US Army Corps of Engineers®
Little Rock District

Stillhouse Branch of the White River, Batesville, Arkansas

Section 14
Emergency Streambank Protection

DRAFT

DRAFT Feasibility Report and Environmental Assessment

October 2016

DRAFT

DEPARTMENT OF THE ARMY
LITTLE ROCK DISTRICT, CORPS OF ENGINEERS
P.O. BOX 867
LITTLE ROCK, ARKANSAS 72203-0867
www.swl.usace.army.mil

Section 14
Emergency Streambank Protection

DRAFT

DRAFT Feasibility Report and Environmental Assessment

OCTOBER 2016

DRAFT

FINDING OF NO SIGNIFICANT IMPACT

NAME OF PROPOSED ACTION: Section 14 Stillhouse Branch, Batesville, Independence County, Arkansas.

PURPOSE AND NEED FOR THE PROPOSED ACTION. Significant stream bank erosion due to recent flood events on Stillhouse Branch is threatening the abutments of the River Road Bridge, a water line, an electrical utility, a 24-inch sewer force main, a park pedestrian bridge, and a park pavilion. The length of erosion problem is estimated at approximately 800 feet. Bank erosion in the areas around bridges threatens their structural integrity. The bank around the bridges is vertical with significant erosion around the bridge approaches and piers. Areas adjacent to the park pavilion exhibits a large amount of bank slides.

ALTERNATIVES. After screening an initial array of alternatives, the Little Rock District (District) evaluated three alternatives in detail in the attached Integrated Feasibility Report and Environmental Assessment:

- *Proposed Action*: The proposed action consists of bank grading (1.5H:1V slope) and a stone revetment or longitudinal peaked stone toe protection (LPSTP) that protects banks from further erosion. The LPSTP consists of stone placed at the bottom of the steep riverbank slope to provide bank protection, and will need to be at about 450 feet long. Gabion basket retaining walls placed along the road and pedestrian bridges will provide additional protection for the bridge abutments.

- *Alternative 2*: Alternative 2 involves grading existing banks at a slope of 1.5H:1V and filling existing eroded areas along each bank to facilitate installation of a rip rap blanket along bank slopes. Gabion basket retaining walls placed along road and pedestrian bridges will provide additional protection for bridge abutments. Installing rip rap will stabilize bank slopes up to an elevation of nearly 258 feet. Grading and new rip rap will also be needed on both stream banks and will extend upstream about 450 feet from the road bridge to the confluence of the White River.

- *No Action*: Under the No Action Alternative (i.e., the Without Project Condition), the City of Batesville would relocate both the river road bridge and pedestrian bridge. Moving these bridges would require the city to relocate a connecting road, which people use to access the Riverside City Park and Batesville High School. Relocating these structures would take place without Corps involvement, and is thus considered the No Action or Without Project Condition.

During plan formulation, the District considered other measures including bend-way weirs, rerouting Stillhouse Branch to lessen erosive forces on the River Road Bridge, and using bioengineering materials. Since Stillhouse Branch is a relatively small stream with a limited channel bottom bend-way weirs were ruled out because they could significantly reduce stream flows. In addition, rerouting the stream would be difficult

DRAFT

given the multiple bridges, utilities, and other structures adjacent to the channel. Use of bioengineering methods would provide a lower, less permanent level of protection and would also take much longer to implement (i.e., time required to establish a robust root system) thereby increasing the threat of imminent failure due to the erosion.

ANTICIPATED ENVIRONMENTAL IMPACTS: As required by 40 Code of Federal Regulations (CFR), the Environmental Assessment demonstrated that direct, indirect and cumulative impacts associated the Proposed Action are not significant. Criteria in making this finding are addressed below in terms of both context and intensity. The significance of short and long-term effects must be viewed in the context of the affected

- Society as a whole (human and national),
- Affected region,
- Affected interests; and
- Locality.

As shown in Figure 1 of the Feasibility Report, the context for this determination is primarily local, and is not highly significant in terms of geography; nor is it controversial in any significant way. Intensity refers to the magnitude and force of impacts, where impacts may be both beneficial and adverse. Within this context, the magnitude and intensity of impacts resulting from this decision are insignificant. The determination for each impact item is listed below.

1. ***The degree to which the action results in both beneficial and adverse effects. A significant effect may exist even if the Federal agency believes that on balance the effect will be beneficial.*** The Environmental Assessment indicates that there will be beneficial effects including protecting a public roadway bridge, city utilities and a pedestrian bridge that would not occur under the No Action Alternative. Implementing the Proposed Action would also benefit water quality, terrestrial vegetation and aquatic habitat by eliminating erosion in Stillhouse Branch and resultant sedimentation in the White River. While there would be adverse construction related effects, these would be minor and would cease after construction.

2. ***The degree to which the action affects public health or safety.*** The Proposed Action would protect public safety by eliminating active erosion that threatens a public bridge, city utilities and a public pedestrian bridge. There would be no adverse effects to public health or safety. Under existing conditions, no hazardous materials were identified on the site.

3. ***The degree to which the action affects unique characteristics of the potentially affected area, such as proximity to historic or cultural resources, park lands, prime farmlands, wetlands, wild and scenic rivers, or ecologically critical areas.*** The Proposed Action would occur in the Riverside Park, which is the most visited recreation site in Independence County. The City of Batesville owns and operates the park. Effects of the Proposed Action would benefit the park by stabilizing an eroding stream that flows through the park.

DRAFT

4. ***The degree to which effects on the quality of the human environment are likely to be highly controversial.*** The Proposed Action would benefit the public; and, therefore the District does not regard this activity as controversial. Public comments received during the 30-day public review period confirm this.

5. ***The degree to which possible effects on the human environment are highly uncertain or involve unique or unknown risks.*** Uncertainty surrounding the impacts of the action are small. Stabilizing the banks will help ensure that the River Road Bridge, city utilities and a pedestrian bridge remain safe for public use.

6. ***The degree to which the action may establish a precedent for future actions with significant impacts.*** Stabilizing the bank would not establish precedent for future actions with significant impacts. The District reviewed past, present and future stabilization projects in the vicinity of the White River to arrive at this conclusion.

7. ***Whether the action is related to other actions with individually insignificant but cumulatively significant impacts.*** The main body of the Environmental Assessment identifies resources that the Proposed Action could affect including: 1) water quality, 2) noise pollution, 3) air quality, 4) aquatic habitat, 5) recreation, and 6) socioeconomic conditions. Based on a detailed evaluation of the physical and biological resources listed, the Proposed Action, when considered with past and reasonably foreseeable future actions, would not result in cumulative impacts to the environment.

8. ***The degree to which the action may adversely affect items listed or eligible for listing in the National Register of Historic Places, or other significant scientific, cultural or historic resources.*** There are no historic properties as defined by Section 106 of the National Historic Preservation Act in the Area of Potential Effect. Based on literature reviews, field investigations, and consultation with the Arkansas State Historic Preservation Office and federally recognized tribes, the District determined that the Proposed Action would not affect cultural resources or historic properties.

9. ***The degree to which the action may adversely affect an endangered or threatened species or its critical habitat.*** Coordination with the U.S. Fish and Wildlife Service indicates that there are no federally listed threatened or endangered species in the project area.

10. ***Whether the action threatens a violation of federal, state or local laws or requirements imposed for the protection of the environment.*** No such violations would occur. Permits from other jurisdictional agencies would be obtained prior to construction, and continued coordination with regulatory agencies would ensure compliance with federal, state, regional, and local regulations and guidelines.

DRAFT

CONCLUSION: Impacts identified in the Environmental Assessment have been thoroughly discussed and assessed. No identified impacts would result in significant adverse effects to the human environment. Therefore, as a result of the analysis presented and comments received during a 30-day public review period that began on October 21, 2016 and ended on November 22, 2016, it is my decision that the preparation of an Environmental Impact Statement as required by the National Environmental Policy Act (NEPA) is unwarranted and a "Finding of No Significant Impact" is appropriate. The signing of this document indicates the Corps final decision of the Proposed Action as it relates to NEPA. The Environmental Assessment and Finding of No Significant Impact will be held on file in the Environmental Branch, Planning and Environmental Section for future reference. Consultation with regulatory agencies will be ongoing to ensure compliance with all federal, state, regional, and local regulations and guidelines.

_____
Date

_____
ROBERT G. DIXON
Colonel, EN
Commanding

DRAFT

DRAFT

EXECUTIVE SUMMARY

This Corps Little Rock District (District) initiated this study in December 2014 at the request of the local sponsor, the City of Batesville in Independence County, Arkansas. Study authority is Section 14 of the Flood Control Act of 1946 as amended, Emergency Streambank Restoration.

In 2008, a 50-year flood triggered serious bank erosion along Stillhouse Branch (a tributary to the White River in Batesville).[1] Erosion has caused the channel to deepen the thalwag and steepen the slope resulting in channel widening. Over time, channel widening has eroded the abutments of the bridges. Currently, the bank is completely vertical at the bridge abutments, and District engineers expect that a 20-year event could cause the bridges to fail. The city has continually placed rip-rap on the banks, which has sustained the bridges to date. District staff visited the site in December 2014; and after further damage in 2015, team engineers revisited the area to take additional cross sections and modify project alternatives. The 2015 flood events damaged and temporarily closed the pedestrian bridge due to safety concerns. Riverside Park is connected by the road and pedestrian bridges and is an important economic engine for not only Batesville and Independence County, but for the region as a whole. Tourists from all over the state visit Riverside Park for special events including the city's Christmas festival of lights, and the only way to get to the park is via the bridges at risk.

This report identifies and recommends bank stabilization with gabion retaining walls adjacent to the bridges and longitudinal peaked stone toe protection (LPSTP) at the toe of the banks as a solution to the problem. Total cost of the feasibility phase is $100,000 at full federal expense. This report provides the basis for preparing plans and specifications and subsequent construction of the proposed plan. During the feasibility phase, the primary structural measures evaluated consist of:

1) Channel modification,
2) Replacing bridges with box culverts,
3) Full-height bank paving,
4) Gabion retaining walls,
5) Simple bio engineering,
6) Bend-way weirs; and
7) LPSTP.

The no action alternative (i.e., without federal project) involves relocating the road and pedestrian bridges, along with utilities. Also, there were four action alternatives including rip rap, longitudinal peaked toe stone protection, bend-way weirs with simple bio-engineering and channel modification using bend-way weirs and LFSTP. Alternative 3 (the recommended plan) is the least cost option ($937,000), and involves installing gabion retaining walls adjacent to the bridges and LPSTP at the toe of the banks. Total estimated federal cost is $ 609,000 and the total estimated non-federal cost is $ 328,000.

[1] Funding for this study was not available until December 2014.

DRAFT

TABLE OF CONTENTS

DRAFT

DRAFT

DRAFT

FIGURES

TABLES

APPENDICES

DRAFT

1.0 INTRODUCTION

1.1 Study Authority

The *Stillhouse Branch of the White River, Batesville, Arkansas* study is authorized by Section 14 of the Flood Control Act of 1946, as amended (P.L.79-526), Emergency Streambank and Shore Protection. The purpose of the Section 14 program is to construct emergency streambank and shore protection to prevent natural erosion processes from damaging highways, bridge approaches, public works, churches, public and private non-profit hospitals, schools, water and sewer lines, and other public or non-profit facilities that offer public services to all, and known historic properties eligible or listed on the National Register of Historic Places.

If an eligible facility is in imminent danger of failure, and after a request for a project has been received from a potential non-federal sponsor stating its desire to participate in a solution, the Corps will conduct a feasibility study to analyze the problem, develop a solution, and determine the feasibility of a solution. In the feasibility phase, the first $100,000 is 100 percent federally funded. Any additional feasibility study costs require an executed Feasibility Cost Sharing Agreement, stating that all costs above the initial $100,000 are cost-shared 50 percent federal and 50 percent non-federal.

1.2 Purpose and Scope

The purpose of this study is to determine if constructing emergency streambank protection to prevent bank erosion from damaging the River Road Bridge approach and other public works at Stillhouse Branch is feasible and economically justified. The study identifies the least cost alternative, and the recommended plan is justified if total project costs are less than costs of relocating the threatened facility. Federal costs are limited to not more than $5,000,000 for one locality. Cost of lands, easements, rights-of-way, relocations of utilities, disposal areas, and the operation and maintenance of the project, once completed, are a non-federal responsibility.

1.3 Study Area

The sponsor of the Stillhouse Branch study is the City of Batesville in Independence County, Arkansas. Stillhouse Branch is downstream of the Highway 167 Bridge that crosses the White River, and is a tributary of the White River and is within the city limits of Batesville (Figure 1).

DRAFT

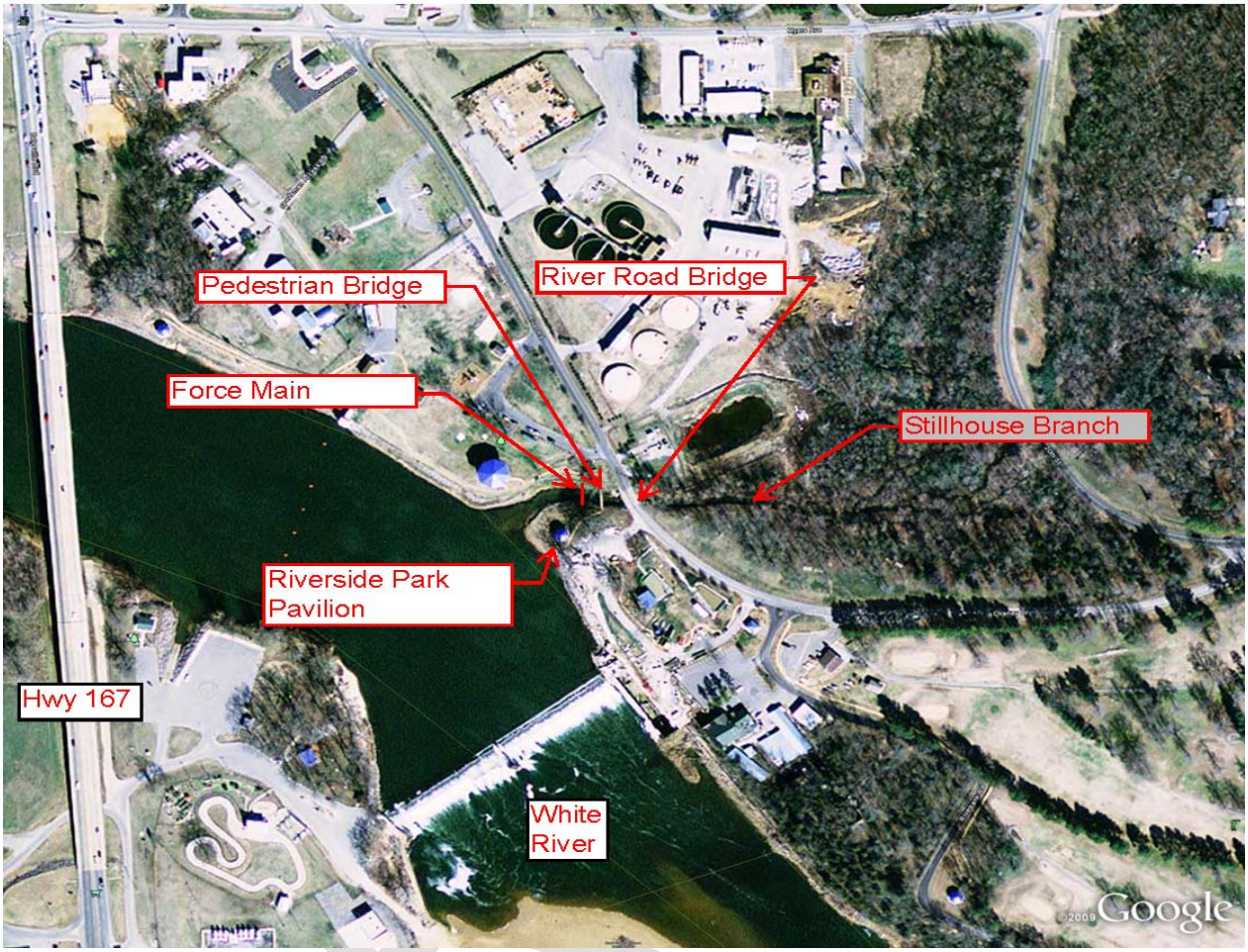


Figure 1: Project Location

1.4 History

Batesville is the second oldest municipality in Arkansas. Historically, the city was an important port on the White River and served as an entry point to the interior of northern Arkansas. Owned and operated by the city, Riverside Park is in the project area. The park is very popular, and has 1.2 miles walking and biking trail along the White River. Built in the 1960s, the River Road Bridge connects Riverside Park to the city. A 2008 flood (50-year event) triggered bank erosion along Stillhouse Branch, and caused the channel to deepen the thalwag and steepen the slope resulting in channel widening. Over time, widening has eroded into the abutments of the bridges. Currently, the bank is completely vertical at the bridge abutments, and engineers anticipate that a 20-year flood event would cause the bridges to fail. The city has continually placed rip-rap on

the banks, which has sustained the bridges to date. In December 12, 2014, the city submitted a letter of intent to cost-share the project (Appendix A)**.** The District conducted an initial site visit in December of 2014; and team engineers revisited the site in 2015 to take additional cross sections and modify project alternatives after flood events further damaged and temporarily closed the pedestrian bridge. Photographs below taken in 2014 during the original site visit illustrate the severity of the erosion.

Photograph1: Stillhouse Branch at confluence with White River

DRAFT

Photograph 2: Stillhouse Branch looking upstream from confluence with White River

Photograph 3: Sewer line owned by the City to be abandoned and removed prior to Construction

Photograph 4: North abutment of pedestrian bridge

Photograph 5: South abutment of pedestrian bridge

Photograph 6: South abutment of pedestrian bridge

Photograph 7: North abutment of River Road Bridge

Photograph 8: South abutment of River Road Bridge

1.5 Prior Reports and Existing Projects

Over the years, the Corps has completed several studies and projects in the Batesville area including a:

1) White River Bank Stab., Batesville, AR, Sec. 14 was a bank stabilization project completed in 1986.

2) White River, Batesville, AR, Sec. 205 study recommended construction of a levee and floodwall to protect the industrial area along the White River and was completed in 1999.

3) Batesville Wastewater Treatment Plant, Batesville, AR, Sec. 14 was a bank stabilization project to protect the wastewater treatment facility in Batesville and was completed in 2011.

4) Southside Water, White River, Batesville, AR, Sec. 14 was a bank stabilization project along the White River to protect the water treatment facility and was completed in 2012.

With the exception of the fourth project, prior projects do not impact the current project. However, the current project will tie into the Section 14 project near the Batesville Water Tower.

2.0 PLAN FORMATION

2.1 Problems and Opportunities

Problems in the study area consist of:

1) Streambank erosion due to recent flood events;

2) Bank erosion in areas around the bridges that threatens the structural integrity of these facilities and road approaches;

3) The bank around the bridges is vertical with significant erosion around the bridge approaches and piers; and

4) The area adjacent to the park pavilion has a large number of bank slides.

Given these problems, there is an opportunity to protect Batesville's Riverside Park and its facilities, utility lines, a pedestrian bridge and River Road Bridge by stabilizing banks along Stillhouse Branch.

2.2 PLANNING OBJECTIVES AND CONSTRAINTS

The study goal is to determine if the project would contribute to the National Economic Development account in a manner consistent with protecting the nation's environment in accordance with national environmental statutes, applicable executive orders, and other federal planning requirements.

2.2.1 Planning Objectives

The study objective is to minimize erosion and protect Batesville's Riverside Park, pedestrian bridge and River Road Bridge approaches.

DRAFT

2.2.2 Planning Constraints

Planning constraints include:

1) Prohibiting loss of flood protection from existing flood damage reduction projects;

2) Preventing road traffic interruptions for the access bridges to the park; and

3) Avoiding impeding flows from Stillhouse Branch to the White River.

2.3 EXISTING CONDITIONS

2.3.1 Study Area Existing Conditions

Stillhouse Branch is in the city limits of Batesville in north-central Arkansas. The stream originates in the center of the city where it collects stormwater flows. From its' origin, the stream flows south approximately 0.40 miles where it impounds in a 2-acre recreational lake for area residents. Below the lake's spillway, Stillhouse Branch continues flowing south for another 0.40 miles where it enters the project area, and flows through Riverside Park before entering the White River immediately above White River Lock and Dam No. 1. Riverside Park is one of two popular parks along the White River, and is the most visited park in Independence County, and is a vital economic engine for not only Batesville and Independence County, but for the region as a whole. Tourists from across the state Riverside Park for special events, including the city's famous Christmas Festival of Lights. The pedestrian and River Road bridges are the only connection to Riverside Park. In 2013, the Arkansas Department of Transportation reported that on average 1,500 vehicles cross the River Road Bridge per day. The city provides year-round maintenance to this popular attraction and has invested significant financial resources to build and operate public pavilions, playgrounds and bathroom facilities.

Significant streambank erosion issues due to recent flood events on Stillhouse Branch are threatening the abutments of the River Road Bridge, a water line, an electrical utility, a park pedestrian bridge, and a park pavilion. The length of erosion problem is estimated at approximately 800 feet. Serious bank erosion near the bridges threatens the structural integrity of these facilities and road approaches. The bank around the bridges is vertical with significant erosion around the bridge approaches and piers. Areas adjacent to the park pavilion exhibits a large amount of bank slides. Riverside Park is connected by the road and pedestrian bridges and is the economic foundation of not only Batesville and Independence County but this region of Arkansas. Tourists from

around the state visit Riverside Park for special events including the city's famous Christmas festival of lights. These bridges are the only connection for Riverside Park. In 2013, the Arkansas Department of Transportation reported that on average 1,500 vehicles that travel over the River Road Bridge per day.

2.3.2 Physical Environment - Land Use

As noted above, the project area is in a heavily used park in the city limits of Batesville, Arkansas. The entire park is maintained year-round for public use. The region surrounding the project area is devoted to urban development, including public utility facilities and public schools. No prime or unique farmland (based on Council in Environmental Quality criteria)[2] or wild and scenic rivers as specified in the Wild and Scenic Rivers Act (6 U.S.C. 1271, et. seq.) are in or near the study area.

2.3.3 Climate and Climate Change

The climate around Batesville is characterized by hot summers (extremely hot on occasion), cool winters, and precipitation more or less evenly distributed throughout the year. The average annual temperature in Batesville is 59 degrees Fahrenheit (F°).[3] Summer average daily temperature is 78°F, while the winter average daily temperature is 40°F. July is usually the warmest month on average (80°F), and January is the coolest (38°F).The highest recorded temperature in Batesville is 112°F and the lowest was minus18.0°F.

On average, Batesville receives 48 inches of precipitation per year with one-half occurring during the months of April through September. May is the wettest month with 5.0 inches, while October averages the least with 3.3 inches. In terms of liquid precipitation, there are an average of 80.5 days of rain with the most occurring in January (8.0 days), and the least rain occurring in October (5.3 days). Batesville receives an average of 6.9 inches of snow per year. The month with the most snow is January with 2.6 inches. Prevailing winds are from the southwest, and average wind speed is highest in the spring at about 9 miles per hour.

Climate change has become a concern due to potential environmental effects, particularly related to water resources. The U.S. Global Change Research Program summarized information regarding climate change and its potential effects in regional

[2] Council of Environmental Quality, "Memorandum of Full Analysis of Impacts on Prime or Unique Agricultural Lands in Implementing the National Environmental Policy Act." August 11, 1980.

[3] Weather statistics are from the National Climatic Data Center.

DRAFT

assessments.[4] In the Southeast, which includes Arkansas, rising temperatures and associated increases in the frequency, intensity, and duration of extreme heat events are predicted, with a 4°F to 8°F regional temperature increase by year 2100. Higher temperatures can contribute to the formation of harmful air pollutants and allergens. Predictions of future precipitation patterns are less certain than projected increases in temperature; however, many models predict drier conditions in the far southwest part of the region and wetter conditions in the far northeast part of the region. It is predicted that Arkansas will lie somewhere in between. As a result, there may only be small changes relative to natural variations (Carter, et al., 2014).

