

MEMPHIS METROPOLITAN STORMWATER DESOTO COUNTY, MISSISSIPPI FEASIBILITY STUDY PUBLIC MEETING

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US Army Corps
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DeSoto County Board of Supervisors



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INTRODUCTION

- Purpose of the Meeting: Discuss findings and solicit comments on the proposed plan
- Notice of Availability published in the Federal Register May 28, 2021
- Comment Period open through July 12, 2021
- Project website:
<https://www.mvm.usace.army.mil/Missions/Projects/North-DeSoto-County-Feasibility-Study/>



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Mississippi Valley Division,
Regional Planning and Environment Division South

Memphis Metropolitan Stormwater – North DeSoto County Feasibility Study, DeSoto County, Mississippi



**Draft Feasibility Report with Integrated Environmental Impact
Statement**

May 2021

Abstract: This Draft Integrated Feasibility Report and Environmental Impact Statement documents the analysis of proposed actions related to the feasibility of flood risk reduction and ecosystem restoration alternatives within DeSoto County, Mississippi. Alternatives, including the proposed Tentatively Selected Plans and the No Action Alternative, are discussed.



THREE WAYS TO PROVIDE COMMENTS



To provide comments:

- (1) Write or record a comment here at the public meeting tonight (not available through the virtual meeting, see below);
- (2) U.S. Mail to: U.S. Army Corps of Engineers (CEMVN-PDC-UDC), ATTN: Memphis Metropolitan Stormwater-North DeSoto County Feasibility Study, Regional Planning and Environmental Division South, 167 North Main Street, Room B-202, Memphis, Tennessee 38103-1894; and/or
- (3) Email to: CEMVM-DeSoto-Comments@usace.army.mil.

Please include your name and return address on the first page of your written comments



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Comment closing date is July 12, 2021.



MEMPHIS METRO AUTHORIZATION

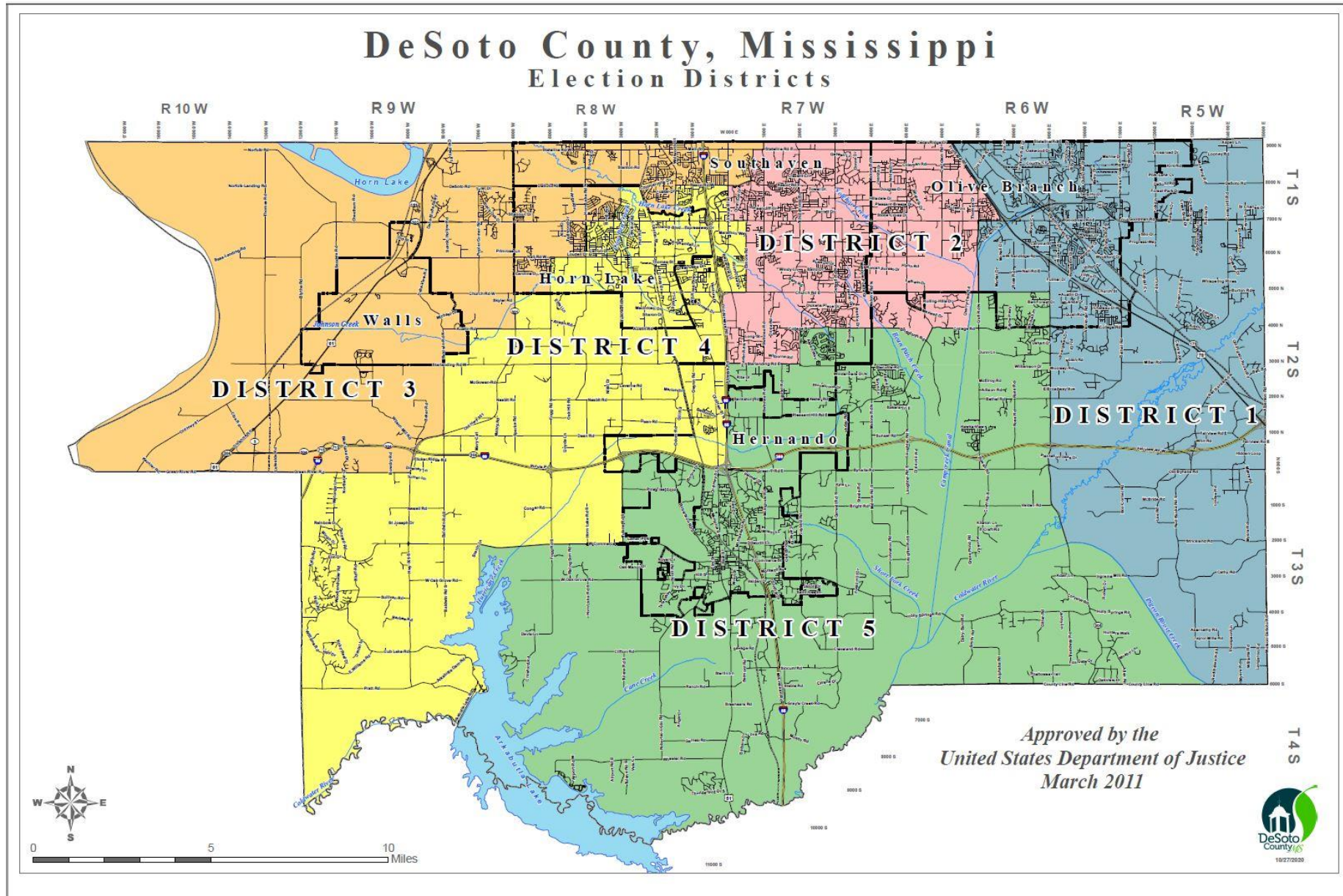
The United States House of Representatives Committee on Transportation and Infrastructure adopted a resolution on March 7, 1996

