5 percent of the population of Prairie du Chien.

4.26 While social effects would of course vary with the quality of the new homesite, the social effects of permanent evacuation would also depend upon how evacuation in a particular case were carried out. The most obvious factor is whether a residence would be moved or demolished, the choice depending upon both the resident's desires and the structural practicality of moving the building. Psychological stress would seem to be greater if the building had to be demolished instead of moved.

4.27 Social impacts would also vary depending upon the speed with which evacuation is carried out. Normally it is expected that the faster the pace of evacuation, the greater the stress on the individual since he/she would have less time to adjust to the change. In this case, some mental adjustment has already occurred since evacuation has been discussed or proposed at least since 1969. However, this may also mean that those disinclined to move may have become weary and would grudgingly accept the move.

4.28 Generally speaking, the level of apprehension toward the move would progressively increase until it is accomplished; the strength of one's feelings would then decrease as the years pass. Similarly, one's perceptions as to whether the move is beneficial or adverse may change depending upon how one views the new environment and depending upon one's perceptions of the relation between the old and new (perceived or actual) environments.

4.29 One of the items of concern is community cohesion and structure, i.e., the established social patterns resulting from being with one's neighbors, friends, and/or ethnic compatriots. This would have been of considerable concern in the past since most cities have had ethnic neighborhoods which were not disposed toward amalgamation with others. If community cohesion were a problem, project "design" could have featured relocation as a group into a subdivision instead of moving into individual dwelling sites in Prairie du Chien or other cities. However, it appears that this is not a problem in Prairie since the floodplain and non-floodplain residents seem to perceive few social barriers. Schools, the mass media, and length of time and number of generations since occupancy seems to have breached potential social walls. In any case, the city is considering provision of multiple-residence subdivisions where closely-knit groups could relocate near each other if they so desire.

4.30 As relocation proceeds, the community would experience social and aesthetic effects similar to those discussed under Floodplain Regulation..., but much more compressed in time.

4.31 Evacuated residents may perceive the move as beneficial or adverse for themselves, as discussed earlier. However, evacuation is generally perceived as being beneficial overall for the following reasons. For one thing, there would be an essentially absolute freedom from flood damages from the 100-year flood, assuming the residents do not choose to relocate in the floodplain in other areas. Secondly, residents would move to equal or better housing under provisions of PL 91-646 (assuring decent, safe and sanitary housing), and other applicable statutes. Thirdly, the residents and larger non-floodplain community would not be subject to the recurrent social and economic expenditures in emergency services such as food, shelter, clothing, and "flood fighting". Fourthly, relocated floodplain residents would experience actual security and peace of mind to the degree that they are out of the floodplain and provided that they do not again relocate to the floodplain outside the city. Finally, former floodplain residents would enjoy a continuity in daily life that they could not enjoy under the floodplain regulation... or flood proofing components.

4.32 Permanent evacuation would also have adverse effects. The project cost would be greater for the city at large than for a project featuring floodplain regulation only, or some kinds of structural work providing regional protection. Similarly, relocated persons would probably experience a greater tax burden in the relocation area, depending upon where they chose to move. Persons of low and fixed income, if constrained by housing availability to relocation sites of higher taxation could be financially strained and their continued home ownership placed in jeopardy. This possibility of higher taxation to the point of strain is especially probable if public improvements, e.g., streets, utilities, etc., accessible to individual new property owners are necessary to accommodate relocatees elsewhere in the city.

4.33 Of probably greater significance is the effect of evacuation on social structure and community cohesion since many social bonds would be disrupted. Although new social bonds would be formed in the relocation area, this form of impact is of concern since ties to the area go back many generations in some cases. Also, the levels of education and economic means of those to be relocated would not allow for easy changes in their life style, home, etc. Although the economically disadvantaged would suffer significant impact, it is perhaps the elderly who would be most affected. It seems likely, as Niebauck (1968) postulated that: "The elderly would be impacted particularly severely due to the fact that their attachments to friends and to their physical setting are likely to be the strongest of all current residents." They also would be the least able to deal with the psychological and physiological stresses of relocation.

Social Impact Overview

4.34 A social survey of 213 floodplain residents was conducted by the Corps of Engineers in an effort to ascertain overall views and preferences regarding the various alternative flood control measures. The method utilized for conducting the survey included personal questionnaire delivery and explanation and a subsequent mailed return by respondents. The resulting data generated by this survey should only be viewed as rough indicators of views. Due to time constraints, the design of the survey was not thoroughly pre-tested and subsequent analysis has revealed some inherent weaknesses that should be taken into consideration. Weaknesses of the survey instrument involved some vague and ambiguous wording, and some questions that may be considered "leading". In addition the survey did not include questions regarding the individual characteristics of the respondent, i.e., age, occupation, education, length of residence, etc. Therefore, it is not possible to correlate the preferences of people with the personal characteristics of people, nor to display such relationships in cross tabulated tables.

4.35 A summary of the data collected through the survey is presented below. They are presented as rough approximations of fact, fully in the context of the limitations explained above regarding research design and method. A complete set of response totals recorded on the form itself is available from the St. Paul District, Corps of Engineers upon request.

TABLE 11

SUMMARY OF PERSONAL PREFERENCE SURVEY RESULTS

<u>Item</u>	<u>Responses</u>	<u>Percent</u>
Rank alternative plans on a scale of 1-9		
Evacuation as first or second choice	114	58
Evacuation as eighth or ninth choice	7	4
Other	74	38
Total	195	100

TABLE 11 (cont.)

<u>Item</u>	<u>Responses</u>	<u>Percent</u>
Preference for replacement housing site		
Within Prairie du Chien	52	67
Other	<u>26</u>	<u>33</u>
Total	78	100
Preference for selecting joint replacement housing site with existing neighbors		
Yes	20	19
Maybe or No	<u>84</u>	<u>81</u>
Total	104	100
Desired timing of evacuation		
Earliest possible time	61	76
1 to 3 years	8	10
3 to 5 years	5	6
Other	<u>6</u>	<u>8</u>
Total	80	100

4.36 Discussion of social effects has mainly dealt with residents and the factors influent upon them, the reason being that residences make up by far the bulk of affected properties. Commercial establishments either would not be relocated or they are not so subject to social effects. (Any effects are primarily economic and would be expressed in the marketplace as one of the several factors influencing the success of a business).

4.37 Many of the social effects outlined cannot be avoided. However, many can be ameliorated by sensitivity in carrying out the plan for reducing flood damages. In addition to carrying out the plan sensitively and with all deliberate speed (but with allowances for those who are less prepared to move), proper project accomplishment should include the fullest possible explanation to the residents of the project area who would be affected with particular attention paid to explaining the options available to them.

4.38 The fundamental fact underlying the assessment of social effects is that outcomes in attitude and behavior vary with the subjective perception of those individuals who experience an external action upon them. While the project is intended to be sensitive to the needs of the residents and while it is generally viewed as beneficial, individual viewpoints would depend upon how it is carried out. Grief over the loss of "home" is important, whether or not it can be precisely defined. Such psychological costs to citizens would be avoided or mitigated to the extent available through design and implementation techniques.

4.39 Evacuation measures may have severe impacts upon some individuals of advanced age and/or low, perhaps fixed, incomes. Should such cases become apparent in the implementation phase of the selected project plan they may pose a dilemma in conjunction with the policy of mandatory evacuation.

4.40 Approximately 130 structures involving 285 persons are designated for mandatory removal in the proposed plan. Some persons having low fixed incomes may not be able to afford the higher taxes, higher customary neighborhood maintenance standards, and other improvement assessments on the property to which they may choose to relocate. Such people could loose their homes if adequate financial aids were not provided. Rigorous counseling procedures should be established by the City of Prairie du Chien for its administration of the relocation component of floodplain evacuation.

4.41 Officials of City and State may wish to establish effective mitigative safeguards to reduce or eliminate potential personal financial problems resulting from the project by: 1) assessing each case as individuals register for property acquisition and relocation assistance; 2) informing and counseling each individual on the benefits and consequences over time of all options and the degrees of corresponding financial obligation they might assume; 3) devise criteria for life span nontransferable exceptions to evacuation; and 4) consider subsidies in the form of limited taxation and improvement assessments for some on relocated home sites within the city.

