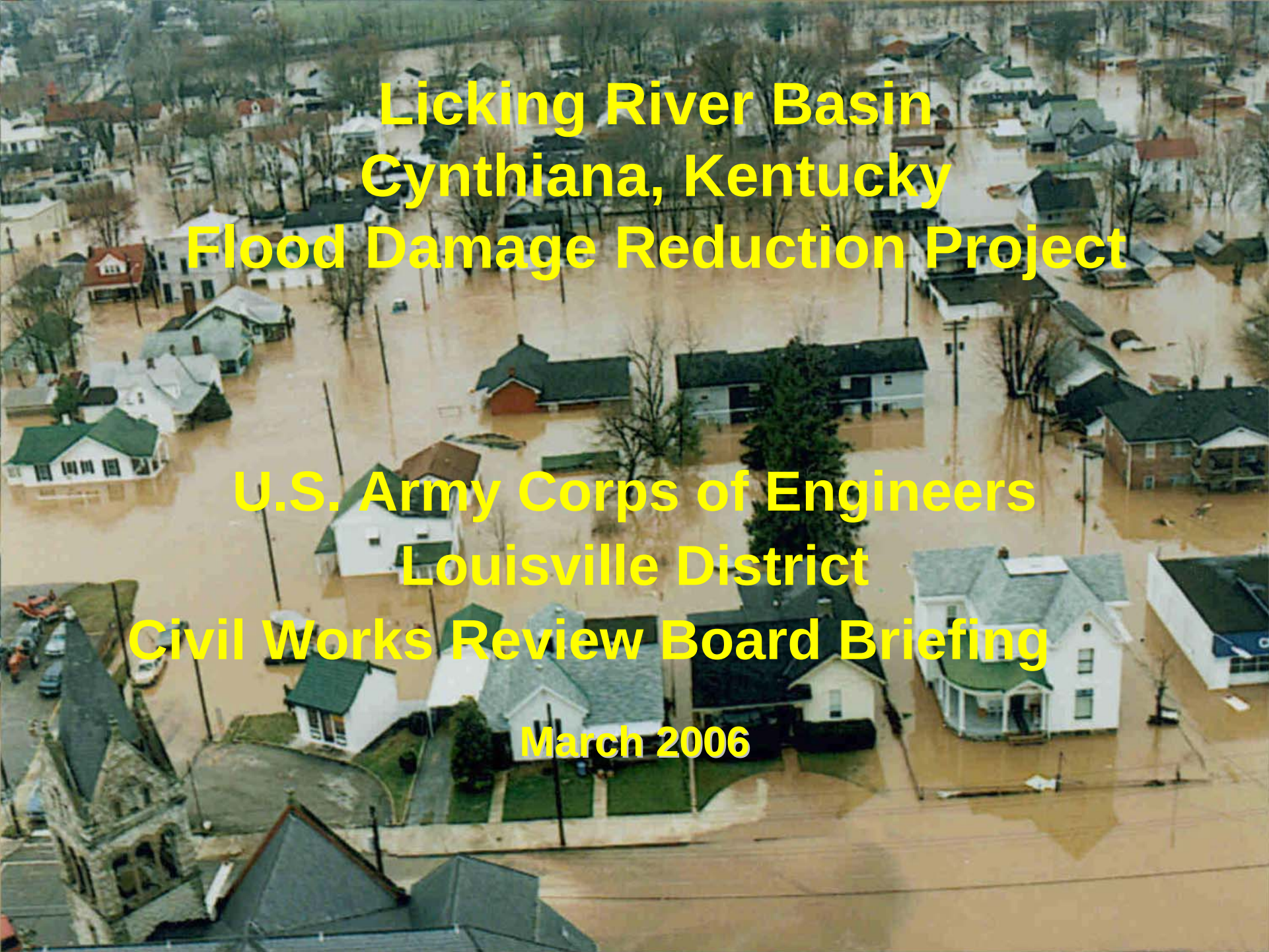


Licking River Basin
Cynthiana, Kentucky
Flood Damage Reduction Project

U.S. Army Corps of Engineers
Louisville District
Civil Works Review Board Briefing