Memphis Metro Area

The Secretary of the Army reviewed the report of the Chief of Engineers on the Wolf River and Tributaries, Tennessee and Mississippi, published as House Document Numbered 76, Eighty-fifth Congress, and other pertinent reports, to determine whether any modifications of the recommendations contained therein are advisable at this time, with particular reference to the need for improvements for flood control, environmental restoration, water quality, and related purposes associated with storm water runoff and management in the metropolitan Memphis, Tennessee area and tributary basins including Shelby, Tipton, and Fayette Counties, Tennessee, and DeSoto and Marshall Counties, Mississippi. This area includes the Hatchie River, Loosahatchie River, Wolf River, Nonconnah Creek, Horn Lake Creek, and Coldwater River Basins. The review shall evaluate the effectiveness of existing Federal and non-Federal improvements, and determine the need for additional improvements to prevent flooding from storm water, to restore environmental resources, and to improve the quality of water entering the Mississippi River and its tributaries.



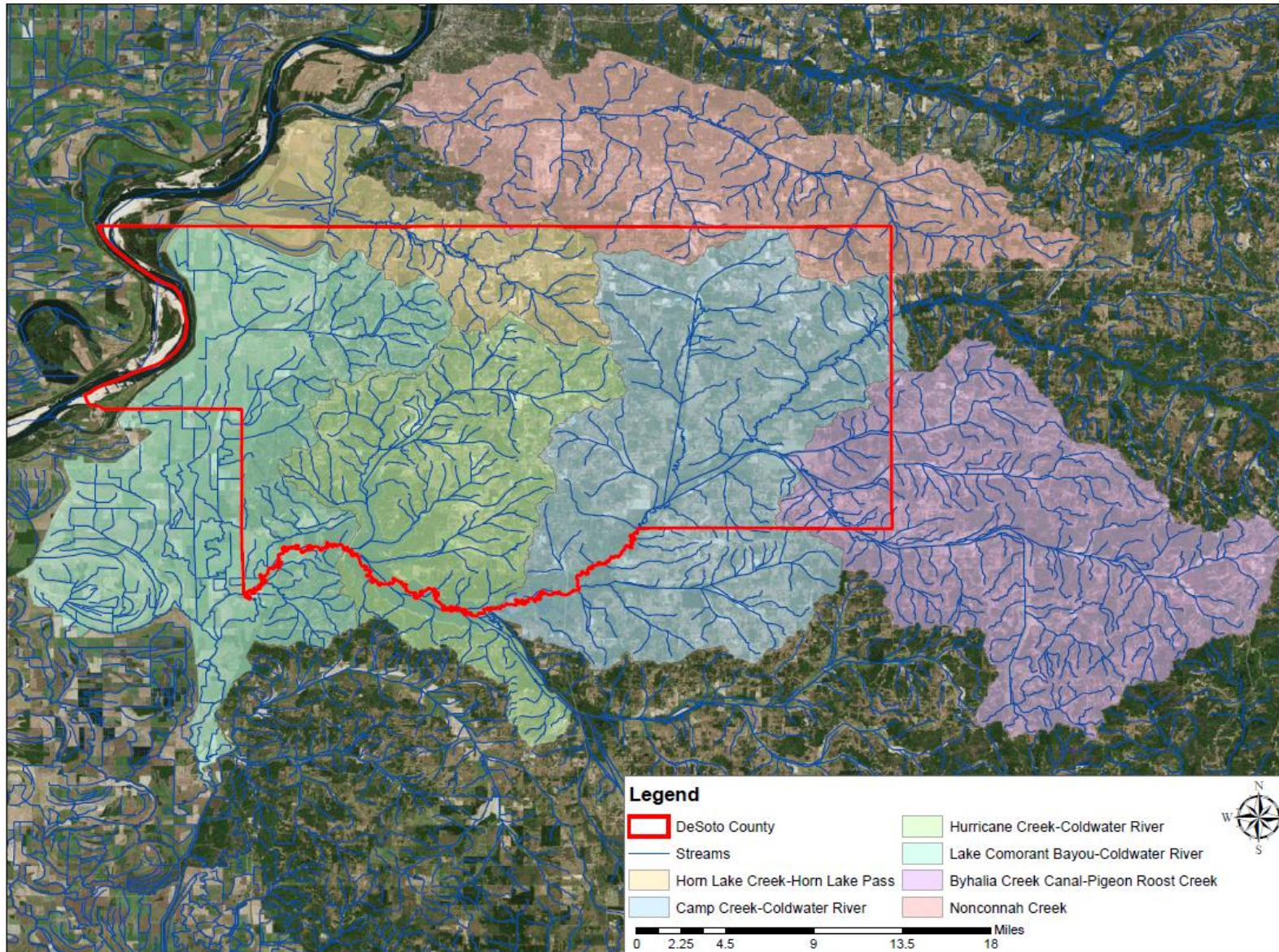
STUDY AREA – DESOTO COUNTY





STUDY AREA-WATERSHEDS

DeSoto Study: 10 Digit HUC Basins and Streams Within Study Area

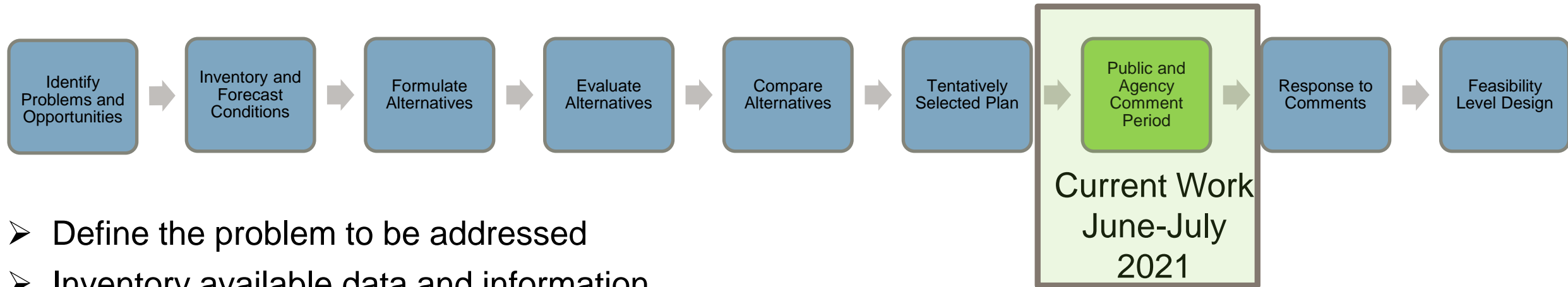


Horn Lake Creek
Camp Creek-
Coldwater River
Hurricane Creek-
Coldwater River
Lake Cormorant
Bayou-Coldwater R.
Byhalia-Pigeon
Roost Creek
Nonconnah Creek



PLANNING PROCESS

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- Define the problem to be addressed
- Inventory available data and information
- Forecast of future conditions
- Identification of key areas of uncertainty that will impact the study and the project formulation
- Identification of the decision criteria that will be used to formulate, compare and select alternatives
