DETAILED PROJECT REPORT
WITH ENVIRONMENTAL ASSESSMENT

SECTION 205 FLOOD DAMAGE REDUCTION STUDY

MAD CREEK
MUSCATINE, MUSCATINE COUNTY, IOWA

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I. INTRODUCTION

The purpose of this Environmental Assessment (EA) is to investigate flood damage reduction measures along Mad Creek in the City of Muscatine, Iowa. This effort is in response to requests from Muscatine city officials for Federal flood protection assistance.

The Mad Creek study area is located along the Mississippi River in Muscatine, Iowa. The Mad Creek watershed drains approximately 17.3 square miles in the eastern portion of Muscatine and areas north of Muscatine in Muscatine County. The upstream portion of the watershed north of Muscatine is primarily agricultural land, but is rapidly being converted into residential subdivisions and commercial developments. The lower portion of Mad Creek is within the Muscatine city limits, flowing through an area of mixed commercial, industrial, and residential uses near the downtown area before emptying into the Mississippi River. Low-lying areas along Mad Creek and Geneva Creek, its main tributary, are subject to flash flooding.

II. PURPOSE AND NEED FOR ACTION

The purpose of this project is to increase flood protection levels in the Mad Creek floodplain. The Rock Island District (the District) of the U.S. Army Corps of Engineers performed field reconnaissance, met with city officials, and prepared an Initial Appraisal, dated November 16, 1998, and addendum, dated December 15, 1998. The initial appraisal indicated that there appeared to be a Federal interest in a flood damage reduction project at the Mad Creek Drainage and Levee District. Therefore, the District entered into a cost-sharing agreement with the City of Muscatine to complete a feasibility study under Section 205 of the 1948 Flood Control Act, as amended.

In order to comply with the NEPA (National Environmental Policy Act) of 1969, this EA was prepared to address potential impacts associated with the levee/floodwall raise, stormwater reservoirs, channel improvements, and upgraded early flood warning system.

III. AUTHORITY

The Mad Creek Flood Damage Reduction Study is undertaken through the Corps of Engineers Continuing Authorities Program. The study is authorized by Section 205 of the 1948 Flood Control Act, as amended.

IV. PROJECT DESCRIPTION

The Muscatine Local Flood Protection Project, located in Muscatine County, Iowa, is being reevaluated under Section 205 of the 1948 Flood Control Act, as amended. Mad Creek drains an area of 17.3 square miles and enters the Mississippi River at River Mile (RM) 455.8. Approximately 2.3 miles of the downstream end of the creek is within the Muscatine city limits.

The project is located along the lower reaches of Mad Creek. The plan of protection provides for raising the existing earthen levees and floodwalls, as well as enhancing an early flood-warning system.

V. ALTERNATIVES

Alternatives to the proposed action include:

A. No Federal Action. Under the No Federal Action alternative, the Corps of Engineers would not participate in efforts to provide additional flood protection to the study area. The No Action plan is the "without project" condition that serves as the basis for developing and comparing the impacts of other plans. It is assumed that under the No Action plan, no project would be constructed to reduce flood damages and therefore the study area would continue to experience damages.

B. Raising the Existing Floodwall and Levee System. This alternative would involve raising the existing levees and floodwalls while constructing railroad closures at several sites along Mad Creek, and installing a positive closure structure on Geneva Creek.

C. Constructing Stormwater Detention Reservoirs. This alternative would involve constructing two stormwater detention reservoirs within Mad Creek and Geneva Creek. The detention reservoirs would each require the construction of a dam with an elevation of 640.0 feet. This would create an approximate 129-acre detention pond. The creation of the reservoirs also would involve relocating existing sewage lagoons.

D. Combination of Alternative A (Levee Raise) and Alternative B (Reservoirs). This alternative would involve raising the levees and floodwalls, constructing railroad closures at several sites along Mad Creek, and constructing two stormwater detention reservoirs within Mad Creek and Geneva Creek.