4.42 City and State assumption of review, advisory and mitigative responsibilities suggested above would minimize the potential for future financial hardships due to relocation. These measures would benefit all citizens, with excess sacrifice imposed on no citizens.

4.43 Effects on community growth patterns would be beneficial. Floodplain regulations would limit future floodplain development to compatible uses. Effects on regional growth, although beneficial, would probably not be significant.

4.44 The local tax base would be increased through an increase in average property values if the proposed project were implemented. Local employment benefits would amount to about \$67,000 on an average annual basis and recreation benefits of about \$7,500 would occur annually due to increased visitation and open space utilization following completion of the project.

4.45 The demand on public services should be decreased in the project area due to evacuations and, consequently, reduced expenditures associated with emergency flood protection and subsequent clean-up operations. Normal public services demands in relocation areas would be increased, although Prairie du Chien is capable of meeting these demands with existing facilities.

4.46 Residents who would be evacuated, or who would move in time, would have to establish new patterns in shopping, going to work, etc. If distances became greater, the social effects would be adverse. Although any increased travel distances of the length experienced here are generally insignificant for the average mobile American, the elderly or disadvantaged could find the effect decidedly adverse.

5.00 UNAVOIDABLE ADVERSE IMPACTS OF THE PROPOSED ACTION

5.01 The unavoidable adverse impacts of the proposed action include loss of undeveloped lands in the non-floodplain area of the city due to relocations of floodplain residents. Temporary dust, noise, and water pollution during construction would occur.

5.02 Social and associated problems would also occur as the result of evacuation and floodplain regulation. These problems were discussed in paragraphs 4.15 through 4.43.

6.00 ALTERNATIVES TO THE PROPOSED ACTION

6.01 Various alternatives to the proposed plan have been studied during the formulation of the proposed plan. Average annual costs and benefits are based on an interest rate of 6 3/8 percent and price levels and conditions prevailing in October 1976. An economic life of 50 years was used to evaluate all alternative plans.

6.02 Any alternative should be capable of satisfying some or all of the following water and related land resource planning concerns for the Prairie du Chien area:

- a. Protecting life and property.
- b. Reducing health hazards and removing unsanitary conditions.
- c. Reducing flood damages.
- d. Minimizing adverse social impacts of relocations.
- e. Compatibility with overall land use plans.
- f. Increase recreation opportunities, especially by providing new open space on St. Friol Island.
- g. Enhance existing cultural resources.
- h. Maximize aesthetic qualities of the entire area and St. Friol Island in particular.

6.03 Alternative solutions considered to meet water and related land resource problems and needs were classified under three principal categories: No action, nonstructural, and structural. Each alternative was tested for its engineering and economic feasibility, social acceptability, impact on cultural resources, and capacity to preserve, and where practical, enhance the quality of the natural and human environment.

6.04 The impacts of the several alternatives on cultural resources will be discussed here rather than in the separate sections. The "no action" and the nonstructural alternatives would result in either no appreciable effect or beneficial effects comparable to those of the proposed project. The three structural alternatives would have significant adverse effects on known cultural resources in the case of alternative number 1, and probable significant adverse effects on presently unknown cultural sites in the case of alternative number 2 and alternative number 3.

6.05 Based on the above criteria, six alternative plans for flood damage reduction were considered for Prairie du Chien in addition to maintaining the status quo or "no action" condition.

No Action

6.06 Maintaining the status quo would mean that no further Federal or non-Federal measures would be taken to alleviate recognized flood-related problems in the Prairie du Chien area. This would not burden Federal and non-Federal interests with financial costs associated with implementing such measures. However, recurrent floods would continue to cause social and economic hardships to residents of the area. About \$178,000 average annual flood damages would remain as a net loss to national and regional economic development.

6.07 With the guidance of the Wisconsin Department of Natural Resources, Prairie du Chien has developed a floodplain ordinance to regulate development in its flood prone areas (paragraph 1.05). The purpose of such a regulation is to reduce the future growth of flood-related damages since aging structures due for replacement or major alteration must be flood proofed or relocated out of the floodplain.

6.08 Residents of Prairie du Chien are also eligible for federally subsidized flood insurance. Due to the high cost of such insurance, however, only a small percentage of the persons eligible now subscribe to such a flood insurance policy. No house or other real property in the Prairie du Chien floodplain can be purchased with the aid of a federally guaranteed loan unless such insurance is taken out.

6.09 In time, the no action alternative would result in project area conditions similar to that expected with the proposed project. However, recurring flood hazards would continue to threaten the health, public safety, and social well-being of the floodplain residents for a number of years.

Nonstructural Alternatives -

6.10 Several nonstructural measures may be effective in reducing flood damages in the Prairie du Chien floodplain. Those evaluated for this study include: (1) improved flood warning and emergency protection; (2) permanent floodplain evacuation; (3) flood proofing; (4) flood insurance; and (5) the proposed plan which is a combination of floodplain evacuation, flood proofing, and floodplain regulation.

Alternative 1 - Improved Flood Warning and Emergency Protection

6.11 Flood warning consists of predicting the timing and magnitude of floods to allow for evacuation of flood prone areas or erection of emergency flood protection measures. The National Weather Service currently provides area officials and local news media with flood forecasts and warnings. Spring snowmelt floods can be reasonably predicted by methods currently available. Large major floods that result from excessive summer rainfall can also be predicted. Based on the existing flood warning system, emergency evacuation of persons are now undertaken when necessary for spring snowmelt floods.

6.12 Improved flood warnings and subsequent emergency actions would reduce the average annual flood damages at Prairie du Chien by about \$6,000, or less than 5 percent. However, because of the uncertain nature of the costs for providing improved flood warnings and emergency protective actions, the net benefits of this plan cannot be estimated.

6.13 Emergency measures would continue to cause personal inconvenience and community disruption. On a short-term basis and in the absence of any other means of flood damage reduction, improved flood warning and subsequent emergency actions would prove effective in reducing flood damages at Prairie du Chien. However, as a means of permanent flood damage reduction and as a long-term solution to flood problems at Prairie du Chien, this plan is not effective because of continued adverse social, economic, and (possibly) biologic effects.

Alternative 2 - Total Floodplain Evacuation

6.14 Total evacuation of developed areas subject to inundation involves purchase of lands, removal of all improvements, and relocation of the residents of such areas. Lands acquired in this manner could be used for parks and other open space purposes that would not interfere with flood flows or suffer material damage from flooding. Lands not suitable for facilities requiring permanent structures could be used for parks, picnic areas, and playgrounds. A number of localities throughout the country are now using floodplains for such purposes and receiving secondary benefits from flood damage reduction programs. Local interests indicated that the vacated areas along the mainland would be managed to assure that future uses would be aesthetically compatible with recreation developments anticipated for St. Friel Island. The total evacuation plan, while meeting the flood control needs, would also complement this projected use for the area. Enforcement of a sound floodplain management program would remain the responsibility of local interests. They plan to develop the evacuated floodplain at St. Friel Island for recreation and tourism.

6.15 Environmental effects of this alternative would be comparable to the proposed plan. Average annual residual flood damages with this alternative would be \$26,000. However, the total evacuation alternative is not economically feasible with a benefit-cost ratio of 0.71.

Alternative 3 - Flood Proofing

6.16 Flood proofing is a combination of structural changes and adjustments to flood prone buildings for flood damage reduction. Several days duration of flooding and appreciable flood depths would cause seepage through the walls of most structures even with effective sealing of doorways and window openings. If residential and business structures were successfully protected by flood proofing measures, average annual residual damages would be approximately \$119,000. The benefit-cost ratio for this alternative is 0.65.

6.17 Social effects of flooding such as interrupted access to flood proofed structures during severe floods would remain. Effects on the biological environment would be similar to those presently occurring. Also, the structural condition of many residential buildings on St. Eriol Island is such that they could not be flood proofed without major structural renovation. Economic considerations and State floodplain regulations may prevent the flood proofing of these structures. However, many of the buildings that are located along the fringe of the floodplain are structurally sound and could be flood proofed. Hence, flood proofing in combination with floodplain regulations and floodplain evacuation may be an adequate solution to many flood problems, but, the flood proofing plan alone cannot adequately solve the flood problems of Prairie du Chien.