- Initial formulation of alternative plans based on critical thinking and professional expertise
- Screen alternatives and identify a tentatively selected plan
- Draft Report and release for concurrent public and agency review
- Response to comments
- Feasibility Level Design (FLD)



PURPOSE AND NEED



Flood Risk Management

- Reduce risk of flood damages to commercial and residential properties, critical infrastructure, roads, schools, and medical facilities in the Horn Lake Creek and the Coldwater River Basin.

Ecosystem Restoration

- Uncontrolled channel degradation and aggradation have caused a decline in the ability of streams and adjacent lands to support the requisite functions for fish and wildlife.



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FLOOD RISK MANAGEMENT



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OBJECTIVES AND CONSTRAINTS

Objectives

- Reduce flood damages to businesses, residents and infrastructure in DeSoto County.
- Reduce risks to critical infrastructure.
- Reduce risk to human life from flooding and rainfall events throughout the county.

Constraints

- Minimize degradation to stream habitat and vulnerable wetland areas.
- Ensure study is compliant with FAA regulations associated with the Memphis International Airport.
- Maintain consistency with DeSoto County Flood Damage Prevention Ordinance;
- Avoid or minimize negative impacts to fish passage.
- To a reasonable extent plan to avoid or minimize negative impacts to cultural, historic, and Tribal resources.



ALTERNATIVES DEVELOPMENT

18 flood risk management alternatives were assembled using the following measures and further evaluated using these screening criteria including effectiveness, efficiency, acceptability, and completeness.

Nonstructural Measures: Reduce the human exposure or vulnerability to a flood hazard without altering the nature or extent of the flood hazard.