E. Raise the Existing Levee/Floodwall System on Mad Creek in Combination with Channel Improvements Immediately Upstream of 2nd Street Bridge and Raising the Mississippi River Floodwall. This is the preferred alternative. This alternative would involve improvement of approximately 2,300 linear feet of existing levees and 1,700 linear feet of existing floodwalls, 230 linear feet of a new floodwall, a new bulkhead closure gate to replace the existing panel closure at Mississippi Drive, a new overhead closure gate to replace an existing floodgate at 2nd Street, a new swing gate to replace the panel closure across the abandoned railroad just upstream of 2nd Street and installation of a new closure structure across the railroad south of Washington Street. In a separate but supporting effort, the City of Muscatine, Iowa, would raise the roadway and bridge at 5th Street at Mad Creek. This would allow the removal of the existing floodgate and the elimination of a high-risk closure.

Channel clearing and excavation would restore hydraulic capacity of Mad Creek through this reach, including the opening underneath the 2nd Street Bridge. Clearing and grubbing of the trees and brush is proposed, along with excavation from approximately 100 feet downstream of the 2nd Street Bridge, as well as approximately 365 feet upstream of the bridge. The width of excavation would be approximately 20 feet. The estimated volume of excavated material is 4,000 cubic yards. Excavated material is unsuitable for fill, so would be placed off site in an upland location.

VI. AFFECTED ENVIRONMENT

A. Natural Resources. The project extends through a highly developed and industrialized environment with few remaining natural floodplain characteristics. Vegetation in the area is limited to a band of cottonwood, willow, and silver maple, as well as riverbank grape, jewel weed, white mulberry, poison ivy, and Virginia creeper. Wildlife species in the area are typical of those found in urban areas such as squirrels, rabbits, songbirds, and non-game birds.

Two borrow sites are proposed for this project. The Hershey borrow site (Figure 1, main report) has historically been used for non-industrial and agricultural purposes and is considered to be a disturbed area. This historic site would provide the material for the levee raise/improvements only. The Mad Creek borrow site (Figure 1, main report) is not a historic site, but would only be needed for the construction of the sediment detention basins. The stormwater reservoirs are not economically feasible for this study and are not included in the preferred alternative plans. Therefore, there would be no impacts to this borrow site.

The two proposed reservoir areas are located on Mad Creek and Geneva Creek within ravines. The borrow sites are in areas either on or near agricultural fields. The levee enhancement areas are located within city limits with industrial, residential, and commercial areas near or adjacent to the levee.

Silt buildup beneath the 2nd Street Bridge (left descending bank) has severely reduced the capacity of the bridge to pass design flows, thereby causing higher water levels during Mad Creek flood events. Removal of this blockage would be accomplished as a part of the project, with continuing maintenance procedures ensuring that any recurrence is addressed similarly.

A portion of this area has been designated as wetland. The channel clearing would involve removing sediment, fill, and vegetation. The project has been modified to reduce the impacts to less than one tenth (.10) of an acre of wetland (the minimal disturbance to the wetland will not require mitigation as it is covered under Nationwide Permit 27, Wetland and Riparian Restoration and Creation Activities (see Appendix H - Pertinent Correspondence). Excavation of fill material in the channel will return this area to a more natural state before fill and sedimentation created this severe encroachment into Mad Creek.

B. Endangered Species. Federally listed species which may be present in the area include: bald eagle (*Haliaeetus leucocephalus),* Higgins' eye pearly mussel (*Lampsilis higginsi*), and Indiana bat (*Myotis sodalis)*.

Bald eagles winter along the Mississippi River, including Pool 17. If necessary, clearing and other construction activity would be scheduled for periods when eagles are not present. The proposed project would not adversely affect bald eagles or their habitats.

The endangered Higgins' eye pearly mussel prefers sand/gravel substrates with a swift current and are most often found in the main channel border or an open, flowing side channel. Higgins' eye pearly mussels are not likely to be found in Mad Creek; therefore, no adverse effect is anticipated for this species.