2.3.4 Topography, Physiography and Soils

Batesville is situated in the transition zone between the Interior Highlands and the Gulf Coastal Plain. Bedrock consists of interbedded shale, sandstone, and limestone. The project area contains soils of Egam silt loam and Linker gravelly fine sandy loam (USDA, 2015). Egam and Linker soils are classified as Prime Farmland, however due to the location of the White River, this area is not protected from flooding. Therefore, the area is not considered prime farmland.

2.3.5 Water Resources

The primary water resource in the project area is the White River, which originates in the Ozark Mountains of northwest Arkansas and empties into the Mississippi River in southeastern Arkansas. As described in Section 7.1, Stillhouse Branch is a relatively short stream about one mile in length from source to mouth. The source of water for Stillhouse is mostly urban runoff, thus flows are intermittent and flashy. In the immediate project area, Stillhouse continues to be intermittent in nature, receiving headwater flows during heavy rain events that causes the city lake upstream to overtop through the spillway. These flashy, intermittent yet high flows are causing erosion problems in the project area. Other streams in the area include Plum Bayou and Poke Bayou, both of which enter the White River upstream of the study area.

2.3.6 Groundwater and Public Water Sources

Groundwater in the study area occurs in a group of formations made up of fractured shale and sandstone, which are characterized by low secondary porosity and permeability resulting in low well yields. These formations are classified as the Western Interior Plains confining system (Kresse et al., 2014). Since yields from this system are typically low, groundwater is not a viable source for industrial or public water supplies;

[4] See, U.S. Global Change Research Program, “Global Climate Change Impacts in the United States, January 2009.

however, yields can sustain individual residential wells. The City of Batesville draws water from the White River for its public supply.

2.3.7 Water Quality

Water quality parameters in Stillhouse Branch have not been measured; however, water flowing through the study area is typically turbid due to continual bank erosion. Water quality in the White River at Batesville is considered good according to the Arkansas Department of Environmental Quality. The 2008 Integrated Water Quality Monitoring and Assessment Report lists the White River segment near the study area as supporting all designated uses (i.e., fish consumption, aquatic life use, primary contact swimming, secondary contact, drinking water use and agriculture and industrial uses). Albin et al. (1967) reported on water resources of Jackson and Independence counties, which are located in the eastern extent of the Western Interior Plains confining system. Analyses for the Atoka Formation indicates that in general groundwater quality was of good with low concentrations of most chemical constituents; though, in a few areas, water had elevated iron concentrations.

2.3.8 Wetlands

The U.S. Fish and Wildlife Service National Wetland Inventory shows that there is one small 3.4 acre freshwater forested scrub wetland in the study area. The site visit confirmed the presence of this wetland, which is located upstream of the study area, and any proposed action would not affect the wetland.

DRAFT

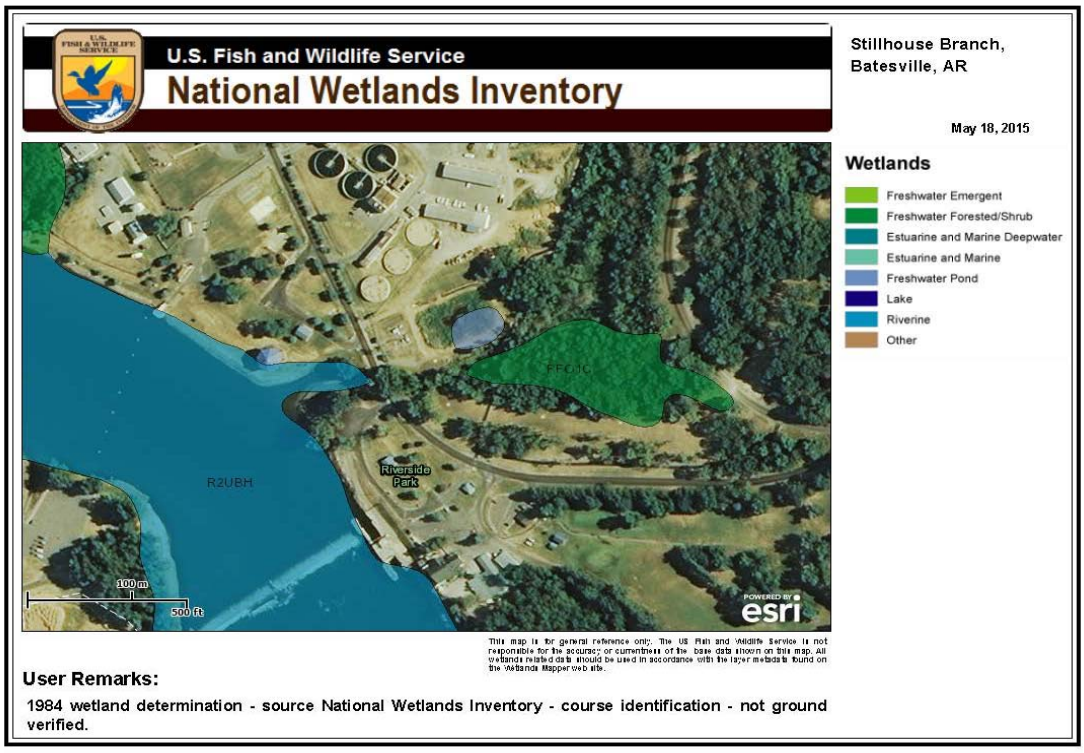


Figure 2: National Wetland Inventory Wetland Distribution

2.3.9 Biological Resources

Biological resources of the White River basin are extensive as a whole. Resources listed in this EA include vegetation, fish and wildlife, and threatened and endangered species.

2.3.10 Vegetation

Historically, vegetation in the area was a mix of hardwood trees, but due to development of the city park, most remaining vegetation consists of cultivated grasses to the top of the riverbank with a few hardwood trees interspersed through the park.

2.3.11 Fish and Wildlife

Wildlife species are limited to small animals capable of inhabiting the limited habitat available in a developed park environment including the eastern cottontail rabbit (*Sylvilagus floridanus*), opossum (*Didelphis virginiana*), eastern gray squirrel (*Sciurus carolinensis*) and eastern mole (*Scalopus aquaticus*). Furbearers include river otters (*Lontra canadensis*), North American beavers (*Castor canadensis*), American mink (*Neovison vison*) and raccoons (*Procyon lotor*). Bird species are typical of urban habitats and include American robins (*Turdus migratorius*), common grackles (*Quiscalus quiscula*), mourning doves (*Zenaida macroura*), northern mockingbirds (*Mimus polyglottos*) and house sparrows (*Passer domesticus*).

The White River is home to many fish species. Common ones include dominant minnow species such as the duskeystripe shiner (*Luxilus pilsbryi*), a species endemic to the White River Basin, bleeding shiner (*Luxilus zonatus*), hybrid stoneroller (*Campostoma anomalumXoligolepis*), blacktail shiner (*Cyprinella venusta*), striped shiner (*Luxilus chrysocephalus*), and Ozark minnow (*Notropis nubilus*). Darters occurring in the White River near the study area include the saddleback darter (*Percina vigil*), logperch (*Percina caprodes*), rainbow darter (*Etheostoma caeruleum*), and greenside darter (*Etheostoma blennioides*). Common sunfishes consist of bluegill (*Lepomis macrochirus*), longear (*Lepomis megalotis*), white crappie, *Pomoxis annularis*), black crappie (*Pomoxis nigromaculatus*), largemouth bass (*Micropterus salmoides*), and spotted bass (*Micropterus punctulatus*). Other common species include the spotted gar (*Lepisosteus oculatus*), gizzard shad (*Dorosoma cepedianum*), northern hog sucker (*Hypentelium nigricans*), golden redhorse (*Moxostoma erythrurum*), and channel catfish (*Ictalurus punctatus*) (Hoover, et al., 2009).

Common reptiles and amphibians in the study area can include aquatic species such as Blanchard's cricket frog (*Acris blanchardi*), spring peepers (*Pseudacris crucifer*), American bullfrogs (*Lithobates catesbeianus*), plain-bellied water snakes (*Nerodia erythrogaster*), common five-lined skinks (*Plestidon fasciatus*), and red-eared sliders (*Trachemys scripta elegans*). The White River is also home to various fresh water mussels; however, there are none of special significance in the project area.

2.3.12 Threatened and Endangered Species

Coordination with the U.S. Fish and Wildlife Service Ecological Service Office indicate that there are no threatened or endangered species or trust resource concerns in or near the project area.

DRAFT

2.3.13 Species of Special Concern

According to the Arkansas Natural Heritage Commission, there are no Species of Conservation Concern in the study area. While no Species of Conservation Concern exist in the project area, species listed in Table 2 have been recorded for the White River in the vicinity of Lock and Dam No. 1, which is immediately downstream from the Stillhouse Branch confluence with the White River. Most of species listed in Table 2 prefer medium size streams with pool – riffle habitat complexes and gravel/cobble substrates (crayfish, darters, and shiner). The striped mullet and American eel migrate from the Gulf of Mexico for spawning. The presence of Lock and Dam No. 1 likely limits their upstream migration. A single occurrence of the federally listed Ozark hellbender has been recorded downstream of Lock and Dam No. 1 below the project area.

Table 1. Department of Arkansas Heritage Elements of Special Concern near Lock and Dam No. 1

Scientific Name	Common Name	Federal Status	State Status	Global Rank	State Rank
Invertebrates					
Orconectes neglectus chaenodactylus	Gap ringed crayfish	-	INV	G5T3	S3
Vertebrates					
Ammocrypta clara	Western sand darter	-	INV	G3	S3
Anguilla rostrata	American eel	-	INV	G4	S3
Cryptobranchus alleganiensis bishopi	Ozark hellbender	LE	SE	G3G4T2Q	S1
Moxostoma anisurum	Silver redhorse	-	INV	G5	S1
Cycleptus elongatus	blue sucker	-	INV	G3G4	S3
Mugil cephalus	striped mullet	-	INV	G5	S2
Notropis ozarcanus	Ozark shiner	-	INV	G3	S3
Percina phoxocephala	Slenderhead darter	-	INV	G5	S2
Percina uranidea	Stargazing darter	-	INV	G3	S2

DRAFT

FEDERAL STATUS CODES

LE = Listed Endangered; the U.S. Fish and Wildlife Service has listed this species as endangered under the Endangered Species Act.

STATE STATUS CODES

INV = Inventory Element; The Arkansas Natural Heritage Commission is currently conducting active inventory work on these elements. Available data suggests these elements are of conservation concern. These elements may include outstanding examples of Natural Communities, colonial bird nesting sites, outstanding scenic and geologic features as well as plants and animals, which, according to current information, may be rare, peripheral, or of an undetermined status in the state. The ANHC is gathering detailed location information on these elements.

GLOBAL RANKS

G3 = Vulnerable globally. At moderate risk of extinction due to a restricted range, relatively few populations (often 80 or fewer), recent and widespread declines, or other factors.

G4 = Apparently secure globally. Uncommon but not rare; some cause for long-term concern due to declines or other factors.

G5 = Secure globally. Common, widespread and abundant.

T-RANKS= T subranks are given to global ranks when a subspecies, variety, or race is considered at the state level. The subrank is made up of a "T" plus a number or letter (1, 2, 3, 4, 5, H, U, X) with the same ranking rules as a full species.

STATE RANKS

S1 = Critically imperiled in the state due to extreme rarity (often 5 or fewer populations), very steep declines, or other factors making it vulnerable to extirpation.

S2 = Imperiled in the state due to very restricted range, very few populations (often 20 or fewer), steep declines, or other factors making it vulnerable to extirpation.

S3 = Vulnerable in the state due to a restricted range, relatively few populations (often 80 or fewer), recent and widespread declines, or other factors making it vulnerable to extirpation.

GENERAL RANKING NOTES

Q = A "Q" in the global rank indicates the element's taxonomic classification as a species is a matter of conjecture among scientists.

DRAFT

2.3.14 Hazardous, Toxic and Radioactive Wastes (HTRW)

A review of the Arkansas Department of Environmental Quality EnviroView website indicated that there are no known hazardous, toxic or radioactive waste located in or near the project area (ADEQ, 2015).

2.3.15 Air Quality

The Clean Air Act of 1977, as amended, requires federal facilities to comply with all federal, state, interstate, and local requirements regarding the control and abatement of air pollution in the same manner as any nongovernmental entity, including any requirement for permits. No particular federal requirements are involved that are not already incorporated into Arkansas State law. According to the Arkansas Department of Environmental Quality, the entire state of Arkansas is in compliance with all USEPA ambient air quality standards. The Conformity Rule of the Clean Air Act of 1977, as amended states that all federal actions must conform to appropriate State Implementation Plans. This rule took effect on January 31, 1994, and at present applies only to federal actions in nonattainment areas (i.e., those not meeting the National Ambient Air Quality Standards for the criteria pollutants in the Clean Air Act). Arkansas is an "attainment area," and is therefore exempt from the Conformity Rule of the CAA.

2.3.16 Noise

Noise levels in the study area are mild to moderate. Sources of noise include local traffic, businesses, and farming equipment from nearby farms.

2.3.17 Cultural Resources

The White River in Arkansas has supported human occupation and industry from the earliest human inhabitants in the area up to modern times. This is evidenced by numerous prehistoric and historic sites located along the banks of the river. The study area lies in “Arkansas Ozarks” section of the state as described in *A State Plan for the Conservation of Archeological Resources in Arkansas* (Davis 1982). The *State Plan* outlines 12 study units for the Arkansas Ozarks section. Study units range from the earliest known human occupation of North America to settled Mississippian prehistoric occupation of the region and the subsequent European settlement. An overview of the regions prehistory and history can be found in the S*tate Plan*, as well as in *Human Adaptation in the Ozark and Ouachita Mountains* (Sabo et al 1988) and numerous other documents, and do not need repeating here.

DRAFT

A review of the Arkansas Archeological Survey's archeological site database and reports of surveys done within the vicinity of the project area indicate that there no known sites recorded within the project area. The General Land Office maps were also consulted and there are no historic features noted on the map within the project area. There are also no historic structures within or near the project area.

The Arkansas State Historic Preservation Office (SHPO) was consulted by letter to determine if any known cultural resources existed in this area. Five archaeological sites (3IN137, 425, 553, 1348 and 1349) and two historic sites (IN0441 – White River Lock & Dam #1, and IN0620 – Lock Keeper's House) were identified within the vicinity of the project area. IN0620 has been determined not eligible for inclusion in the National Register of Historic Places, but the remaining sites are of undetermined eligibility.

The District Archaeologist determined the Area of Potential Effect (APE) for the Stillhouse Branch Project. Based on information received from SHPO, it was determined that no cultural resources sites have been recorded within the footprint of the APE. The State Historic Preservation Officer concurred, and determined that no know historic properties would be affected by project activities.

As part of scoping for NEPA and Section 106 compliance, letters were sent to the following Federally Recognized Tribes seeking recommendations or concurrence on the proposed APE boundary, as well as requesting information on properties within the APE which hold religious or cultural significance:

- Eastern Shawnee Tribe of Oklahoma,
- Quapaw Tribe of Indians,
- Shawnee Tribe, and
- Osage Nation.

No comments were received from any tribes as a result of this consultation.

2.3.18 Socioeconomic

Independence County is located in the north-central part of the state in an area that is largely agricultural. In 2010, 19.3 percent of persons in the county had incomes below the poverty level, compared with a statewide rate of 18.0 percent. Over 94.7 percent of the population is white; the African-American population constitutes 2.2 percent of the total population. The median age of the population statewide is 37 years, compared with a county median age of 39.

Median household income for the county is $34,625 in comparison with the state median household income of $39,267. The unemployment rate for Independence County in 2010 was 6.9 percent while the State of Arkansas unemployment rate was 7.8 percent. In 2010, the civilian labor force totaled 16,984 for the county and 1,367,999 for the state. The primary sources of employment in Independence County are: Education Services, Health Care, and Social Assistance (23.9 percent); Manufacturing (20.3 percent), and Retail Trade (12.8 percent).

2.3.19 Existing Environmental Laws, Regulations and Policies Applicable to Proposed Action

Table 3 lists the applicable federal, state and local environmental laws, regulations and policies that impact the study area, and specifies whether the proposed action is compliant with the items. Compliance categories used in this table were assigned based on the following definitions:

- *Full compliance* indicates that all requirements of the statute, executive order, or other policy and related regulations have been met for this stage of planning;
- *Partial compliance* indicates that some requirements of the statute, executive order, or other policy and regulations remain to be met but if applicable will be met before construction commences (e.g., water quality certification);
- *Noncompliance* specifies that none of the requirements have been met for this stage of planning; and lastly,
- *Not applicable* specifies that listed statutes, executive orders, or other policies are not applicable.

DRAFT

Table 2. Status of Project with Applicable Laws and Statutes

Item	Compliance*
Federal Statutes	
Archaeological and Historic Preservation Act, as amended (16 U.S.C. 469, et. seq.)	
Clean Air Act of 1977, as amended, (42 U.S.C. 7609, et. seq.)	Full
Clean Water Act, as amended, Federal Water Pollution Control Act (33 U.S.C. 1251, et. seq.)	Full
Coastal Zone Management Act (16 U.S.C. 1451, et. seq.)	N/A
Endangered Species Act (16 U.S.C. 1531, et. seq.)	Full
Estuary Protection Act (16 U.S.C. 1221, et. seq.)	N/A
Federal Water Project Recreation Act (16 U.S.C. 460-12, et. seq.)	Full
Fish and Wildlife Coordination Act (16 U.S.C. 661, et. seq.)	Full
Land and Water Conservation Fund Act (16 U.S.C. 460/ -460-11, et. seq.)	N/A
Marine Protection, Research and Sanctuary Act (33 U.S.C. 1401, et. seq.)	N/A
Migratory Bird Conservation Act (16 U.S.C. 715 – 715s)	Full
National Environmental Policy Act (42 U.S.C. 4321, et. seq.)	Full
National Historic Preservation Act (16 U.S.C. 470a, et. seq.)	Full
Rivers and Harbor Act (33 U.S.C. 401, et. seq.)	N/A
Watershed Protection and Flood Prevention Act (16 U.S.C. 1001, et. seq.)	N/A
Wild and Scenic Rivers Act (16 U.S.C. 1271, et. seq.)	Full
Executive Orders and Memorandums	
Executive Order 11988, Floodplain Management, May 24, 1977 (42 CFR 26951; May 25, 1977)	
Executive Order 11990, Protection of Wetlands, May 24, 1977 (42 CFR 26961; May 25, 1977)	Full
Council on Environmental Quality Memorandum of August 11, 1980: Analysis of Impacts on Prime or Unique Agricultural Lands in Implementing the National Environmental Policy Act.	Full
Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations, February 11, 1994.	Full
State and Local Policies	
Arkansas Water Quality Standards	Partial

DRAFT

2.4 DEVELOPMENT OF ALTERNATIVE PLANS

2.4.1 Initial Measures

Structural measures evaluated consist of:

1. Channel modification, which involves changing flow characteristics of the channel by clearing to reduce bank erosion,

2. Concrete box culverts or vertical concrete walls to stabilize the bank by channeling flows under roads,

3. Rip rap, which consists of placing rocks in water and on the bank to deter bank erosion,

4. Full-height bank paving consisting of a revetment of grouted rock or concrete pavement is cast in place on a prepared slope to provide necessary bank protection on the bank of the channel for the entire full height,

5. Gabion retaining walls that are vertically stacked stone-filled baskets tied together with wire designed and constructed to resist the lateral pressure of soil,

6. Bioengineering that involves using plants to stabilize soil with the roots binding the soil particles together to reduce erosion,

7. Bend-way weirs that consist of underwater rock dikes angled upstream to the flow to direct flow away from the banks;

8. Rerouting the stream to redirect flows by excavating a new route to lessen erosion of the banks; and

9. Longitudinal peaked stone protection (LPSTP), which is a stone structure consisting of well sorted, self-launching stone built on the toe of an eroding bank or slightly streamward.

The non-structural measure consisted of relocating the bridges and utilities. This is the no action or future without project condition.

DRAFT

2.4.2 Screening of Measures

The team evaluated measures based on meeting objectives and avoiding the constraint. If a measure met objectives, it was evaluated with respect to avoiding the constraint, and an (X) was placed in the appropriate column below (Table 4).

Table 3. Screening Measures for the Initial Array of Alternatives

Measure(s)	Objective 1 Reduce Flood Risk	Objective 2 Reduce Erosion	Constraint 1 Avoid Inhibiting Flows
1) Channel modification	X	X	X
2) Box culverts/Vertical concrete channel lining	X	X	
3) Rip rap	X	X	X
4) Full-height bank paving	X	X	X
5) Gabion retaining walls	X	X	X
6) Bioengineering	X	X	X
7) Bend-way weirs	X	X	
8) Reroute the stream	X	X	X
9) Longitudinal peaked stone protection	X	X	X

The team screened box culverts/vertical measure 2, concrete channel lining and measure 7, bend-way weirs out due to the ability to inhibit the flow of the stream. Remaining measures were analyzed and combined to form initial alternatives. Gabion retaining walls were combined with other measures (rip rap or LPSTP) to formulate alternatives.

2.5 ALTERNATIVE FORMULATION

The no action alternative (future without project) and four action alternatives with various means of protecting the bank from erosion. Initial alternatives are listed below: discussed below:

- *Alternative 1* is the no action alternative (future without project) and involves relocating utilities along with the River Road Bridge and pedestrian bridge.

- *Alternative 2* is bank stabilization with full bank height rip rap, gabion basket retaining walls, and fill material.

- *Alternative 3* is bank stabilization alternative with sloped bank grading (LPSTP) and gabion retaining walls.

- *Alternative 4* is bank stabilization with simple bio-engineering of banks.

- *Alternative 5* involves rerouting the stream to better flow through bridges using box culverts and/or longitudinal peaked toe protection (LPSTP).

3.0 EVALUATION AND COMPARISON OF ALTERANTIVES

3.1 Screening of Preliminary Alternatives

Alternative 4 and 5 were dropped from the study. Rerouting the stream (Alternative 5) would be difficult in this area due to the multiple bridges, utilities, and other structures adjacent to the channel. Bioengineering (Alternative 4) would provide a lower, less permanent level of protection and would also pose a threat of early failure due to the length of time required to establish adequate root systems.

3.2 Final Alternatives for Evaluation and Consideration

Remaining alternatives include Alternative 1 (no action), and Alternatives 2 and 3 that provide similar benefits using different designs. Alternatives 2 and 3 were both studied further to identify a least cost alternative.

3.2.1 Alternative 1: No Action (Future without Project)

Under the no action alternative, Batesville would relocate the River Road Bridge and pedestrian bridge. The alternative would also involve relocating utilities that are attached to the bridge and another a city road. The city would have do this to avoid failure of the River Road Bridge approach and city road which is used to access Riverside City Park and the Batesville High School. While this is considered the no action alternative, relocating these structures and facilities would take place without a Corps study and project and that is why it is still considered the no action or future without project condition.

3.2.2 Alternative 2: Full bank height Rip Rap:

Alternative 2 consists of grading existing banks to obtain a slope of 1.5H:1V and filling existing eroded areas along each bank to facilitate installation of a rip rap blanket along the bank. Gabion basket retaining walls will be required between the road and pedestrian bridges to protect the bank between these structures without restricting

stream width. Rip rap would be placed to ensure stability along the bank slopes up to an elevation of 258 feet. Rip rap and grading would be necessary on both banks from upstream of the existing River Road Bridge to the confluence of the White River for a total distance of 450 feet.