March 2006

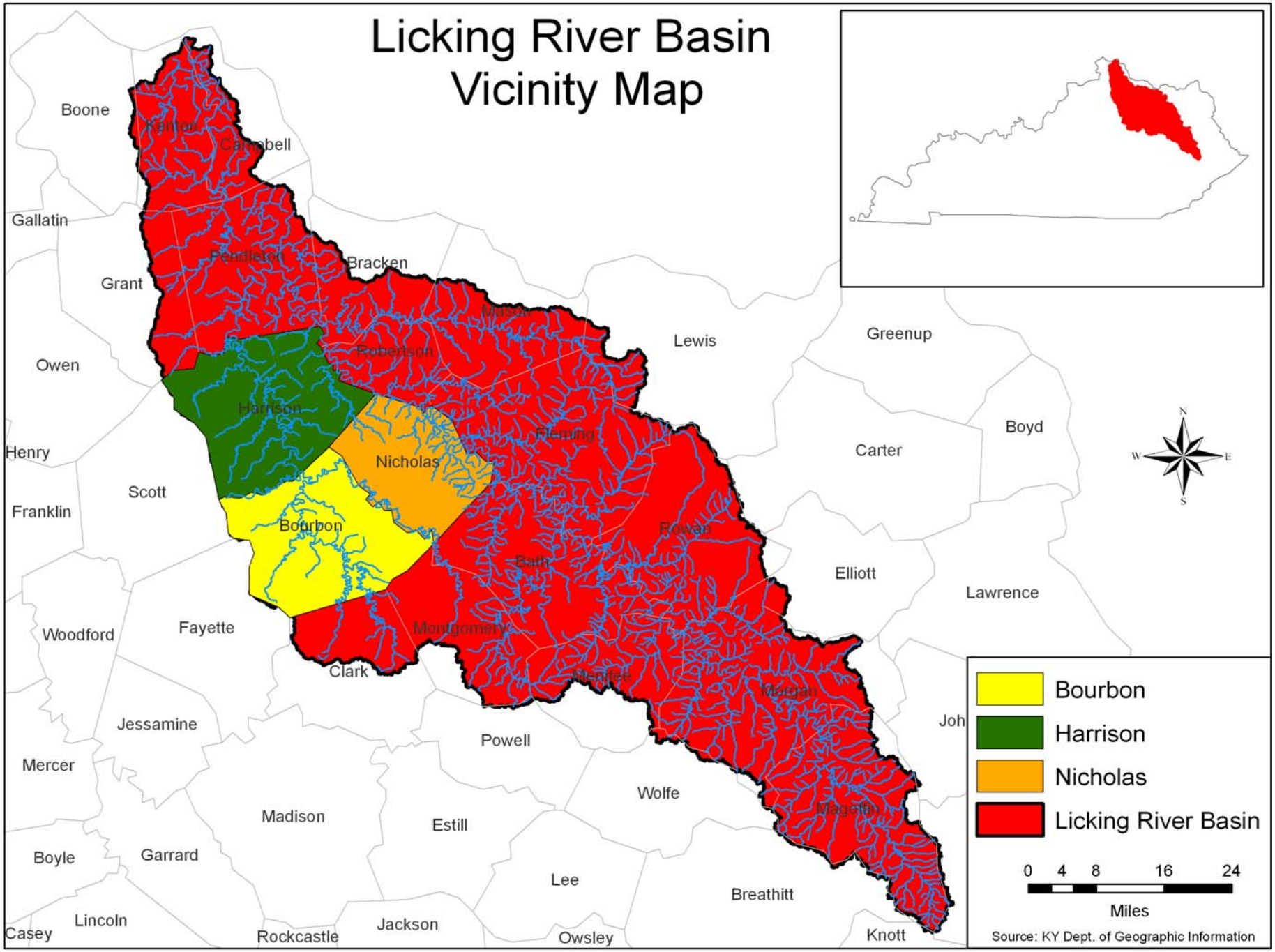
CWRB Briefing Purpose

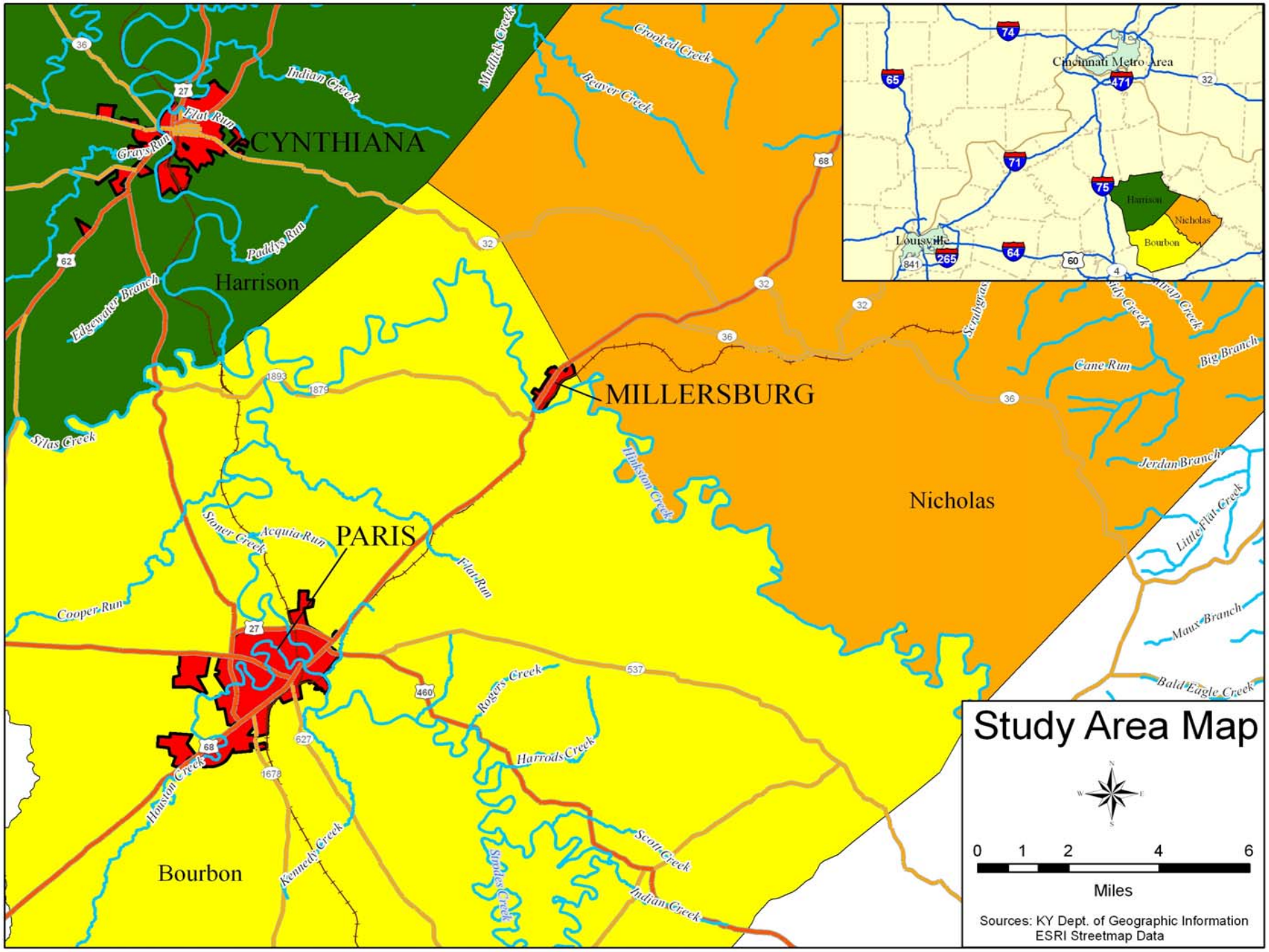
- Overview of the report and planning process
- Summary of the Recommended Plan
- Overview of the Product Delivery Team process
- Results of the ITR and policy review process
- Outcome of the public involvement and review process
- Provide necessary information to the CWRB for release of report for state and agency review