Alternative 4 - Flood Insurance

6.18 The National Flood Insurance Program under the U.S. Department of Housing and Urban Development offers insurance coverage for urban residences, businesses, and other buildings and their contents up to prescribed limitations. Flood insurance is available within a community when an application for community eligibility has been approved by the Federal Insurance Administration. When the Federal Insurance Administration approves the application, which must include land use control measures, flood insurance at subsidized rates is available on all structures within that community. New construction would be insured at actuarial rates. Flood insurance is now available to residents of Prairie du Chien. Currently, prescribed limitations for subsidized flood insurance coverages are \$35,000 for single family residential, \$100,000 for multifamily residential, and \$100,000 for nonresidential contents. Average annual local and Federal costs for flood insurance for all improvements within the Prairie du Chien floodplain would be \$275,000. Average annual damages would remain at \$178,000.

6.19 Subsidized insurance does not solve flood problems and does not reduce actual damages but merely spreads part of the monetary loss over a wider population sector. The average annual damages would remain the same in the short-term. Unsubsidized insurance internalizes the cost of floodplain development, and in the long-term causes removal of incompatible development through economic disincentives and through the related floodplain regulation program. Flood insurance alone cannot be considered an acceptable long-term solution to the problems under study.

Alternative 5 - Proposed Plan: Evacuation, Floodplain Regulation and Flood Proofing.

6.20 The proposed plan provides for permanent evacuation of all inhabitable structures located within floodway areas subject to deep and fast flowing water, floodplain regulation measures to assure wise future use of vacant floodplain lands, and flood proofing measures where found to be economically feasible for reducing the flood damage potential to existing development. The proposed plan has a benefit-cost ratio of 1.10 to 1 and average annual residual damages are \$85,000.

Structural Measures

Alternative 6 - Levees and Floodwalls

6.21 Three basic flood barrier alignments including facilities for interior drainage needs were considered. Alignment A would protect the floodplain at Prairie du Chien with two separate levee systems - one extending along the mainland riverfront and the other a ring levee around St. Friel Island. Alignment B provides for a continuous flood barrier from the north corporate limits extending around St. Friel Island to the south corporate limits. Alignment C would protect a 90-acre tract of land near the south corporate limits. This small area was considered also as it is removed from other developed floodplain areas and, if protected, would include protection for the farm fertilizer plant located in the vicinity. The vacant lots within alignment C would also be available as homesites for the houses to be evacuated from other floodplain areas.

6.22 Levees would require changes to transportation and hauling of materials, and would therefore impact streets, traffic patterns in the area and nearby residents. This alternative would result in modifications to the natural vegetation and shoreline within the project area. Landscaping and subsequent planting of trees and shrubs could be included as integral features to partially offset some losses. In addition, irregular slopes incorporated with the levee side slopes could aesthetically improve their appearance. Development of open areas and recreation facilities (in the existing floodplain but within the possible levees) would be less likely with this alternative as the reduced flood danger would encourage new residential and commercial development in protected areas.

6.23 This alternative while reducing average annual residual damages to only \$34,000 has a benefit-cost ratio of 0.38 because of high associated construction costs.

Alternative 7 - Reservoir Control

6.24 The existing Corps of Engineers reservoirs located in the headwaters region of the Mississippi River exert some control over less than 8 percent of the total drainage area above Prairie du Chien and are located too far upstream. Their operation has little or no effect on flood peaks at Prairie du Chien. Although numerous upstream reservoir sites have been identified in the Upper Mississippi River Comprehensive Basin Study as having potential for future development, several of these sites would have to be developed as a system before flood stages at Prairie du Chien could be reduced to tolerable levels. Studies were conducted in the Minnesota River basin on two of the most effective of these available reservoir sites, Blue Earth and New Ulm. However, even with these two reservoir sites fully developed and in operation, flood stages at Prairie du Chien would be reduced only 1 to 2 feet, and average annual damages reduced by only a small percentage.

6.25 Because of economic limitations, significant environmental effects, and the speculative nature of additional reservoirs, this alternative is considered to be impractical as a solution to flood damage reduction needs at Prairie du Chien.

Alternative 6 - Channel Modification

6.26 Channel modification was investigated and found infeasible for environmental, economic, and institutional reasons. Channel modifications would not provide a desirable degree of flood protection within economic limitations because of the mild channel gradient and limited channel capacity compared to the extremely high flows experienced. Construction of adequate channels would have major impacts on the quality of the aquatic environment in the Upper Mississippi Wildlife and Fish Refuge, fish and wildlife values, and overall aesthetics in the area. Therefore, this plan was not considered further.

7.00 THE RELATIONSHIP OF LOCAL SHORT-TERM USES OF THE HUMAN ENVIRONMENT AND THE MAINTENANCE AND ENHANCEMENT OF LONG-TERM PRODUCTIVITY.

7.01 Short-term benefits would consist of avoidance of adverse economic and social impacts of floods equal to, or of less magnitude than, the 1965 flood (0.8-percent flood).

7.02 Evacuation and floodplain regulations would enhance the environmental setting and increase the natural productivity of the area through avoidance of non-compatible floodplain uses.

8.00 IRREVERSIBLE AND IRRETRIEVABLE COMMITMENTS OF RESOURCES WHICH WOULD BE INVOLVED IN THE PROPOSED ACTION

8.01 Some undeveloped lands within the city limits would be committed to use as home sites for relocated persons. For practical purposes, the natural resources used during construction would also be irretrievable. There would also be a commitment to restricting floodplain development to those uses that are compatible with its designation.

9.00 COORDINATION

9.01 Coordination with Federal, State and local agencies was initiated in the early stages of the proposed project planning efforts. A public hearing was held on 11 January 1966. All agencies and known interests have been notified periodically of study progress. Extensive coordination was accomplished with the U. S. Department of Housing and Urban Development during the formulation of the evacuation measures proposed. In addition close coordination has been maintained with the Wisconsin Department of Natural Resources.

9.02 Particular attention has been paid to adequate coordination with the Advisory Council on Historic Preservation, the National Park Service, the Wisconsin State Historical Society and the Wisconsin State Archaeologist due to the extensive cultural resources of the area. As noted in section 4, a cultural resource investigation was accomplished under contract with the Corps by the Wisconsin State Historical Society. The results are summarized in section 4. Coordination will continue to be emphasized.

9.03 Local coordination has also been extensive. Initial coordination was developed through the Prairie du Chien Flood Committee. Later, a Citizens Advisory Committee was established. Their initial meeting was held in January 1976. Several meetings have been held since. The committee provided valuable assistance in keeping the public fully informed about the status and progress of the study. Further, the committee provided definite contributions in the selection of specific planning objectives, the determination of likely special impacts of the evacuation plan, and the formulation of the mix of flood protection measures in the proposed plan. The committee's participation in plan reformulation studies culminated in a position paper supporting the proposed plan of floodplain evacuation, flood proofing, and continued floodplain regulation.

9.04 In addition to extensive contact with local interests through the citizens advisory committee, a survey of 213 floodplain residents was conducted by Corps of Engineers representatives. This survey provided helpful input to the planning process.

9.05 State, Federal, and local interests were furnished copies of the proposed plan of study and identified water and related land resource needs of the area for comments in February of 1975.

9.06 The draft environmental impact statement was furnished to the various Federal, State and local agencies and interested individuals listed below.

