ATTACHMENT 7F

HYDROLOGIC ENGINEERING CENTER FLOOD DAMAGE ANALYSIS PROGRAM (HEC-FDA) YAZOO BACKWATER AREA, MISSISSIPPI

US Army Corps of Engineers®

HEC-FDA

Welcome to the Hydrologic Engineering Center's flood damage analysis web site. The purpose of this site is to describe the flood damage analysis software package (HEC-FDA) developed and maintained by HEC. This site covers the current Flood Damage Analysis (HEC-FDA Version 1.2) program, the upcoming release (Version 1.3) and the next generation flood damage analysis program that is under development, HEC-FDA 2.0.

HEC-FDA Version 1.2 (Current release)

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Support

The Hydrologic Engineering Center's Flood Damage Analysis (HEC-FDA) computer program is designed to assist Corps of Engineers study team members in using risk analysis methods for flood damage reduction studies as required by the Corps (EM 1110-2-1419). The approach explicitly incorporates descriptions of uncertainty of key parameters and functions into project benefit and performance analyses. The following is a description of how HEC-FDA is used in flood-damage-reductions studies during plan development.

Corps' Procedure for Plan Development

The typical Corps of Engineers study evolves through five phases:

1. Reconnaissance study phase
2. Feasibility study phase;
3. Preconstruction engineering and design phase;
4. Construction phase; and
5. Operation and maintenance phase.

HEC-FDA is designed to assist study team members during the feasibility study phase of a flood damage reduction study. The objective of a feasibility study is to investigate and recommend solutions to water resources problems. The effort during the early stage of the feasibility study consists of evaluation of plan alternatives, including the without-project condition, and verifying the amount and level of detail of the studies and field investigations to be accomplished. Sufficient engineering and design are performed to enable refinement of the project features, prepare the baseline cost estimate, develop a design and construction schedule, and to allow detailed design on the selected plan to begin at the start of the next phase. The objective is to allow the project to proceed through the preconstruction engineering and design phase without the need for major changes.

The feasibility study must demonstrate that the proposed project contributes to national economic development (NED). That is, the project benefits must exceed the costs. Benefits from plans for reducing flood hazards accrue primarily through the reduction in actual or potential damage associated with land use. These benefits may be classified as inundation-reduction benefits, intensification benefits, or location benefits, depending on the response to flood damage reduction.

Role of HEC-FDA in Flood Damage Analysis

The HEC-FDA computer program was developed to assist Corps staff in analyzing the economics of flood-

HEC-FDA Version 1.3 (Under development)

The HEC-FDA Version 1.3 update will fix numerous issues that have been discovered in HEC-FDA Version 1.2 over the past few years. The interface will remain mostly unchanged. HEC-FDA 1.3 is scheduled to be released by the end of calendar year 2006, and will coincide with the release of an updated User's Manual and new Applications Guide.

HEC-FDA Version 2.0 (Under development)

The HEC-FDA Version 2.0 package will be a significant advance over the earlier versions of HEC-FDA. HEC-FDA 2.0 will have a new graphical user interface, that allows the user to more readily view and organize their study data. The new interface will contain geographic information system (GIS) components that will greatly enhance the applicability of HEC-FDA for flood damage reduction studies. It will also contain features for evaluating and comparing non-structural measures within a flood damage reduction study. Finally, damage in HEC-FDA 2.0 can be computed using the existing method (aggregated stage-damage functions) or on a structure-by-structure basis using depth grids.

Geographic information system capabilities

The ability to use spatially referenced data to develop input for a new study or to upgrade the data in an existing database is a key feature of HEC-FDA 2.0. GIS capabilities in the version will allow users to create structure inventories from parcel maps, census block data, or land use shape files. This will provide a cost effective way to update existing structure inventories or create approximate structure inventories for future conditions.

Another goal of HEC-FDA 2.0 is to allow an analyst, not proficient in GIS, to be able to readily manipulate, analyze, and display spatially referenced data layers on his or her workstation, which would improve their efficiency when completing a flood damage analysis study. Spatially referenced data layers commonly used will include stream system alignments, aerial photographs, flood inundations depth grids, county parcels and census blocks information, land use patterns, impact area polygons, and jurisdictional and political boundaries (communities, counties, states, watersheds and basins, Congressional districts, etc.).

HEC-FDA 2.0 will also have features that allow for clear-cut analysis of non-structural flood damage reduction measures. These measures will include removing, relocating structures and flood-proofing structures, as well as installation of a flood warning system.

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http://www.hec.usace.army.mil/software/hec-fda/hecfda-hecfda.html