3.2.3 Alternative 3: Longitudinal Peaked Stone Toe Protection (Recommended Alternative)

Alternative 3 is the recommended plan and consists of bank grading and longitudinal peaked stone toe protection (LPSTP). The bank would be graded to a 1.5H:1V slope where possible. The LPSTP consists of stone placed at the bottom of the steep riverbank slope to provide bank protection, and would need to be at approximately 450 feet long. Gabion basket retaining walls will be required between the road and pedestrian bridges to protect the bank between these structures without restricting stream width. While this alternative does not provide as much protection as Alternative 2, similar projects using toe protection in the Little Rock District have been successful at protecting structures while providing a more natural, vegetated bank. Appendix B contains typical cross sections and versions of Alternatives 2 and 3. Figures represent variations of streambank protection that could take place under these two remaining alternatives.

3.2.4 Comparison of Alternatives

Table 4 below compares the no action alternative with alternatives 2 and 3. Alternative 3 is the least cost alternative and the recommended plan.

DRAFT

Table 4. Comparison of the No Action Alternative with Alternatives 2 and 3

Cost Item	No Action Alternative	Alternative 2	Alternative 3
Contract Cost		$759,000	$648,000
Engineering & Design		$65,000	$54,000
Operation and Maintenance (O&M) Cost	$62,000	$42,000	$36,000
LERRD		$0	$0
Project First Cost + Contingency	$ 1,547,000	$866,000	$738,000
Interest Rate	3.125%	3.125%	3.125%
Construction Period (years)	0.5	0.5	0.5
Interest Rate Monthly	0.257%	0.257%	0.257%
Economic Life	50	50	50
Interest During Construction	$10,000	$5,600	$4,800
Investment Cost	$1,557,000	$871,600	$742,800

3.2.5 Locally Preferred Plan

There is no locally preferred plan.

DRAFT

4.0 DESCRIPTION OF TENTATIVELY SELECTED PLAN

The Tentatively Selected Plan (TSP) is Alternative 3, which as noted above consists of bank grading and LPSTP to provide protection from further erosion. While Alternative 3 does not provide as much protection as Alternative 2, similar projects using toe protection in the Little Rock District have been successful at protecting structures while providing a more natural, vegetated bank, which is important since the project would be in a park setting.

Alternative 3, the least cost alternative, underwent refined design and cost estimates to arrive at a feasibility level cost that was Agency Technical Reviewed and certified on June 9, 2016. The certified feasibility level design and cost estimate is more expensive than preliminary plan versions. Estimated cost for Alternative 3 increased from $738,000 to $904,000. Since cost changes apply uniformly across all alternatives; Alternative 3 is still the least cost alternative.

5.0 DESIGN AND CONSTRUCTION CONSIDERATIONS

Appendix B contains the engineering design and construction data, and documents the engineering analysis and follows the format of Engineering Regulation 1110-2-1150. Included in Appendix B are the following: Engineering Plates, MCACES cost estimate and construction schedule, and the Cost and Schedule Risk Analysis.

For the recommended plan, the gabion gravity retaining walls were selected for use between the road and pedestrian bridges due to the limited channel width and short spans of the two bridges. It would not be possible to place riprap in these locations without dramatically reducing the channel width and capacity or creating a channel top width much wider than the existing abutments. Additionally, constriction in the channel downstream of the bridge would reduce flow capacity and increase velocities. Utilizing rip rap would have involved excavation and widening of the top bank which would have required removing the foundation of the pedestrian bridge and the road bridge. It would require additional costly to transition from the wider channel to the much narrower bridge. Gabion retaining walls in this area protect both structures without necessitating their alteration or adversely affecting the flow upstream and downstream.

The proposed bank stabilization was designed to stay within the existing channel geometry while protecting the structures that were endangered. The channel was laid out in a manner that was hydraulically functional while minimizing the need to remove or relocate other structures.

DRAFT

6.0 REAL ESTATE REQUIREMENTS

Appendix D contains the real estate plan.

The City provided deeds which show ownership errors in the legal descriptions and fail to show proof of ownership of the entire project area. It is currently assumed the project area is owned in fee by the City as there is a fully functioning and maintained public park on either bank of Stillhouse Branch along with a waste water treatment facility adjacent to the northeast boundary of the project. However, the City is providing a clear title for the entire project area before the project partnership agreement is executed with the U.S. Government.

In addition, there is sewer line in the project area which is being removed and capped off by the City prior to construction of this project. This line was scheduled to abandoned and removed in connection with water treatment plant update in 2015.

7.0 ENVIRONMENTAL CONSEQUENCES - FUTURE WITHOUT PROJECT AND FUTURE WITH PROJECT COMPARISON

Table 5 summarizes potential impacts to the physical, biological, cultural and socioeconomic environment of the area.

Table 5. Summary of Potential Effects of the Future without Project and Future with Project Scenarios

Resource	Alternative 1 No Action (future without project)	Alternative 2	Alternative 3 (Tentatively Selected Plan)
Land Use	Continued erosion of the bank will eventually necessitate the City of Batesville to relocate the River Road Bridge and/or the pedestrian bridge.	Same as Alternative 3	Land use would remain the same. The project area would be stabilized and no longer threaten city facilities. Erosion and resultant sedimentation in to the White River would be reduced or eliminated.
Water Resources	Continued scouring will increase turbidity in this portion of the White River.	Same as Alternative 3	Temporary construction related increase in turbidity will occur. Stabilization of the riverbank will decrease current scouring, which is currently causing higher levels of turbidity in the White River.

DRAFT

Table 5. Summary of Potential Effects of the Future without Project and Future with Project Scenarios

Resource	Alternative 1 No Action (future without project)	Alternative 2	Alternative 3 (Tentatively Selected Plan)
Cultural Resources	There would be no effect to historic or cultural resources.	Same as Alternative 1	Same as Alternative 1
Biological Resources	Continued scouring will prevent vegetation growth along the riverbank and destroy riparian habitat along Stillhouse Branch in the project area.	Same as Alternative 3	Construction of the recommended plan will provide a stable stream bank in the project area. Stabilization material could be used by aquatic species and provide habitat for terrestrial species inhabiting this riparian section of Stillhouse Branch. The reduction in erosion and sediment deposition in to the adjacent White River will benefit fish habitat.
HTRW	No impact to HTRW resources will occur.	Same as Alternative 3	No impact to HTRW resources will occur. Construction related best management practices will insure that no oils or fuels are spilled in the project area.
Air Quality	No impact to the air quality of the project area will occur.	Same as Alternative 3	Temporary construction related increase in emissions will occur. These emissions will be within EPA requirements and will be related to construction vehicles and equipment. No impairment to the project area air quality will occur.
Noise	No change in current noise levels will occur.	Same as Alternative 3	Temporary construction related increase in noise would occur due to construction vehicles and equipment.
Socioeconomic	No change in current socioeconomic conditions.	Same as Alternative 3	The proposed project will provide temporary job opportunities during the construction phase of the project.
Recreation	Continued scouring will result in the eventual loss of the pedestrian bridge in the park. Scouring will also result in additional sediment deposition into the White River, resulting in less angler success over time.	Same as Alternative 3	The proposed project will stabilize the shoreline and allow the existing pedestrian bridge to remain for park visitors.

DRAFT

Table 5. Summary of Potential Effects of the Future without Project and Future with Project Scenarios

Resource	Alternative 1 No Action (future without project)	Alternative 2	Alternative 3 (Tentatively Selected Plan)
Cumulative Effects	None	Same as Alternative 3	The recommended plan will have no cumulative effect when combined with any reasonably foreseeable past, present of future projects in the area.

DRAFT

7.1 Physical Environment

7.1.1 Land Use

The project area is in an existing city park, and the City of Batesville has invested significant resources to improve and maintain the park and will continue to operate it as such. Therefore, none of the alternatives will change the land use. The no action alternative would eventually result in the city having to relocate the River Road Bridge, a park pedestrian bridge, and city water and electric facilities. Alternative 2 and Alternative 3 (recommended plan) would eliminate the threats to city facilities, and negate the no action alternative.

7.1.2 Climate

There will be no effect on the climate in this area via implementation of any alternatives.

7.1.3 Topography, Physiography and Soils

There will be no effect on the topography, physiography or soils in the area by implementation of any alternatives.

7.2 Water Resources

As noted previously, the primary water source near the study area is the White River, which is immediately adjacent to the study area at the confluence of Stillhouse Branch. Stillhouse Branch is an intermittent stream that carries stormwater flows from Batesville. One wetland was identified upstream of the project area. Placement of fill material (quarry run stone) below the high water mark would occur on Stillhouse Branch with either action alternative. A Section 404(b)(1) was completed for both action alternatives (Appendix E). A Section 401 state water quality certification (Short Term Activity Authorization) will be acquired by the City of Batesville before project construction.

- **Alternative 1 – No action (future without project):** Under the no action alternative, erosion would continue along the lower reach of Stillhouse Branch, and would continue to threaten city facilities and add to sediment to the White River. Sedimentation may affect water quality and aquatic habitat. There would be no impacts to water quantity, groundwater or wetlands from this alternative.

- **Alternative 2 – Full bank height rip rap.** Alternative 2 would improve water quality and mitigate adverse impacts to aquatic habitat in the White River by reducing sedimentation from Stillhouse Branch. There would be a temporary increase in turbidity due to construction activities, but this would significantly decrease over time and cease after construction completed. Alternative 2 would not affect water quantity, groundwater or the wetlands upstream of project area.

- **Alternative 3 (recommended plan): Sloped banks with longitudinal peaked stone toe protection:** Same effects as Alternative 2.

7.3 Biological Resources

7.3.1 Vegetation

Vegetation in the project area is primarily grass up to the top bank of Stillhouse Branch and the White River. Very few trees remain, due to development of the area as a city park.

- **Alternative 1 – No action (future without project): A**lternative 1 would allow erosion to continue along Stillhouse Branch until the erosion necessitated relocation of River Road Bridge, Riverside Park pedestrian bridge and city utilities. Land in Riverside Park adjacent to Stillhouse Branch would continue to be lost, along with established vegetation.

- **Alternative 2: Full bank height rip rap.** Implementation of this alternative would prevent further erosion along Stillhouse Branch, which would end loss of land and vegetation (grasses) along the bank.

- **Alternative 3 (recommended plan): Sloped banks with longitudinal peaked stone toe protection:** Same effects as Alternative 2.

7.3.2 Fish and Wildlife

- **Alternative 1 – No action (future without project):** Continued erosion along Stillhouse Branch may have minor effects on fish, mussels and other aquatic organisms in the White River; however the effects are likely unmeasurable due to the size of the White River at the confluence with Stillhouse Branch, together with cumulative effects of sedimentation from upstream sources on the White River. As an intermittent stream, Stillhouse Branch is unlikely to provide habitat for aquatic species dependent on permanent water. Alternative 1 would not impact species such as gray squirrel, cottontail rabbit, beaver, and other small mammals.

- **Alternative 2 – Full bank height rip rap.** Implementation Alternative 2 would halt erosion along Stillhouse Branch; thus providing some, but likely unmeasurable, benefits to aquatic species in the White River. Alternative 2 would not affect other species present, including amphibians, reptiles, and small mammals.

DRAFT

- **Alternative 3 (recommended plan) – Sloped banks with longitudinal peaked stone toe protection:** Same effects as Alternative 2.

7.3.3 Threatened and Endangered Species

According to a planning assistance email received from the USFWS on 22 June 2015, the Service has determined that no federally listed species or trust resource concerns are known to occur within the proposed project site.

7.3.4 Species of Special Conservation Concern

The Arkansas Natural Heritage Commission species database did not list any species of conservation concern for Stillhouse Branch. Their database does list the following species as occurring in the White River in the proximity of Lock & Dam No. 1, which is immediately downstream of the Stillhouse Branch confluence with the White River (see Table 1 in Section 2 for federal and state rankings).

- *Orconectes neglectus chaenodactylus*.....Gap ringed crayfish
- *Ammocrypta clara*……..Western sand darter
- *Anguilla rostrata*……American eel
- *Cryptobranchus alleganiensis bishopi*……..…Ozark Hellbender
- *Moxostoma anisurum*……...Silver redhorse
- *Mugil cephalus*……..Striped mullet
- *Notropis ozarcanus*……..…Ozark shiner
- *Percina phoxocephala*……..Slenderhead darter
- *Percina uranidea*……..……Stargazing darter

The above species prefer medium sized streams with pool-riffle habitat complexes and gravel, cobble or boulder habitats, which do not occur in the study area. It is possible that some of these species occur in the White River adjacent to the study area.

- **Alternative 1 – No action (future without project):** Continued bank erosion in Stillhouse will add sediment to the White River above Lock and Dam No. 1. While likely minimal by itself, this sediment when added to other sources upstream on the White River, could adversely affect habitat for species needing relatively clean gravel substrates. Alternative 1 would have minimal if any impacts to species downstream of Lock and Dam No. 1 given that the dam prevents sediment from migrating downstream (except during high water).

- **Alternative 2 – Full bank height rip rap.** Construction of bank sloping and placement of rip rap may temporarily increase sediment input to the White River. Erosion control measures implemented during construction would help to minimize these inputs. Construction impacts would be temporary, and when finished, this alternative would reduce sedimentation in the White River resulting in a positive impact to aquatic habitats. Alternative 2 would likely have minimal if

DRAFT

any impacts to species downstream of Lock and Dam No. 1, as the dam prevents sediment from migrating downstream (except during high water).

- **Alternative 3 (recommended plan) – Sloped banks with longitudinal peaked stone toe protection:** Same effects as Alternative 2.

7.4 Hazardous, Toxic and Radioactive Waste

A review of the Arkansas Department of Environmental Quality EnviroView website indicated that there are no known hazardous, toxic or radioactive wastes in or near the project site. During construction, best management practices would minimize potential oil or fuel spills or leakages from heavy equipment; overall, there would no significant impacts related to hazardous, toxic or radioactive waste.

7.5 Air Quality

- **Alternative 1 – No action (future without project).** With the exception of minor increases in emissions and dust from heavy equipment during construction (relocation of roads), Alternative 1 would not affect air quality in the project area.

- **Alternative 2 – Full bank height rip rap.** As is the case with Alternative 1, this plan would have temporary minimal impact on existing air quality during construction.

- **Alternative 3 (recommended plan) – Sloped banks with longitudinal peaked stone toe protection.** Same effects as Alternatives 1 and 2.

7.6 Noise

- **Alternative 1: No action (future without project).** With the exception of noise related to heavy equipment operation during road relocation, no action alternative would have no impact to existing noise levels.

- **Alternative 2: Full bank height rip rap.** Same as Alternative 1.

- **Alternative 3 (recommended plan): Sloped banks with longitudinal peaked stone toe protection:** Same effects as Alternative 2.

DRAFT

7.7 Cultural Resources

As discussed in Section 2 (Existing Conditions for cultural resources), there determined that no cultural resources sites in the footprint of the project area. In addition, as part of NEPA scoping and Section 106 compliance, letters were sent to federally recognized tribes seeking recommendations or concurrence on the proposed project site, as well as requesting information on properties within the project area, which hold religious or cultural significance, and the District did not comment from the tribes.

7.8 Socioeconomic Resources

Each alternative including the no action scenario would provide temporary direct, indirect and induced jobs and income during the construction phase.

7.9 Recreational Resources

The no action alternative could impact fishing in the White River by continued bank erosion causing an increase in turbidity and habitat degradation. Alternatives 2 and 3 (recommended plan) would stabilize the shoreline of Stillhouse Branch, which would result in reduced turbidity and sediment deposition in to the White River. This would have a positive impact to aquatic habitat and could improve angling opportunity in the area.

7.10 Cumulative Impacts

This section considers cumulative impacts of implementing the recommended plan and any reasonably foreseeable future actions. Cumulative impacts on the environment result from the incremental impact of an action when added to other past, present, and reasonably foreseeable future actions, regardless of what agency (federal or non-federal) or person undertakes such other actions. Cumulative impacts can result from individually minor, but collectively significant, actions taking place over a period of time (40 CFR 1508.7).

Resource impacts of the recommended plan are restricted to a very small geographic area, as described in Section 7.2 Environmental Setting of the Study Area (page 16). The study area consists of an 800 foot section of Stillhouse Branch immediately above the confluence with the White River. Also included is that portion of the White River immediately below the confluence of Stillhouse Branch (upstream of Lock and Dam No. 1). For cumulative impact analysis, the geographic area is extended upstream in Stillhouse Branch for approximately 0.40 miles to the dam impounding the 2-acre city lake. Additionally, the area is extended upstream on the White River for approximately one mile in order to include recent past actions.

DRAFT

Past actions in the cumulative effects geographic area include two Federal CAP Section 14 projects constructed within one mile upstream of Lock and Dam No. 1 on the White River (Batesville Wastewater Treatment Plant Bank Stabilization, and Batesville Southside Water Treatment Plant Bank Stabilization) since 2010. Additionally, there have been sporadic attempts by the City of Batesville in recent years to stabilize the eroding banks along Stillhouse Branch in an attempt to protect the bridges and municipal utilities from erosion and eventual failure.

No future actions have been identified in the cumulative impact analysis area. Communication with the Batesville City Engineer, and Director of Parks and Recreation indicated no future construction plans have been identified in this area. Similarly, agency coordination conducted as part of scoping did not reveal any future activities.

Insignificant adverse impacts to water quality (turbidity and sedimentation), air quality and noise pollution have been identified and discussed in previous sections. These impacts are entirely construction related, thus only lasting a few weeks. Positive impacts to biological, socioeconomic and recreation resources have also been identified and discussed in previous sections (see Table 5, pages 25-26). These resource areas are evaluated here for cumulative impacts.

As discussed in Effects on Significant Resources (Section 8.0), minor, construction related sediment deposition in the White River immediately upstream of Lock and Dam No. 1 is anticipated with implementation of the recommended plan. While there may be initial negative effects from increased sedimentation due to construction, erosion control measures implemented during construction will abate most of the impact. Long-term, the erosion control afforded by implementing the recommended alternative would result in positive benefits by eliminating a source of sediment. Both Section 14 CAP projects previously constructed involved streambank erosion control that introduced minimal, construction related sediment to the White River. Environmental assessments completed for both projects determined the actions would have only minor, localized construction related impacts on the environment. Further, the District determined that water quality in the immediate area would benefit long-term as a result of the elimination in erosion due to the bank stabilization projects. Similarly, erosion control attempts by the City of Batesville likely resulted in minor beneficial effects on water quality by reducing active scouring, albeit for a short time before the flow in Stillhouse Branch began eroding around the repairs. Cumulatively, past and present actions (no foreseeable future actions) would result in net positive benefits to water quality by reducing sedimentation in the White River.

None of the past or present actions (no foreseeable future actions) result in any long-term adverse impact to air quality or noise pollution. Each action is temporary, and impacts are limited to construction.

DRAFT

Positive impacts to biological, socioeconomic and recreation resources identified in Table 5 were also recognized in the two Section 14 CAP projects. Cumulatively, there would continue to be positive impacts to these resources. Biological resources benefit from a cumulative reduction in sediment that can affect aquatic habitats for many species. Positive benefits to aquatic habitat can translate into improved fishing conditions for anglers, thus improving recreation opportunities. Similarly, less sedimentation, and thus turbidity, results in cleaner water that is appealing to people that enjoy recreating on the White River.

Socioeconomic benefits from past and present projects are positive. However, since these benefits are restricted to temporary employment from construction activities related to the projects, there would be no cumulative impact to socioeconomic conditions.

Based on this cumulative impact analysis, the recommended action, when considered with past and reasonably foreseeable future actions, would not result in any cumulative impacts to the environment.

7.11 Conclusion

To protect city facilities adjacent to Stillhouse Branch and reduce sedimentation in the White River, some form of bank protection is required. Results of this Environmental Assessment indicate that the recommended plan would result in minimal impacts to the human environment, none of which are considered to be significant; and therefore, preparation of an Environmental Impact Statement as specified by NEPA is not necessary.

DRAFT

8.0 PLAN IMPLEMENTATION REQUIREMENTS

Completion of this report by the Little Rock District Engineer must occur before the project can be constructed. The report must go out for public review for 30 days, and the Southwest Division Commander must approve the report. After approval, the feasibility phase ends, and the project moves to the design and implementation phase. Steps in this phase include:

1) Execution of a Project Partnership Agreement (PPA) - The City of Batesville must declare their intent in a letter (see Appendix A) to enter into a PPA for the design and construction of the project. This letter must state they are willing and have the authority to sign a PPA. The PPA defines the obligations of the federal government and the sponsor in the construction, maintenance, and cost sharing of the project.

2) Preparation of the plans and specifications and land acquisition - The Corps must complete plans and specifications for project construction, and project lands, easements, rights-of-way, access routes, relocations, and disposal areas must be acquired by the sponsor, and rights-of-entry must be provided to the Corps.

3) Permits for Clean Water Act Section 404 and 401 and National Environmental Policy Act (NEPA) compliance must be obtained.

4) Construction contracts must be advertised and awarded; and

5) Project construction begins.

With respect to cost apportionment, the non-federal sponsor is responsible for a minimum of 35 percent of total project costs to a maximum of 50 percent during the design and implementation phase. In accordance with the terms of the Project Partnership Agreement, the non-federal sponsor must pay 5 percent of total project costs in cash and provide all lands, easements, rights-of-way, relocations, and disposal areas (LERRDs). The City will not receive credit for the value of LERRDs because the city owns the applicable land; however, there are lands, easements, and rights-of-way requirements that must be provided by the City to construct the project. If the value of the non-federal sponsor's contribution is less than 35 percent of total project costs, the non-federal sponsor must pay additional cash contribution so that its total contribution equals 35 percent of total project costs. In addition, the federal project limit is $5,000,000. Any costs above the federal expenditure limit is a non-federal cost. The total project cost of Alternative 3 is $937,000, of which $328,000 is the sponsor’s share. The 5 percent cash contribution would be $46,900 (Table 5).

Table 5. Summary of Federal and Non-Federal Cost for Recommended Plan

Feature	Federal Cost	Non-Federal Cost	Total Cost
LERRD*	$0.00*	$0.00*	$0.00*
Design &Implementation Cost			
Construction Contract	$762,000	$0.00	$762,000
Engineering & Design	$122,000	$0.00	$122,000
Construction Management.	$53,000	$0.00	$53,000
Totals	$937,000	$0.00	$937,000
Cash Contribution (5 percent)	($46,900)	$ 46,900	$0.00
Additional Contribution (30 percent)	($281,100)	$281,100	$0.00
Final Cost Allocation	$609,000	$328,000	$937,000
Cost Share Percentages	65%	35%	100%

*Any LERRDs crediting for any administrative costs will be updated during PED and included in the PPA

8.1 Federal Responsibilities

The Corps would be responsible for preparing plans and specification as well as constructing the bank stabilization project. The sponsor would be responsible for right of way and easements and disposal lands. Project construction is contingent upon the sponsor and the Corps of Engineers signing a Project Partnership Agreement.

8.2 Non-Federal Responsibilities

Prior to implementation, the non-federal sponsor must:

1) Provide without cost to the United States all lands, easements, rights-of-way, access routes, relocations, and disposal areas necessary for project construction.

2) In accordance with the Water Resources Development Act of 1986 (PL 99-662), provide a cash contribution equal to at least 5 percent of the total project cost (see Table 9).

3) Provide additional cash contribution such that the total non-Federal share is equal to 35 percent of the project cost (see Table 9).

4) Hold and save the United States free from damages caused by the construction, operation, and maintenance of the project, excepting damages due to the fault or negligence of the United States or its contractors.

DRAFT

5) Maintain and operate the project after completion without cost to the United States.

6) Assume full responsibility for all project costs in excess of the Federal cost limitation of $5,000,000.

7) Execute a Project Partnership Agreement incorporating all required measures of local cooperation.

9.0 PERMITS

Section 404 and Section 10 permits will be obtained prior to start of construction.

10.0 VIEW OF NON-FEDERAL SPONSOR, LETTER OF SUPPORT

Appendix A contains the City of Batesville's Letter of Intent, dated December 12, 2014, stating their willingness and their ability to cost share in implementing the project.