Honorable Gaylord A. Nelson, U.S. Senate
Honorable William S. Proxmire, U.S. Senate
Honorable Alvin Baldus, House of Representatives
Honorable Patrick J. Lucey, Governor, State of Wisconsin
Honorable David G. Berger, Wisconsin State Senate
Honorable Bernard Lewison, Wisconsin Assembly
Honorable John F. McPhee, Mayor, City of Prairie du Chien

U.S. Environmental Protection Agency
U.S. Department of Agriculture
U.S. Department of Commerce
U.S. Department of Health, Education and Welfare
U.S. Department of Housing and Urban Development
U.S. Department of the Interior
U.S. Department of Transportation
Advisory Council on Historic Preservation

Mississippi River Regional Planning Commission
(Areaside Clearinghouse)
Bureau of Planning, and Budget, Wisconsin Department of
Administration (State Clearinghouse)

Wisconsin Department of Administration
Wisconsin Department of Agriculture
Wisconsin Department of Health and Social Services
Wisconsin Department of Natural Resources
Wisconsin Department of State and Local Affairs
Wisconsin Department of Transportation

Environmental Policy Center, Washington, DC
Izaak Walton League, Wisconsin Division
Northern Environmental Council
Sierra Club, Midwest Representative
Sierra Club, John Muir Chapter
Wisconsin Canoe Association
Wisconsin League of Women Voters
Wisconsin Public Service Commission
Wisconsin State Board of Soil and Water
Wisconsin State Archaeologist
Wisconsin State Historical Society

Minnesota - Wisconsin Boundary Area Commission

Citizens Advisory Council
City Assessor, Prairie du Chien
City Clerk-Treasurer, Prairie du Chien
Prairie du Chien Harbor Commission
Mr. L.F. Ahrens, Real Estate Broker
Mr. E.C. Braem
Mr. Thomas Bresenhan, SEDA Council of Government
Mr. J.M. Cosgriff, Wisconsin Power & Light Company Pennsylvania
Ms Gale Dickenson
Mr. C.E. Hughes, Northern Engraving Co., Sparta, WI
Dr. Robert H. Jackson, Univ. of Wisconsin - La Crosse

Mr. R.D. Smith, Attorney
Mr. Robert G. Valley, Wisconsin Southern Gas Co., Inc.

9.06 In addition, copies of this statement were furnished
to the following libraries, where they were available for review:

University of Wisconsin - La Crosse
Prairie du Chien Public Library

9.07 A public meeting concerning the proposed flood control project was held on 6 December 1976. All known interests were invited to attend. The purpose of the meeting was to assure that all interested parties had sufficient information to understand how their concerns are affected by water resource problems and to afford local interests the opportunity to express their views regarding the proposed plan.

9.08 Comments on the draft environmental statement were received from the following:

- U.S. Environmental Protection Agency
- Advisory Council on Historic Preservation
- U.S. Department of Agriculture
- U.S. Department of Commerce
- U.S. Department of the Interior
- U.S. Department of Transportation
- State of Wisconsin, Department of Local Affairs
- State of Wisconsin, Department of Natural Resources
- State of Wisconsin, Department of Transportation
- State of Wisconsin, Public Service Commission
- State Historical Society of Wisconsin

9.09 The letters of comment received with Corps of Engineers response are on the ensuing pages.

9.10 Single copies of this final environmental impact statement are available at the Corps of Engineers, St. Paul District Office, 1135 U.S. Post Office and Custom House, St. Paul, Minnesota, 55101.

LETTERS of COMMENT
and
CORPS RESPONSES



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



Corps responses to the U. S. ENVIRONMENTAL PROTECTION AGENCY

1. Demolition undertaken will be designed to comply with Air Quality Standards including the National Emission Standards for Asbestos. This has been noted in paragraphs 1.07 and 4.04 of the final statement.
2. Concur. This information has been added to our final statement, paragraphs 1.07 and 4.05, but with the change that septic systems could be removed or sealed or cleaned.

Colonel Forrest T. Gay, III
District Engineer
U. S. Corps of Engineers, St. Paul
1135 U.S. Post Office & Customhouse
St. Paul, Minnesota 55101

RE: 76-090-196
D-COE-F36045-WI

Dear Colonel Gay:

We have completed our review of the Draft Environmental Impact Statement (EIS) for Flood Control, Mississippi River at Prairie du Chien, Wisconsin. Your letter of August 31, 1976, requested our views and comments on this proposal. Based upon the information provided in the EIS, we have no objections to the project as proposed. Our Agency compliments you and your staff for designing and undertaking such flood control measures. The following comments express our concerns on this proposal.

During demolition of the buildings which are to be removed as part of the project, precautions should be taken to assure compliance with Air Quality Standards. Since some of the buildings are old, asbestos could have been used as part of the building material. Assurance that all demolition activities will comply with the National Emission Standards for Asbestos (Federal Register, April 6, 1973, Vol. 38, No. 66 - Section 61.22) should be made. At the sites where structures are to be removed, oil storage tanks for heating should be pumped out to prevent any oil from entering the Mississippi River. Where septic systems will be abandoned, they should be cleaned and sealed or removed as part of the project.

Based on the information provided in the EIS, we have rated the project as LO (lack of objections) and categorized the EIS as class 1 (sufficient information). The date and classification of the project will be published in the Federal Register in accordance with our responsibility to inform the public of our views on other agencies' projects.

When the Final EIS is filed with the Council on Environmental Quality, please forward two copies to us. If you have any questions in regard to our comments, please contact Mr. Bill Franz at 312-353-2307.

Sincerely yours,

Gary A. Williams
Chief,
Environmental Review Section

Advisory Council on
Historic Preservation
1523 K Street NW
Washington, D.C. 20005

November 4, 1976

Forrest T. Gay, III
Colonel, Corps of Engineers
District Engineer, St Paul District
U.S. Army Corps of Engineers
1153 U.S. Post Office and
Custom House
St. Paul, Minnesota 55101

Dear Colonel Gay:

Thank you for your request of August 31, 1976, for comments on the environmental statement for Flood Control-Mississippi River, Prairie du Chien, Wisconsin. Pursuant to our responsibilities under Section 102(2)(C) of the National Environmental Policy Act of 1969 and the Council's "Procedures for the Protection of Historic and Cultural Properties" (36 C.F.R. Part 800), we have determined that your draft environmental statement mentions properties of cultural and/or historical significance; however, we need more information in order to evaluate the effects of the undertaking on these resources. We understand that a cultural resources investigation is in progress. We recommend that its presentation in the final environmental statement include the following information concerning compliance with Section 106 of the National Historic Preservation Act of 1966 (16 U.S.C. 470f., as amended, 90 Stat. 1320):

1. A property listed in the National Register of Historic Places is not located within the area of environmental impact, and the undertaking will not affect any such property. In making this determination, the Council requires evidence that you have consulted the annual edition of the National Register (Federal Register, February 10, 1976, and its monthly supplements).
2. A property listed in the National Register is located within the area of environmental impact, and the undertaking will or will not affect any such property. In cases where there will be an effect, the final environmental impact statement should contain evidence of compliance with Section 106 of the National Historic Preservation Act through the Council's "Procedures for the Protection of Historic and Cultural Properties" (36 C.F.R. Part 800).

The Council is an independent unit of the Executive Branch of the Federal Government charged by the Act of October 15, 1966 to advise the President and Congress in the field of Historic Preservation.

Corps responses to the Advisory Council on Historic Preservation

3. Concur. We have noted our compliance, see paragraphs 4.30 and 4.31.

-2-

4. The Corps is fully coordinating all cultural resource activities.
See the technical appendix.

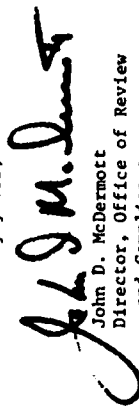
3. A property eligible for inclusion in the National Register of Historic Places is not located within the area of environmental impact, and the undertaking will not effect any such property. In making this determination the Council requires evidence of consultation with the appropriate State Historic Preservation Officer and evidence of an effort to ensure the identification of such properties. The Council recommends that comments of the State Historic Preservation Officer be included in the final environmental statement.

4. A property eligible for inclusion in the National Register is located within the area of environmental impact, and the undertaking will or will not affect any such property. In cases where there will be an effect, the final environmental statement should contain evidence of compliance with the Executive Order through the Council's "Procedures for the Protection of Historic and Cultural Properties" (36 C.F.R. Part 800).

To ensure a comprehensive review of cultural and historical resources, the Advisory Council recommends that the environmental statement contain evidence of contact with the appropriate State Historic Preservation Officer. A copy of his comments concerning the effects of the undertaking upon these resources should be included in the environmental statement.

Should you have any questions on these comments or require any additional assistance, please contact Charles Spilker of the Advisory Council staff (202-254-3380)

Sincerely yours,


John D. McDermott
Director, Office of Review
and Compliance

UNITED STATES DEPARTMENT OF AGRICULTURE
FOREST SERVICE
NORTHWESTERN AREA STATE AND FOREST ENGINEER
500 NORTH 3RD STREET, ST. PAUL, MINN. 55101
(113) 54-1671

APR 19 1971



Forrest T. Gay, III
Colonel, Corps of Engineers
District Engineer
St. Paul District
Corps of Engineers
1135 U.S. Post Office and Custom House
St. Paul, Minnesota 55101

Refer to: NCSEB-PB, Draft
Environmental Statement,
Flood Control, Mississippi
River at Prairie Du Chien, WI

Dear Colonel Gay:

Our Milwaukee Office forwarded a second copy of the
above statement to us for comment as no National Forests
are involved.