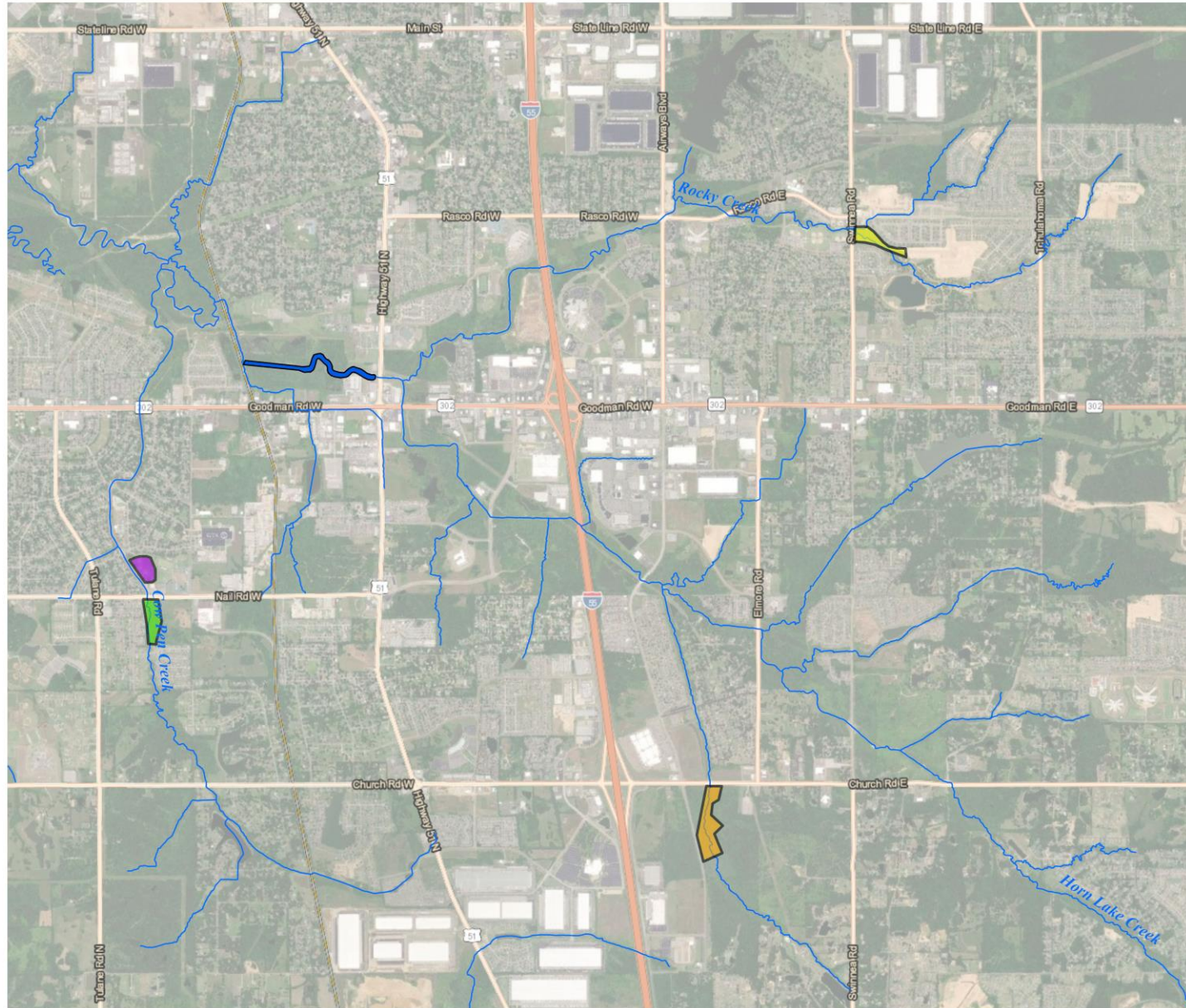
Structural Measures: Physical modifications designed to reduce the frequency of damaging levels of flood inundation

- Detention Basins
- Channel modifications
- Re-routing flows
- Levees
- Removing Constrictions

Screening Criteria	Plan Specific Metrics
Effectiveness: the extent to which an alternative plan alleviates the specified problems and achieves the specified opportunities	Reducing damage to structures Reducing water surface elevation
Efficiency: the extent to which an alternative plan is the most cost-effective means of alleviating the specified problems and realizing the specified opportunities, consistent with protecting the Nation's environment	Cost effective Create or enhance stream and wetland habitats; Cultivate recreational opportunities.
Acceptability: the workability and viability of the alternative plan with respect to acceptance by state and local entities and the public; and compatibility with existing laws, regulations, and public policies	Avoid or minimizes negative impacts to •T&E and protected species; •Critical habitat •Water quality (Sediment TMDL) •Cultural, historic, and Tribal resources
Completeness: whether plan includes all elements necessary to achieve the objectives.	1) Reduce risk to human life from flooding and rainfall events; 2) Reduce flood damages to businesses, residents; and 3) Reduce risks to critical infrastructure



TENTATIVELY SELECTED PLAN - STRUCTURAL



DeSoto County Study Structural Final Array



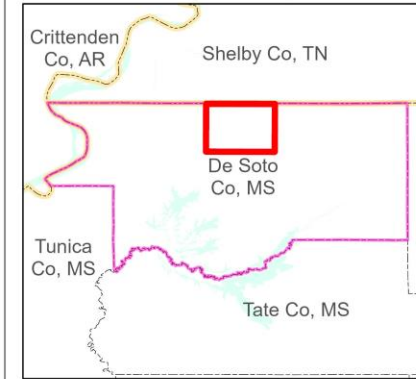
U.S. Army Corps of Engineers
Memphis District

Legend

- Streams
- Channel Enlargement 18.6 - 19.4
- Cowpen Creek
- Cowpen Creek (Ballfield)
- Lateral D
- Rocky Creek



Location Map



Date: 6/14/2021





TENTATIVELY SELECTED PLAN: NON-STRUCTURAL COMPONENT

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Structures with remaining damages at the 25 YR storm event would be raised to 100 YR level of protection