The endangered Indiana bat is listed as occurring in Muscatine County, Iowa. During the summer, the Indiana bat frequents the corridors of small streams with well-developed riparian woods and mature upland forests. It roosts beneath the loose bark of dead or dying trees. Any tree clearing necessary for this project would not be performed during the April 1 - September 30 timeframe. Restricting tree clearing around this window of time would avoid potential adverse impacts to summer-roosting Indiana bats.

According to the U.S. Fish and Wildlife Service Coordination Act Report, dated June 26, 2001, "the proposed flood damage reduction measures should have no long-term impacts on threatened or endangered species" (see Appendix H).

C. Cultural Resources. Section 106 of the National Historic Preservation Act of 1966, as amended, and its implementing regulations 36 CFR Part 800, require Federal agencies to take into account the effect of an undertaking on significant historic properties if that project is under the direct or indirect jurisdiction of the agency or has been licensed or assisted by that agency. The District determined that the proposed undertaking had potential to cause effects to significant historic properties (36 CFR 800.3(a)) and provided that determination along with proposed research measures to the SHPO (State Historic Preservation Officer), relevant federally recognized tribes, and the interested public for review and comment. The SHPO concurred with the District's determination by letter dated January 29, 2001 (R&C#: 010170032) and both the Sac and Fox Nation and the Iowa Tribe of Oklahoma indicated interest in the undertaking and the results of the archeological investigation (see Appendix H).

Subsequent to consultation, project modifications involving floodwall construction necessitated revising the APE to include two historic structures and associated limestone wall. According to *Historic Architecture of Muscatine, Iowa,* as prepared for the city of Muscatine in 1977 by Environmental Planning and Research, Incorporated, the house located at 501 East Mississippi Drive, referred to as the Judge Woodward House, was constructed in 1848 with additions built in 1874. The second house, located next door at 505 East Mississippi Drive, was built around 1846 and is referred to as the Cornelius Cadel House. It is thought that the limestone wall dates to the mid 1870's with the paving of Mississippi Drive and the construction of the Judge Woodward House improvements. A National Register of Historic Places eligibility determination has not been rendered on any of the standing structures, and the lots surrounding these structures have not been surveyed previously for archeological remains.

The revised APE was provided to the SHPO, relevant federally recognized tribes, and the interested public for comment by letter dated April 23, 2002. A draft programmatic agreement (PA) addressing the Corps compliance requirements specific to the revised APE was attached for review and comment. Responses were received from the SHPO (R&C#: 010170032) and the Peoria Tribe of Indians of Oklahoma. The SHPO comments were addressed and the draft PA was provided to the Advisory Council on Historic Preservation (Council) for comment by letter dated June 24, 2002. The Council notified the Corps by letter dated July 12, 2002, that Council participation in the execution of the PA was not required. The final PA was filed with the Council by letter dated November 25, 2002.

VII. ENVIRONMENTAL IMPACTS OF THE PREFERRED ALTERNATIVE

Table D-1 on page D-6 summarizes environmental effects.

A. Created Resources. The majority of the project extends through a created environment. Human activities are principally related to industrial, commercial, and transportation developments.

B. Natural Resources. The project area occurs in a predominantly urban area with few remaining natural floodplain characteristics. Vegetation in the area is limited to narrow bands of trees, weedy vegetation, and scrub shrub which provides habitat for wildlife species such as squirrels, rabbits, songbirds, and non-game birds. Normal flow of Mad Creek is insufficient to support use of the creek by migratory waterfowl or shorebirds. Likewise, a fishery resource is essentially nonexistent. The aquatic ecosystem is considered as typical of a low-flow stream. No significant adverse impacts would result from implementation of the proposed project.