We feel that the selected plan has more positive long-
term environmental effects than structural measures such
as levees and channel modification. Removal of structures
will tend to reduce flood levels when floods occur. The
subsequent landscaping should include trees appropriate
to the site and resistant to periodic flooding. We assume
that the Wisconsin Department of Natural Resources will
be involved in the revegetation planning.

Thank you for the opportunity to review this Draft State-
ment.

Sincerely,

DALE O. VANZELBERG
Staff Director
Environmental Quality Evaluation

Corps Engineers, Corps of Engineers, Department of Agriculture, Forest Service

See attached copy of the final statement of coordination
and maintenance with the Department of Natural Resources and
will continue to study project.

UNITED STATES DEPARTMENT OF AGRICULTURE

SOIL CONSERVATION SERVICE MIDWEST TECHNICAL SERVICE CENTER

Federal Building-U.S. Courthouse, Room 345, Lincoln, Nebraska 68508

September 14, 1976

Colonel Forrest T. Gay, III
St. Paul District, Corps of Engineers
Department of the Army
1135 U.S. Post Office & Custom House
St. Paul, Minnesota 55101

Dear Colonel Gay:

Subject: Prairie du Chien Flood Control Draft EIS (NCSED-ER)
and Phase I General Design Memorandum (NCSED-PB)

This is in reference to subject documents furnished me for review.

Since these documents regard projects in Wisconsin, Jerome C. Hytry, State Conservationist for the Soil Conservation Service at Madison, will furnish SCS comments. Should we have any comments on these reports, they will be furnished to Mr. Hytry prior to comment deadline.

I do, however, want to thank you for giving this office the opportunity to review these documents.

Sincerely,

Richard E. Strong ACTING
Richard E. Strong
Director, Midwest TSC

cc:
J. W. Haas, Dep. Adm. for Water Resources, SCS, USDA, Washington, D. C.
J. C. Hytry, STC, SCS, Madison, Wisconsin
Buell M. Ferguson, Head, E&WP Unit, SCS, MTSC, Lincoln, Nebraska

U.S. DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL WEATHER SERVICE
601 North Dearborn Street
St. Paul, Minnesota 55101

September 17, 1976

WFC242

Col. Forrest Gay III
St. Paul Corps of Engineers
1135 U.S. Post Office and Customs House
St. Paul, Minnesota 55101

Dear Col. Gay:

Subject: Draft Environmental Impact Statement for Prairie Du Chien
Wisconsin

Reference: WCEED-ER letter, dated August 31, 1976

We have reviewed the draft environmental impact statement for Prairie Du
Chien, Wisconsin, concerning flood warning and forecasting. Paragraph
6.10, page 31, adequately covers our program.

Sincerely,

Elroy C. Balke
Elroy C. Balke
Regional Hydrologist, CRH



United States Department of the Interior

OFFICE OF THE SECRETARY
NORTH CENTRAL REGION
201 S. DEARBORN STREET, 12th FLOOR
CHICAGO, ILLINOIS 60604

Corps responses to the U. S. DEPARTMENT OF THE INTERIOR

6. See paragraph 4.05 of the final statement. The methods used in sealing would be determined as each individual case is examined.
7. A statement has been added to the final statement (paragraph 2.05). The new well will be located above the elevation of the 1-percent flood a considerable distance from the floodplain and will not be subject to any flood hazard.

(ER-76/877)

October 21, 1976

Colonel Forest T. Gay III
District Engineer
U.S. Army Engineer District
St. Paul
1135 U.S. Post Office & Custom
House
St. Paul, Minnesota 55101

Dear Colonel Gay:

The Department of the Interior has reviewed the Draft Environmental Statement and draft Phase I, General Design Memorandum (Plan Formulation) for the Mississippi River at Prairie Du Chien, Crawford County, Wisconsin, as requested in your letter of September 3, 1976.

Draft Phase 1, General Design Memorandum

As presented in the General Design Memorandum, the authorized plan would have only minimal effects on fish and wildlife resources. Further studies of the project by the U.S. Fish and Wildlife Service are not considered necessary.

Plate B-2 of Appendix B is confusing because of duplication of colors used in displaying the various land use categories. For example, the same color is used to indicate both single family residence and parks and open space. Similar conflicts also occur in the designation of other lands.

Draft Environmental Impact Statement

6 The proposed action will involve razing or moving 130 residential structures (page 2). The statement should indicate what steps will be taken to seal wells and other excavations in the area of evacuation in order to prevent ready access of potentially polluted flood water to the comparatively shallow aquifer. Also, a new municipal well is being drilled in the northeast portion of the city. Reference to plates 4 and B-2 of the draft report suggest that the location of the new well is probably above the Standard Project Flood; however, the statement should include a comment on the location of the well with respect to flood hazard.



2

The statement is adequate in presenting the effects of the proposed project on fish and wildlife resources. However, some minor additions should be made. For instance, Section 2.21, Rare and Endangered Species, of the draft Environmental Impact Statement, should be amended to indicate that the freshwater bivalve mussels Lampsilis ligumina (Higgins' eye pearly mussel) exists in the area. This organism was placed on the Endangered Species List in the Federal Register, Volume 41, No. 115, dated June 14, 1976. In addition, the U.S. Fish and Wildlife Service has proposed in the Federal Register, July 12, 1976, a modification in the listed Endangered Status of the Bald Eagle under which the Northern Bald Eagle (Haliaeetus leucocephalus alascanus) would be listed as threatened. We do not expect the proposed project to have adverse impacts on either of these species. No further consideration is necessary.

A more detailed description of existing recreation resources in the study area should be provided in Section 2.25 on page 10 of the statement. Information provided should indicate the names of existing parks, their sizes, and in general, the types of uses which occur in them.

We are pleased that appropriate procedures to identify and protect cultural resources within the project area have been initiated (pages 11 and 36). The archeological and historical surveys being conducted should include not only St. Friel Island, but also the mainland portions of the project area subject to inundation. The extent of the surveys should be indicated in the statement.

Sincerely yours,

Madonna F. McGrath

Madonna F. McGrath
Acting Special Assistant
to the Secretary

8. This information has been included in the final statement (paragraphs 2.21 and 4.07).
9. We have included Table 1 on page 13 of the final statement which presents an inventory of existing recreation resources. More detailed information concerning recreation is contained in appendix F of the General Design Memorandum.
10. The cultural resource reconnaissance was not limited to St. Friel Island. Several sites were located on the waterfront portion of the mainland, some of which would be included in the proposed Nationally Registered Historic District. The reconnaissance included all of Prairie du Chien and surrounding areas with attention focused on the specific areas where the Corps project would have impact. A summary of the results is presented in section 2, paragraphs 2.32 to 2.52.

U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION

REGION 5

1820N DIXIE HIGHWAY
HOMERWOOD, ILLINOIS 60430

September 27, 1976

Corps responses to the U. S. DEPARTMENT OF TRANSPORTATION

11. The secondary impacts of the relocation cannot be determined at this time since individuals may select where they will move to and the location may not even be in Prairie du Chien. More defined information concerning relocation will be ascertained as studies progress.
12. Paragraph 6.22 notes that levees would require changes to transportation, and hauling of materials would impact streets, traffic patterns in the area, and nearby residents.

IN REPLY, REFER TO

05-00.5

Colonel Forrest T. Gay, III
District Engineer
St. Paul District, Corps of Engineers
1135 U.S. Post Office & Custom House
St. Paul, Minnesota 55101

Dear Colonel Gay:

The draft environmental statement for flood control of Mississippi River at Prairie du Chien, Wisconsin has been reviewed and we offer the following comments on the transportation related aspects of the proposal.

11 The relocation of homes from the flood plain to proposed new housing areas in Prairie du Chien would require construction of new local streets in the city. The impacts of the construction of these streets should be discussed.

12 The alternative of constructing levees and floodwalls (if selected) would require the reconstruction or modification of the existing streets and bridges in Prairie du Chien. The impacts of this reconstruction or modification should be discussed.