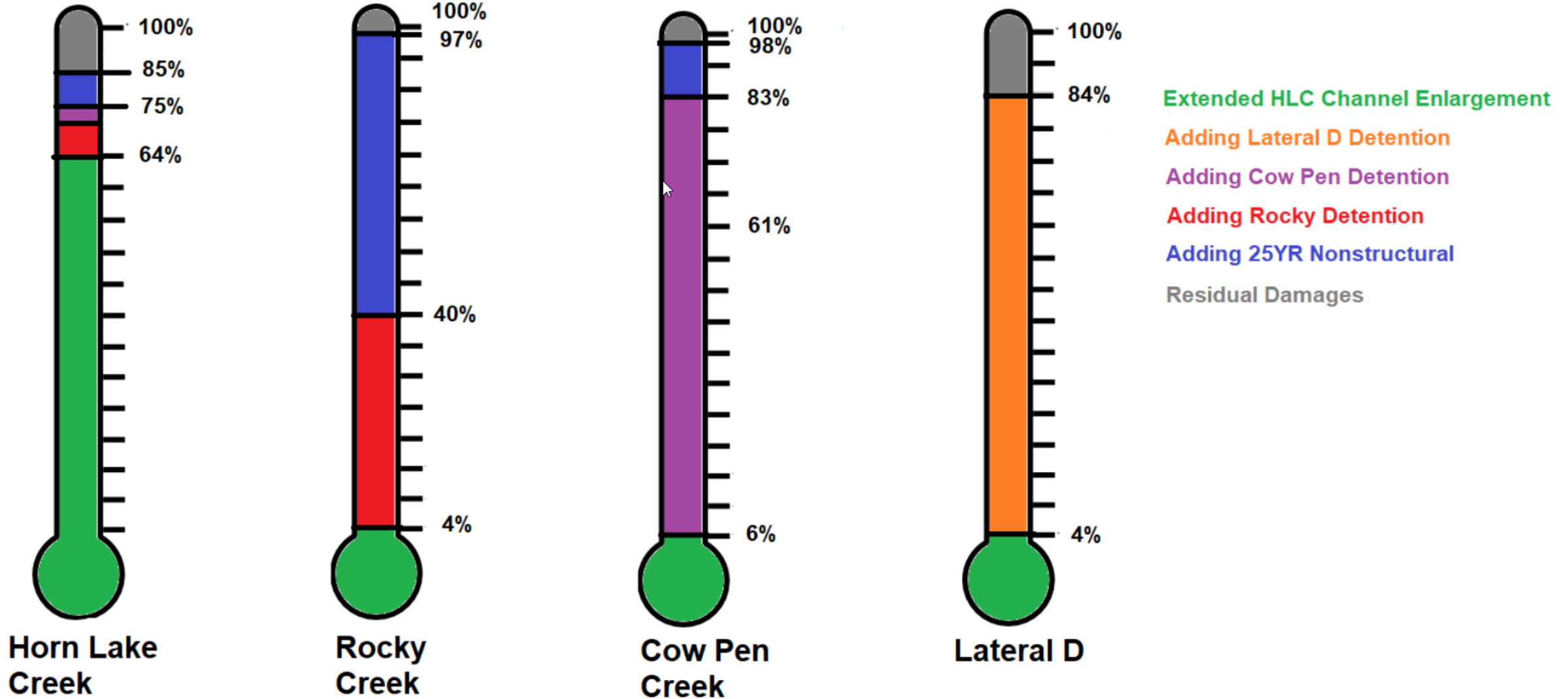
- Residential Homes- Elevated
- Commercial Sites- Flood Proofing



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FLOOD RISK REDUCTION PLAN EFFECTIVENESS

Expected Annual Damages Reduced by Alternative





SIGNIFICANT RESOURCES



- **Wetlands and Bottomland Hardwood Forest**
- **Water Quality and Aquatic Resources**
- Upland Forest
- Threatened and Endangered Species
- Migratory Birds
- Air Quality
- Cultural Resources
- Socioeconomic Resources
- Environmental Justice
- Agricultural Lands/Prime Farmland
- Recreation
- Aesthetics
- Noise
- Hazardous, Toxic and Radioactive Waste (HTRW)



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SUMMARY OF IMPACTS



Impact Analysis

Impact Sites	Acreage Impacted	Existing SCI	Existing AAHU	Future without Project SCI ¹	Future without Project AAHU	Future without Project (50-Year Horizon)	With Project SCI	With Project AAHU	AAHU Loss Per Impact Site	Habitat Loss over 50-Year Horizon	Net Initial AAHU Loss	Net Habitat Unit Loss (50-Year Horizon)
Horn Lake Creek Enlargement	10	0.31	3.10	0.95	9.50	475.00	0.1	1	8.50	425.00	33.90	1695.0
Lateral D Detention Basin	22	0.80	17.60	0.95	20.90	1045.00	0.1	2.2	18.70	935.00		
Cow Pen Detention Basin	8.5	0.36	3.06	0.50	4.25	212.50	0.1	0.85	3.40	170.00		
Rocky Creek Detention Basin	7.5	0.54	4.05	0.54	4.05	202.50	0.1	0.75	3.30	165.00		
Total	48		27.81	0.74	38.70	1935.00		4.8	33.90	1695.00		

1 - Future without project SCI Total is the average of the FWOP SCIs



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PROPOSED COMPENSATORY MITIGATION



Compensatory Mitigation Acreage		
Impact Sites	Acreage Proposed per Impact Site	Habitat Gain Required (50-Year Horizon)
Horn Lake Creek Enlargement	10.6	425
Lateral D Detention Basin	23.4	935
Cow Pen Detention Basin	4.3	170
Rocky Creek Detention Basin	4.1	165
Total	42.4	1695



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CONCLUSION OF FLOOD RISK MANAGEMENT



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ECOSYSTEM RESTORATION



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OBJECTIVES AND CONSTRAINTS



Objectives

- Restore and protect aquatic and riparian ecosystems by decreasing channel slopes and stabilizing bank lines, which would improve transport of stream flows and sediment over a 50-year period of analysis.
- Improve species richness through channel stabilization and habitat restoration.
- Improve water quality to support aquatic resources.