C. Historic Properties. The OSA (Office of the State Archaeologist) conducted an archeological site file search for the Corps under Contract DACW25-98-D-0015, Delivery Order No. 3 (Site File Search 134). The OSA, by letter dated November 20, 2000, identified 39 sites within a mile of the project feature locations; however, no sites were recorded within the APE (area of potential effect) of the undertaking (Appendix H). Consultation was initiated with the SHPO (State Historic Preservation Officer) of Iowa, relevant federally recognized tribes, and the interested public regarding the undertaking's potential effects on historic properties and particularly tribal concerns about properties that may be of religious and cultural significance (36 CFR 800.4(a)(3-4)). Responses were received from the SHPO (R&C#: 010170032), the Sac and Fox Nation, and the Iowa Tribe of Oklahoma. No additional historic properties were identified as a result of that consultation.

The District contracted for an archeological survey with BCA (Bear Creek Archeology) of Cresco, Iowa, under Contract DACW25-98-D-0001, Delivery Order 25. The investigation evaluated the potential borrow areas and resulted in the documentation of four newly recorded prehistoric archeological sites. Based on recommendations presented in the BCA report, the District determined that these historic properties were not eligible for listing on the National Register of Historic Places and that further archeological investigation was not warranted. The BCA report and District determination were provided to the SHPO for review and comment. The SHPO concurred with the District's determination by letter dated June 11, 2001, with the exception that the SHPO recommended archeological survey of the potential retention basin sites (Appendix H). The retention basin project features, however, are not part of the preferred alternative and therefore are not part of the APE of this undertaking.

Subsequent to consultation, project modifications involving floodwall construction necessitated revising the APE to include two historic structures and associated limestone wall. A National Register of Historic Places eligibility determination has not been rendered on any of the standing structures, and the lots surrounding these structures have not been surveyed previously for archeological remains. The District and the Iowa SHPO have signed a PA (Programmatic Agreement) (Appendix I) regarding implementation of the project and revisions to the APE. This PA is an appropriate vehicle for addressing historic property concerns for this undertaking at the historic wall and historic structure locations within the revised APE.

While the District is assured that no significant historic properties would be affected by the preferred alternative, if any undocumented historic properties are identified or encountered during

the undertaking, the District would discontinue project activities and resume coordination with the consulting parties to identify the significance of the historic property and determine any potential effects.

D. Noise Levels and Air Quality. The project is principally located in an industrial area where a temporary increase in construction would have a minimal effect on existing air and noise levels. Minor impacts to the air quality within the project vicinity are common during construction.

E. Hazardous, Toxic, and Radiological Waste. Investigations and sampling at the Mad Creek project area discovered that there were arsenic concentrations in excess of the Iowa Land Recycling Program statewide standard. However, the concentrations were below the ingestion and inhalation standards for construction workers under the Illinois TACO (Tiered Approach to Clean up Objectives) standards. Based on these findings, the Mad Creek flood damage reduction project may proceed without limitations or special construction techniques, which are associated with HTRW (Hazardous, Toxic, and Radiological Waste) contamination. Refer to Appendix E for further details. No mining activity is present in the study area, and no mineral resources would be affected by the proposed action.

F. Water Quality. The water quality in Mad Creek is generally poor due to high runoff rates in the upper reaches of the watershed and the heavy industrial areas surrounding it within the Muscatine city limits. The proposed project features would not adversely impact the present condition of Mad Creek.

Table D-1. Effects of the proposed action on natural and cultural resources

Types of Resources	Authorities	Evaluation of Effects
Air Quality	Clean Air Act, as amended (42 U.S.C. 1857h-7, et seq.)	No significant impacts
Endangered and Threatened Species Critical Habitat	Endangered Species Act of 1973, as amended (16 U.S.C. 1531, et seq.)	No significant impacts
Floodplains	Executive Order 11988, Flood Plain Management	No significant impacts
Historic and Cultural Properties	National Historic Preservation Act of 1966, as amended (16 U.S.C. 470, et seq.)	No significant impacts
Prime and Unique Farmland	CEQ Memorandum of August 1980; Analysis of Impacts on Prime or Unique Agricultural Lands in Implementing the National Environmental Policy Act. Farm-land Protection Policy Act.	No significant impacts
Water Quality	Clean Water Act of 1977, as amended (33 U.S.C. 1251, et seq.)	No significant impacts
Wetlands	Executive Order 11990, Protection of Wetlands, May 24, 1977	No significant impacts
Wild and Scenic Rivers	Wild and Scenic Rivers Act, as amended (16 U.S.C. 1271, et seq.)	Not present in planning area

G. Cumulative Impacts. The District identified floodplain levee and bankline habit as the primary resources impacted by the proposed project. Mad Creek is a tributary to Pool 17 of the Mississippi River, and Pool 17 has been virtually lined by levees on both sides of the pool for its 20-mile length.