Sincerely yours,

Donald E. Trull
Regional Administrator

By:

W. G. Emrich, Director
Office of Environment and Design

W. G. Emrich



State of Wisconsin / DEPARTMENT OF LOCAL AFFAIRS & DEVELOPMENT

DIVISION OF STATE LOCAL AFFAIRS

Bureau of Community Development

1035 WEST WASHINGTON AVENUE
MADISON, WISCONSIN 53702

October 11, 1976

District Engineer
St. Paul District, Corps of Engineers
1135 U. S. Post Office and Custom House
St. Paul, Minnesota 55101

Dear Sir:

We have reviewed your Draft Environmental Impact Statement: Flood Control
---Mississippi River at Prairie du Chien, Wisconsin and would like to make
the following comments.

We understand that the relocation aspects of the proposed project make
this relatively unique among flood control projects, and we commend the
approach for its long-term economic and safety benefits. This is
especially true if Table 3 accurately reflects a trend toward more serious
flooding in recent years and presumably in the future.

The major deficiency of this report is that it does not deal adequately
with the housing, or more correctly the rehousing, problem which will
appear where relocation occurs. Our Relocation Section was involved in
earlier discussions of these matters and was informed that a survey of
residents of the project area was undertaken. It would greatly help
our review if the information on demographics, socioeconomic status, and
rehousing preference from that survey were included in the final EIS.

The report does not adequately discuss the lack of suitable, presumably
low-cost, housing for relocatees which would be difficult to find or
provide in a community the size of Prairie du Chien. Given the generally
poor condition of the structures to be vacated, moving the better of
them would seem to deal with only a small part of the problem. Other
measures to ameliorate this problem should be discussed.

Thank you for the opportunity to comment.

Sincerely,

Marc Williamson

Marc Williamson
DLAD Environmental Coordinator

cc: Paul Fleber

MW:awb
3-140

Corps responses to the STATE OF WISCONSIN, DEPARTMENT
OF LOCAL AFFAIRS AND DEVELOPMENT

13. A more thorough discussion of the survey methodology and
the limited nature of the data generated is presented in
paragraphs 4.3- and 4.35.
14. We have expanded the discussion of the procedure for reloca-
tion defined in Public Law 91-646. (See paragraphs 1.11 -
1.13.) Further discussion of possible mitigative measures
is included in paragraphs 4.39 - 4.42.



State of Wisconsin / DEPARTMENT OF NATURAL RESOURCES

Anthony S. Earl
Secretary

November 2, 1976

BOX 7921
MADISON, WISCONSIN 53707

IN REPLY REFER TO: 1600

Colonel Forrest T. Gay
District Engineer
Corps of Engineers
1135 U. S. Post Office & Custom House
St. Paul, Minnesota 55101

Corps responses to the STATE OF WISCONSIN,
DEPARTMENT OF NATURAL RESOURCES

15. This information has been included in paragraph 2.18 of the final EIS.
16. This information has been added to the final statement paragraphs 2.21 and 4.07. Also see comment number 9, U. S. Department of the Interior.
17. As studies progress more defined information on relocation will be obtained. See response numbers 11 and 14.

Dear Colonel Gay:

Re: Draft Environmental Impact Statement for
Flood Control - Mississippi River at
Prairie du Chien, Crawford County

We have completed our review of the subject document and offer these comments.

Specific Comments

15 Section 2.18 - Largemouth bass and bluegill should be included as fish species inhabiting the backwater areas. In addition, mention should be made of the commercial clamming activities ongoing in the Prairie du Chien area.

16 Section 2.21 - A freshwater mussel species, *Lampsilis biggsii*, which has been found in the Mississippi River near Prairie du Chien is on the federal endangered species list.

17 Section 2.24 - A more detailed discussion of the land within the city limits which would be available for the relocation phase of the project should be provided. This should include, but not necessarily be limited to, the following items:

1. The location of the available land.
2. Existing use of available land.

Colonel Forrest T. Gay - November 2, 1976

2.

Corps responses to the STATE OF WISCONSIN,
DEPARTMENT OF NATURAL RESOURCES (continued)

3. Total acreage required to accomplish the relocation.

4. Description of the flora and fauna present on the available land.

Section 4.25 - Although relocated homeowners might experience a greater property tax burden, this additional tax could possibly be offset by the elimination of flood insurance premiums.

18

General Comments

The proposed plan appears to be a feasible, logical and environmentally desirable approach to the reduction of historic flooding problems at Prairie du Chien. The Department supports the concepts incorporated into the plan including relocation of residences, open-space use of the flood plain and the emphasis on administration of Prairie du Chien's flood plain ordinance.

We thank you for the opportunity to review and comment on this draft environmental impact statement and would appreciate receiving four copies of the final document when it is completed.

Sincerely,

Bureau of Environmental Impact

James R. Huntoon
Director

13. Due to the high cost of such insurance only a small percentage of persons eligible now subscribe to such a flood insurance policy. (See paragraph 6.08 of draft and final statement.) The effects would roughly cancel for policy holders, however,



State of Wisconsin / DEPARTMENT OF TRANSPORTATION



DIVISION OF PLANNING
4802 AMERSON AVENUE
MILWAUKEE, WISCONSIN 53202

October 20, 1976

Colonel Forrest T. Gay, III
District Engineer
Department of the Army
St. Paul District, Corps of Engineers
1135 USPO & Custom House
St. Paul, Minnesota 55101

Dear Colonel Gay:

Re: Draft Environmental Impact Statement
Flood Control - Mississippi River
Prairie Du Chien, Wisconsin

We have reviewed the above Draft Environmental Impact Statement and wish to offer the following comments.

19

1. We feel the project is beneficial to the people of Prairie Du Chien and will not severely impact the three modes of transportation which are in existence within the proposal's area of action.

A. The impact on the rail line (C.M. St.P. & P. R.R.) will be minimal. The businesses and water terminal facilities it serves, if economically feasible, will still operate subject to flood plain regulations.

B. Water terminal and dock facilities should not be affected by the proposal. Areas for materials storage will continue to be under the Prairie Du Chien flood plain ordinance which has been approved according to State Statutes.

C. Since previous flood damage to roads and streets has not been a major impact it is expected that the proposal should not exacerbate the situation. Additionally there should be no problems with the recently constructed Mississippi River Bridge carrying U.S.H. 18 over the river since it was built above the 1965 flood level of 630.7.

2. Various streets in Prairie Du Chien are currently on the federal-aid system and are located in the floodplain. We do not anticipate direct effects upon these streets, however we cannot address the secondary impacts until they are identified. Potentially, changes in traffic flows could precipitate secondary impacts upon the transportation system as well as the residents of Prairie Du Chien.

20

Corps responses to the STATE OF WISCONSIN,
DEPARTMENT OF TRANSPORTATION

19. This information has been added in paragraph 4.08 of the final statement.
20. Concur. At this time the areas to be directly affected by relocation in Prairie du Chien have not been identified. Some secondary impacts would be likely. However, through continued coordination with the city of Prairie du Chien as well as your office, impacts are expected to be minimal. Additional taxes from individuals who are relocated could function to fund measure to mitigate impacts on the transportation system.

Colonel Forrest T. Gay, III

-2-

October 20, 1976

Corps responses to the STATE OF WISCONSIN,
DEPARTMENT OF TRANSPORTATION (continued)

3. We assume that the remainder of streets, particularly on St. Feriole Island, will remain in existence until such time as a complete development for recreational use is accomplished at some future time by the City. We cannot see any objection to this provided they are open and used for traffic. However any new construction or any grade raises on any of the roads and/or streets in the floodplain area should be consistent with the Flood Plain Management Standards, Wisconsin Administrative Code DMR 116 as stated in Prairie Du Chien's Flood plain Management Ordinance. Further, any loss of street mileage in Prairie Du Chien could be a factor in State and Federal aid allotments for street and road construction and maintenance.

21

4. If "Structural Measures" (Alternative 6) such as Levees and Floodwalls are used, we would expect that consideration would be given to the potential impacts of hauling the material over the road and street system of the area.

22

We thank you for the opportunity to review this Draft Environmental Impact Statement.

Sincerely,


T. J. Hart, Administrator
Division of Planning

21. No construction or grade raises on any of the streets or roads in the floodplain area are anticipated in relation to the proposed project. Should the city determine to participate in recreation development, further coordination with your department would be necessary. All changes would be consistent with floodplain ordinances. It is not anticipated that any significant losses of street mileages would occur.