Constraints

- Ensure study is compliant with FAA regulations associated with the Memphis International Airport.
- Maintain consistency with DeSoto County Flood Damage Prevention Ordinance;
- Avoid or minimize negative impacts to fish passage.
- To a reasonable extent plan to avoid or minimize negative impacts to cultural, historic, and Tribal resources to a practicable extent.



ALTERNATIVES DEVELOPMENT

Five alternatives were considered on each of the 11 degraded streams. The alternatives were evaluated using the following criteria: effectiveness, efficiency, acceptability, and completeness.

Grade control with various stabilization techniques such as stone toes, channel training structures, and pool and riffle components.

Riparian buffer strips in varying sizes and locations.

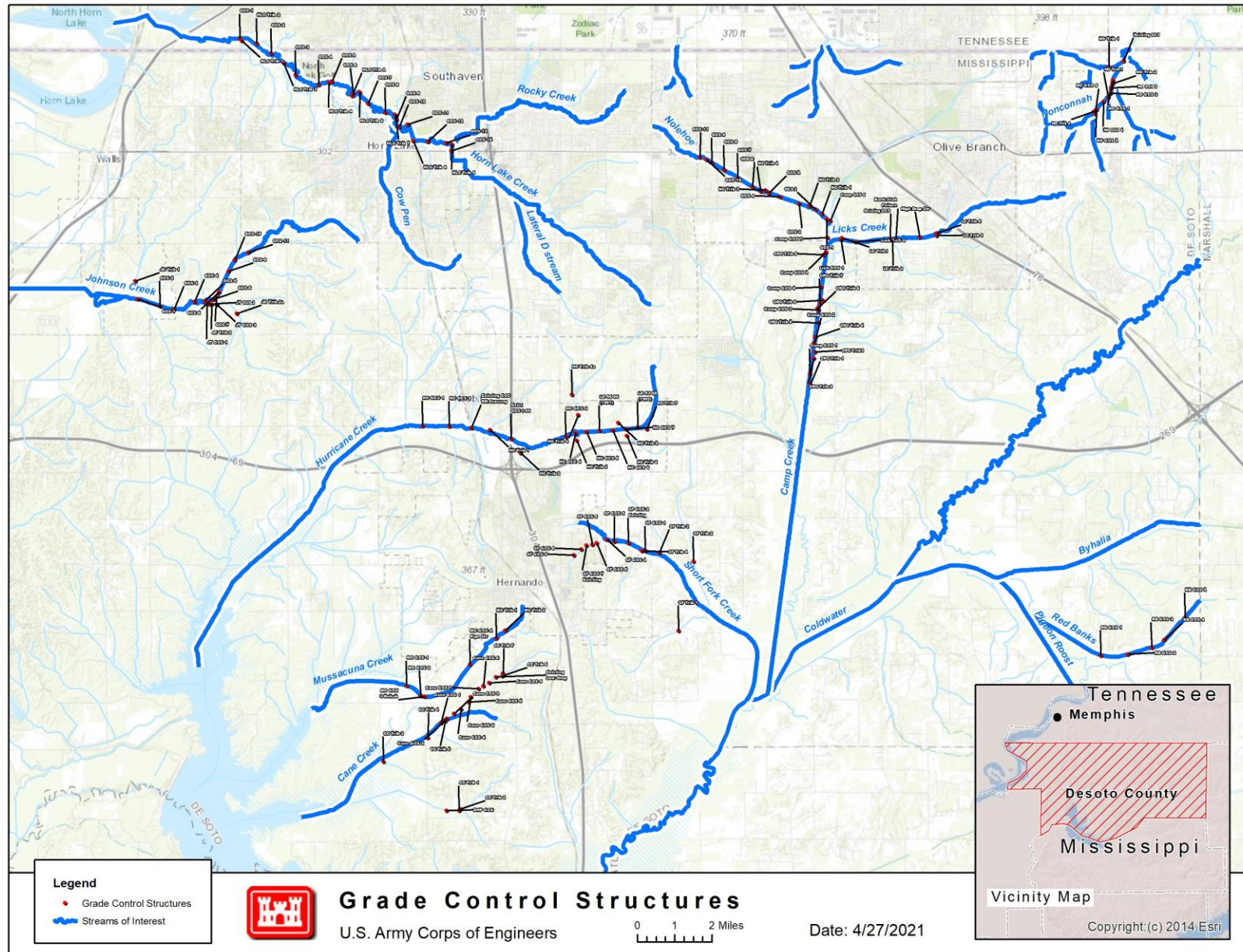
Reforestable land types:

