

UPPER SHADES CREEK FLOOD HAZARD MITIGATION PLAN

A Comprehensive Risk Assessment and Mitigation Strategy



- Birmingham
- Homewood
- Mountain Brook
- Irondale

December 16, 2003



JEFFERSON COUNTY EMERGENCY MANAGEMENT AGENCY

BIRMINGHAM, ALABAMA

Upper Shades Creek Flood Hazard Mitigation Plan

This plan is the culmination of the most comprehensive study of flooding ever conducted within Jefferson County, Alabama. Total study costs exceeded \$536,500. It was funded in part through a \$369,000 grant awarded by the Alabama Emergency Management Agency to the Jefferson County Emergency Management Agency (EMA) under the Federal Emergency Management Agency (FEMA) Hazard Mitigation Grant Program and through the Technical Assistance Program of the U.S. Army Corps of Engineers, Mobile District (\$3,250). Project support was provided through in-kind services performed by the Storm Water Management Authority, Inc. (\$90,000) and the City of Birmingham Department of Planning, Engineering, and Permits (\$10,000). The City of Mountain Brook and Evson, Inc. supplied supplemental funding (\$64,250). An intergovernmental agreement to participate in and support this effort was entered into by the cities of Birmingham, Homewood, Mountain Brook, and Irondale. The planning process began in September 2000.

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EXECUTIVE SUMMARY

Scope and Purpose. This plan responds to the serious flood hazard and safety threats to property and lives within the flood plains of the upper reaches of Shades Creek. Without appropriate remedial measures, flooding presents a continuing risk for severe property damages and an ongoing threat to public safety. The intent of this plan to protect the public health, safety, and general welfare through a comprehensive program of mitigation measures that mobilizes all available private sector and local, state and federal public resources. This plan presents workable mitigation actions for the cities of Homewood, Mountain Brook, Birmingham, and Irondale.

Study Methodology. Principal tools for analyses included programs supplied through the Corps of Engineers Hydrologic Engineering Center: HEC-1 for computation of watershed hydrology/storm water flow rates, HEC-RAS for computation of stream hydraulics/flood elevations, and HEC-FDA for economic impact/flood damage assessment. The study team compiled, organized, and evaluated digital parcel maps, digital elevation model data, aerial imagery, field survey data, property owner questionnaires, real estate sales data, and property tax data. A series of community meetings at the beginning of the planning process helped focus the study on the most critical issues of concern to affected property owners.

Study Area. The study area includes those areas threatened by the flooding of Shades Creek and its tributaries as they flow through portions of the cities of Birmingham, Irondale, Mountain Brook, and Homewood. The Shades Creek study limits begin at the bridge crossing at West Oxmoor Road in Homewood and ends at the origins of its basin above Irondale. Its tributaries include Scott's Branch and Griffin Creek in Homewood and Watkins Brook, Crestline Tributary, and Furnace Branch in Mountain Brook.

Flood Hazard Risks. Since the October 1995 floods of Hurricane Opal, flooding has become a recurring hazard that has cost millions in damages to properties within the flood plains of Upper Shades Creek Basin and its tributaries. In particular, the floods of June 1999 and September 2002, demonstrate the vulnerability homes and businesses to flood damages. Close to 1,400 structures valued at over \$592 million with an estimated \$755 million in contents and equipment value are located within these flood plains. A 100-year flood occurrence could result in close to \$50 million in total damages.

Environmental Guidelines. The Shades Creek channel, flood plains and wetlands are essential elements of the natural ecological system. These elements help preserve the quality of the surface water and groundwater, support living resources by providing habitat, and exist as natural storm water and flood management systems. This plan presents guidelines for the protection and enhancement of these natural resources and for maintaining healthy channel conditions.

Plan Alternatives. A multi-disciplinary planning team examined each of the available planning approaches to determine the best strategy for mitigating the damage risks to properties throughout the study area, including both non-structural and structural plan alternatives. No property acquisition alternatives were found to be feasible. Two structural plans were found to be potentially feasible projects for reducing flood damages for Watkins Book in Mountain Brook Village and Scott's Branch in West Homewood, each with positive B/C (benefit to cost) ratios.

Flood Hazard Mitigation Strategy. This plan presents a comprehensive program for each of the participating cities, including recommended goals, objectives, and mitigation policies for prevention, property protection, public education and outreach, natural resources protection, emergency services, and structural projects.

Action Program. Recommended actions for immediate implementation include the following highest priority mitigation measures:

- *The City of Mountain Brook should execute the Corps of Engineers cost sharing agreement and continue the feasibility phase to complete the studies initiated by this plan and secure the Federal funding opportunity made available through H.R. 2497. The Watkins Brook Plan (Plan 24) is a potentially feasible structural project that requires further investigation. The proposed feasibility phase study by the Corps of Engineers can complete the solution to the flooding problems along Watkins Brook within Mountain Brook Village and evaluate additional mitigation solutions for Furnace Branch.*
- *The City of Homewood should pursue the “Scott’s Branch Plan (Plan 2)” structural project to reduce flooding on Scott’s Branch.*
- *All cities should participate in the Jefferson County flood mitigation program and adopt its “Higher Regulatory Standards” model ordinance.*
- *All cities should immediately carry out measures for stream channel maintenance.*
- *Jefferson County should install a new stream gage site on Watkins Brook to monitor and alert the Mountain Brook Village area of impending flood events.*

ACKNOWLEDGMENTS

Participating Cities

- City of Birmingham - Mayor Bernard Kincaid
- City of Homewood - Mayor Barry R. McCulley
- City of Mountain Brook - Mayor Laurence T. “Terry” Oden
- City of Irondale - Mayor A. Allen Ramsey

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