22. Concur. See response number 12.

State of Wisconsin / PUBLIC SERVICE COMMISSION

Corps responses to the STATE OF WISCONSIN,
PUBLIC SERVICE COMMISSION

NORMAN M. CLAPP, CHAIRMAN
MATTHEW HOLDEN, JR., COMMISSIONER
JOHN C. OESTREICHER, COMMISSIONER
LEWIS T. MITTNESS, EXECUTIVE SECRETARY
HILL FARM STATE OFFICE BUILDING
MADISON, WISCONSIN 53707

September 14, 1976

FILE NO.

Colonel Forrest T. Gay, III
District Engineer
Corps of Engineers
1135 U.S. Post Office & Custom House
St. Paul, Minnesota 55101

Re: Flood Protection
Prairie du Chien

Dear Colonel Gay:

Thank you for your letter together with enclosures of September 3, 1976. Please regard this letter as a response both to the general design memorandum and the draft environmental impact statement.

The Corps of Engineers response to the problem at Prairie du Chien is an innovative one and this office is looking forward to its implementation. The proposed solution addresses a long-standing problem in the flood plain regulation area. This office has no comments insofar as specific project design is concerned. We do wish, however, to call your attention to the fact that four utilities serve in the project area. Of particular concern are the utility facilities located on St. Friel Island, the so-called fourth ward. The Prairie du Chien Water Utility is a part of the local government structure and I am sure that you have had direct contact with them. The other concerned utilities are Wisconsin Power & Light Company, 222 West Washington Avenue, Madison, WI 53701; Wisconsin Southern Gas Company, Sheridan Springs Road, Lake Geneva, WI 53147; and General Telephone Company of Wisconsin, 18 South Thornton Avenue, Madison, WI 53701. The project will involve terminating or greatly revising the service rendered by these utilities. It is important that the facilities be dealt with in an equitable manner insofar as value and that the remaining utility property be properly safeguarded so that the service still required on the island can be rendered in an acceptable manner, particularly with respect to safety.

With the exception of the municipal utility, I have contacted the serving utilities. There does not appear to be any unsurmountable problems, however,

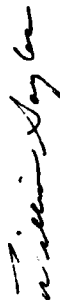
23. Concur. Coordination with all known interests has been maintained and will continue. All floodproofing and evacuation procedures will be in accordance with all applicable Federal, State and local ordinances, laws and regulations.

Colonel Forrest T. Gay, III

-2-

I recommend that your office establish some form of liaison with them to assure smooth transition. Thank you very much for the opportunity to comment on this project. We would appreciate any further information relating to future developments.

Very truly yours,



William Sayles
Chief Engineer

WS:kn

cc: Wisconsin Power & Light Company
Wisconsin Southern Gas Company
General Telephone Co. of Wisconsin
Mr. Tom Lee, Dept. of Natural Resources

**THE STATE HISTORICAL
SOCIETY OF WISCONSIN**

816 STATE STREET MADISON, WISCONSIN 53706 JAMES MORTON SMITH, DIRECTOR

Corpus responses to the STATE HISTORICAL SOCIETY OF WISCONSIN

October 19, 1976

Colonel Forrest T. Gay, III
District Engineer
St. Paul District, Corps of Engineers
1135 U.S. Post Office and Custom House
St. Paul, Minnesota 55101

SNW 0517-76

Dear Colonel Gay:

We have reviewed the "Draft Environmental Impact Statement; Flood Control - Mississippi River, Prairie du Chien, Wisconsin (NCSED-ER).

Generally, we were extremely pleased with your consideration of the prehistoric and historic sites in the area, as presented in part 2.29-2.40 and 4.05-4.07. We feel that removal of the non-historic buildings in the flood plain area would have beneficial effect on the existing historic buildings. Removal of the industrial operations on the Island would have an even greater beneficial effect.

24 There is one potential impact on historic and prehistoric sites that is not discussed in this Draft Environmental Impact Statement. Briefly, what effect will the relocation of 130 households in areas above 625 msl have on historic and archeological sites in this area. We feel that this activity could potentially have a great impact on cultural resources.

If we can provide you with any further information, please contact Mr. Richard Dexter (608/262-2732) in the Historic Preservation Division.

Sincerely,

Richard A. Erney
State Historic Preservation Officer

RAE:rdg

cc: Mr. Griffith Williams
Local Survey Coordinator
Crawford County Historical Society

24. See paragraph 4.14 of the final EIS concerning secondary impacts due to relocation sites selected.

TECHNICAL

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ST. PAUL DISTRICT, CORPS OF ENGINEERS
DEPARTMENT OF THE ARMY

7 December 1976

Mr. Robert R. Garvey, Jr.
Executive Director
Advisory Council on Historic
Preservation
1522 K Street N.W.
Washington, D.C. 20005

Dear Mr. Garvey:

The Corps of Engineers, St. Paul District, is preparing the "Final Environmental Impact Statement; Flood Control-Mississippi River, Prairie du Chien, Wisconsin." Six properties currently listed in the National Register of Historic Places are located within the area of environmental impact of the proposed undertaking. These properties are identified in our draft environmental impact statement which was sent to you for review on 31 August 1976.

In compliance with the Advisory Council "Procedures for the Protection of Historic and Cultural Properties" (36 C.F.R. Part 800) we have applied the "Criteria of Effect" and the "Criteria of Adverse Effect" (36 C.F.R. Parts 800.8 and 800.9, respectively). It is our determination that the undertaking will result in beneficial changes in the quality of the historical, architectural, archaeological and cultural properties which are listed in the National Register. These benefits will result from the removal of the non-historical structures from the area surrounding the listed properties and from the termination of modern residential and commercial development.

The State Historic Preservation Officer of Wisconsin concurs in this determination of no adverse effect (see inclosed letter).

NOSED-LR

Mr. Robert R. Garvey, Jr.

7 December 1976
BOWMAN/ST/7632

Pursuant to 36 C.F.R. Part 800.4(d) we request your review of this determination. We would appreciate receiving your response in time to include it in our final environmental impact statement which is scheduled for completion in January 1977.

Sincerely,

1 Incl
As stated

✓ FORREST T. GAY, III
Colonel, Corps of Engineers
District Engineer

CF:

✓ Mr. Richard A. Erney
State Historic Preservation Officer
The State Historical Society of Wisconsin
816 State Street
Madison, Wisconsin 53706