11.0 COORDINATION

11.1 Public Views and Responses

The Arkansas Historic Preservation Program (AHPP) identified five archeological sites for assessment. The District Archeologist has determined that these sites are not in the area of potential effect, and AHPP concurred with the determination. The U.S. Fish and Wildlife Service reviewed the study area and determined no threatened or endangered species or trust resource concerns occur in the vicinity of the project area. Lastly, the Arkansas Natural Heritage Commission reviewed the project description and study area and determined no species of conservation concern occur in the project area. Any impacts to species of conservation concern in the White River would likely be beneficial from reduced erosion. Other agencies contacted either expressed support or had no comment on the proposed project (Appendix C displays comment letters).

11.2 Agency Responses

The District included the following tribes, agencies, municipalities and individuals in coordination efforts:

1) Dr. Andra Hunter, Director, Tribal Historic Preservation Office, The Osage Nation, P.O. Box 779, Pawhuska, OK 74056.

DRAFT

2) Evertt Bandy, Tribal Historic Preservation Officer, The Quapaw Tribe of Indians, P.O. Box 765, Quapaw, OK 74363

3) Robin Dushane, Tribal Historic Preservation Office, Eastern Shawnee Tribe of Oklahoma, P.O. Box 350, Senica, MO 64865.

4) Kim Jumper, Tribal Historic Perservation Office, Shawnee Tribe, P.O. Box 189, Miami, OK 74354

5) Michael Sullivan, State Conservationist, U.S. Department of Agriculture, Natural Resources Conservation Service, 700 West Capitol Ave., Room 3416, Federal Building, Little Rock, AR 72201

6) Michael P. Jansky, Regional Environmental Review Coordinator, U.S. Environmental Protection Agency, Region VI, 6EN-XP, 1445 Ross Avenue, Suite 1200, Dallas, TX 75202-2733

7) Jeanene Peckham, NEPA Specialist, U.S. Environmental Protection Agency, Region 6, FRC 800 North Loop 288, Denton, TX 76209-3698

8) Tony Robinson, Region 6 Administrator, FEMA, Region VI, Federal Regional Center, 800 North Loop 288, Denton, TX 76210

9) Cindy Dohner, Regional Director, U.S. Fish and Wildlife Service, 1875 Century Boulevard,
10) Atlanta, GA 30345

11) Melvin Tobin, Field Supervisor, U.S. Fish and Wildlife Service, Arkansas Ecological Services Field Office, 110 S. Amity Road, Suite 300, Conway, AR 72032

12) Reed Green, Hydrologist, U.S. Geological Survey, 401 Hardin Road, Little Rock, AR 72211

13) David Friewald, Director, U.S. Geological Survey, 401 Hardin Road, Little Rock, AR 72211

14) Steven Spencer, Regional Environmental Officer, U.S. Department of the Interior, Office of Environmental Policy and Compliance, 1001 Indian School Road NW, Suite 348, Albuquerque, NM 87104

15) Loretta Sutton, Program Analyst, Natural Resources Management Team, U.S. Department of the Interior, Office of Environmental Policy and Compliance, 1849 C Street NW, (MS 2342), Washington, DC 20240

16) Cam Sholly, Regional Director, National Park Service, Midwest Region, Midwest Regional Office, 601 Riverfront Drive, Omaha, NE 68102

DRAFT

17) Becky Keogh, Director, Arkansas Dept of Environmental Quality, 5301Northshore Drive, North Little Rock, AR 72218

18) Tracy Copeland, Arkansas State Clearing House, Department of Finance and Administration, 1515 West 7th Street, Little Rock, AR 72203

19) Doug Akin, Arkansas Forestry Commission, 3821 W. Roosevelt Road, Little Rock, AR 72204

20) Mike Knoedl, Director, Arkansas Game and Fish Commission, 2 Natural Resources Drive, Little Rock, AR 72205

21) Jeremy Risely, Fisheries Supervisor, Arkansas Game and Fish Commission, 201 East 5th Street, Mountain Home, AR 72653

22) Nathaniel Smith, MD, Director, Department of Health, 4815 West Markham, Little Rock, AR 72205

23) Chris Colclasure, Director, Arkansas Natural Heritage Commission, 1500 Tower Building, 323 Center Street, Little Rock, AR 72201

24) Scott Bennett, Director, Arkansas Highway and Transportation Department, 10324 Interstate 30, Little Rock, AR 72203

25) Richard W. Davies, Executive Director, Arkansas Department of Parks and Tourism, #1 Capitol Mall, Rm 4A-900, Little Rock, AR 72201

26) Matt McNair, Arkansas Department of Parks and Tourism, #1 Capitol Mall, Rm 4A-900, Little Rock, AR 72201

27) Frances McSwain, Director, Arkansas Historic Preservation Program, 1500 Tower Building, 323 Center Street, Little Rock, AR 72201

28) Randy Young, Executive Director, Arkansas Natural Resources Commission, 101 E. Capitol, Suite 350, Little Rock, AR 72201

29) Edward Swaim, Manager, Arkansas Natural Resources Commission, Water Resources Division, 101 E. Capitol, Suite 350, Little Rock, AR 72201

30) Rick Elumbaugh, Mayor, City of Batesville, Batesville City Hall, 500 East Main, Batesville, AR 72501

31) Damon Johnson, Batesville City Engineer, City of Batesville, Batesville City Hall, 500 East Main, Batesville, AR 72501

32) Robert Griffin, Independence County Judge, Independence County Courthouse, 192 East Main Street, Batesville, AR 72501

DRAFT

33) Scott Simon, State Director, The Nature Conservancy, Arkansas Field Office, 601 North University Avenue, Little Rock, AR 72203

12.0 LIST OF PREPARERS

1) Aaron Cole, Design Engineer, Engineering & Construction, U.S. Army Corps of Engineers, Little Rock District

2) Josh Hendricks, H&H Engineer, Engineering & Construction, U.S. Army Corps of Engineers, Little Rock District

3) Craig Hilburn, Biologist, Environmental Branch, Planning and Environmental Division, U.S. Army Corps of Engineers, Little Rock District

4) Tacy Jensen, Lead Planner, Planning Branch, Planning and Environmental Division, U.S. Army Corps of Engineers, Little Rock District

5) Eric Krebs, H&H Engineer, Engineering & Construction, U.S. Army Corps of Engineers, Little Rock District

6) Stuart Norvell, Economist, Planning Branch, Planning and Environmental Division, U.S. Army Corps of Engineers, Little Rock District

7) Brian Raley, Acquisition, Planning & Control Branch, Real Estate Division, U.S. Army Corps of Engineers, Little Rock District

8) Martin Regner, Cost Engineer, Engineering & Construction, U.S. Army Corps of Engineers, Little Rock District

9) Cynthia Thomas, District Archeologist, Environmental Branch, Planning and Environmental Division, U.S. Army Corps of Engineers, Little Rock District

10) Russell Wallace, Economist, Planning Branch, Planning and Environmental Division, U.S. Army Corps of Engineers, Little Rock District

DRAFT

13.0 REFERENCES

ADEQ 2015. Arkansas Department of Environmental Quality. EnviroView Interactive GIS Web Mapping App. Website: https://www.adeq.state.ar.us/home/about/website/apps.aspx (Accessed December 1, 2015).

Albin, D.R., Hines, M.S., and Stephens, J.W., 1967, Water resources of Jackson and Independence Counties, Arkansas: U.S. Geological Survey Water-Supply Paper 1839–G, 29 p.

Carter, L. M., J. W. Jones, L. Berry, V. Burkett, J. F. Murley, J. Obeysekera, P. J. Schramm, and D. Wear, 2014: Ch. 17: Southeast and the Caribbean. *Climate Change Impacts in the United States: The Third National Climate Assessment*, J. M. Melillo, Terese (T.C.) Richmond, and G. W. Yohe, Eds., U.S. Global Change Research Program, 396-417. doi:10.7930/J0N-P22CB.

Hoover, J.J., K.J. Kilgore, C.E. Murphy, and K.A. Boysen, 2009. White River Comprehensive Report. U.S. Army Engineer Research and Development Center. Waterways Experiment Station. Vicksburg, MS. 360 pp.

Kresse, T.M., Hays, P.D., Merriman, K.R., Gillip, J.A., Fugitt, D.T., Spellman, J.L., Nottmeier, A.M., Westerman, D.A., Blackstock, J.M., and Battreal, J.L., 2014, Aquifers of Arkansas—Protection, management, and hydrologic and geochemical characteristics of groundwater resources in Arkansas: U.S. Geological Survey Scientific Investigations Report 2014–5149, 334 p., *http://dx.doi.org/10.3133/sir20145149*

USDA, 2015. U.S. Department of Agriculture Web Soil Survey. Internet Site: http://websoilsurvey.sc.egov.usda.gov/App/WebSoilSurvey.aspx (Accessed 11/24/15).

Weatherbase, 2016.

DRAFT

14.0 RECOMMENDATION

Serious bank erosion at Stillhouse Branch is occurring along the banks of Stillhouse Branch, threatening the River Road Bridge, pedestrian bridge, utilities and public facilities. The bridges are in imminent danger of failure and the local sponsor, City of Batesville, will be forced to relocate the bridges, utilities and Chaney Drive Road.

The recommended plan is the least cost alternative, Alternative 3 consisting of gabion retaining walls adjacent to the bridges and LPSTP at the toe of the banks. Total project cost of Alternative 3 was estimated to be $ 937,000. The benefit-to-cost ratio is the ratio of the No Action Alternative cost to the recommended plan of 1.5. Total federal cost is estimated to be $609,000 and total non-federal cost is estimated to be $328,000.

The City of Batesville is willing and financially capable of cost sharing in the project construction. The Corps of Engineers finds that the recommended plan will have no significant adverse environmental impacts, and an Environmental Impact Statement according to the National Environmental Policy Act of 1969 (PL 91-190) is not required. Therefore, the Corps of Engineers recommends that the selected plan, as generally described in this report, be approved for implementation under the authority of Section 14 of the Flood Control Act of 1946, as amended.

Date:_____ _____

ROBERT G. DIXON
Colonel, EN
Commanding

DRAFT

Appendix A: Sponsor's Letter of Intent

CITY OF BATESVILLE

500 East Main

BATESVILLE, ARKANSAS 72501

Phone 870-698-2400

Fax 870-698-2406

www.cityofbatesville.com

RICK ELUMBAUGH, MAYOR
DENISE JOHNSTON, CLERK
LINDSEY CASTLEBERRY, ATTORNEY

COUNCIL
CHRIS BELLER
THOMAS E. BRYANT
MARGARET HENLEY
PAIGE HUBBARD
FRED KRUG
DOUGLAS MATTHEWS
CHRIS POOLE
DAVID SHETRON

December 12, 2014

Courtney W. Paul
Colonel, U.S. Army Corps of Engineers
Little Rock District
P.O. Box 867
Little Rock, AR 72203-0867

Dear Colonel Paul:

This letter is to reaffirm our interest in getting assistance from the U.S. Army Corps of Engineers under Section 14 of the Flood Control Act of 1946, as amended, to investigate and provide Emergency Streambank Protection to the bank erosion problems along Stillhouse Branch in Batesville, AR. We understand the Section 14 authority is part of the Corps' Continuing Authorities Program (CAP).

Our problems consist of erosion along the banks of Stillhouse branch at the confluence of the White River. There is a small roadway bridge that was built in the 1960's that is misaligned with the channel. During high flow events high velocity flows are damaging the banks above and below the bridge. An existing pedestrian bridge, electrical service panel, multiple water and sewer lines are all potentially impacted.

We understand that Section 14 projects require project cost sharing from the non-Federal sponsor for the feasibility and design and implementation phases. Currently, this is 65% federal and 35% non-federal for the design and implementation phase. We are willing and have the financial capability to execute a Project Partnership Agreement for the project. We would acquire all the lands, easements, rights-of-way, relocations of utilities, and disposal areas necessary for the construction of the project. We would also assume all responsibility for operation and maintenance of the project.

If you need additional information regarding this request, please contact Damon Johnson at (870)698-2400 or cityengineer@cityofbatesville.com. Your assistance is greatly appreciated.

Sincerely,

Damon Johnson, P.E.
Batesville City Engineer

Appendix B
Engineering Appendix

Table of Contents

Attachments
Attachment A – Engineering Plates
Attachment B - Cost Analysis, Construction Schedule, and MCACES Cost Estimate
Attachment C - Cost and Schedule Risk Analysis

APPENDIX B- ENGINEERING APPENDIX

1 General

This appendix documents the engineering analysis and follows the format in appendix C of Engineering Regulation 1110-2-1150. Included with this appendix are Engineering Plates (Attachment A) the Micro-Computer Aided Cost Estimating System (MCACES) cost estimate and construction schedule (included in Attachment B) and the Cost and Schedule Risk Analysis (Attachment C).

Five alternatives were initially developed and considered in this study. The No Action Alternative and four action alternatives with various means of protecting the bank from erosion. The initial alternatives were:

Alternative 1: No Action or Future Without Project. This alternative will consist of no action being taken to protect the banks of Stillhouse Branch. This exposure will lead to the need for relocating the road bridge and pedestrian bridge.

Alternative 2: Full bank height rip rap. Bank stabilization alternative with full bank height rip rap, gabion basket retaining walls, and fill material.

Alternative 3: Longitudinal peaked stone toe protection (LPSTP). Bank stabilization alternative with sloped bank grading and longitudinal peaked stone toe protection (LPSTP) and gabion basket retaining walls.

Alternative 4: Bendway Weirs. Bank stabilization with Bendway Weirs and simple bio-engineering of banks.

Alternative 5: Reroute stream. Reroute stream to better flow through bridges using bendway weirs and longitudinal peaked stone toe protection (LPSTP).

Other schemes and alternatives were considered but were screened out of the study, including alternatives 4 and 5. The use of bendway weirs is not recommended in a small stream due to the limited channel bottom width and additional bank protection needed at the outside bends of the stream, which could drastically inhibit the flow of the stream. Re-routing the stream would be difficult in this area with multiple bridges, utilities, and other structures adjacent to the channel. Bioengineering methods provide a lower, less permanent level of protection and also pose the threat of early failure due to the length of time required to establish an adequate root system.

The remaining alternatives 2 and 3 provide similar benefits using different designs. Alternatives 2 And 3 were both studied further to discover the least cost alternative.

2 Hydrology and Hydraulics (H&H)

2.1 Hydraulic Analysis

The computer program HEC-RAS 5.0.0 (Feb. 2016) was used to develop an existing conditions velocity profile for the 0.2, 1, 2, 4, 10, 20, and 50 percent annual exceedence probability (AEP) events. Table 1 shows the velocities for each AEP at three particular cross-sections. Cross-section 413 is the immediate upstream cross-section from the Chaney Rd. Bridge, cross-section 359 is the immediate downstream cross-section from the Chaney Rd. Bridge, and cross-section 317 is the immediate downstream cross-section of cross-section 359.

The geometry of the existing conveyance system was created using HEC-GeoRAS 10.1 for ArcGIS 10.1. Elevation data was obtained from existing LiDAR data (Dec. 2010) and physical features such as stream centerline, bank lines, and the Chaney Rd. Bridge were digitized using in-house aerial photography.

2.2 Hydrologic Analysis

Flow data was obtained through the USGS StreamStats user interface (V3.0). Engineering judgment was used to determine that the upper limit of the peak flows should be used due to the urbanization of the drainage basin. The peak flows for each AEP can be found in Table 1.

Due to the White River basin size and travel times, it was determined that there was little to no coincidence between the White River and Stillhouse Branch. Therefore, the water surface elevation of the White River at Batesville when flowing at 50,000 cfs (the maximum targeted flow under controlled conditions) (251.70 ft. NGVD29) and the water surface elevation of the White River during a 50% AEP event (253.32 ft. NGVD29) were used as downstream boundary conditions on two separate model runs. These boundary conditions were found to produce similar velocity profiles at the project area. Pertinent flow data was obtained using the USGS Gage Data sheet for the White River gage at Batesville (USGS Station No. 07061000) and existing USACE-derived rating curves.

	AEP	50%	20%	10%	4%	2%	1%	0.2%
	CFS	955	1570	2010	2600	3090	3560	4870
X-Section	412.8374	4.08	6.47	7.87	9.13	9.92	10.41	9.68
	BRIDGE							
	359.1264	3.37	5.52	6.88	8.00	8.72	8.98	9.89
	316.7861	3.62	6.11	8.12	10.81	12.33	13.77	15.05

TABLE 1. Velocities in ft/sec

= minimal transport =significant transport = full-on erosion

2.3 H&H Analysis Results

Soil composition for the immediate study area was determined to be alluvium composed of finer particles such as clay, silt, and sand. Using the Hjulstrom's Diagram found in Figure 1, it was determined

that bank material begins significant transport when Stillhouse branch is flowing with a velocity of 6.5 feet/second and full-on erosion begins to occur at a velocity of 8.5 feet/second.

Correlating this data to the model results, it was determined that in any given year, there is a 20% chance (20% AEP ~ 1600 cfs) of significant transport of bank material and a 4% chance (4% AEP ~ 2600 cfs) of full-on erosion at the project location.

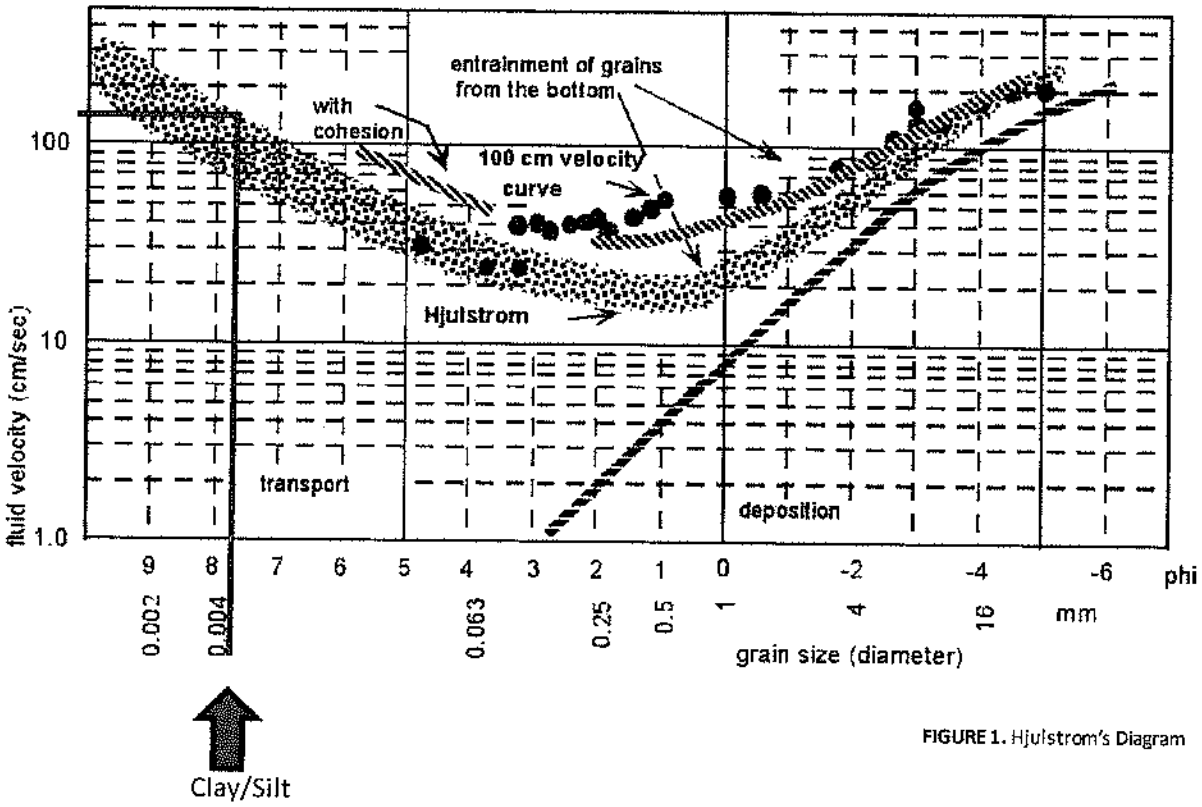


FIGURE 1. Hjulstrom's Diagram

Along with flow characteristics of the study area, the information obtained from this model was used in determining appropriate stone gradation. Based on existing LiDAR data for this area, the majority of erosion occurs at an elevation of 258 and below. At this elevation, the channel dimensions should be as follows to adequately convey channel flow: Bottom width: 20 feet; top width: varied but 50 feet minimum where possible (this may not be possible where gabions are used in areas with multiple existing obstacles). Maximum flow velocity was determined to be approximately 15 feet/second, which requires Grade C stone with a median diameter of 7-11 inches for slope stability per USACE EM 1110-2-1601 and will be used for all longitudinal peak stone toe protection (LPSTP) sections. Gabions will be filled with a smaller stone as specified by the gabion basket manufacturer. LPSTP will have a bottom width of a minimum of 9 feet and height of 3 feet to provide proper bank protection and be embedded approximately 3 feet into the toe of the bank.

3 Surveying, Mapping, and Other Geospatial Data Requirements

Terrain data used for this study was collected using Light Detection and Ranging (LiDAR). This data was collected in 2010 with the Leica ALS-40 system by a USACE contractor. Vertical datum for LiDAR elevations is NAVD 88. This data was imported into ArcGIS to produce contours for Bentley InRoads software. This information combined with aerial photography was utilized to layout, analyze, and compute quantities for the channel and associated work. There are no existing river gages on Stillhouse Branch.

A more recent and comprehensive topographic survey will be required in order to develop plans and specifications. This survey will provide topographic features, boundary lines, easements, structures, utilities, streets and railways, etc.

4 Geotechnical

4.1 General

No existing geotechnical borings were available for this study. The design coordinator and hydraulic engineer reviewed soil maps and performed a visual inspection of the existing conditions of the channel bottom and side slope to assess the soil conditions in the project area. The primary soils in the area are silty loam and sandy loam with shallow depths to bedrock. While bedrock is not visible at the bottom of Stillhouse Branch, the predominant soil types identified in NRCS soil maps suggest a depth of bedrock at 30-40". It is reasonable to believe that some amount of rock excavation will be required to place the bottom course of gabion baskets. This soil type is appropriate for the selected alternative's project features. Additional geotechnical investigation in the areas where gabion retaining walls will be installed will be performed during design. Borings will need to be obtained and allowable bearing pressure and slope stability will need to be determined.

4.2 Gabion Retaining Walls

The contact pressure on a flexible gabion footing is not distributed in a planar fashion, but decreases from a maximum at the point of application of the resultant to lesser values at the edges of the footing. The pressure at the toe of a gabion wall is, therefore, generally less than for a rigid wall.

It may be determined, through an investigation and stability analysis, that additional stability of the gabion wall may be required to achieve acceptable factors of safety for sliding. One option to pursue prior to enlarging the gabion wall cross section for additional stability is to place the gabion gravity retaining wall on a 6 – 10 degree batter towards the retained slope. This will require the founding soils to graded and compacted to accommodate for the specified wall batter.

Gabion gravity retaining walls may be placed or keyed in below sub grade to prevent scour and wave action from undermining the toe of the structure. The rule of thumb for depth of placement below sub grade is approximately 2 times anticipated depth of scour.

Gabion gravity retaining walls, in comparison with reinforced soil walls, allows for a wider range of soil types to be utilized as backfill material. This is due to the gabion gravity walls configuration, typically low wall heights, and porous facing. It is imperative to the overall long term performance of a gabion gravity retaining wall that the specified backfill material be properly placed and compacted. Poor compaction of backfill materials can lead to structural settlement, lateral wall movement, and result in insufficient shear strength to perform as designed. Specified backfill material shall be placed and compacted to minimum Standard Proctor 95% in lifts not to exceed 9" vertical and shall comply with local standards.