- Cultivated crops
- Barren land
- Hay/pasture
- Herbaceous
- Shrub/scrub

Ecosystem Restoration Screening Criteria	Plan Specific Metrics
Effectiveness: the extent to which an alternative plan alleviates the specified problems and achieves the specified opportunities	Restores and protects aquatic habitat by stabilizing bank lines
Efficiency: the extent to which an alternative plan is the most cost-effective means of alleviating the specified problems and realizing the specified opportunities, consistent with protecting the Nation's environment	Cost effective--Provides non cost related benefits (reduces sediment loading and loss of streamside acreage) ; Cultivate recreational opportunities.
Acceptability: the workability and viability of the alternative plan with respect to acceptance by state and local entities and the public; and compatibility with existing laws, regulations, and public policies	Avoid adversely affecting fish passage; Avoid or minimizes negative impacts to cultural, historic, and Tribal resources; Avoid adversely affecting human life or inducing additional flood risk
Completeness: whether plan includes all elements necessary to achieve the objectives.	Restore and protect aquatic and riparian ecosystems by decreasing channel slopes and stabilizing bank lines which would improve transport of stream flows and sediment over a 50 period of analysis; Improve species richness through channel stabilization and habitat restoration; Improve water quality to support aquatic resources



TENTATIVELY SELECTED PLAN



BUIL



RELEVANT RESOURCES



- **Wetlands and Bottomland Hardwood Forest**
- **Water Quality and Aquatic Resources**
- **Threatened and Endangered Species**
- **Migratory Birds**
- Upland Forest
- Air Quality
- Cultural Resources
- Socioeconomic Resources
- Environmental Justice
- Agricultural Lands/Prime Farmland
- Recreation
- Aesthetics
- Noise
- Hazardous, Toxic and Radioactive Waste (HTRW)



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TECHNICAL SIGNIFICANCE



Technical Criteria	Problem	NER Plan Benefit
Scarcity	<ul style="list-style-type: none">• Documented severe loss of bottomland hardwood forest (BLH) in the Mississippi Valley Loess Plains (MVLP) ecoregion• Severe degradation of aquatic habitat due to erosion of banklines and riparian habitat	<ul style="list-style-type: none">• Project would reforest ~895 acres of riparian buffers (native vegetation) once fully implemented.• Project would stabilize and restore ~28 miles/~187 acres of in-stream habitat within the MVLP ecoregion.
Representativeness	<ul style="list-style-type: none">• Streams in DeSoto County are representative of MVLP streams and are continuing to degrade.	<ul style="list-style-type: none">• Implementation of the project would restore many of the streams in DeSoto County to a stable and representative condition of the MVLP.
Status and Trends	<ul style="list-style-type: none">• Streams in the MVLP are continuing to degrade.	<ul style="list-style-type: none">• This project would arrest stream bed degradation and allow for the improvement of foraging, cover, and reproductive habitats in the area.
Connectivity	<ul style="list-style-type: none">• Habitat fragmentation in the MVLP region has impacted the potential for movement and dispersal of species.• Fish passage is highly impacted in all streams included in the NER plan.	<ul style="list-style-type: none">• Project would reconnect ~90 stream miles in DeSoto County• Project would provide riparian corridors that could connect streams to larger forested blocks and wetlands• Reconnect isolated stands of habitat to allow movement and dispersal of species throughout the project area• Design of structures will allow for the improvement of fish passage in the streams.



TECHNICAL SIGNIFICANCE



Technical Criteria	Problem	NER Plan Benefit
Limiting Habitat	<ul style="list-style-type: none">• Limited/non-existent primary productivity in many stream reaches• Lack of structure and organic materials limit colonization by macroinvertebrates.• Limited BLH/riparian	<ul style="list-style-type: none">• Stream stabilization would promote re-colonization of hydrophytic and riparian vegetation contributing to healthy and diverse ecotones.• Grade control and bank stabilization structures along with riparian habitats will provide structure and restore function for/with macroinvertebrates.• Reforestation provides foraging habitat, as well as introducing important coarse woody debris and organic materials into the streams.
Biodiversity	<ul style="list-style-type: none">• Aquatic species endemic to the area are threatened by systemic degradation of streams.• Suitable habitats of Federally threatened species are scarce within the project area.• Bottomland hardwood loss within the Mississippi Flyway	<ul style="list-style-type: none">• Endemic and/or species in need of conservation, include the Yazoo darter and Yazoo shiner, Southern red-bellied dace, and Piebald madtom (currently petitioned for listing under the ESA).• Northern long-eared bat (NLEB) would benefit from reforestation (roosting).• NLEB and wood stork would benefit from grade control and bank stabilization techniques: aquatic insect habitat and pooling habitat.• Reforestation of acreage within the Mississippi Flyway is beneficial to neo-tropical migratory birds and will promote forage and resting habitat.



ECOSYSTEM RESTORATION BENEFIT ANALYSIS

Stream	Grade Control Structures	Riparian Acreage	AAHU
Camp Creek	7	98	98
Cane Creek	9	66	54
Horn Lake Creek	14	64	101
Hurricane Creek	9	160	140
Johnson Creek	11	122	113
Lick Creek	3	36	24
Mussacuna Creek	3	57	40
Nolehoe Creek	11	32	54
Nonconnah Creek	7	107	65
Red Banks	5	48	46
Short Fork	9	106	84