Study Authority

Resolution by the Senate Committee on Environment and Public Works, adopted on January 21, 1987

Conference Report 105-271, Appropriations for Energy and Water Development for FY 1998, provided funds for the Licking River Watershed including Cynthiana, Paris, and Millersburg, Kentucky.


Licking River Basin
Vicinity Map
Boone
Kenton
Campbell
Gallatin
Pendleton
Bracken
Grant
Mason
Robertson
Lewis
Greenup
Owen
Harrison
Fleming
Boyd
Carter
Henry
Nicholas
Scott
Franklin
Bourbon
Rowan
Bath
Elliott
Lawrence
Woodford
Fayette
Montgomery
Clark
Menifee
Morgan
Jessamine
Powell
Mercer
Wolfe
Madison
Estill
Magoffin
Boyle
Garrard
Lee
Breathitt
Lincoln
Casey
Rockcastle
Jackson
Owsley
Knott
N
W
E
S
Bourbon
Harrison
Nicholas
Licking River Basin
0 4 8 16 24
Miles
Source: KY Dept. of Geographic Information


Study Area Map
CYNTHIANA
Harrison
MILLERSBURG
PARIS
Nicholas
Bourbon
Cincinnati Metro Area
Louisville
Harrison
Nicholas
Bourbon
Indian Creek
Madlick Creek
Crooked Creek
Beaver Creek
Flat Run
Grays Run
Paddys Run
Edgewater Branch
Silas Creek
Stoner Creek
Acquia Run
Cooper Run
Flat Run
Hinkston Creek
Rogers Creek
Harrods Creek
Scott Creek
Indian Creek
Kennedy Creek
Hinston Creek
Scrubgrass
Cane Run
Big Branch
Jerdan Branch
Little Flat Creek
Maus Branch
Bald Eagle Creek
0 1 2 4 6
Miles
Sources: KY Dept. of Geographic Information
ESRI Streetmap Data

Project Partnering

Lead Local Sponsor

City of Cynthiana

Supporting Local Interests and Stakeholders

Commonwealth of Kentucky

Harrison County

City of Paris

City of Millersburg

Project Delivery Team Members

Shehab Eddin	Project Manager /Plan Formulation
Ronald Holmberg	Project Engineer / H&H
Jan Hemberger	Cultural Resources
Linda Davis	Geotechnical Design
Mike Witcher	Cost Engineering
Van Shipley	Environmental Assessment
Nathaniel Peters	HTRW
Gene Hoard	Civil Design
Patty Smith	Real Estate
Jeffrey Bayers	Structural Design
Harry Ross	Economic Analysis
Ron Feger	Construction
Thomas Clayton	Local Sponsor Representative

Independent Technical Review Members

Roger Setters	ITR Chairman (National FDR Planning Center of Expertise)
Richard Pruitt	H&H Design
Lauren Minto	Legal / OC
Michael Taylor	Real Estate
Verle Heindselman	Cost Engineering
Michael Turner	Environmental Analysis
Mitch Laird	Economic Analysis (LRD-RTS)
John Allison	Civil Design
Terry Sullivan	Structural Design (LRD-RTS)
Martin Wahking	HTRW
Ron Kiser	Civil Design
Max Stull	H&H Design (LRD- RTS)
Jeffrey Schaefer	Geotechnical Design (LRD- RTS)
Hon. Virgie Wells	Mayor of Cynthiana

Study Area Problem – Without Project Condition

452 structures located in the 0.2% (500-Year) floodplain

415 structures located in the 1% (100-Year) floodplain

Average annual flood damages in study area: $3,369,000

March 1997 flood equivalent to the 1% chance event

Repeat of this event would cause an estimated $34,000,000 in damages (2005 dollars)

Cynthiana, KY - March 1997

Project Objectives

Provide effective relief from flooding

Reduce the costs of emergency and disaster relief and rehabilitation

Maintain community cohesion

Contribute to the social and economic well-being of citizens

Flood Damage Reduction Measures:

- **Flood Warning Project for State DES and communities in the Licking River basin implemented in 2004**
- **No new economically feasible non-structural measures identified during the feasibility study**
- **Previous studies showed that levees, floodwalls, and large regional dams & reservoirs were infeasible**
- **This effort focused on detention basins located on tributary streams and modifications to the channel of the South Fork**
- **Six individual structural measures (Four detention basins and two channel cut-throughs) were combined into 30 candidate plans of various sizes for optimization purposes**