Geotextile filter fabric is a vital component of any gabion gravity retaining wall. The void ratio of the stone fill confined within the gabion baskets allows for free drainage of the retained soils and requires a filter fabric be placed between the gabion wall and the specified backfill soil interface. The geotextile filter fabric will prevent loss of soil during drainage and drawdown. Gabion gravity retaining walls constructed without the placement of filter fabric will have a tendency to incur a loss of retained soils and grade elevation behind the gabion wall. The type of backfill soil specified will determine the type, and placement of the geotextile filter fabric. To provide the maximum resistance to soil forces the gabion baskets shall be placed with the length dimension of the gabion unit running from the back of the gabion wall to the front face of the gabion wall. This will result in the internal diaphragms being placed perpendicular to the wall face and parallel to soil thrust

5 Environmental Engineering

5.1 Use of environmentally renewable materials.

There is little opportunity to incorporate renewable materials in this project. The major construction materials will be stone rip rap and gabions which will be used for bank protection. There may be an opportunity to reuse composted topsoil for the restoration of the channel top bank.

5.2 Design of positive environmental attributes into the project.

The channel top bank will be mostly vegetated utilizing a grass and wildflower seed mix.

5.3 Inclusion of environmentally beneficial operations and management for the project.

The intent is to protect the existing channel from additional erosion, which is threatening adjacent road and pedestrian bridges. This reduction in erosion will also limit the sediment entering the channel. The proposed solution will provide a more natural top bank using a wildflower and grass seed mix. This will reduce the amount of mowing as is typical on a conventional grass swale. This approach should reduce emissions from mowing equipment and the use of oil and gas.

5.4 Beneficial uses of spoil or other project refuse during construction and operation.

All excavated material will be reused on site by the construction contractor. It is likely that the contractor could sell excess spoil material to be reused as fill material on other projects within and around the city.

5.5 Energy savings features of the design.

Due to the scope and nature of this emergency stream bank protection project, there are no feasibly obtainable energy saving features available.

5.6 Maintenance of the ecological continuity in the project with the surrounding area and within the region.

The landscape of the project site will be altered by the excavation for the bank protection. However, the long term change in ecology of the area will be minimized as the upland areas will be returned to a vegetated condition to promote habitat and minimize erosion. Stone LPSTP will provide some additional aquatic habitat and protect from erosion disturbing the water quality of the stream.

5.7 Consideration of indirect environmental costs and benefits.

There are no significant indirect impacts anticipated.

5.8 Integration of environmental sensitivity into all aspects of the project.

Environmental sensitivity will be incorporated into the design and construction of the project to the maximum extent practicable.

5.9 Consideration of environmental problems on similar projects with respect to the Environmental Review Guide for Operations (ERGO).

The perusal of the Environmental Review Guide for Operations (ERGO) with respect to environmental problems that have become evident at similar existing projects and, through foresight during this design stage, will be mitigated/addressed in the project design. There are minimal environmental impacts, requiring no mitigation, from the proposed project.

5.10 Incorporation of environmental compliance measures into the project design.

A Storm-Water Pollution Prevention Plan (SWPPP) will be prepared by the construction contractor and implemented for the project. The Sponsor will be required by the partnering agreement to provide land free and clear of HTRW contamination. Acquisition of required State and Federal permits will be completed by the construction contractor prior to any construction activity.

6 Civil Design

6.1 Site selection and project development

In order to find a solution for flood risk management, various channel alignments and structures were evaluated to determine the available alternatives. The Project Delivery Team (PDT) conducted site

visits, considered existing improvements via aerial photography, and prepared preliminary cost comparisons in order to help facilitate selection of the most feasible bank protection alternative.

The Federal interest limit of the proposed channel includes Stillhouse Branch in Batesville, AR. The channel has a fairly consistent depth and runs through a park area within the city. The proposed bank stabilization was designed to stay within the existing channel geometry while protecting the structures that were endangered. The channel was laid out in a manner that was hydraulically functional while minimizing the need to remove or relocate other structures.

The primary structural measures evaluated were channel modification, replacement of bridges with box culverts, full-height bank paving, gabion retaining walls, and longitudinal peaked stone protection (LPSTP). The selected plan is alternative 3, which included gabion retaining walls adjacent to the bridges and LPSTP at the toe of the bank.

The channel quantities were computed by the Average End Area Method. Cross sections depicting existing geometry channel compared with the proposed geometry and bank protection were analyzed with Bentley InRoads software. Cut and fill volumes were computed for each alternative.

The site quantities (vegetation, stabilization, tree clearing, demolition, etc.) were determined by estimating quantities from InRoads cross sections and from aerial photography. The aerial photography data utilized was accessed through Google Earth and from imagery through previous Corps of Engineers aerial photography contracts in the area.

Utility quantities were calculated by analyzing data collected during site visits to identify potential utility conflicts. Aerial imagery was also utilized to identify utility conflicts. Quantities for utility relocation were estimated for areas where conflicts were suspected.

In general, a proposed right of way width of 40' beyond the top bank of the proposed channel was assumed. Staging/lay down areas were selected to be in close proximity to the reaches.

The gabion gravity retaining walls were selected for use between the road and pedestrian bridges due to the limited channel width and short spans of the two bridges. It would not be possible to place riprap in these locations without dramatically reducing the channel width or creating a channel top width much wider than the existing abutments. A constriction in the channel downstream of the bridge would reduce flow capacity and increase velocities. Excavation and widening of the top bank would remove the foundation the pedestrian bridge sets on, requiring the removal of that bridge, and would require additional work at the road bridge to transition from the wider channel to the much narrower bridge. Utilizing gabion retaining walls in this area allows the project to protect both structures without negatively affecting the flow within Stillhouse branch.

6.2 Real Estate

This project will not require the acquisition of real estate in order to obtain access for construction equipment. In general, the required right of way for the channel was determined by utilizing the proposed channel top-of-bank to top-of-bank dimension plus 20' feet on each side for construction,

access, and maintenance. Also, real estate acquisition will not be required for staging/lay down areas. No borrow or spoil areas will be acquired for this project. All excavated material will be reused on site by the construction contractor.

6.3 Relocations.

Utilities located in the vicinity of the project were identified by design engineers during on-site inspections. For the selected plan, no utility relocations were identified.

6.4 Risk for Cost Overruns in Civil Design

6.4.1 Utilities

For the selected plan, there is no risk for utility relocations.

6.4.2 Unknown Site Conditions

Unknown site conditions are always a potential risk on a project. No HTRW or cultural resource sites were identified in the project area. Any new sites found during design could affect cost and schedule. Other possible unknown site conditions include utilities, rock formations, and artificial subsurface obstructions.

6.5 Design Criteria and Standards.

The following documents and standards, as a minimum, will be incorporated in the design of this flood risk management project.

- "Manual on Uniform Traffic Control Devices (MUTCD)", Federal Highway Administration
- Architectural and Engineering Instruction Manual (AEIM), Southwestern Division
- Unified Facilities Criteria (UFC)
- American Society for Testing and Materials (ASTM) International Standards
- SpecsIntact will be utilized to develop the project specifications

7 Structural Requirements

7.1 General

There are no structural elements in this bank stabilization project. A simple estimate was produced for the replacement of the highway bridge in the no action alternative. However, that alternative was not the TSP and will not require further design. The selected alternative does involve working around existing abutments which will be protected from damage during construction.

8 Electrical and Mechanical Requirements

There are no electrical or mechanical elements in this bank stabilization project.

9 Hazardous and Toxic Materials

Little Rock District environmental personnel contacted the Arkansas Department of Environmental Quality (ADEQ) and received a listing of all known HTRW sites in Batesville, AR. The sites identified by ADEQ are outside of the boundaries of this project. Little Rock District engineering representatives also made multiple site visits to evaluate the project area and identify any potential HTRW sites. No HTRW sites were found and no other known or potential hazardous and toxic material sites have been identified in the project area. If HTRW sites are identified during the design phase, the study team will coordinate with all local, state, and federal authorities to determine if or where additional action is needed.

10 Construction Procedures and Water Control Plan

The construction of the bank stabilization will be sequenced in order to minimize the impact on the local traffic patterns. Placement of stone and gabions adjacent to the existing bridges may require temporary closure of those structures for safety. Barriers will be installed near the edge of the excavated channel at locations where the channel intersects an existing road.

Erosion control measures will also be put in place to minimize the erosion on the excavated slopes and all adjacent land that may have been stripped of vegetation.

11 Initial Reservoir Filling and Surveillance Plan

Not Applicable

12 Flood Emergency Plans for Areas Downstream of Corps Dams

Not Applicable

13 Environmental Objective and Requirements

This information is provided in the main body of the report.

14 Reservoir Clearing

Not Applicable

15 Operation and Maintenance

The sponsor will be responsible for annually traversing the entire length of the channel and looking at the condition of the channel bottom and side slopes and stone structures. The sponsor will ensure that the earthen side slopes are mowed where appropriate; and that undesirable weeds and woody growth will be removed by herbicides or cutting. The stone and gabion structures will also need to be inspected annually for damage and deterioration and repaired immediately to prevent further damage to the

structure. The sponsor will be responsible for repair to any damaged sections of the riprap as well as removal of large woody plant growth within the riprap. These activities are already being performed by the sponsor throughout the full length of Stillhouse Branch.

16 Access Roads

This project is located within the city of Batesville and will be feasible to use the existing public city streets for transportation of construction equipment and hauling of excavated material, debris and construction materials. The project site will have construction easements along the top banks of the excavated channel. The easements will provide sufficient right of way for the sponsor to go back in the future and perform maintenance as required.

17 Corrosion Mitigation

The selected plan does not include any corrosion mitigation at this time. During design, further investigation will be done to determine if the gabion baskets would need protection from corrosion by utilizing a pvc coating.

18 Project Security

This project, consisting only of gabions and stone protection, is not anticipated to require a security plan.

19 Cost Estimates

19.1 Description

The study was initiated at the request of City of Batesville, Arkansas. The authority for this study is Section 14 of the Flood Control Act of 1946, as amended, Streambank and Shoreline Erosion Protection.

The study area is located on a tributary of White River, adjacent to Riverside Park in Batesville, Arkansas.

The MCACES is developed using October 2015 Price Levels and the latest labor rates for Little Rock District areas. The feasibility estimate is one (1) contract. The contract is organized in accordance with a work breakdown structure. Midpoint dates for the construction contract are developed in conjunction with the project manager for developing the fully-funded costs. The estimate is prepared in accordance with ER 1110-2-1302 Civil Works Cost Engineering. The costs are escalated in accordance with the above Engineering Regulation and EM 1110-2-1304 Civil Works Construction Cost Index System (CWCCIS). All data is input into the Total Project Cost Summary (TPCS) spreadsheet.

Direct costs include a small business set-aside contract mechanism productivity of 85% and sales tax at 10.25%. The sales tax was determined from State of Arkansas: List of Cities and Counties with Local Sales and Use Tax (Jan – Mar 16). (State Sales and Use Tax of 6.5%; Batesville Tax of 2.0%; and Independence County Tax of 1.75%). There are no Hazardous, Toxic, and Radioactive Wastes anticipated. The

Operation and Maintenance estimate is dated October 2015, with an effective pricing date of October 2015.

An Abbreviated Risk Analyses (ARA) was performed by the PDT on 26 Feb 16. The risks are quantified and a cost risk model developed to determine a contingency at 80% Confidence Level. An ATR Certification of Cost Estimate is provided by Walla Walla District.

19.2 Account Code 09 – Channels and Canals

This contract is based on riprap, gabion retaining wall, and longitudinal-peaked stone toe protection along Stillhouse Branch to control erosion. Work extends from the White River to about two-hundred linear feet upstream of Chaney Drive Bridge. Riprap or longitudinal-peaked stone toe protection is to be placed under Chaney Drive. Risks are noted in the ARA.

19.3 Account Code 30 – Engineering and Design

The cost for this account are developed using the guidelines provided in the TPCS, with the agreement of the cost engineer and the project manager. Risk are noted in the ARA.

19.4 Account Code 31 – Construction Management

The cost for this account are developed using the guidelines provided in the TPCS, with the agreement of the cost engineer and the project manager. Risk are noted in the ARA.

20 Schedule for Design and Construction

The schedule for the tentatively selected plan, Alternative 3 is located within Attachment B.

21 Special Studies

Not Applicable

22 Plates, Figures, and Drawings

There are three plates within Attachment A to the main engineering appendix showing plan views for alternatives 2 and 3 and details. Additional maps and drawings can be found in the Feasibility Report.

23 Data Management

During the feasibility study, electronic data was compiled and maintained in project folders for each discipline involved on the server. This data is backed up regularly by USACE's data manager (ACE-IT). The project information will be available for the next phase of the project.

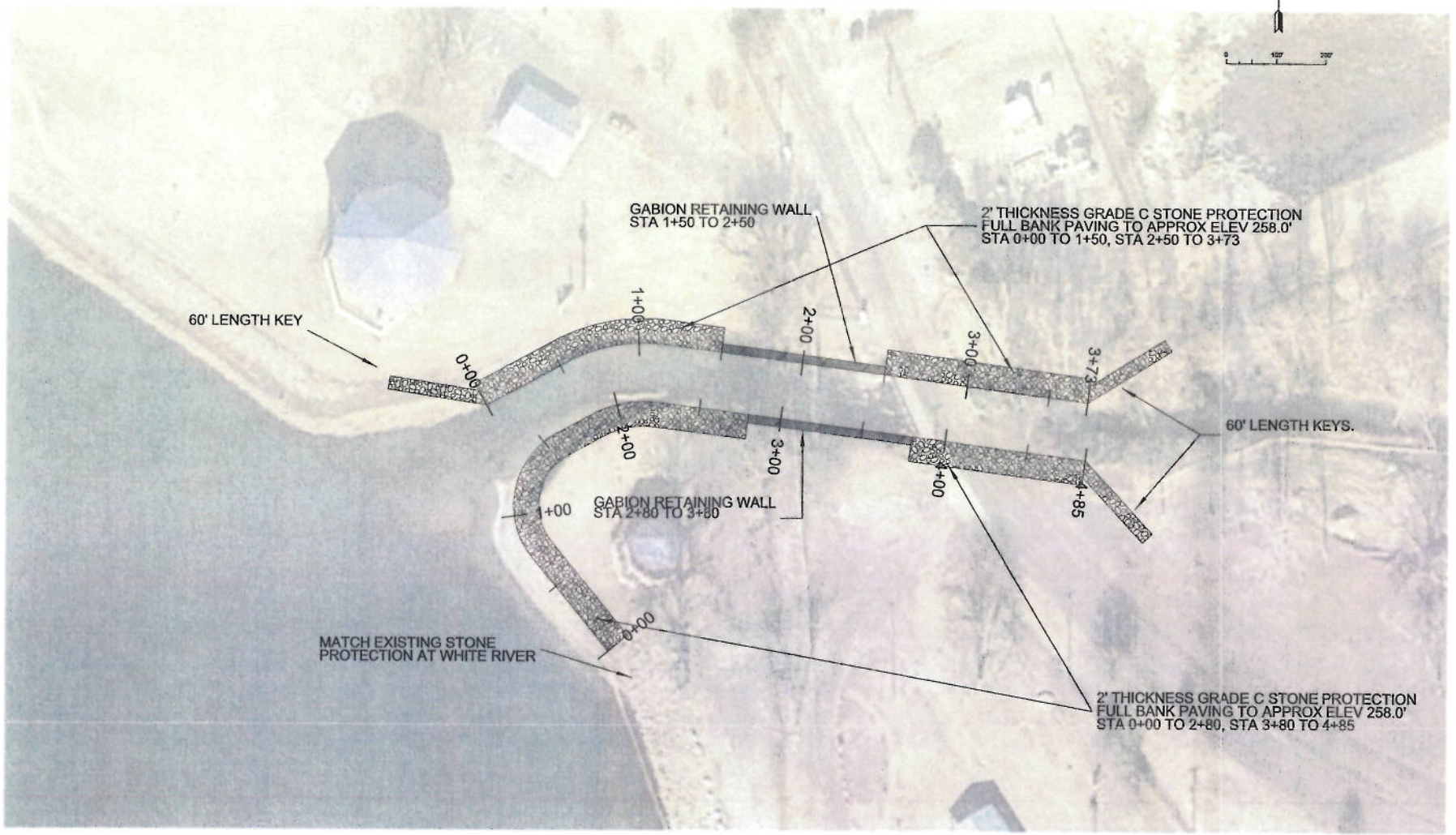
24 Use of Metric System Measurements

The Sponsor specifically requested that the project be designed in English units. They have stated that the English system is consistent with their current standards, specifications and bidding practices. With English units being the locally familiar system in this area, the material testing, utility, and surveying

companies would likely be forced to work with unfamiliar units. The data used to produce the H&H models and quantity calculations were all provided in English units. Converting this survey data from English to Metric would have created additional work effort for the design team resulting in slips in the schedule and additional costs.

Attachment A

Engineering Plates



US Army Corps of Engineers
Little Rock District

No.	Description	Date

Designed by: AAC
Date: FEBRUARY 2016
Drawn by: AAC
Submitted No.:
Reviewed by: XX
Contract No.:

U.S. ARMY ENGINEER DISTRICT
CORPS OF ENGINEERS
LITTLE ROCK, ARKANSAS

Submitted by:
Chief, General Engineering Section

BATESVILLE, AR
WHITE RIVER BASIN
INDEPENDENCE COUNTY, ARKANSAS
STILLHOUSE BRANCH
FEASIBILITY STUDY

ALTERNATIVE 2

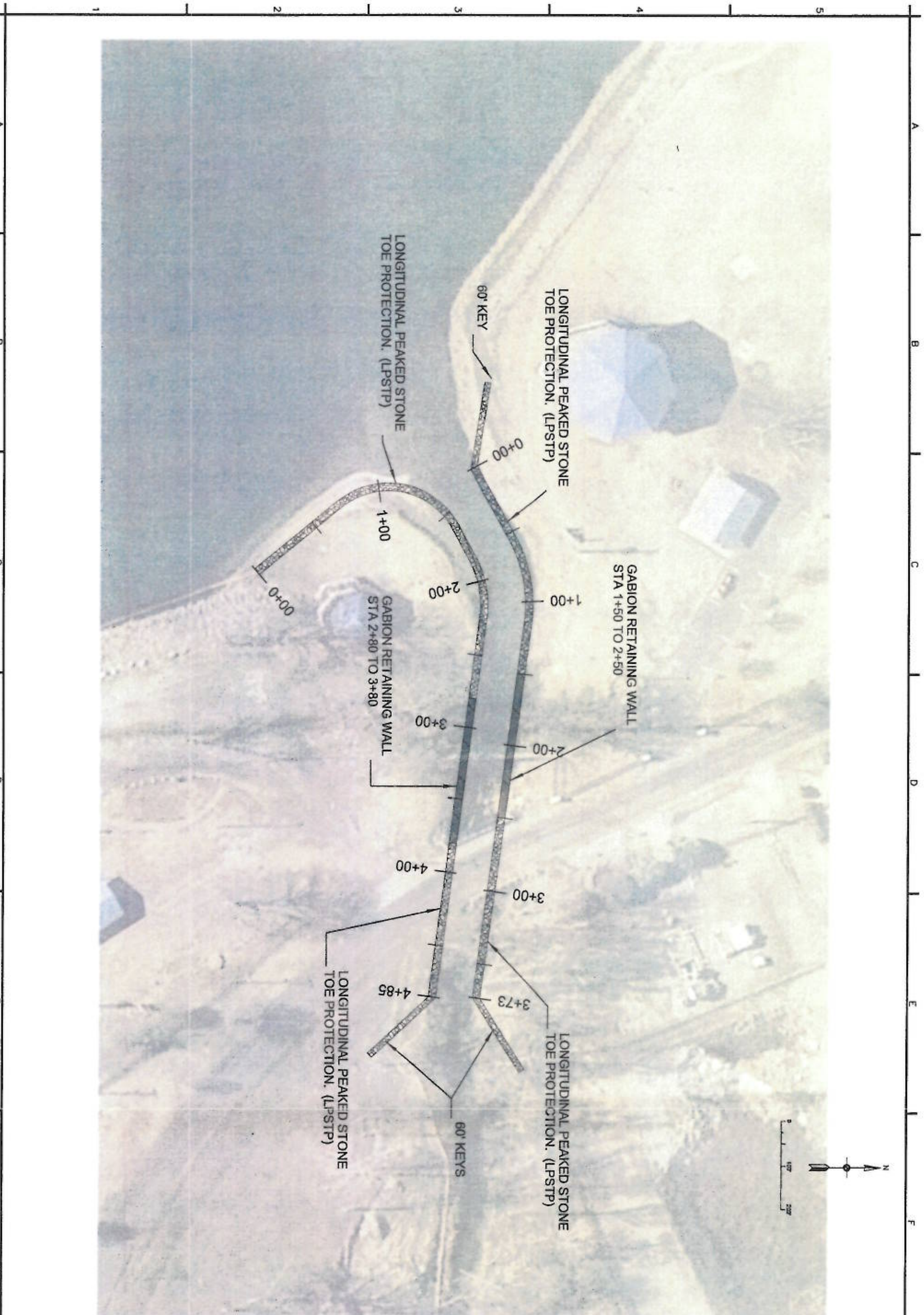
Drawing Code/
Serial No.
10689-99/

Drawing Ref. No.
C-101

MAEDGAAC

L:\ENG Shared\DESIGN\PROJECTS\CIVIL WORKS CORPS\SRH House Branch\Civil\Alternative_2.dgn

21-APR-2016 12:41



BATESVILLE, AR
WHITE RIVER BASIN
INDEPENDENCE COUNTY, ARKANSAS
STILLHOUSE BRANCH
FEASIBILITY STUDY

ALTERNATIVE 3

U.S. ARMY ENGINEER DISTRICT
CORPS OF ENGINEERS
LITTLE ROCK, ARKANSAS

Submitted by:

Chief, General Engineering Section

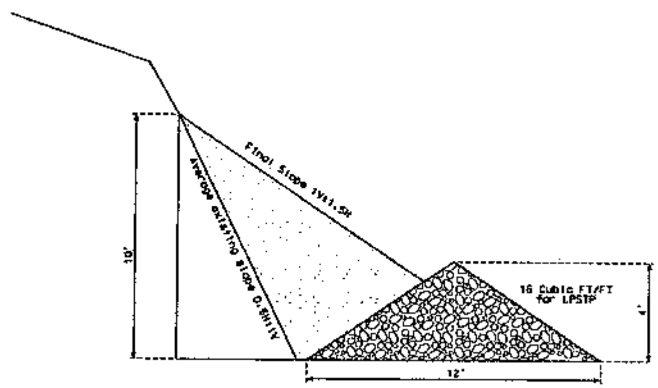
Designed by: AAC
Date: FEBRUARY 2016
Drawn by: AAC
Solicitation No.:
Reviewed by: XX
Contract No.:

Symbol	Description	Date	Appr.