Past levee construction in Pool 17 has been mainly for protection of agricultural lands. However, the Mad Creek Levee on the Iowa side combines with the Muscatine Levee to protect the City of Muscatine, Iowa, while the downstream reaches of the Muscatine Levee combine with the Odessa levee to protect agricultural land and the large Lake Odessa natural resource complex adjacent to Lock and Dam 17. The Drury Drainage District levee in Illinois begins just above Lock and Dam 16 and runs south to roughly RM 451. At that point, the levee for the Sub-District No. 1 of Drainage Union No. 1 starts and continues downstream to the Bay Island Drainage and Levee District No. 1 levee, which continues past Lock and Dam 17.

The present actions proposed for the improvement of the Mad Creek levee would improve protection of a portion of the City of Muscatine from flash flooding. This is in line with the recent improvements to the mainstem river levee. Within the reasonably foreseeable future, there is no

additional levee construction proposed within Pool 17. Associated actions in Pool 17 would include the recent upgrade of the Muscatine Levee and some minor levee repair to other agricultural levees resulting from flood damage within the last 10 years.

The proposed project has identified and taken into account cumulative impacts; considered alternative actions that could lessen such adverse impacts, and is, to the extent practicable, compatible with state, unit of local government, and private programs and policies to protect floodplain urban, agricultural field, and bankline habitats. Also, since the current levee is only being modified and no new levee construction is proposed, and because this construction activity only affects an insignificant portion (less than 2%) of the total levee structures found in Pool 17, the District finds that the proposed project would not cumulatively exceed any known biological or social thresholds.

VIII. SOCIAL AND ECONOMIC EFFECTS OF PROPOSED ACTION

A. Community and Regional Growth. No adverse impacts to the growth of the community or region would be realized as a direct result of the proposed project. The area would benefit due to continued economic growth with reduced threat of flooding at major employment areas within the city.

B. Community Cohesion. The project would be expected to somewhat enhance community cohesion by further reducing the threat of damages from flooding and securing the economic viability of businesses located in the area to be protected.

The lower portion of Mad Creek is within the Muscatine city limits, flowing through an area of mixed commercial, industrial, and residential uses near the downtown area before emptying into the Mississippi River. The city administration and property owners in the area have expressed support for the project. Coordination with Federal and State agencies has not revealed any objections or concerns.

C. Displacement of People. The proposed project involves raising the existing flood control levee and floodwall within the protected area, plus some channel improvements. The project would necessitate no residential displacements.

D. Property Values and Tax Revenues. The potential value of property in the project vicinity could increase as a result of the project construction.

E. Public Facilities and Services. The project involves upgrading an existing levee and floodwall, thus improving this public facility. Other public facilities and infrastructure located within the protected area would benefit from reduced flood damages following project construction.

A public marina, boat ramp, and city park are located on the Mississippi River and adjacent to the existing floodwall. The proposed project would not adversely affect access to, or use of, these public facilities.

F. Business and Industrial Activity. The proposed project would positively impact existing business and industrial activity by further reducing the threat of flooding. Significant commercial/industrial expansion in the project area is not expected due to the current density of use. No business relocations would be required for the proposed project.

G. Executive Order 11990 (Protection of Wetlands). No fill would be placed in any wetlands or waters of the United States. Excavation within a wetland will be necessary as a component of the channel improvements for Mad Creek. However, the impacted area would be less than a tenth (.10) of an acre; this is in compliance with Nationwide Permit 27 (see Appendix H, pages H-73 and H-74).