NED / RECOMMENDED PLAN

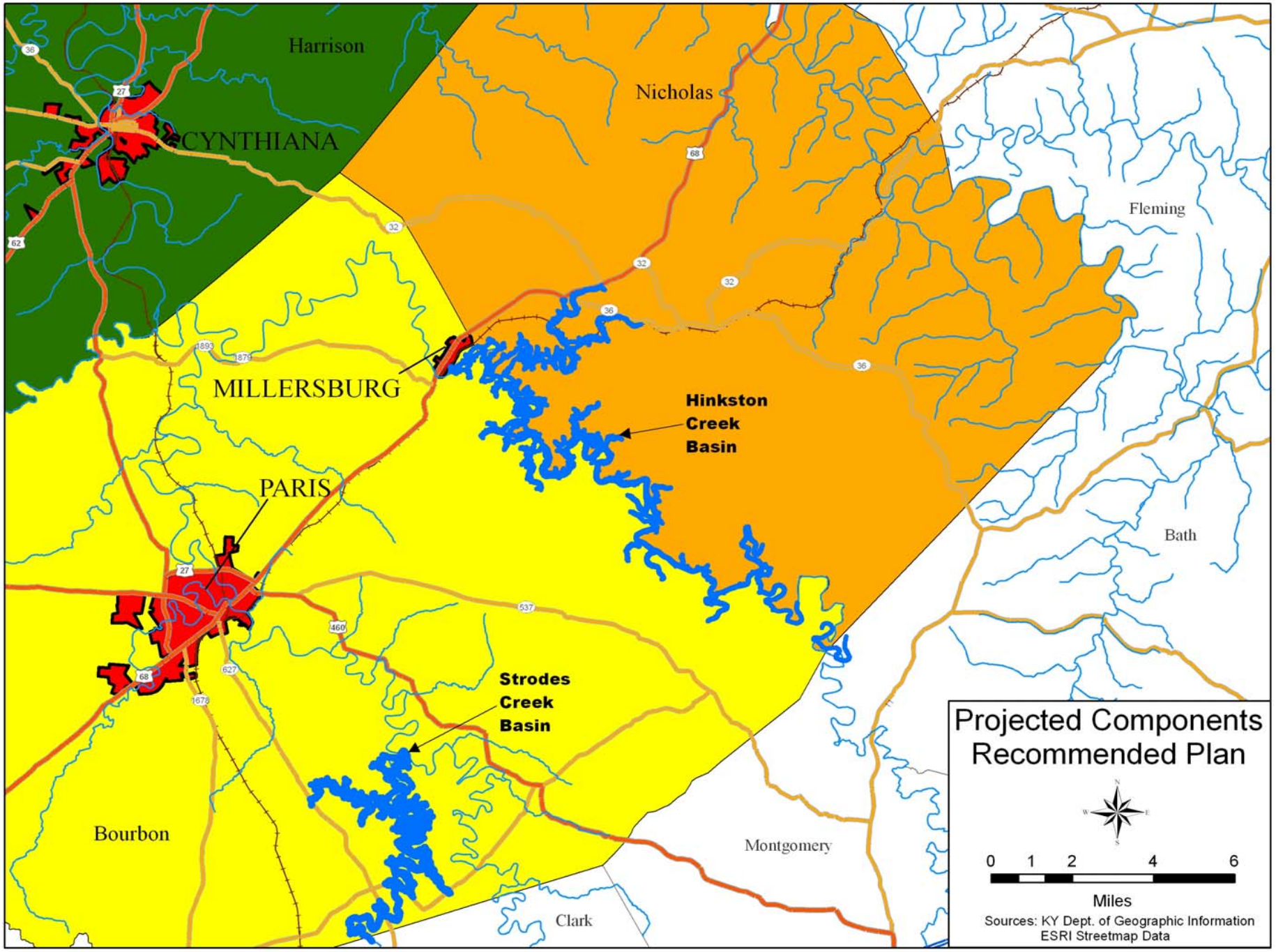
Consists of a dry bed detention basin on Hinkston Creek with a spillway elevation of 772 feet msl, combined with a dry bed detention basin on Strodes Creek with a spillway elevation of 823 feet msl. The dams for each basin will be constructed of roller compacted concrete.

Benefit Cost Ratio: 3.1

NED/Recommended Plan

NED Plan: FY 2005 Price Levels ($000)