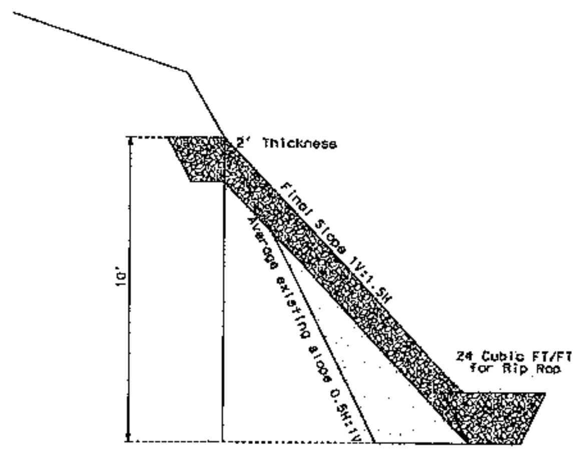
US Army Corps of Engineers
Little Rock District

Drawing Code/Serial No.
10889-99/
Drawing Ref. No.
C-102

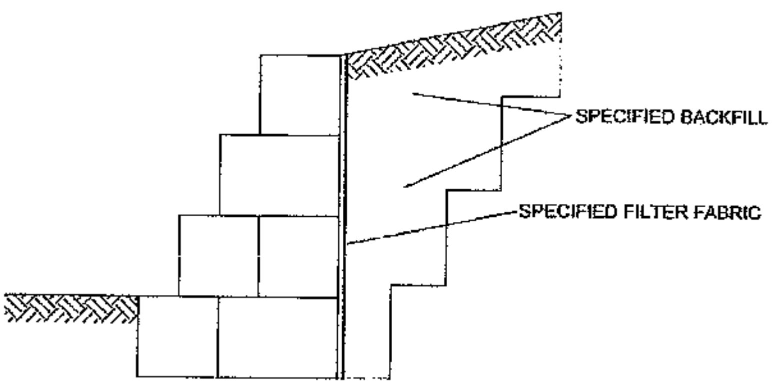
21-APR-2016 12:42 L:\ENG Shared\DESIGN\PROJECTS\CIVIL WORKS CORPS\Still House Branch\Civil\Alternative_3.dgn M4EDGAAC



A DETAIL SCALE: N.T.S.
C-501 | C-501 LONGITUDINAL PEAKED STONE TOE PROTECTION



B DETAIL SCALE: N.T.S.
C-501 | C-501 FULL BANK HEIGHT RIP RAP BLANKET



C DETAIL SCALE: N.T.S.
C-501 | C-501 GABION BASKET RETAINING WALL

US Army Corps of Engineers
Little Rock District

Designed by: AAC	Date: FEBRUARY 2016
Drawn by: AAC	Solicitation No.
Reviewed by: NPG	Contract No.

U.S. ARMY ENGINEER DISTRICT
CORPS OF ENGINEERS
LITTLE ROCK, ARKANSAS

Submitted by:

Chief, General Engineering Section

BATESVILLE, AR
WHITE RIVER BASIN
INDEPENDENCE COUNTY, ARKANSAS
STILLHOUSE BRANCH
FEASIBILITY STUDY

DETAILS

Drawing Code/ Serial No.

Drawing Ref. No.
C-501

21-APR-2016 13:09 L:\ENG Shared\DESIGN\PROJECTS\CIVIL WORKS CORPS\Still House Branch\Civil\Details.dgn M4EDGAAC

Attachment B

Cost Analysis,
Construction Schedule,
& MCACES Cost Estimate

****** TOTAL PROJECT COST SUMMARY ******

****** CONTRACT COST SUMMARY ******

PROJECT: Stillhouse Branch - CAP Section 14
LOCATION: Batesville, AR
This Estimate reflects the scope and schedule in report; CAP Feasibility STUDY -

DISTRICT: SWL LITTLE ROCK
POC: CHIEF, COST ENGINEERING, Nicholas Barner

PREPARED: 3/9/2016

WBS Structure		ESTIMATED COST				PROJECT FIRST COST (Constant Dollar Basis)				TOTAL PROJECT COST (FULLY FUNDED)				
		Estimate Prepared: 3/15/2014 Estimate Price Level: 42278				Program Year (Budget EC): 2017 Effective Price Level Date: 1-Oct-16								
WBS NUMBER A	Civil Works Feature & Sub-Feature Description B	COST ($K) C	CNTG ($K) D	RISK BASED CNTG (%) E	TOTAL ($K) F	ESC (%) G	COST ($K) H	CNTG ($K) I	TOTAL ($K) J	Mid-Point Date P	ESC (%) L	COST ($K) M	CNTG ($K) N	FULL ($K) O
	ALT 02: Riprap													
16	BANK STABILIZATION	$634	$125	19.7%	$759	1.8%	$645	$127	$772	2018Q1	1.9%	$657	$129	$787
	CONSTRUCTION ESTIMATE TOTALS:	$634	$125	19.7%	$759		$645	$127	$772			$657	$129	$787
01	LANDS AND DAMAGES													
30	PLANNING, ENGINEERING & DESIGN													
0.01	Project Management	$6	$0	4.4%	$6	3.6%	$6	$0	$6	2017Q3	2.0%	$6	$0	$7
0.01	Planning & Environmental Compliance	$6	$0	4.4%	$6	3.6%	$6	$0	$6	2017Q3	2.0%	$6	$0	$7
0.05	Engineering & Design	$32	$1	4.4%	$33	3.6%	$33	$1	$35	2017Q3	2.0%	$34	$1	$35
0.01	Engineering Tech Review ITR & VE	$6	$0	4.4%	$6	3.6%	$6	$0	$6	2017Q3	2.0%	$6	$0	$7
0.01	Contracting & Reprographics	$6	$0	4.4%	$6	3.6%	$6	$0	$6	2017Q3	2.0%	$6	$0	$7
0.01	Engineering During Construction	$6	$0	4.4%	$6	3.6%	$6	$0	$6	2018Q1	4.0%	$6	$0	$7
	Planning During Construction			4.4%										
	Project Operations			4.4%										
31	CONSTRUCTION MANAGEMENT													
0.057	Construction Management	$36	$3	9.5%	$39	3.6%	$37	$4	$41	2018Q1	4.0%	$39	$4	$42
	Project Operation:			9.5%										
0.003	Project Management	$2	$0	9.5%	$2	3.6%	$2	$0	$2	2018Q1	4.0%	$2	$0	$2
	CONTRACT COST TOTALS:	$734	$131		$865		$749	$133	$883			$764	$136	**$900**

**** TOTAL PROJECT COST SUMMARY ****

PROJECT: **Stillhouse Branch - CAP Section 14**
PROJECT NO: **P2 335548**
LOCATION: **Batesville, AR**

DISTRICT: **SWL LITTLE ROCK**
PREPARED: **3/9/2016**
POC: **CHIEF, COST ENGINEERING, Nicholas Barner**

This Estimate reflects the scope and schedule in report; CAP Feasiblity STUDY -

Civil Works Work Breakdown Structure		ESTIMATED COST				PROJECT FIRST COST (Constant Dollar Basis)						TOTAL PROJECT COST (FULLY FUNDED)			
						Program Year (Budget EC):				2017					
						Effective Price Level Date:				1-Oct- 16					
WBS NUMBER	Civil Works Feature & Sub-Feature Description	COST ($K)	CNTG ($K)	CNTG (%)	TOTAL ($K)	ESC (%)	COST ($K)	CNTG ($K)	REMAINING COST ($K)	Spent Thru: 10/1/2015 ($K)	TOTAL FIRST COST ($K)	ESC (%)	COST ($K)	CNTG ($K)	FULL ($K)
16	BANK STABILIZATION	$634	$125	20%	$759	1.8%	$645	$127	$772		$772	1.9%	$657	$129	$787
	CONSTRUCTION ESTIMATE TOTALS:	$634	$125		$759	1.8%	$645	$127	$772		$772	1.9%	$657	$129	$787
01	LANDS AND DAMAGES														
30	PLANNING, ENGINEERING & DESIGN	$62	$3	4%	$65	3.6%	$64	$3	$67		$67	2.2%	$66	$3	$69
31	CONSTRUCTION MANAGEMENT	$38	$4	10%	$42	3.6%	$39	$4	$43		$43	4.0%	$41	$4	$45
	PROJECT COST TOTALS:	$734	$131	18%	$865		$749	$133	$883		$883	2.0%	$764	$136	$900

_____ CHIEF, COST ENGINEERING, Nicholas Barner

_____ PROJECT MANAGER, Tacy Jensen

_____ CHIEF, REAL ESTATE, Pat Bennett

_____ CHIEF, PLANNING, Patricia Anslow

_____ CHIEF, ENGINEERING, Tony Batey

_____ CHIEF, OPERATIONS, Kevin McDaniels

_____ CHIEF, CONSTRUCTION, DeJuan Carter

_____ CHIEF, CONTRACTING, Sandra Easter

_____ CHIEF, PM-PB, Albert Rein

_____ CHIEF, DPM, Randy Hathaway

ESTIMATED TOTAL PROJECT COST:		**$900**
ESTIMATED FEDERAL COST:	**65%**	$585
ESTIMATED NON-FEDERAL COST:	**35%**	$315
22 - FEASIBILITY STUDY (CAP studies):		**$100**
ESTIMATED FEDERAL COST:		$100
ESTIMATED NON-FEDERAL COST:		
ESTIMATED FEDERAL COST OF PROJECT		**$685**

--- NEW WORK ---
P2-335648 - STILLHOUSE BRANCH, WHITE RIVER, BATESVILLE, ARKANSAS
FEASIBILITY STUDY (CAP SECTION 14)
OCTOBER 2015 PRICE LEVEL
ALT 02 - RIPRAP - 50 YEAR O&M COST

YEAR	TOTAL
YEAR 1	3,146
YEAR 2	3,146
YEAR 3	3,146
YEAR 4	3,146
YEAR 5	3,146
YEAR 6	3,146
YEAR 7	3,146
YEAR 8	3,146
YEAR 9	3,146
YEAR 10	4,688
YEAR 11	3,146
YEAR 12	3,146
YEAR 13	3,146
YEAR 14	3,146
YEAR 15	3,146
YEAR 16	3,146
YEAR 17	3,146
YEAR 18	3,146
YEAR 19	3,146
YEAR 20	4,688
YEAR 21	3,146
YEAR 22	3,146
YEAR 23	3,146
YEAR 24	3,146
YEAR 25	3,146
YEAR 26	3,146
YEAR 27	3,146
YEAR 28	3,146
YEAR 29	3,146
YEAR 30	4,688
YEAR 31	3,146
YEAR 32	3,146
YEAR 33	3,146
YEAR 34	3,146
YEAR 35	3,146
YEAR 36	3,146
YEAR 37	3,146
YEAR 38	3,146
YEAR 39	3,146
YEAR 40	4,688
YEAR 41	3,146
YEAR 42	3,146
YEAR 43	3,146
YEAR 44	3,146
YEAR 45	3,146
YEAR 46	3,146
YEAR 47	3,146
YEAR 48	3,146
YEAR 49	3,146
YEAR 50	4,688
TOTAL O&M	$165,010

--- NEW WORK ---
P2-335548 - STILLHOUSE BRANCH, WHITE RIVER, BATESVILLE, ARKANSAS
FEASIBILITY STUDY (CAP SECTION 14)
OCTOBER 2015 PRICE LEVEL
ALT 03 - LPSTP - 50 YEAR O&M COST

YEAR	TOTAL
YEAR 1	3,146
YEAR 2	3,146
YEAR 3	3,146
YEAR 4	3,146
YEAR 5	3,146
YEAR 6	3,146
YEAR 7	3,146
YEAR 8	3,146
YEAR 9	3,146
YEAR 10	3,918
YEAR 11	3,146
YEAR 12	3,146
YEAR 13	3,146
YEAR 14	3,146
YEAR 15	3,146
YEAR 16	3,146
YEAR 17	3,146
YEAR 18	3,146
YEAR 19	3,146
YEAR 20	3,918
YEAR 21	3,146
YEAR 22	3,146
YEAR 23	3,146
YEAR 24	3,146
YEAR 25	3,146
YEAR 26	3,146
YEAR 27	3,146
YEAR 28	3,145
YEAR 29	3,146
YEAR 30	3,918
YEAR 31	3,146
YEAR 32	3,146
YEAR 33	3,146
YEAR 34	3,146
YEAR 35	3,146
YEAR 36	3,146
YEAR 37	3,146
YEAR 38	3,146
YEAR 39	3,146
YEAR 40	3,918
YEAR 41	3,146
YEAR 42	3,146
YEAR 43	3,146
YEAR 44	3,146
YEAR 45	3,146
YEAR 46	3,146
YEAR 47	3,146
YEAR 48	3,146
YEAR 49	3,146
YEAR 50	3,918
TOTAL O&M:	$161,180

--- NEW WORK ---
P2-335548 - STILLHOUSE BRANCH, WHITE RIVER, BATESVILLE, ARKANSAS
FEASIBILITY STUDY (CAP SECTION 14)
OCTOBER 2015 PRICE LEVELS
CONTRACT CALENDAR

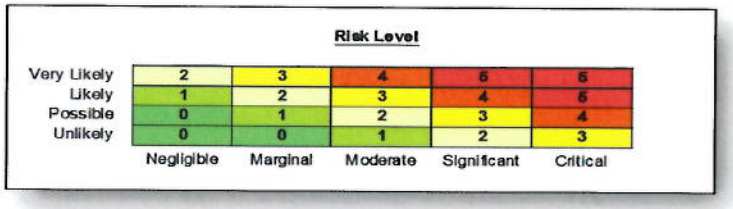
CONTRACT	DESCRIPTION	DURATION (month)	DESIGN MIDPOINT	START DATE	MIDPOINT	END DATE
ALT 01	No action.					
ALT 02	Riprap.	3	Apr-17 (2017Q3)	Oct-17 (2018Q1)	Nov-17 (2018Q1)	Dec-17 (2018Q1)
ALT 03	Longitudinal Peaked Stone Toe Protection.	3	Apr-17 (2017Q3)	Oct-17 (2018Q1)	Nov-17 (2018Q1)	Dec-17 (2018Q1)

Attachment C

Cost and Schedule Risk Analysis

STILLHOUSE BRANCH (CAP SECTION 14) ALT 01, 02, 03

Feasibility (Alternatives)
Abbreviated Risk Analysis
Meeting Date: 26-Feb-16



Risk Register

Risk Element	Feature of Work	Concerns	PDT Discussions & Conclusions (Include logic & justification for choice of Likelihood & Impact)	Impact	Likelihood	Risk Level
Project Management & Scope Growth				**Maximum Project Growth**		40%
PS-1	ALT 01: NO ACTION		Background: This alternative is to demolish existing utilities and existing bridge and install proposed utilities and proposed bridge since no action will result in bridge failure. Impact: There are no environmental concerns. There are no archaeology concerns. There are no HTRW concerns. Likelihood: N/A.	Negligible	Unlikely	N/A
PS-2	ALT 02: RIPRAP		Background: This alternative is to provide riprap and gabion retaining wall protection to Stillhouse Branch. Impact: There are no environmental concerns. There are no archaeology concerns. There are no HTRW concerns. Likelihood: N/A.	Negligible	Unlikely	N/A
PS-3	ALT 03: LPSTP		Background: This alternative is to provide riprap and gabion retaining wall and longitudinal-peaked stone toe protection (LPSTP) protection to Stillhouse Branch. Impact: There are no environmental concerns. There are no archaeology concerns. There are no HTRW concerns. Likelihood: N/A.	Negligible	Unlikely	N/A
PS-12	Remaining Construction Items			Negligible	Unlikely	N/A

PS-13	Planning, Engineering, & Design	Potential for shortage of engineers.	Background: For ALT 02 and ALT 03. (ALT 01 by Sponsor.) SWL has a shortage of engineers. Impact: The impact is marginal. New hires may not be experienced and delays may be realized. Likelihood: Likely.	Marginal	Likely	2
PS-14	Construction Management			Negligible	Unlikely	N/A
Acquisition Strategy				**Maximum Project Growth**		**30%**
AS-1	ALT 01: NO ACTION	Contracting plan is not firmly established. Limited bid competition is anticipated.	Background: The type of contract is unknown. PDT assumes unrestricted best value. Impact: If contract is small business, then the cost increase will be marginal. This agrees with historical bid results. Likelihood: It is likely the acquisition method could become restricted (small business).	Marginal	Likely	2
AS-2	ALT 02: RIPRAP	Contracting plan is not firmly established. Limited bid competition is anticipated.	Background: The type of contract is unknown. PDT assumes unrestricted best value. Impact: If contract is small business, then the cost increase will be marginal. This agrees with historical bid results. Likelihood: It is likely the acquisition method could become restricted (small business).	Marginal	Likely	2
AS-3	ALT 03: LPSTP	Contracting plan is not firmly established. Limited bid competition is anticipated.	Background: The type of contract is unknown. PDT assumes unrestricted best value. Impact: If contract is small business, then the cost increase will be marginal. This agrees with historical bid results. Likelihood: It is likely the acquisition method could become restricted (small business).	Marginal	Likely	2
AS-12	Remaining Construction Items			Negligible	Unlikely	N/A
AS-13	Planning, Engineering, & Design			Negligible	Unlikely	N/A

AS-14	Construction Management	Contracting plan is not firmly established. Limited bid competition is anticipated.	Background: For ALT 02 and ALT 03. (ALT 01 by Sponsor.) The type of contract is unknown. PDT assumes unrestricted best value. Impact: If contract is small business, then the cost increase will be moderate. This agrees with historical bid results. Also higher construction management oversight would be anticipated. Likelihood: It is likely the acquisition method could become restricted (small business).	Moderate	Likely	3
Construction Elements				**Maximum Project Growth**		15%
CON-1	ALT 01: NO ACTION	No care of water and/or diversion plan. Existing above ground utilities to work around.	Background: No care of water and/or diversion plan considered. Stormwater Pollution Prevention problems could be encountered prior to bank stabilization with stone and grass. There are existing above ground utilities to work around and three storm drainage outfalls to tie into existing structure. Impact: There is a marginal impact due to care of water during high flows. There is a marginal impact to existing utilities due to proximity of work and potential for reduced productivity. Likelihood: It is possible to run into high waters during high flows events.	Marginal	Possible	1
CE-2	ALT 02: RIPRAP	No care of water and/or diversion plan. Existing above ground utilities to work around.	Background: No care of water and/or diversion plan considered. Stormwater Pollution Prevention problems could be encountered prior to bank stabilization with stone and grass. There are existing above ground utilities to work around and three storm drainage outfalls to tie into existing structure. Impact: There is a marginal impact due to care of water during high flows. There is a marginal impact to existing utilities due to proximity of work and potential for reduced productivity. Likelihood: It is possible to run into high waters during high flows events.	Marginal	Possible	1
CE-3	ALT 03: LPSTP	No care of water and/or diversion plan. Existing above ground utilities to work around.	Background: No care of water and/or diversion plan considered. Stormwater Pollution Prevention problems could be encountered prior to bank stabilization with stone and grass. There are existing above ground utilities to work around and three storm drainage outfalls to tie into existing structure. Impact: There is a marginal impact due to care of water during high flows. There is a marginal impact to existing utilities due to proximity of work and potential for reduced productivity. Likelihood: It is possible to run into high waters during high flows events.	Marginal	Possible	1
CE-12	Remaining Construction Items			Negligible	Unlikely	N/A

CE-13	Planning, Engineering, & Design			Negligible	Unlikely	N/A
CE-14	Construction Management			Negligible	Unlikely	N/A
Specialty Construction or Fabrication				**Maximum Project Growth**		**50%**
SC-1	ALT 01: NO ACTION			Negligible	Unlikely	N/A
SC-2	ALT 02: RIPRAP			Negligible	Unlikely	N/A
SC-3	ALT 03: LPSTP			Negligible	Unlikely	N/A
SC-12	Remaining Construction Items			Negligible	Unlikely	N/A
SC-13	Planning, Engineering, & Design			Negligible	Unlikely	N/A
SC-14	Construction Management			Negligible	Unlikely	N/A
Technical Design & Quantities				**Maximum Project Growth**		**20%**
T-1	ALT 01: NO ACTION	Less than 10% bridge design. Insufficient investigations to develop quantities, e.g. topography, bathymetry, soil survey, etc.	Background: No topography, bathymetry, or soil survey exists. No design (plan/profile) of bridge structure exists. Impact: Pilings or further reinforcement may be required due to soils in the area. Any increases in bridge height (due to floodway area requirements and assumed dimensions) will require rework of roads leading to bridge. Overall, the impact is significant to add multiple pilings. Likelihood: The likelihood is possible.	Significant	Possible	3
T-2	ALT 02: RIPRAP	Insufficient investigations to develop quantities, e.g. topography, bathymetry, soil survey, etc.	Background: No topography, bathymetry, or soil survey exists. Impact: Additional support may be required for assumed dimensions and/or subsiding soils. Overall, the impact is marginal. Likelihood: The likelihood is possible.	Marginal	Possible	1
T-3	ALT 03: LPSTP	Insufficient investigations to develop quantities, e.g. topography, bathymetry, soil survey, etc.	Background: No topography, bathymetry, or soil survey exists. Impact: Additional support may be required for assumed dimensions and/or subsiding soils. Overall, the impact is marginal. Likelihood: The likelihood is possible.	Marginal	Possible	1

T-12	Remaining Construction Items			Negligible	Unlikely	N/A
T-13	Planning, Engineering, & Design			Negligible	Unlikely	N/A
T-14	Construction Management			Negligible	Unlikely	N/A
Cost Estimate Assumptions				**Maximum Project Growth**		**25%**
EST-1	ALT 01: NO ACTION	Fuel rates low. MII 4.2 with 2012 Cost Book used. TPCS Sep 2015 used.	Background: Fuel rate at $2.00/Gallon is low. [Used MII 4.2 with 2012 Cost Book. Do not anticipate a switch to MII 4.3 with 2015 Cost Book for this project. Used TPCS Sep 2015. Anticipate new TPCS Mar 2016, but do not anticipate a switch to TPCS Mar 2016 for this project. Impact captured with marginal rating.] Impact: If the fuel rate is doubled ($4.00/Gallon), then there will be a negligible to marginal impact. $4.00/Gallon is not an unreasonable fuel rate based on historical fuel rates. Likelihood: Due to the volatile nature of fuel, it is likely the fuel rate will increase.	Marginal	Likely	2
EST-2	ALT 02: RIPRAP	Fuel rates low. MII 4.2 with 2012 Cost Book used. TPCS Sep 2015 used.	Background: Fuel rate at $2.00/Gallon is low. [Used MII 4.2 with 2012 Cost Book. Do not anticipate a switch to MII 4.3 with 2015 Cost Book for this project. Used TPCS Sep 2015. Anticipate new TPCS Mar 2016, but do not anticipate a switch to TPCS Mar 2016 for this project.] Impact: If the fuel rate is doubled ($4.00/Gallon), then there will be a negligible to marginal impact. $4.00/Gallon is not an unreasonable fuel rate based on historical fuel rates. Likelihood: Due to the volatile nature of fuel, it is likely the fuel rate will increase.	Marginal	Likely	2
EST-3	ALT 03: LPSTP	Fuel rates low. MII 4.2 with 2012 Cost Book used. TPCS Sep 2015 used.	Background: Fuel rate at $2.00/Gallon is low. [Used MII 4.2 with 2012 Cost Book. Do not anticipate a switch to MII 4.3 with 2015 Cost Book for this project. Used TPCS Sep 2015. Anticipate new TPCS Mar 2016, but do not anticipate a switch to TPCS Mar 2016 for this project.] Impact: If the fuel rate is doubled ($4.00/Gallon), then there will be a negligible to marginal impact. $4.00/Gallon is not an unreasonable fuel rate based on historical fuel rates. Likelihood: Due to the volatile nature of fuel, it is likely the fuel rate will increase.	Marginal	Likely	2
EST-12	Remaining Construction Items			Negligible	Unlikely	N/A
EST-13	Planning, Engineering, & Design			Negligible	Unlikely	N/A
EST-14	Construction Management			Negligible	Unlikely	N/A

External Project Risks				Maximum Project Growth		20%
EX-1	ALT 01: NO ACTION	Potential for severe, adverse weather. Concern with Sponsor funds.	Background: This alternative is to provide riprap and gabion retaining wall and longitudinal-peaked stone toe protection (LPSTP) protection to Stillhouse Branch. Impact: Elevated riverflow based on abnormal weather conditions could have a moderate impact on work. Equipment may need to be moved during a flood. This could delay the project and have a moderate impact on costs, e.g. mobilization and demobilization of (primarily) general items and personnel to higher ground and/or away from job site. Funding delays could cause a marginal impact. (Do not foresee political issues - even adjacent to Batesville High School and Treatment Plant - since bridge is one of two entrances/exits.) Likelihood: Overall, it is possible for abnormal weather conditions and funding delays.	Moderate	Possible	2
EX-2	ALT 02: RIPRAP	Potential for severe, adverse weather. Concern with cost share.	Background: This alternative is to provide riprap and gabion retaining wall protection to Stillhouse Branch. Impact: Elevated riverflow based on abnormal weather conditions could have a moderate impact on work. Equipment may need to be moved during a flood. This could delay the project and have a moderate impact on costs, e.g. mobilization and demobilization of (primarily) general items and personnel to higher ground and/or away from job site. Funding delays could cause a marginal impact. (Do not foresee political issues - even adjacent to Batesville High School and Treatment Plant - since bridge is one of two entrances/exits.) Likelihood: Overall, it is possible for abnormal weather conditions and funding delays.	Moderate	Possible	2
EX-3	ALT 03: LPSTP	Potential for severe, adverse weather. Concern with cost share.	Background: This alternative is to provide riprap and gabion retaining wall and longitudinal-peaked stone toe protection (LPSTP) protection to Stillhouse Branch. Impact: Elevated riverflow based on abnormal weather conditions could have a moderate impact on work. Equipment may need to be moved during a flood. This could delay the project and have a moderate impact on costs, e.g. mobilization and demobilization of (primarily) general items and personnel to higher ground and/or away from job site. Funding delays could cause a marginal impact. (Do not foresee political issues - even adjacent to Batesville High School and Treatment Plant - since bridge is one of two entrances/exits.) Likelihood: Overall, it is possible for abnormal weather conditions and funding delays.	Moderate	Possible	2
EX-12	Remaining Construction Items			Negligible	Unlikely	N/A
EX-13	Planning, Engineering, & Design			Negligible	Unlikely	N/A

EX-14	Construction Management	Potential for severe, adverse weather.	Background: For ALT 02 and ALT 03. (ALT 01 by Sponsor.) Impact: Elevated riverflow based on abnormal weather conditions could have a marginal impact on work due to time delays (and additional SIOH). Likelihood: Overall, it is possible for abnormal weather conditions.	Marginal	Possible	1

Appendix C: Agency Correspondence

DEPARTMENT OF THE ARMY
LITTLE ROCK DISTRICT CORPS OF ENGINEERS
POST OFFICE BOX 867
LITTLE ROCK, ARKANSAS 72203-0867

(501) 324-5751 FAX: 501-324-5605 http://www.swl.usace.army.mil

May 15, 2015

Planning and Environmental Division

Dear,

The U.S. Army Corps of Engineers, Little Rock District, has initiated a Section 14 "Emergency Streambank and Shoreline Erosion Protection" study on Stillhouse Branch at the request of the City of Batesville, Arkansas (Independence County). Stillhouse Branch is a tributary of the White River located downstream of the Highway 167 bridge in Batesville (Figure 1, see reverse side). This study will be conducted under the authority of Section 14 of the 1956 Flood Control Act, as amended. The study consists of a feasibility phase that, upon completion, can be used for the design and implementation phase of this project.