H. Clean Water Act of 1977 (Sections 401 and 404), as amended. Minor increases in turbidity as a result of construction may occur during periods of rapid rainfall runoff. Standard erosion protection practices will be used. These increases would be temporary with no anticipated violations to water quality standards.

The project is covered under Nationwide Permit 27. This permit allows activities in waters of the U.S. associated with the restoration of former waters of the U.S. For this project, the water depth around the 2nd Street Bridge would be restored where it has silted in.

I. Life, Health, and Safety. Upgrading the existing flood protection system would further reduce life, health, and safety threats faced by area residents and business owners.

J. Noise Levels. The project would temporarily increase noise levels over the 3-year construction period. The project area is primarily developed for industrial uses, and no significant or long-term noise impacts to residents or sensitive receptors are expected.

K. Aesthetics. The project would raise the existing levee and floodwall and clean out a portion of the existing channel. The appearance of the finished project would not be much different than what is already in place; therefore, no significant change to the aesthetic resources of the area would be expected.

IX. COMPLIANCE WITH ENVIRONMENTAL QUALITY STATUTES. Tabular summation of compliance can be found in Table D-2 on page D-9.

A. Endangered Species Act of 1973, as amended. Coordination with the U.S. Fish and Wildlife Service and the Iowa Department of Natural Resources has not resulted in the identification of adverse impacts to any state or federally listed species. However, tree clearing will be limited to the September 30 - April 1 timeframe to avoid potential disruption to the Indiana bat.

B. National Historic Preservation Act of 1966, as amended. The preferred alternative, as presented herein, would have No Effect on significant historic properties. This determination has been provided to the State Historical Society of Iowa, who concurred by letters dated January 29, 2001, and June 11, 2001 (R&C# 010170032) (see Appendix H).

C. Federal Water Project Recreation Act. The proposed project would have no impact on provisions of this Act.

D. Fish and Wildlife Coordination Act. The project has been coordinated with the U.S. Fish and Wildlife Service, the Iowa Department of Natural Resources, the U.S. Environmental Protection Agency, and other interested agencies, organizations, and individuals. No significant impacts to fish or wildlife would occur as a result of the proposed modifications.

E. Wild and Scenic Rivers Act of 1968, as amended. No wild or scenic rivers are located in the study area.

F. Executive Order 11988 (Flood Plain Management). The proposed project would take place within a developed urban area which is heavily industrialized. Space is limited for increased development within the existing levee. The project, therefore, would not directly or indirectly induce growth (construction of structures and/or facilities) in the floodplain. The project, as proposed, is the best practicable alternative and is therefore judged to be in full compliance.

G. Executive Order 11990 (Protection of Wetlands). No fill would be placed in any wetlands or waters of the United States. Excavation within a wetland will be necessary as a component of the channel improvements for Mad Creek. However, the impacted area would be less than a tenth (.10) of an acre; this is in compliance with Nationwide Permit 27 (see Appendix H).

H. Clean Water Act of 1977 (Sections 401 and 404), as amended. Minor increases in turbidity as a result of construction may occur during periods of rapid rainfall runoff. Standard erosion protection practices will be used. These increases would be temporary with no anticipated violations to water quality standards.

I. Clean Air Act, as amended. Minor, temporary impacts to air quality would occur from increased dust and exhaust during construction. No air quality standards would be violated.

J. Farmland Protection Policy Act of 1981. The project would be located in an intensive urban area. No farmlands would be affected.

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

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

Table D-2. Relationship of plans to environmental protection statutes and other environmental requirements

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

NOTES:

a. Full compliance. Having met all requirements of the statute for the current stage of planning (either preauthorization or postauthorization).
b. Partial compliance. Not having met some of the requirements that normally are met in the current stage of planning.
c. Noncompliance. Violation of a requirement of the statute.
d. Not applicable. No requirements for the statute required; compliance for the current stage of planning.

X. ENVIRONMENTAL IMPACTS OF NONPREFERRED ALTERNATIVES

A. No Federal Action. This alternative would result in virtually no alteration of existing conditions throughout the project area, barring state or municipal action. Occasionally, heavy precipitation and resultant ponding would continue to damage crops and urban property.