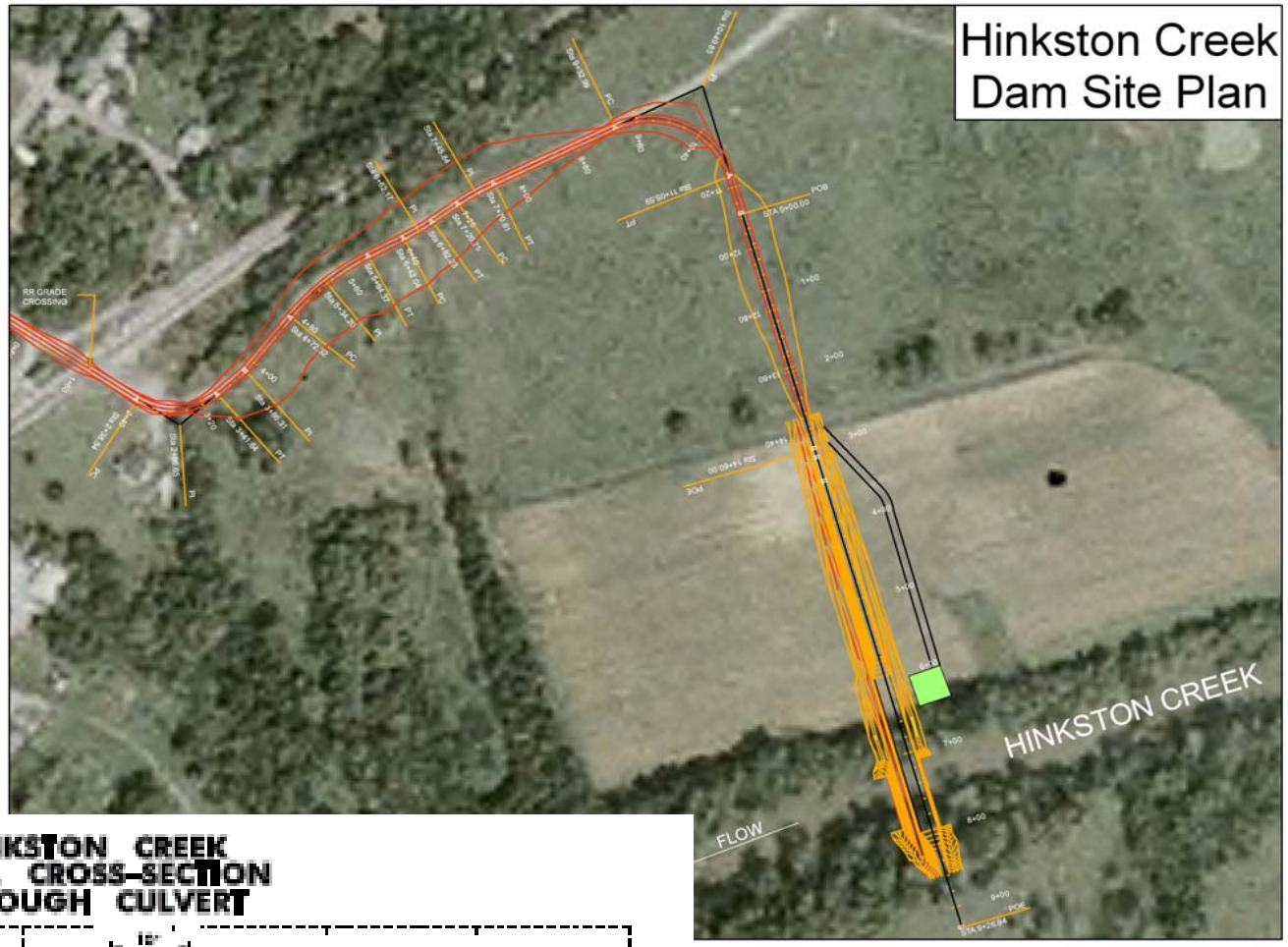
Project Costs:	
First Cost (shared cost)	$17,458
Interest During Construction	995
Total Economic Costs	$18,453
Annual Costs:	
Interest and Amortization	$ 1,070
OMRRR	26
Total Annual Costs	$ 1,096
Annual Benefits:	
Residential	$ 459
Commercial	2,360
Public	167
Transportation and Utility	95
Non-Physical	233
Total Annual Benefits	$ 3,350
Benefit Cost Ratio	3.1
Net Benefits	$ 2,254

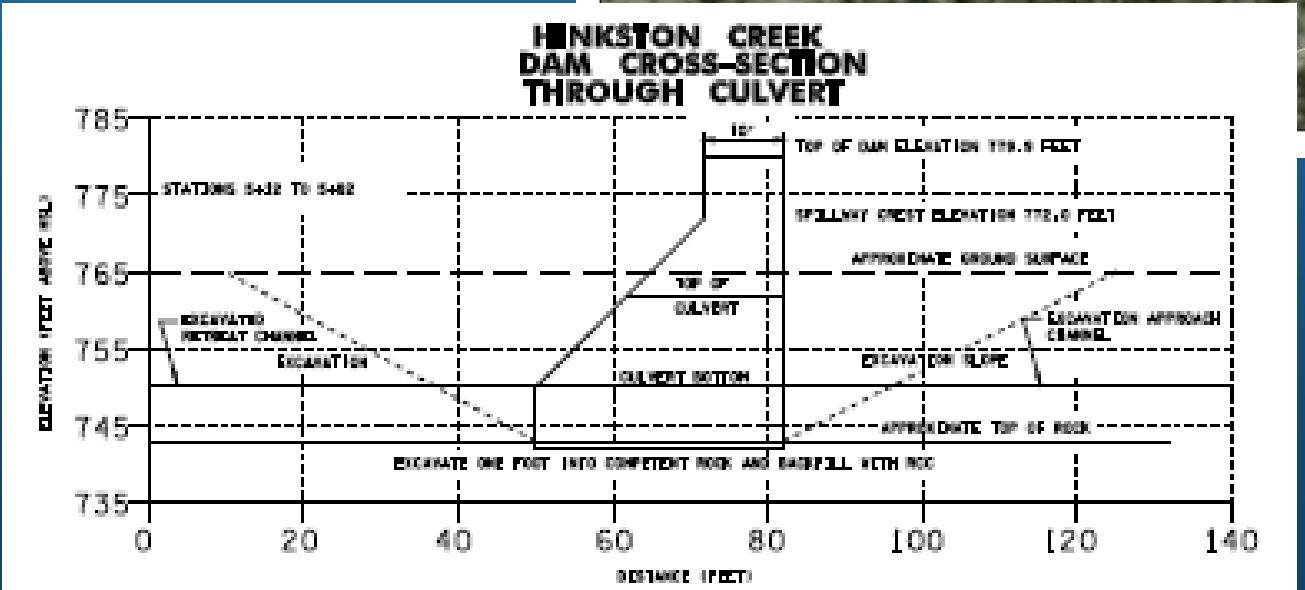

Harrison
Nicholas
Fleming
CYNTHIANA
MILLERSBURG
PARIS
Hinkston
Creek
Basin
Strodes
Creek
Basin
Bath
Bourbon
Montgomery
Clark
Projected Components
Recommended Plan
0 1 2 4 6
Miles
Sources: KY Dept. of Geographic Information
ESRI Streetmap Data