U. S. ARMY

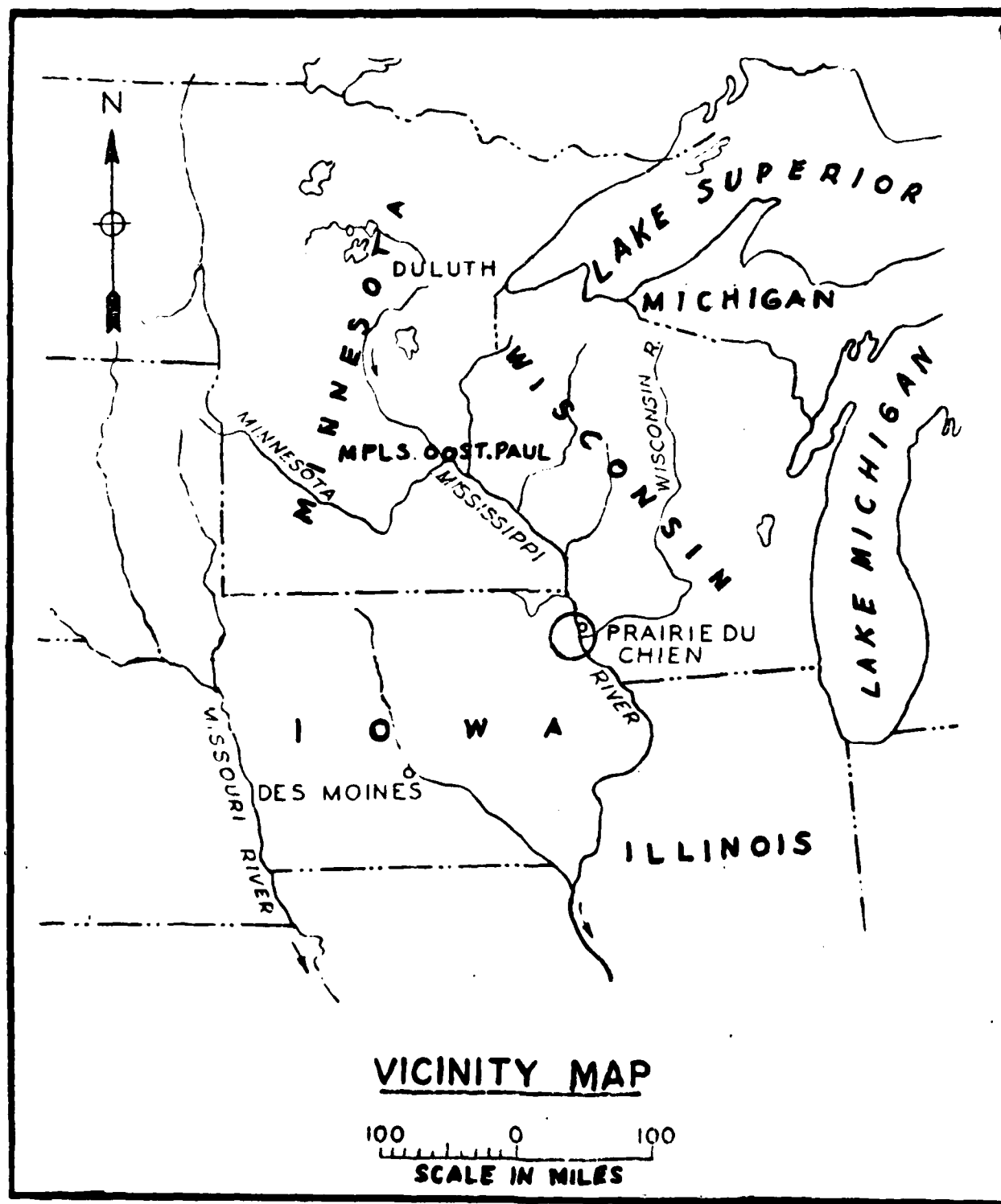


PLATE 1

DESIGN MEMORANDUM NO. 1
GENERAL PHASE 1 PLAN FORMULATION
FLOOD CONTROL
MISSISSIPPI RIVER AT
PRAIRIE DU CHIEN, WISCONSIN
FLOOD OUTLINES
ST. PAUL, MINN. DISTRICT
FILE NO. M-R10-5/68 PLATE 4



LEGEND

- STANDARD PROJECT FLOOD OUTLINE
- 1943 FLOOD OF RECORD OUTLINE
- INTERMEDIATE REGIONAL FLOOD OUTLINE (R2)

0 1 2 3 4 5
MILES IN FEET

0 1 2 3 4 5
MILES IN FEET



LEGEND

- STRUCTURES TO BE EVACUATED
- STRUCTURES SUBJECT TO CONTINUING FLOODPLAIN REGULATION AND ELIGIBLE FOR LIMITED FLOODPROOFING ASSISTANCE
- 100-YEAR FLOOD RECORD OUTLINE
- ELEVATION 62
- DESIGN MEMORANDUM NOT
- GENERAL PHASE 1 PLAN FORMULATION
- FLOOD CONTROL
- MISSISSIPPI RIVER AT PRAIRIE DU CHIEN, WISCONSIN
- SELECTED PLAN
- PRAIRIE DU CHIEN, WISCONSIN

FILE NO. M-R10-5/70 PLATE 6

PRAIRIE DU CHIEN, WISCONSIN

PRAIRIE DU CHIEN, WISCONSIN

PRAIRIE DU CHIEN, WISCONSIN

PRAIRIE DU CHIEN, WISCONSIN

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PRAIRIE DU CHIEN, WISCONSIN

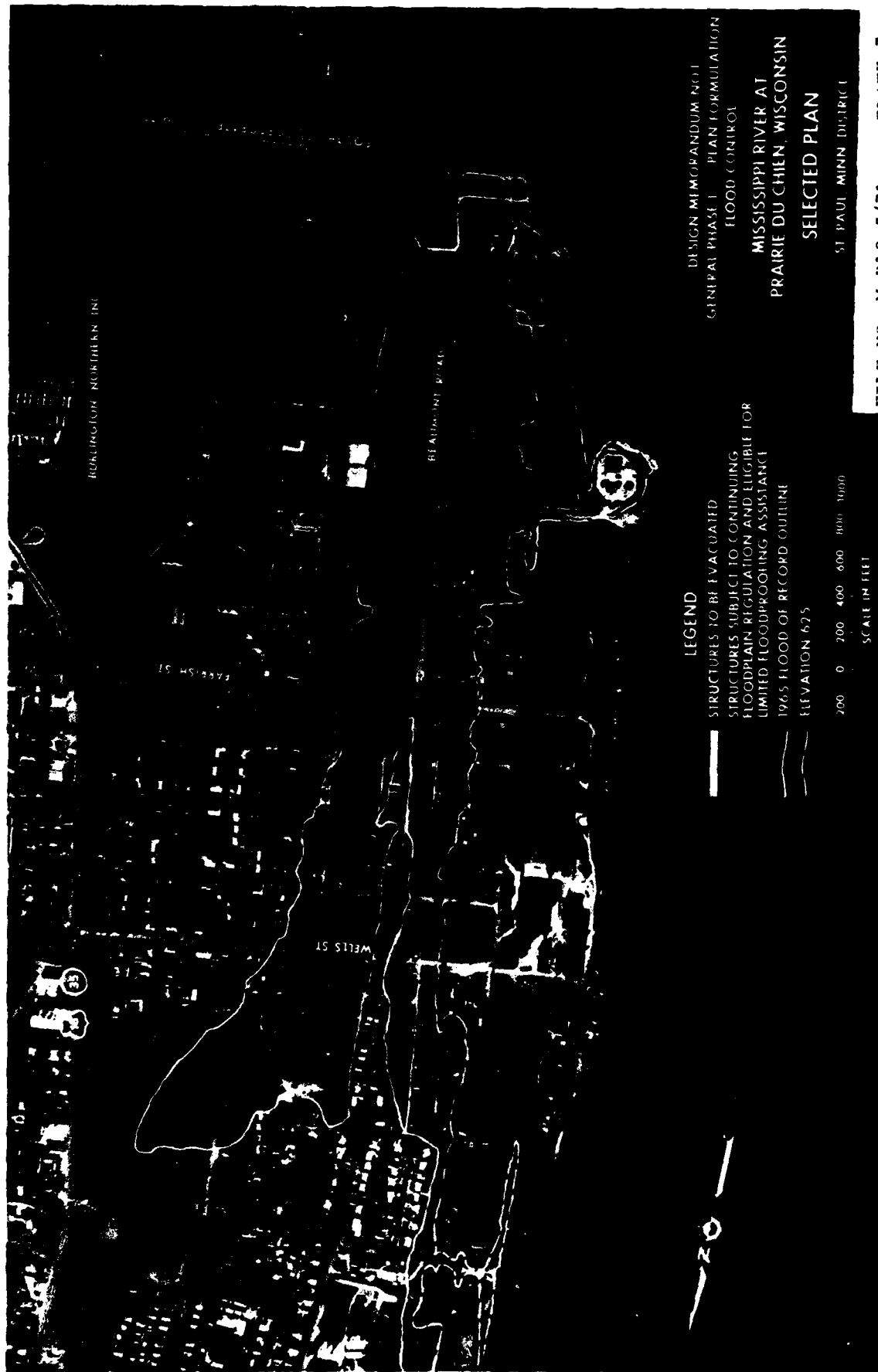
PRAIRIE DU CHIEN, WISCONSIN

PRAIRIE DU CHIEN, WISCONSIN

PRAIRIE DU CHIEN, WISCONSIN

PRAIRIE DU CHIEN, WISCONSIN

PRAIRIE DU CHIEN, WISCONSIN



DESIGN MEMORANDUM NO. 1
 GENERAL PHASE 1 - PLAN FORMULATION
 FLOOD CONTROL
 MISSISSIPPI RIVER AT
 PRAIRIE DU CHIEN, WISCONSIN
 SELECTED PLAN
 ST. PAUL, MINN. DISTRICT

FILE NO. M-R10-5/71 PLATE 7