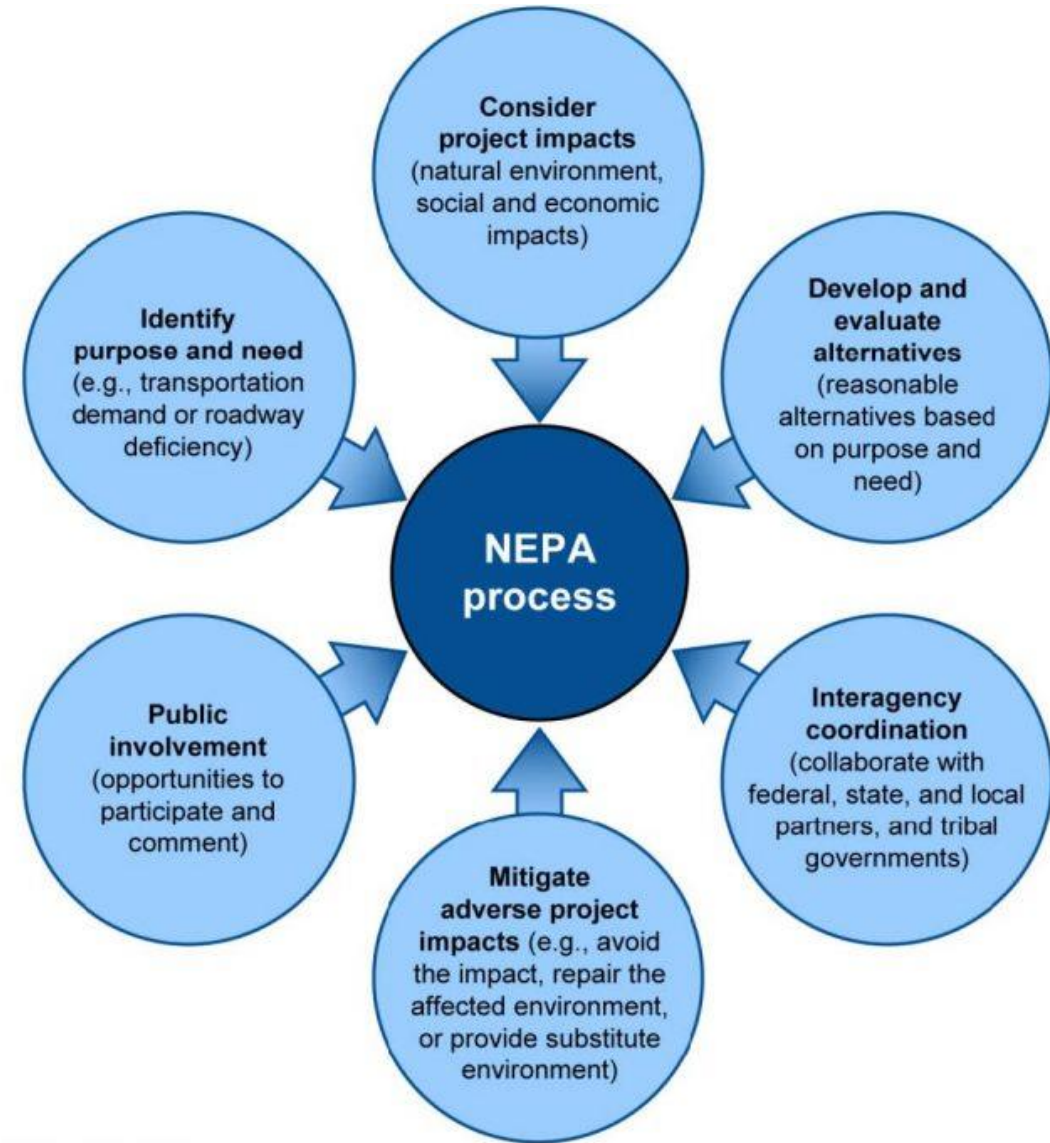
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NATIONAL ENVIRONMENTAL POLICY ACT



The National Environmental Policy Act (NEPA) was signed into law by President Nixon on January 1, 1970. NEPA requires all federal agencies to consider the environmental impacts of any proposed action by developing a range of alternatives, provide opportunities for the public to provide input, and document the decision-making process so that interested and affected stakeholders can understand how the agency came to a decision. Implementation requires the publishing of a Notice of Intent in the Federal Register for Environmental Impact, and sometimes Environmental Assessments.





AGENCY COORDINATION



- Programmatic Agreement
 - 8 Federally Recognized Tribes,
 - Mississippi Department of Archives and History (SHPO),
 - Advisory Council on Historic Preservation.
- Endangered Species Act and Fish and Wildlife Coordination Act – US Fish and Wildlife Service
- State Water Quality Certification – Mississippi Department of Environmental Quality (MDEQ)
- HTRW – US Environmental Protection Agency and MDEQ
- Farmland Conversion Impact Ratings – US Department of Agriculture/Natural Resources Conservation Service



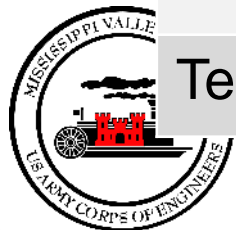
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KEY MILESTONES



Milestone	Date
Notice of Intent Published	August 9, 2019
Cooperating Agency Kick-off Meeting	December 18, 2019
Public Scoping Meetings	December 5, 2018 August 29, 2019
Public Scoping Period Ends	Oct. 15, 2018
Draft Fish and Wildlife Coordination Act Report	Pending
Draft IFR-EIS Released For Public/Agency Review – Comment Period Begins	May 28, 2021
Draft IFR-EIS Comment Period Ends	July 12, 2021
Tentative Schedule - Final dIFR-EIS Publication	Pending
Tentative Schedule - Record of Decision	Pending





CONCLUSION OF ECOSYSTEM RESTORATION



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