US Army Corps of Engineers®

Hinkston Creek Dam Site

Plan and Cross Section

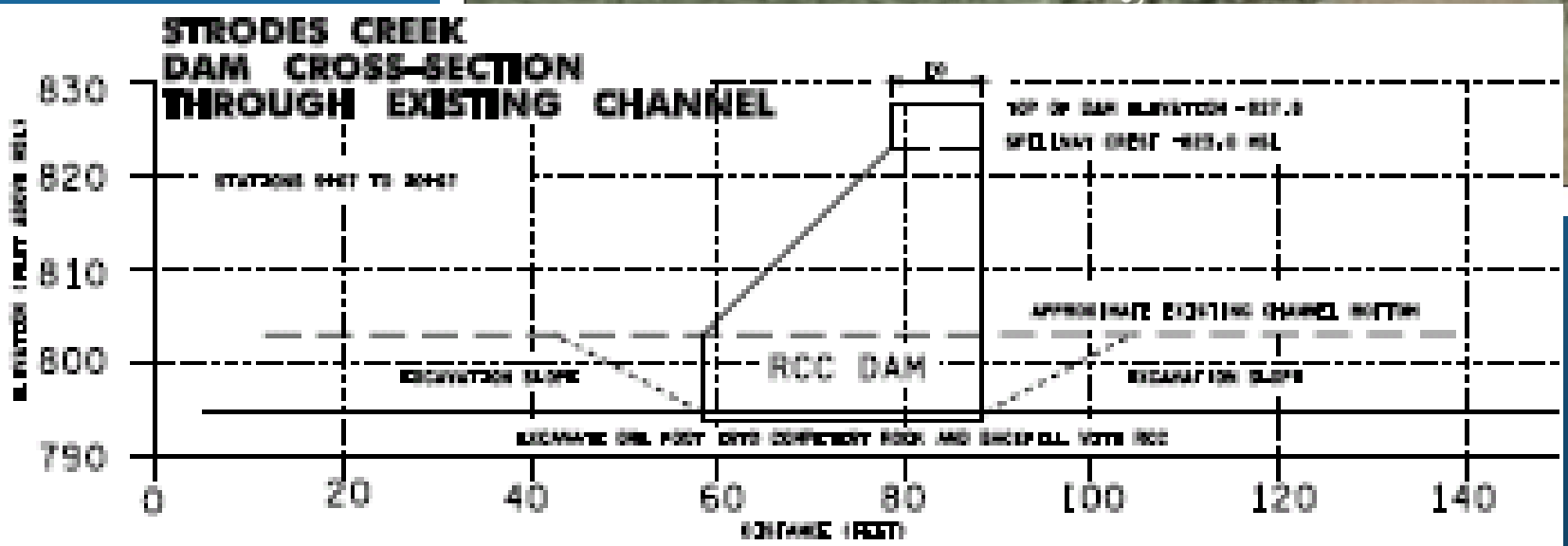




US Army Corps of Engineers®

Strodes Creek Dam Site

Plan and Cross Section



Consistency with Environmental Operating Principles

Environmentally sustainable
Interdependence of life and physical environment
Synergy between human and natural systems
Accountability under law
Mitigate cumulative impacts to the environment
Build and share knowledge
Respect the views of individuals and groups

Mitigation Requirements Recommended Plan

<u>Detention Basins:</u> Hinkston Creek/ Strodes Creek; 60 & 30 acres of existing project lands, respectively, are provided for tree plantings to compensate for loss of riverine habitat.

<u>Mitigation Cost:</u> Approximately $310,000 has been included. Mitigation requirements have been incrementally justified.

SYSTEM OF ACCOUNTS

	Recommended Plan Fulfills Objectives	No-Action Plan Does Not Fulfill Objectives
NED	Reduces existing AAD by 86% Residual AAD $522K BCR 3.1; Annual O&M $25K	Continued flooding w/AAD $3,639K
RED	Improves depressed local property values in addition to NED	Continued degradation of property values and local economic conditions
EQ	Minor impacts during construction Reduces stream pollution from floods Enhanced habitat values with plantings Requires 90 acres of mitigation plantings for bottomland hardwoods on project lands	No change
OSE	Minimizes human suffering and need for disaster & emergency relief Improves social and economic well being of citizens in and around study area.	Continued adverse impacts on communities that form regional, social, and economic hub of study area. Continued need for disaster and emergency relief—i.e., 200 families evacuated during the March 1997 flood.

PROJECT COST APPORTIONMENT
FY 2005 PRICE LEVEL

NON-FEDERAL COST SHARE:	ESTIMATED COST
LERRD Costs (29.1%)	$ 5,076,000
Cash Contribution (5%)	$ 873,000
Additional Cash (0.9%)	$ 161,000
NON-FEDERAL SHARE (35%)	$ 6,110,000
FEDERAL COST SHARE (65%)	$11,348,000
TOTAL PROJECT COST	$17,458,000
PROJECT COST CATEGORIES:	**ESTIMATED COST**
PED	$ 2,074,000
Real Estate	$ 5,136,000
Construction	$10,248,000
TOTAL COST	$17,458,000

ITR Highlights

Concern 1 - Routing of the standard project flood (SPF) and probable maximum flood (PMF) events through the DB structures

<u>Response:</u> RCC dams withstand significant flow over their top. The dams were designed in accord with applicable Corps criteria. Additional work on routing of the SPF and PMF will be done during PED.