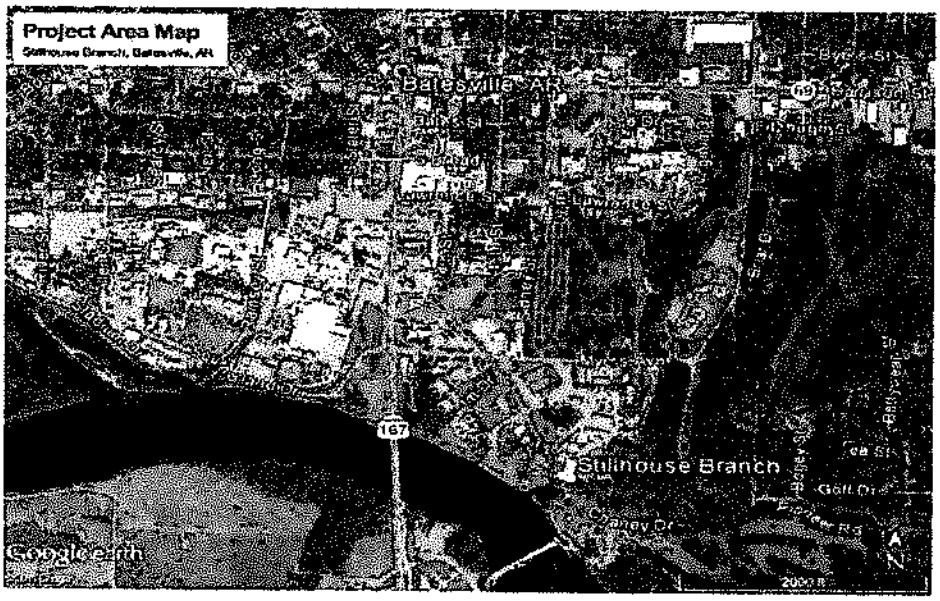
Flooding on Stillhouse Branch is threatening the abutments of the River Road Bridge as well as several existing public amenities including water lines, electrical utility, park pedestrian bridge, and park pavilion. Bank erosion in the areas around the bridges threatens the structural integrity of these facilities. The bank around the bridges is near vertical with significant erosion around the bridge approaches/ piers. The area adjacent to the park pavilion experiences a large amount of bank slides. The length of erosion problem is estimated at approximately 800 feet and is located immediately upstream of the confluence with the White River.

The Corps of Engineers is requesting information and comments that would assist in the preparation of the study and accompanying environmental assessment (EA) as required by the National Environmental Policy Act of 1969 and the Corps' Engineer Regulation ER 200-2-2 "Procedures for Implementing NEPA". Please submit any information your agency may have by June 15, 2015. If comments are not received by this date, we will assume your agency has no comments at this point on the study. If there are any questions or concerns, our environmental POC for this study is Mr. Craig Hilburn at (501) 324-5735 or email at David.C.Hilburn@usace.army.mil.

Sincerely,

Dana O. Coburn
Chief, Environmental Branch

Figure 1: Project Site Map



USDA
United States Department of Agriculture

MAY 2 9 2015

Dana O. Coburn
Little Rock District Corps of Engineers
Post Office Box 867
Little Rock, AR 72203

Dear Ms. Coburn,

This letter is in response to your request for information related to Prime Farmland and Farmland of Statewide Importance for the stream bank and shoreline erosion study on the Stillhouse Branch of the White River in the City of Batesville, Arkansas. This area is not considered Prime Farmland or Farmland of Statewide Importance

Should you have any questions or need additional information, please call me at (501) 301-3172 or email at nelson.rolong@ar.usda.gov.

Sincerely,

Nelson A. Rolong

Nelson A. Rolong PhD
Assistant State Soil Scientist

Enclosure

cc:
Edgar Mersiovsky, State Soil Scientist, NRCS, Little Rock, AR

Natural Resources Conservation Service
Room 3416, Federal Building
700 West Capitol Avenue
Little Rock, Arkansas 72201-3215

Helping People Help the Land

An Equal Opportunity Provider and Employer

United States Department of the Interior

National Park Service

Midwest Region
601 Riverfront Drive
Omaha, Nebraska 68102-4226

650 2(MWR-P/CO)
05-00655, 00698

JUN 03 2015

Ms. Dana O. Coburn
Chief, Environmental Branch
Little Rock District Corps of Engineers
P.O. 867
Little Rock, Arkansas 72203

RE: Section 14 "Emergency Streambank and Shoreline Erosion Protection" study on Stillhouse Branch, (tributary of the White River), city of Batesville, Independence County, Arkansas

Dear Ms. Coburn

Thank you for the opportunity to review the subject document of May 15, 2015. We have reviewed the document for possible conflicts with the Land and Water Conservation Fund (LWCF) program within the area. The proposed area includes a recreation area that was developed with assistance from the LWCF program. The project number for this site is 05-00655, Riverside Park.

We recommend that you consult directly with the official who administers the LWCF program in Arkansas to determine any potential conflicts with Section 6(f)(3) of the LWCF Act (Public Law 88-578 as amended). This section states: "No property acquired or developed with assistance under this section shall without the approval of the Secretary (of the Interior), be converted to other than public outdoor recreation uses. The Secretary shall approve such conversion only if he finds it to be in accord with the then existing comprehensive statewide outdoor recreation plan and only upon such conditions as he deems necessary to assure the substitution of other recreation properties of at least equal fair market value and of reasonably equivalent usefulness and location."

The administrator for the LWCF program in the state of Arkansas is Mr. John Beneke, Director, Outdoor Recreation Grants Program, Arkansas Department of Parks and Tourism, One Capitol Mall, Little Rock, Arkansas, 72201. Mr. Beneke's phone number is 501-682-1401 and his email is john.beneke@arkansas.gov.

Sincerely,

Roger A. Knowlton

Roger A. Knowlton
Outdoor Recreation Planner

TAKE PRIDE IN AMERICA

From: Hillburn, David C SWL on behalf of Hilburn, David C SWL
Sent: Thursday, June 11, 2015 12:20 PM
To: 'john.beneke@arkansas.gov'
Cc: Jensen, Tacy SWL
Subject: LWCF grants at Riverside Park, Batesville AR (UNCLASSIFIED)
Attachments: Stillhouse_Branch_ADPT ltr for LWCF clearance 20150611.docx; Stillhouse_NPS_ltr20150603.pdf

Classification: UNCLASSIFIED
Caveats: NONE

Hello John,

It was good visiting with you regarding the project being planned for Stillhouse Branch at Batesville, Arkansas. As I mentioned on the phone, in our initial stages of planning we send letters to potentially interested agencies requesting information or comments that may be of use as we develop alternatives. I've attached an electronic copy of the letter sent to the National Park Service. A similar letter was sent to the Arkansas Department of Parks and Tourism, which initiated Matt's phone call to me on May 28th.

I've also attached a response letter we received from Roger Knowlton with the Park Service that requested that I contact you regarding LWCF funding that has been spent at Riverside Park. As you can see from the project description, the purpose of the work would be to protect the park and existing facilities from active erosion.

To aid in "closing the loop" regarding Mr. Knowlton's letter, I would appreciate a brief letter or email regarding ADPT's review and assessment of compliance with Section 6(f)(3) of the LWCF Act. As you clarified for me during our visit, this section refers to conversion of land to uses other than recreation. This project shouldn't affect any other lands, other than some bank sloping of Stillhouse Branch necessary to place rock for erosion protection.

Thanks again for your time and information.

Craig Hilburn
Biologist
Planning and Environmental Division

U.S. Army Corps of Engineers,
Little Rock District
700 West Capitol Avenue
Little Rock, Arkansas 72201
(501) 324-5735 (phone)

** Mr. Beneke indicated during phone call that there were no issues regarding LWCF conflicts.

THE DEPARTMENT OF ARKANSAS
HERITAGE

Arkansas Historic Preservation Program

May 19, 2015

Ms. Dana O. Coburn
Chief, Environmental Branch
Department of the Army
Little Rock District Corps of Engineers
Post Office Box 867
Little Rock, Arkansas 72203-0867

RE: Independence County – Batesville
Section 106 Review – COE-LR
Emergency Streambank and Shoreline Erosion Protection
AHPP Tracking Number 92984

Dear Ms. Coburn

This letter is written in response to your inquiry regarding properties of archeological, historical or architectural significance in the area of the proposed undertaking.

My staff has reviewed our records in connection with the proposed undertaking and there are five archeological sites (3IN137, 425, 553, 1348 and 1349) and two historic sites (IN0441 – White River Lock & Dam #1, and IN0620 – Lock Keeper's House) in the vicinity. IN0620 is not eligible for inclusion in the National Register of Historic Places, but the remaining sites are of undetermined eligibility. We recommend that these sites be assessed prior to any ground disturbing activity.

Thank you for the opportunity to review this undertaking. Please refer to the AHPP Tracking Number listed above in all correspondence. If you have any questions, please call Steve Imhoff of my staff at 501-324-9[illegible].

Sincerely,

Frances McSwain
Deputy State Historic Preservation Officer

cc: Mr. Everett Bandy, Quapaw Tribe of Oklahoma
Ms. Robin Dushane, Eastern Shawnee Tribe of Oklahoma
Dr. Ann M. Early, Arkansas Archeological Survey
Ms. Tamara Francis-Fourkiller, Caddo Nation
Dr. Andrea Hunter, Osage Nation
Ms. Kim Jumper, Shawnee Tribe of Oklahoma

DEPARTMENT OF THE ARMY
LITTLE ROCK DISTRICT CORPS OF ENGINEERS
POST OFFICE BOX 867
LITTLE ROCK, ARKANSAS 72203-0867

AHPP
OCT 21 2015

October 21, 2015

SUBJECT: Stillhouse Branch – Emergency Streambank and Shoreline Erosion Protection (AHHP 92984)

Date 10-21-15
[illegible] historic properties will be affected by the undertaking. The effect determination could change [illegible]
Frances McSwain
Frances McSwain, Deputy State Historic Preservation Office

Ms. Stacy Hurst
Arkansas Historic Preservation Program
State Historic Preservation Officer
323 Center Street, Suite 1500
Little Rock, AR 72201

Dear Ms. Hurst,

The U.S. Army Corps of Engineers, Little Rock District, (USACE) would like to thank you for your response letter to our request for information to assist in the preparation of an Environmental Assessment to determine the effect of the proposed shoreline stabilization of Stillhouse Branch. As this study has moved forward, the USACE has determined that the area of potential effect (APE) for this proposed project will be confined to the embankment and immediate area along the Stillhouse Branch near the confluence of the White River as identified in red on Figure 1 of the attached enclosure. Also included in the enclosure are recent photographs of the project area, aerial imagery showing previously ground disturbance within in the APE, and proposed alternatives.

A review of the Automated Management of Archeological Site Data in Arkansas (AMASDA), was conducted by the staff archeologist. No cultural resources sites have been recorded within the footprint of the APE. There are five archeological sites (3IN137, 3IN425, 3IN553, 3IN1348, and 3IN1349) and two historic sites (IN0441 – White River Lock & Dam #1, and IN0620 – Lock Keeper's House) in the vicinity of the project area, with the closest site (3IN137) being 120 meters from the APE. The General Land Office (GLO) maps were also reviewed and there are no historic features noted on the maps for this project area.

As part of the our Government to Government responsibilities and in compliance with federal laws, regulations, and policies we are consulting with all Tribal Governments that have expressed interest in USACE undertakings that occur within Independence County, Arkansas. Once we have reviewed any additional information received from our requests, we will make a determination of effects to historic properties for this project and will continue consultation with all interested parties.

At this time, under Section 106 of the National Historic Preservation Act of 1966, as amended and implementing regulations 36 CFR Part 800, as amended, and in coordination with the National Environmental Policy Act, we are seeking recommendations or concurrence on the proposed boundaries of the APE. If there are any questions or concerns, contact Ms. Cindy Thomas at (501) 324-5752 or email at Cynthia.G.Thomas@usace.army.mil

Arkansas Department of Health

4815 West Markham Street • Little Rock, Arkansas 72205-3867 • Telephone 501-661-2000
Governor Asa Hutchinson
Nathaniel Smith, MD, MPH, Director and State Health Officer

Engineering Section, Slot 37 Ph 501-661-2623 Fax 501-661-2032
www.HealthyArkansas.com/eng/ After Hours Emergency 501-661-2136

May 28, 2015

Dana O Coburn
Chief, Environmental Branch
Dept. Of the Army
Little Rock District Corps of Engineers
PO Box 867
Little Rock, AR 722003-0867

RE: Streambank and Erosion Protection Study- Stillhouse Branch, Independence County, Arkansas

Dear M. Coburn,

A staff review has been made of the information received on the referenced project. The Engineering Section has no comments on the submittal.

Please update your records and send all future submittals to:

Jeff Stone, P.E.
Director, Engineering Section
Arkansas Department of Health
4815 W. Markham, Slot 37
Little Rock, AR 72205-3867

Furthermore, only one notification is needed and Nathaniel Smith, MD, MPH, is the current agency wide director of the Arkansas Department of Health

If you have any questions or comments, please coordinate them through Brad Jones at 501-661-2067.

Sincerely,

Lyle Godfrey, P.E.
Chief, Technical Support
Engineering Section

MF:DT:LJ:LG:DR:bj

From: Lombardi, Melissa [melissa_lombardi@fws.gov]
Sent: Monday, June 22, 2015 11:38 AM
To: Hilburn, David C SWL
Subject: Re: [EXTERNAL] Re: Stillhouse Branch and Greers Ferry Water Reallocation studies (UNCLASSIFIED)

Craig,
I appreciate you following up on these studies and I apologize for missing them in the transition period.

The U.S. Fish and Wildlife Service has reviewed the Section 14 Stillhouse Branch study in Batesville, Arkansas. The Service has no threatened or endangered species or trust resource concerns with the authorization of this project. Thank you for the opportunity to comment. If you have any questions, please feel free to contact me.

(The comments herein are for the sole purpose of providing technical assistance to the action agency or for individual pre-project planning assistance. These comments and opinions should not be misconstrued as an "effect determination" or considered as concurrence with any proceeding determination(s) by the action agency in accordance with Section 7 of the Endangered Species Act (ESA). These comments do not authorize the take of a threatened or endangered species as defined under the ESA. In the absence of authorization (e.g., an ESA Section 10 Permit, a Biological Opinion with incidental take provisions, a concurrence letter, etc.) from the Service, take of protected species are in violation of the ESA.)

From: Hilburn, David C SWL
Sent: Thursday, May 28, 2015 12:53 PM
To: Jensen, Tacy SWL; Proffitt, Glenn R SWL
Cc: Hilburn, David C SWL; Coburn, Dana O SWL
Subject: Arkansas State Park Contact - Stillhouse and Greers Ferry letters

Classification: UNCLASSIFIED
Caveats: NONE

Tacy/Glenn,

Just a quick note for the files. I received a call this morning from matt McNair with Arkansas State Parks regarding the agency coordination letters for Stillhouse Branch and Greers Ferry Reallocation. His only comment was he's supportive of studies, has no comment on the letters, but wants to remain on the mailing list for future correspondence. I'll copy this email to the files for both projects.

Craig Hilburn
Biologist
Planning and Environmental Division

U.S. Army Corps of Engineers,
Little Rock District
700 West Capitol Avenue
Little Rock, Arkansas 72201

From: Bailey, Bill [William.Bailey@ahtd.ar.gov]
Sent: Friday, June 12, 2015 1:18 PM
To: Hilburn, David C SWL
Cc: Fleming, John; Price, Brenda
Subject: [EXTERNAL] COE Public Notice Stillhouse Branch

AHTD reviewed the letter referencing the "Emergency Streambank and Shoreline Erosion Protection" study on Stillhouse Branch. The Department has no comments on this project.

Bill Bailey
Arkansas Highway & Transportation Department
Environmental Division
Environmental Scientist
501-569-2617

DEPARTMENT OF THE ARMY
LITTLE ROCK DISTRICT, CORPS OF ENGINEERS
POST OFFICE BOX 867
LITTLE ROCK, ARKANSAS 72203-0867

REPLY TO
ATTENTION OF
CESWL-PE

April 22, 2016

AHPP
APR 25 2016

SUBJECT: Stillhouse Branch – Emergency Streambank and Shoreline Erosion Protection (AHHP 92984)

RECEIVED USACE
4-28-16 PE
CThomas

Ms. Stacy Hurst
Arkansas Historic Preservation Program
State Historic Preservation Officer
323 Center Street, Suite 1500
Little Rock, AR 72201

Date APR 26 2016
No known historic properties will be affected by this undertaking. This effect determination could change should new information come to light.
Frances McSwain
Frances McSwain, Deputy State Historic Preservation Officer

Dear Ms. Hurst:

The Little Rock District of the US Army Corps of Engineers (Corps) is currently studying a proposed bank line stabilization for Stillhouse Branch in Batesville, Arkansas, PN# 335548, Section 14 of the Flood Control Act of 1946, as amended, Streambank and Shoreline Erosion Protection.

A field visit was made to the proposed construction area on March 26, 2016. No historic properties as defined by Section 106 of the National Historic Preservation Act were located within the Area of Potential Effect (APE). Based on the results of the desktop analysis reported in the October 20, 2015 consultation letter addressed to your office, and field investigations, it is determined by USACE that no cultural resources will be impacted. A cultural resources Project Identification Form is enclosed. In the unlikely event that cultural materials are discovered during construction, all activities will cease and your office will be consulted.

As a result the review and coordination with your staff, we have determined that this proposed action will have no effect to historic properties eligible or potentially eligible for inclusion in the National Register of Historic Places. In compliance with of Section 106 of the National Historic Preservation Act of 1966, as amended, and 36 CFR Part 800, and in coordination with the National Environmental Policy Act, we are seeking your recommendations or concurrence with our determination of no effect. Should you have any questions or concerns, feel free to contact me at 1 (501) 324-5752. Please send responses via email to Cynthia.G.Thomas@usace.army.mil. Thank you for your time.

With Respect,

THOMAS.CYNTHIA.G.
1400734069

Digitally signed by THOMAS.CYNTHIA.G.1400734069
DN: c=US, o=U.S. Government, ou=DoD, ou=PKI, ou=USA, cn=THOMAS.CYNTHIA.G.1400734069
Date: 2016.04.22 15:50:04 -05'00'

Cindy Thomas
District Archeologist

Enclosure

APPENDIX D

Real Estate Plan
Emergency Streambank Protection Project
Section 14
Stillhouse Branch
White River
Batesville, Arkansas

30 August 2016

Prepared For
US Army Corps of Engineers
Southwestern Division
Little Rock District

Prepared By
Brian C. Raley
Acquisition, Planning & Control Branch
Real Estate Division
US Army Corps of Engineers
Southwestern Division
Little Rock District

Real Estate Plan
Emergency Streambank Protection Project
Section 14
Stillhouse Branch
White River
Batesville, Arkansas

Table of Contents **Page**

Prepared By: Brian C. Raley

Exhibits:

Exhibit 1	Vicinity Map
Exhibit 2	Estates
Exhibit A	Project Design Map

Real Estate Plan
Emergency Streambank Protection Project
Section 14
Stillhouse Branch
White River
Batesville, Arkansas

1. Purpose of the Real Estate Plan

The purpose of this Real Estate Plan (REP) is to outline the real estate acquisition requirements necessary for the completion of the Section 14, Stillhouse Branch Project.

The authority for the study is Section 14, Flood Control Act of 1946 (P.L. 79-526) as amended, Emergency Streambank and Shore Protection.

2. Description of lands, easements, and rights-of-way (LERRD's)

The sponsor for the proposed project is the City of Batesville, Arkansas. A map depicting the project design is shown in Exhibit 2. The proposed project will require an area located on the left descending bank of the White River in Batesville, AR consisting of 0.25 acres of Bank Protection Easement and 1.52 acres of Temporary Work Area easement to be owned and maintained in public ownership by the sponsor. The proposed project area is presumably sponsor owned land in the area of Stillhouse Branch located downstream of the Highway 167 Bridge, crossing the White River. Stillhouse Branch is a tributary to the White River and is within the city limits of the City of Batesville, Arkansas located in Independence County. Stillhouse branch runs through the middle of Riverside Park, owned by the City of Batesville before running into the White River.

The sponsor is the only known ownership in the project area. Clear title is yet to be provided as described in section three of this plan.

3. Description of LERRD's already owned by Non-Federal Sponsor

The sponsor is the only known owner in the project area. However, deeds provided by the City of Batesville showing ownership have errors in the legal descriptions and fail to show proof of ownership of the entire project area. A preliminary search with the Independence County Circuit Clerk returned no records or real estate instruments for the project area.

It is currently assumed the project area is owned in fee by the sponsor as there is a fully functioning and maintained public park on either bank of Stillhouse Branch along with a waste water treatment facility adjacent to the northeast boundary of the project. However, the sponsor is required to provide clear title for the entire project area before a project partnership agreement can be executed with the US Government.