B. Raising the Existing Floodwall and Levee System. This alternative would involve raising the levees, floodwalls, and constructing railroad closures at several sites along Mad Creek.

C. Constructing Stormwater Detention Reservoirs. This alternative would involve constructing two stormwater detention reservoirs within Mad Creek and Geneva Creek. The creation of the reservoirs also would involve relocating existing sewage lagoons. This alternative was not selected due to the high cost/low benefit ratio.

XI. PROBABLE ADVERSE ENVIRONMENTAL EFFECTS WHICH CANNOT BE AVOIDED

In order to upgrade the levee, the vegetation and trees that have grown up along the slope would be cleared.

Trees and vegetation within the area of the 2nd Street Bridge also would be cleared in order to remove material that has accumulated and is constricting flows. The disturbed bankline would be graded and reseeded.

These areas are not considered to be highly productive habitat for fish and or wildlife due to the urban areas in which this vegetation removal would take place. The impacts would be temporary and would likely revegetate over time.

XII. ANY IRREVERSIBLE OR IRRETREVABLE COMMITMENTS OF RESOURCES WHICH WOULD BE INVOLVED IF THE PROPOSED ACTION SHOULD BE IMPEMENTED

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

XIII. RELATIONSHIP OF THE PROPOSED PROJECT TO LAND-USE PLANS

The project area is zoned for various urban uses such as residential, business-commercial, and industrial. The purpose of this project is to enhance such uses by providing flood protection and is therefore compatible with the existing zoning.

XIV. RELATIONSHIP BETWEEN SHORT-TERM USE OF MAN'S ENVIRONMENT AND THE MAINTENANCE OF LONG-TERM PRODUCTIVITY

Local flood protection is necessary to reduce the flash flood hazard to Muscatine businesses and residences along Mad Creek. Implementation of the proposed features would provide improved flood protection and flood warnings in the future.

XV. CONCLUSIONS

Environmental effects are not considered to be significant. The project design would incorporate features to minimize or avoid impacts to natural and cultural resources. The preferred alternative provides for levee raises. This raise would not extend beyond the existing footprint of the levee.

XVI. COORDINATION

Coordination has been made throughout the planning and design process with the following Federal and State agencies:

U.S. Fish and Wildlife Service
U.S. Environmental Protection Agency
Iowa Department of Natural Resources
Iowa State Historical Society
State Historic Preservation Officer

Appendix H - Pertinent Correspondence contains comment letters regarding this action.

FINDING OF NO SIGNIFICANT IMPACT

SECTION 205 FLOOD DAMAGE REDUCTION STUDY
MAD CREEK
MUSCATINE, MUSCATINE COUNTY, IOWA

I have reviewed the information provided by this Environmental Assessment (EA), along with data obtained from cooperating Federal, State, and local agencies and from the interested public. Based on this review, I find that the preferred alternative for the proposed flood control improvements, to improve the levee along Mad Creek in Muscatine, Iowa, and restore a portion of the channel and bankline near the Second Street Bridge, as proposed in this EA, will not significantly affect the quality of the environment. Therefore, it is my determination that an Environmental Impact Statement (EIS) is not required. This determination will be reevaluated if warranted by later developments.

Alternatives considered along with the preferred action were:

- No Federal action;

- Constructing stormwater detention reservoirs;

- Raising existing floodwall and levee system;

- A combination of floodwalls and levees and stormwater detention reservoirs; and an enhanced early flood-warning system to better react to flash floods.

Preferred Alternative.

Factors considered in making a determination that an EIS was not required are as follows:

a. The project involves a within-levee upgrade.

b. Impacts to local wildlife and aquatic communities will be minimal and temporary.

c. No endangered species, either State or Federal, will be affected by the project action.

d. No significant environmental, social, economic, or cultural impacts are anticipated as a result of implementing the proposed project.

_____
Date

William J. Bayles
Colonel, U.S. Army
District Engineer