Concern 2 - Whether RCC dams would be prone to failure and at what depth of overtopping could failure occur.

Response: The dams have a maximum overflow height of 20.4'. The RCC dam stability analyses were conducted with base width criteria, overturning, uplift, sliding, and shear friction. Further H&H Modeling will also be done during PED. Failure risk is low.

Public Involvement

- **Public Meetings – February 22, 2001 in Frankfort; August 30, 2001 in Cynthiana; October 2, 2001 in Paris, KY**
- **Meetings announced / advertised in newspapers within the study area**
- **Public review of Draft Feasibility Report – July 29, 2005 to September 2, 2005**
- **Regular meetings were held with the local sponsors, along with meetings with stakeholders and other interested parties, throughout the feasibility phase**

Public Comments

<u>Private citizens:</u> Requested information on how their homes, farms, or rural historic properties of interest to them would be affected by the project

The District provided written response

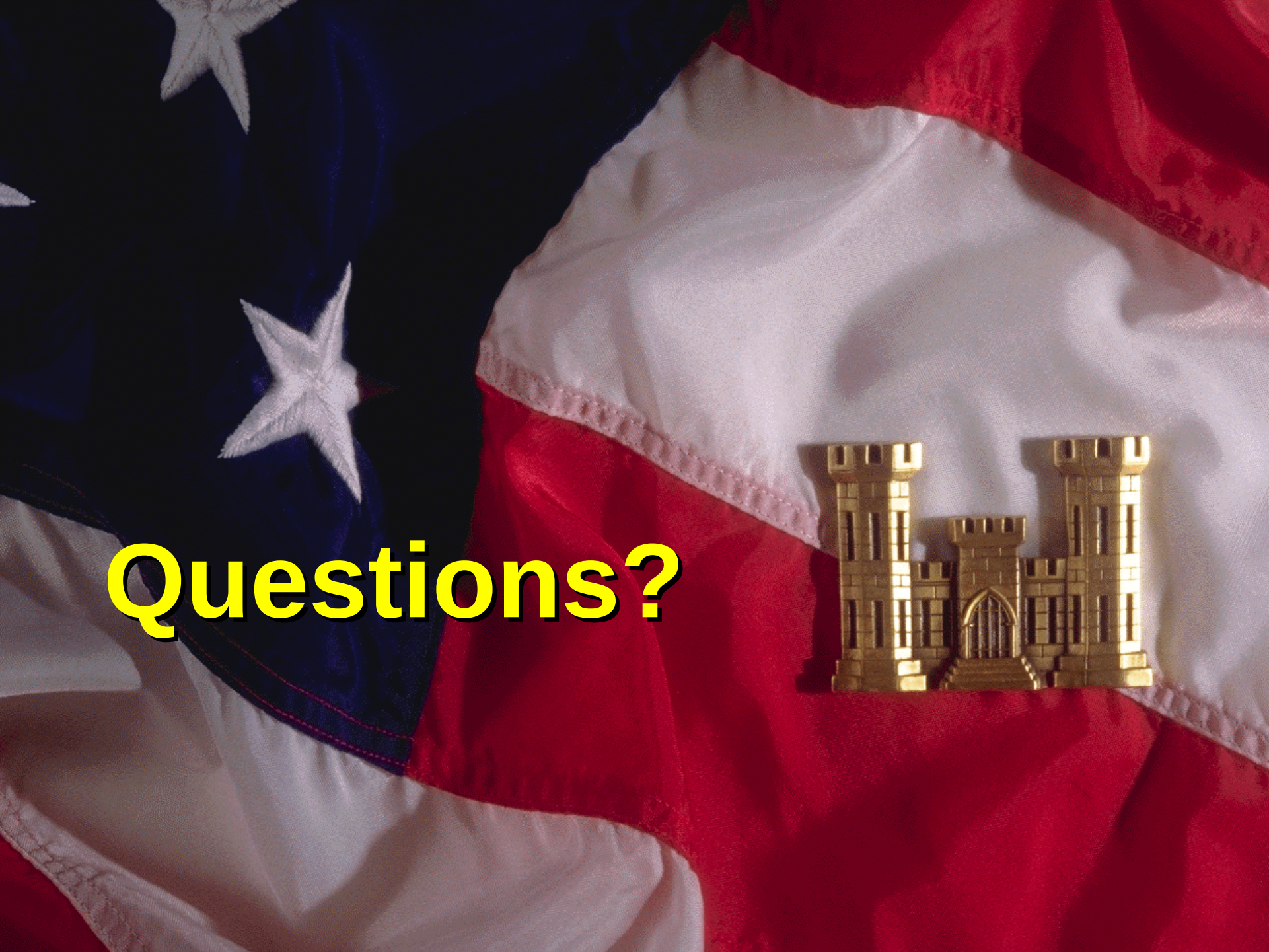
<u>SHPO</u> noted archaeological investigations have been done on portions of the project areas; expects continued coordination during PED and construction

USFWS/KYDFWR: Recommend tree planting mitigation for loss of wildlife habitat.

KYDOW: Will process a 401 water Quality Certification during PED

PROPOSED PROJECT IMPLEMENTATION SCHEDULE

Chief's Report (eligible for WRDA)	**June 2006**
Execute Preconstruction Engineering and Design (PED) Agreement	**FY 06**
Execute PCA	**FY 09**


Questions?