The sponsor may address title discrepancies in the project area by providing recorded corrective deeds for conveyance already provided showing ownership of the project area, recorded succeeding deeds showing ownership of the project area, or a combination of recorded corrective and succeeding deeds. The sponsor must also identify any known and unknown easements or other rights of way existing in the project area. Any lands, easements or rights of way identified as not being owned by the sponsor during this process must be acquired or terminated respectively by the sponsor. The costs for such actions must be recorded and provided to the federal government for possible crediting.

It is recommended the sponsor hire an abstract or title company to help clear their title and ensure the entire project area is in sponsor ownership. The estimated cost of the sponsor clearing title in the project area is outlined in section 10 of this plan.

This streambank protection project is designed to protect the established recreation areas within Riverside Park as well as surrounding water utility services and existing bridges. These facilities fully surround the project area; thus the value of all land provided by the sponsor is not eligible for crediting. However, the administrative cost of the sponsor clearing title for presumed ownership will be considered for crediting.

4. Copies of proposed non-standard estates

There are no proposed non-standard estates involved with this project.

5. Existing federal project that lies fully or partially with the LERRD's required for the project

There is no federal project lying within the proposed project area

6. Any federally owned land included within the LERRD's required for the project

See paragraph 5 above.

7. Extent that LERRD's lies below the ordinary high water mark

The sponsor is the only known ownership in the project area. No acquisition of LERRD is expected.

8. Map depicting project area

The map depicting the location of the proposed project is shown in Exhibit 1. There are no known or potential HTRW lands. There are no utilities or facilities to be relocated due to the construction of this project.

9. Discussion of whether there will be flooding induced by construction or Operation and Maintenance (O&M) of the project

Induced flooding is not anticipated from the construction or the operation and maintenance of this project.

10. Baseline cost estimate for real estate

The following baseline real estate cost estimate includes only administrative costs for the sponsor and the US Government.

The total estimated real estate cost is $23,400 (including contingency) for the proposed project. Of this total estimate $15,000 is Non-Federal Sponsor cost. The remaining $8,400 is estimated federal government cost.

BASELINE COST ESTIMATE FOR REAL ESTATE
EMERGENCY STREAMBANK PROTECTION - SECTION 14
STILLHOUSE BRANCH PROJECT

01	Lands & Damages		
01.23	Construction Contract Documents		
01.23.03	Real Estate Analysis Documents		
01.23.03.01	Real Estate Planning Documents		
	Planning by Local Sponsor	$2,000	20% = $400
	Local Sponsor Remedy Title	$10,000	20% = $2,000
	Corps of Engineers Real Estate Plan	$5,000	20% = $1,000
	Review of Local Sponsor	$1,000	20% = $200
	TOTAL PLANNING (Not included in Estimated Total)	$18,000	$3,600
01.23.03.02	Real Estate Acquisition Documents		
	Acquisitions by Local Sponsor		
	Review of Local Sponsor		
01.23.03.03	Real Estate Condemnation Documents		
	Condemnations by Local Sponsor		
	Review of Local Sponsor		
01.23.03.05	Real Estate Appraisal Documents		
	Appraisals by Local Sponsor		
	Review of Local Sponsor		
01.23.03.06	Real Estate PL 91-646 Asst. Documents		
	PL 91-646 Asst. by Local Sponsor		
	Review of Local Sponsor		
01.23.03.15	Real Estate Payment Documents		
	Payments by Local Sponsor (Land)		
	Payments by Local Sponsor (Damages)		
	Payments by Local Sponsor (PL 91-646 Asst.)	0	0
	Review of Local Sponsor	0	0
01.23.03.17	Real Estate LERRDRD Crediting Documents		
	Preparation by Local Sponsor	$500	20% = $100
	Review of Local Sponsor	$1,000	20% = $200
	TOTAL ADMIN & PAYMENTS	$19,500	
	TOTAL CONTINGENCY		$3,900
	ESTIMATED TOTAL		**$23,400**

11. Relocation assistance benefits

There are no PL 91-464 relocations associated with this project.

12. Mineral activity

Bureau of Land Management (BLM) does not own any mineral rights on any of the lands required for this project, as defined under State law. No oil, gas, and coal exploration activities were noted in the immediate area of the proposed project. Any mineral rights for oil, gas and coal could be subordinated or purchased.

13. Assessment of Non-Federal Sponsor's legal and professional capability

The sponsor is the only known ownership in the project area. No acquisition of LERRD is expected. Thus, there is no assessment required.

14. Application of zoning ordinances

There are no zoning ordinances applicable to the lands required for this project.

15. Real estate acquisition schedule

The sponsor is the only known ownership in the project area. No acquisition of LERRD is expected.

16. Description of facility or utility relocations

No facility or utility relocations are expected for this project.

There is an existing abandoned sewage pipeline crossing the project area. The sponsor states it is a city owned pipeline and it will be cut and capped on either side of Stillhouse Branch prior to construction of the project. The pipeline will not be otherwise moved or touched during construction of the project.

Pedestrian and motor bridges cross the project area. These bridges or anything attached to them will not be moved or otherwise touched during the construction of this project.

Ownership of the bridges and pipeline will be better identified as the sponsor works to provide clear title for their ownership in the project area. See section 3 of this plan.

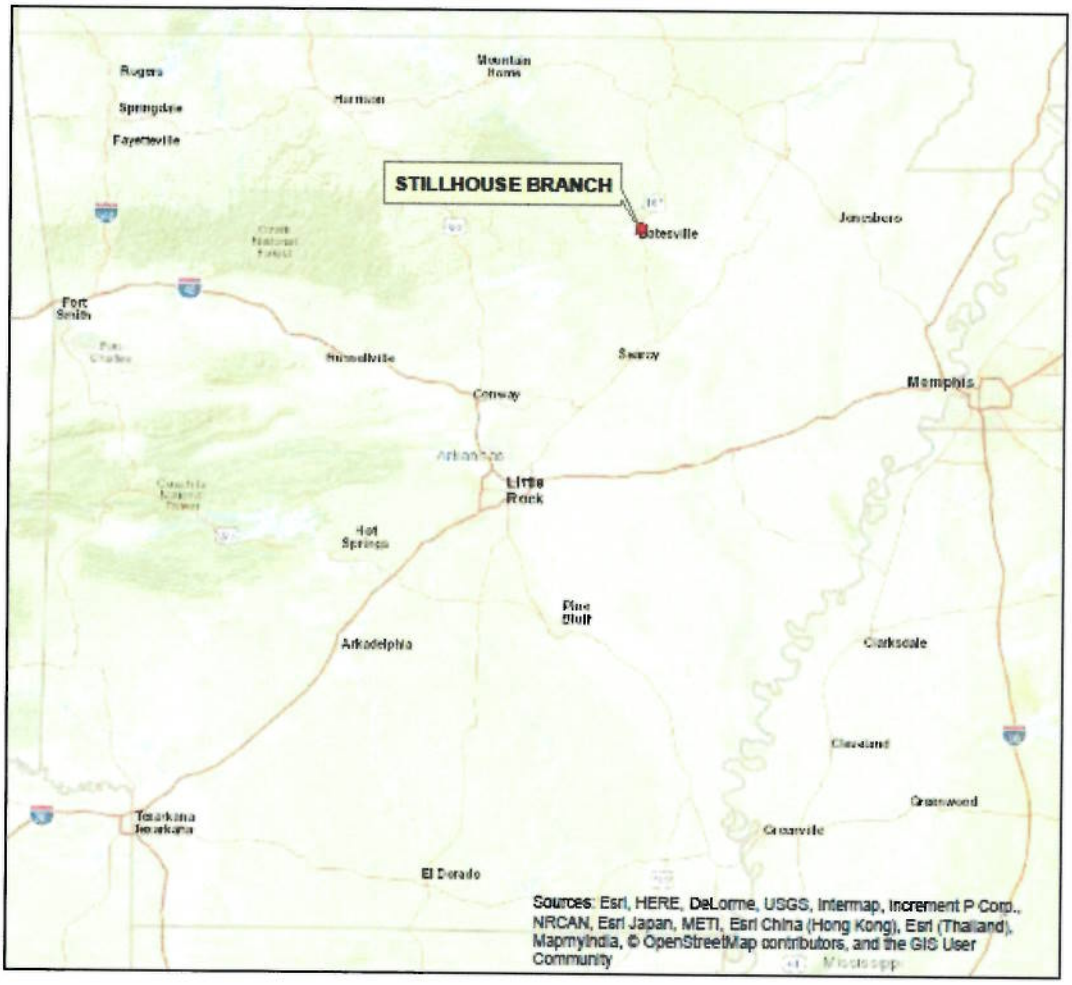
17. Support or opposition to the project

There have been no positive or negative written or verbal comments received concerning this proposed project.

18. Other real estate issues

There are no other issues that need to be addressed relevant to this project.

STILLHOUSE BRANCH
EMERGENCY STREAMBANK PROTECTIN PROJECT
SECTION 14



VICINITY MAP

0 25 50 100 Miles

N
W E
S

Exhibit 1

EXHIBIT 2
Estates

ESTATES: Bank protection easement and temporary work area easement are the estates to be acquired for this proposed port project.

Bank Protection Easement

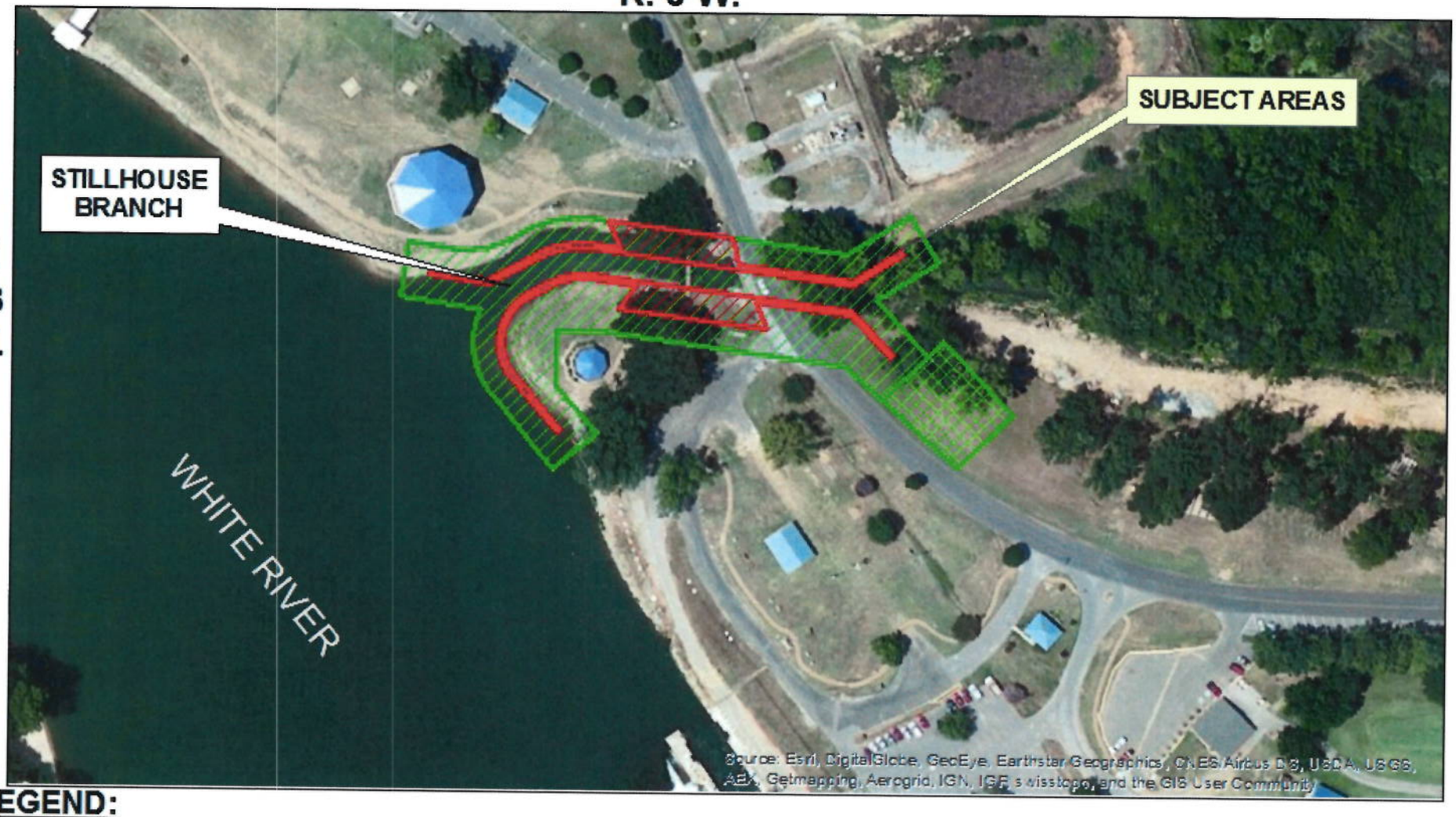
A perpetual and assignable easement and right-of-way in, on, over and across the land hereinafter described for the location, construction, operation, maintenance, alteration, repair, rehabilitation and replacement of a bank protection works, and for the placement of stone, riprap and other materials for the protection of the bank against erosion; together with the continuing right to trim, cut, fell, remove and dispose therefrom all trees, underbrush, obstructions, and other vegetation; and to remove and dispose of structures or obstructions within the limits of the right-of-way; and to place thereon dredged, excavated or other fill material, to shape and grade said land to desired slopes and contour, and to prevent erosion by structural and vegetative methods and to do any other work necessary and incident to the project; together with the right of ingress and egress for such work; reserving, however, to the landowners, their heirs and assigns, all such rights and privileges as may be used without interfering with or abridging the rights and easement hereby acquired; subject, however to existing easements for public roads and highways, public utilities, railroads and pipelines.

Temporary Work Area Easement

A temporary easement and right-of-way in, on, over and across (the land described in Schedule A) (Tracts Nos. _____, _____, _____) for a period not to exceed _____, beginning with date possession of the land is granted to the United States, its representative, agents, and contractors as a (borrow area) (work area), including the right to (borrow and/or deposit fill, spoil and waste material thereon) (move, store and remove equipment and supplies, and erect and remove temporary structures on the land and to perform any other work necessary and incident to the construction of the _____ Project, together with the right to trim, cut, fell and remove therefrom all trees, underbrush, obstructions, and any other vegetation, structures, and any other vegetation, structures, or obstacles within the limits of the right-of-way; reserving, however, to the landowners, their heirs and assigns, all such rights and privileges as may be used without interfering with or abridging the rights and easement hereby acquired; subject, however, to existing easements for public roads and highways, public utilities, railroads and pipelines.

R. 6 W.

T. 13 W.



LEGEND:

SUBJECT AREAS

- PARCEL NO.1 (BANK PROTECTION EASEMENT - 0.12 ACRE)
- PARCEL NO.2 (BANK PROTECTION EASEMENT - 0.13 ACRE)
- PARCEL NO.3 (TEMPORARY WORK AREA EASEMENT - 1.42 ACRES)
- PARCEL NO.4 (TEMPORARY WORK AREA EASEMENT - 0.10 ACRE)

COUNTY: INDEPENDENCE
STATE: ARKANSAS

US Army Corps of Engineers
Little Rock District
Real Estate Division

STILLHOUSE BRANCH
BATESVILLE, ARKANSAS
LOCATED WITHIN SECTION 21,
TOWNSHIP 13 WEST, RANGE 6 WEST
INDEPENDENCE COUNTY, ARKANSAS

DATE: AUGUST 30, 2016
FN:STILLHOUSEBRANCH JPG
EXHIBIT "A"

Appendix E

Clean Water Act
Section 404(b)(1) Analysis
Emergency Streambank Protection Project
Section 14
Stillhouse Branch
White River
Batesville, Arkansas

Prepared By:
David C. Hilburn
Chief, Environmental Branch
Planning and Environmental Division
US Army Corps of Engineers
Southwestern Division
Little Rock District

SHORT-FORM
Evaluation of Section 404(b)(1) Guidelines

Formal review should follow close of public notice comment period.

APPLICANT: Stillwater Branch Section 14 APPLICATION NUMBER: NA

1. Review of Compliance (Section 230.10(a)-(d)). Preliminary 1/ Final 2/
A review of the permit application indicates that:

a. The discharge represents the least environmentally damaging practicable alternative and if in a special aquatic site, the activity associated with the discharge must have direct access or proximity to, or be located in the aquatic ecosystem to fulfill its basic purpose (if no, see section 2 and information gathered for EA alternative):..... YES [X] NO[ ]* YES [X] NO[ ]

b. The activity does not appear to: 1) violate applicable state water quality standards or effluent standards prohibited under Section 307 of the CWA; 2) jeopardize the existence of Federally listed endangered or threatened species or their habitat; and 3) violate requirements of any Federally designated marine sanctuary (if no, see section 2b and check responses from resource and water quality certifying agencies):..... YES [X] NO[ ]* YES [X] NO[ ]

c. The activity will not cause or contribute to significant degradation of waters of the United States including adverse effects on human health, life stages of organisms dependent on the aquatic ecosystem, diversity, productivity and stability, and recreational, aesthetic, and economic values (If no, see section 2):..... YES [X] NO[ ]* YES [X] NO[ ]

d. Appropriate and practicable steps have been taken to minimize potential adverse impacts of the discharge on the aquatic ecosystem (If no, see section 5). ..... YES [X] NO[ ]* YES [X] NO[ ]
*1/, 2/ See page 3.

2. Technical Evaluation Factors (Subparts C-F). N/A Not Significant Significant

a. Physical and chemical characteristics of the Aquatic Ecosystem (Subpart C-F)

	N/A	Not Significant	Significant
1) Substrate impacts.		X	
2) Suspended particulates/turbidity impacts.		X	
3) Water column impacts.		X	
4) Alteration of current patterns and water circulation.		X	
5) Alteration of normal water fluctuations/hydroperiod.		X	
6) Alteration of salinity gradients.	X		

b. Biological Characteristics of the Aquatic Ecosystem (Subpart D).

	N/A	Not Significant	Significant
1) Effect on threatened/endangered species and their habitat.	X		
2) Effect on the aquatic food web.		X	
3) Effect on other wildlife(mammals, birds, reptiles, amphibians)		X	

c. Special Aquatic sites (Subpart E).

	N/A	Not Significant	Significant
1) Sanctuaries and refuges.	X		
2) Wetlands.	X		
3) Mud flats.	X		
4) Vegetated shallows.	X		
5) Coral reefs.	X		
6) Riffle and pool complexes.		X	

d. Human Use Characteristics (Subpart F).

	N/A	Not Significant	Significant
1) Effects on municipal and private water supplies.	X		
2) Recreational and Commercial fisheries impacts.		X	
3) Effects on water-related recreation.		X	
4) Aesthetic impacts.		X	
5) Effects on parks, national and historical monuments, national seashores, wilderness areas, research sites, similar preserves.	X		

Remarks: Where a check is placed under the significant category, preparer add explanation below.

3. Evaluation of Dredged or Fill Material (Subpart G). 3/

a. The following information has been considered in evaluating the biological availability of possible contaminants in dredged or fill material. (Check only those appropriate.)

1) Physical characteristics.....[X]
2) Hydrography in relation to known or anticipated sources of contaminants.....[X]
3) Results from previous testing of the material or similar material in the vicinity of the project.....[X]
4) Known, significant, sources of persistent pesticides from land runoff or percolation.....[X]
5) Spill records for petroleum products or designated (Section 311 of CWA) hazardous substances.[X]
6) Other public records of significant introduction of contaminants from industries, cities or other sources.....[X]
7) Known existence of substantial material deposits of substances which could be released in harmful quantities to the aquatic environment by man-induced discharge activities.....[X]
8) Other sources (specify).....[ ]

List appropriate references (attach sheet if necessary).

b. An evaluation of the appropriate information in 3a above indicates that there is reason to believe the proposed dredge or fill material is not a carrier of contaminants, or that levels of contaminants are substantively similar at extraction and that the dredged material will be constrained and not allowed to flow beyond the boundaries of the disposal site. The material meets the testing exclusion criteria .....YES[X] NO[ ]

4. Disposal Site Delineation (Section 230.11(f)).

a. The following factors, as appropriate, have been considered in evaluating the disposal site

1) Depth of water at disposal site.....[X]
2) Current velocity, direction, and variability at disposal site.....[X]
3) Degree of turbulence.....[X]
4) Water column stratification.....[X]
5) Discharge vessel speed and direction.....[ ]
6) Rate of discharge.....[X]
7) Dredged material characteristics (constituents, amount, and type of material, settling velocities) .....[X]
8) Number of discharges per unit of time.....[X]
9) Other factors affecting rates and patterns of mixing (specify).....[ ]

List appropriate references (attach sheet if necessary).

b. An evaluation of the appropriate factors in 4a above indicates that the disposal site and/or size of mixing zone are acceptable.....YES[X] NO[ ]

5. Actions to Minimize Adverse Effects (Subpart H).

All appropriate and practicable steps have been taken, through application of recommendation of Section 230.70-230.77 to ensure minimal adverse effects of the proposed discharge.

List actions taken. (attach sheet if necessary).....YES[X] NO[ ]

N.B. Return to section 1 for final stage of compliance review. See also note 3/, page 3.

6. Factual Determination (Section 230.11).

A review of appropriate information as identified in items 2-5 above indicates that there is minimal potential for short or long-term environmental effects of the proposed discharge as related to:

a. Physical substrate at the disposal site (review sections 2a, 3, 4, encl 5 above).....YES[X] NO[ ]
b. Water circulation, fluctuation and salinity (review sections 2a, 3, 4, and 5).....YES[X] NO[ ]
c. Suspended particulates/turbidity (review sections 2a, 3, 5, and 6).....YES[X] NO[ ]
d. Contaminant availability (review sections 2a, 3, and 4).....YES[X] NO[ ]
e. Aquatic ecosystem structure and function (review sections 2b and c, 3, and 5).....YES[X] NO[ ]
f. Disposal site (review sections 2, 4, and 5).....YES[X] NO[ ]
g. Cumulative impact on the aquatic ecosystem.....YES[X] NO[ ]
h. Secondary impacts on the aquatic ecosystem.....YES[X] NO[ ]

7. Evaluation Responsibility (*See page 3).

a. This evaluation was prepared by:

David C. Hilburn
Position: Biologist
Date: 5/19/2016

b. This evaluation was reviewed by:

Tracy Jensen
Position: Biologist
Date: 5/27/2016

8. Findings.

a. The proposed disposal site for discharge of dredged or fill material complies with the Section 404(b)(1) guidelines.....[X]

b. The proposed disposal site for discharge of dredged or fill material complies with the Section 404(b)(1) guidelines with the inclusion of the following conditions: (attach sheet if necessary).....[ ]

c. The proposed disposal site for discharge of dredged or fill material does not comply with the Section 404(b)(1) guidelines for the following reason(s):

1) There is a less damaging practicable alternative..... [ ]
2) The activity:
violates applicable state water quality standards..... [ ]
jeopardizes a Federally listed endangered or threatened species..... [ ]
violates requirements of a Federally designated marine sanctuary..... [ ]
3) The proposed discharge will result in significant degradation of the aquatic ecosystem..... [ ]
4) The proposed discharge does not include all practicable and appropriate measures to minimize potential harm to the aquatic ecosystem..... [ ]

SIGNATURE

Patricia Anslow
Chief, Planning and Environmental Division

* A negative, significant, or unknown response indicates that the permit application may not be in compliance with the Section 404(b)(1) Guidelines.

1/ Negative responses to three or more of the compliance criteria at this stage indicate that the proposed projects may not be evaluated using this "short term procedure." Care should be used in assessing pertinent portions of the technical information of items 2 a thru d below before completing the final review of compliance.

2/ Negative response to one of the compliance criteria at this stage indicates that the proposed project does not comply with the guidelines. If the economics of navigation and anchorage of Section 404(b)(2) are to be evaluated in the decision-making process, the "short form evaluation process is inappropriate."

3/ If the dredged or fill material cannot be excluded from individual testing, the "short-form" evaluation process is inappropriate.