US Army Corps of Engineers®

One Team – Relevant, Ready, Responsive, Reliable

GREAT LAKES & OHIO RIVER DIVISION

MSC Commander's Briefing

Licking River Basin Cynthiana, Kentucky Flood Damage Reduction Feasibility Study

BG Bruce Berwick
Commander
Great Lakes and Ohio River Division
March 2006

Briefing Objectives

- Rationale for Project support
- MSC Quality Assurance
- Expected Response to the Report
- Other Observations
- My Recommendations

Rationale for Project Support

- Formulated in Accord with Policy
- Strong Federal Interest - BCR 3.1
- Division Engineer's Transmittal Letter signed September 2005

MSC Quality Assurance

- Independent Technical Review Team lead by the USACE Planning Flood Damage Reduction Center of Expertise
- District Commander certification
- Policy Certification - September 2005
- Division Commander's concurring endorsement

Expected Response to the Report

- Non-Federal Sponsor
  - City of Cynthiana
- Financial Supporters
  - Harrison County
  - Funding supported by Commonwealth of Kentucky, Governor's Office for Local Development
- Numerous Supporters and Stakeholders
  - Cities of Paris and Millersburg: Bourbon and Nicholas Counties
  - State and US Fish and Wildlife Service
  - SHPO – State of KY
- Favorable Response Expected

Other Observations

- Eligible for WRDA
- Congressional Support – Bunning – KY, McConnell – KY; Davis KY-04
- Appropriations
  - Planning, Engineering and Design (PED) – $100 K in FY 06

Recommendations

Release for State and Agency Review

Civil Works Review Board

Significant Policy Review Concerns

Licking River, Cynthiana Kentucky Flood Damage Reduction Project

C. Lee Ware, P.E.
Office of Water Project Review
Policy and Policy Compliance Division

Washington, DC – March 2006

Areas of Policy Concern:

- Economic Analyses
- Project Costs
- Plan Formulation
- Cultural Investigation Requirements
- Cost Sharing
- Preliminary Financing Plan
- USFWS Coordination Act Report

Economic Analyses

Concern: The AFB materials did not adequately explain the development of non-physical damages.

Reason: Guidance for CW projects requires that the without project condition be fully defined as a basis for evaluating the NED effects of alternatives.

Resolution: District is revising the economic text to explain how non-physical damages were estimated for various frequency flooding events and how they were evaluated in plan formulation. Addendum pages are being provided prior to S&A review.

Resolution Impact: Concern resolved

Project Costs

Concern: The AFB materials did not include the fully-funded cost estimate and there were concerns regarding adjustments and contingency values in the MCACES cost estimate.

Reason: The fully–funded estimate (with inflation) is needed for financial planning. The MCACES estimate should be supported with rationale for the application of adjustments and contingency factors.

Resolution: The report was revised to provide the fully-funded cost estimate and to explain the assumptions used in developing the MCACES cost estimate.

Resolution Impact: Concern resolved

Plan Formulation

Concern: Additional benefit categories and costs were applied to the selected plan, which raised questions as to whether the plan formulation might be affected.

Reason: Plan formulation of final alternatives should be based on consideration of the complete NED benefits and costs.

Resolution: The district revised the report to explain that the plan formulation is not affected by the consideration given to non-physical damages and mitigation costs. Addendum pages are being provided prior to S&A review.

Resolution/Impact: Concern resolved.

Cultural Investigation Requirements

Concern: The AFB materials and final report indicate that cultural mitigation will be required for the recommended plan, however further cultural investigations are deferred to PED.

Reason: Corps policy requires that project costs, including mitigation, be identified as appropriate for the level of detail.

Resolution: The final report explains that project costs have included an estimate for cultural mitigation, which will be refined during PED. The SHPO concurs with this approach.

Resolution Impact: Concern resolved

Cost-Sharing

Concern: The AFB materials did not indicate the recommended cost sharing.

Reason: Corps reports must show the proposed cost sharing for the tentatively recommended plan and any locally preferred plan.

Resolution: The final report recommends 65% Federal/35% non-Federal cost sharing for the recommended plan, including a 5% local cash contribution and credit for LERRD. This is consistent with structural flood control policy.

Resolution Impact: Concern resolved

Preliminary Financing Plan

Concern: The AFB materials did not adequately explain the financial requirements of the study sponsors and their ability to finance the project.

Reason: ER 1105-2-100 requires that feasibility reports include the sponsors' preliminary financing plan and a district assessment of their financial capabilities.

Resolution: The District provided supplemental information that explains the sponsors' plans for financing the recommended project and their assessment of sponsors' financial capabilities based on past performance.

Resolution Impact: Concern resolved

USFWS Coordination Act Report

Concern: The Final Report did not include the final USFWS Coordination Act (2b) Report.

Reason: CW projects are required to demonstrate compliance with the Fish and Wildlife Coordination Act.

Resolution: The District will provide the final USFWS Coordination Act (2b) Report for inclusion in the document to be circulated for State and Agency Review.

Resolution Impact: Concern resolved

HQUSACE Policy Compliance Review Team RECOMMENDATION

Release the report and EA for S&A Review

Licking River Basin
Cynthiana, Kentucky
FDR Feasibility Study

Lessons Learned

Great Lakes and Ohio River Division

Lessons Learned (LRD)

1. Time between AFB report, and Draft Report was two years

   Take away: more attention to schedule

Lessons Learned (LRD)

2. Draft Report should not be signed without a final U.S. Fish & Wildlife Service Coordination Act Report.

Take Away: LRL to revise Business process.

Lessons Learned (LRD)

3. Coordination with Neighboring Communities.

Take Away:

1. Immediate completion before CWRB
2. Future Coordination to be accomplished throughout project development