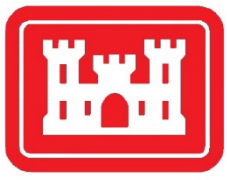
Appendix G – Environmental Assessment

Stump Creek, Little Rock, AR

Section 208

Detailed Project Report and Environmental Assessment

November 2023



US Army Corps of Engineers

Little Rock District

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Attachment B: .....Arkansas Natural Heritage Commission State Species Report
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List of Acronyms

ACS	American Community Survey
ADEQ	Arkansas Department of Environmental Quality
AEP	Annual Exceedance Probability
AMASDA	Automated Management of Archeological Data in Arkansas
ANHC	Arkansas National Heritage Commission
BMP	Best Management Practice
CAA	Clean Air Act
CAP	Continuing Authorities Program
CEJST	Climate and Environmental Justice Screening Tool
CEQ	Council on Environmental Quality
EA	Environmental Assessment
EJ	Environmental Justice
EJScreen	Environmental Justice Screening Tool
EO	Executive Order
EPA	Environmental Protection Agency
FID	Federal Interest Determination
FIS	Flood Insurance Study
HEC-RAS	Hydrologic Engineering Center River Analysis System
HEC-2	Hydrologic Engineering Center-2 Water Surface Profiles
IPaC	Information for Planning and Consultation
NAAQS	National Ambient Air Quality Standards
NEPA	National Environmental Policy Act
NFS	Non-Federal Sponsor
NHPA	National Historic Preservation Act
PDT	Project Delivery Team
RPEC	Regional Planning and Environmental Center
SHPO	State Historic Preservation Office
STAA	Short-Term Activity Authorization
T&E	Threatened and Endangered
USACE	United States Army Corps of Engineers
USFWS	United States Fish and Wildlife Service
°F	Degrees Fahrenheit
%	Percent

DRAFT FINDING OF NO SIGNIFICANT IMPACT

STUMP CREEK SECTION 208
DETAILED PROJECT REPORT AND ENVIRONMENTAL ASSESSMENT
LITTLE ROCK, ARKANSAS

The U.S. Army Corps of Engineers, Little Rock District (Corps) has conducted an environmental analysis in accordance with the National Environmental Policy Act of 1969, as amended. The Draft Detailed Project Report and Environmental Assessment (DPR/EA), dated January 2023, for the Stump Creek Continuing Authorities Program project addresses flood risk management opportunities and feasibility in Little Rock, Arkansas.

The Draft DPR/EA, incorporated herein by reference, evaluated three alternatives that would offer nuisance flooding reduction in the study are. The recommended plan was selected based on Other Social Effects metrics and includes:

- Clearing and snagging only for approximately 100 feet upstream of Reck Road.
- Clearing, snagging, and excavation will occur for the first approximately 2,300 feet downstream of Reck Road.

In addition to a "no action" plan, two action alternatives were evaluated. The alternatives included clearing and snagging approximately 100 feet upstream of Reck Road paired with either: (1) clearing, snagging, and excavation for the first approximately 1,500 feet downstream of Reck Road and a further 750 feet downstream of solely clearing and snagging (Alternative 4a); or, (2) clearing, snagging, and excavation the full roughly 2,300 feet downstream of Reck Road (Alternative 4b).

For all alternatives, the potential effects were evaluated, as appropriate. A summary assessment of the potential effects of the recommended plan are listed in Table 1:

Table 1: Summary of Potential Effects of the Recommended Plan

	Insignificant effects	Insignificant effects as a result of mitigation*	Resource unaffected by action
Aesthetics	☒	☐	☐
Air quality	☒	☐	☐
Aquatic resources/wetlands	☒	☐	☐
Invasive species	☒	☐	☐
Fish and wildlife habitat	☒	☐	☐
Threatened/Endangered species/critical habitat	☒	☐	☐
Historic properties	☐	☐	☒

	Insignificant effects	Insignificant effects as a result of mitigation*	Resource unaffected by action
Other cultural resources	☒	☐	☐
Floodplains	☒	☐	☐
Hazardous, toxic & radioactive waste	☐	☐	☒
Hydrology	☒	☐	☐
Land use	☐	☐	☒
Navigation	☐	☐	☒
Noise levels	☒	☐	☐
Public infrastructure	☒	☐	☐
Socio-economics	☒	☐	☐
Environmental justice	☒	☐	☐
Soils	☒	☐	☐
Tribal trust resources	☐	☐	☒
Water quality	☒	☐	☐
Climate change	☐	☐	☒

All practicable and appropriate means to avoid or minimize adverse environmental effects were analyzed and incorporated into the Preferred Alternative. Best management practices (BMPs) as detailed in the DPR/EA will be implemented, if appropriate, to minimize impacts.

Examples of BMPs include but are not limited to:

- Best available practical techniques and BMPs would be utilized during construction activities to avoid and minimize potential temporary and long-term adverse impacts.
- Disturbed areas that will not be maintained for O&M access will be revegetated with native grass seed mixture (species to be determined in PED).
- Limiting ground disturbance necessary for staging areas, access routes, etc. to the smallest area necessary to safely operate during construction.
- Movement of heavy equipment and support vehicles would utilize predetermined access roads to the greatest extent possible. Ingress and egress to access the creek will utilize minimal area needed to complete work.

- Refueling and maintenance of vehicles and equipment in designated areas to prevent accidental spills and potential contamination of water sources and the surrounding soils.
- Limiting idling of vehicles and equipment to reduce emissions.
- Minimizing project equipment and vehicles transiting between the staging area and restoration site to the greatest extent practicable, including but not limited to using designated routes, confining vehicle access to the immediate needs of the project, and coordinating and sequencing work to minimize the frequency and density of vehicular traffic.
- Minimizing use of construction lighting at night and when in use, directing lighting toward the construction activity area and shielding from view outside of the project area to the maximum extent practicable.

No compensatory mitigation is required as part of the recommended plan.

Public review of the Draft DPR/EA and Draft FONSI will be completed in April of 2023. All comments submitted during the public review period will be responded to in the Final DPR/EA and Finding of No Significant Impact (FONSI).

Pursuant to the Endangered Species Act of 1973, as amended, listed threatened, endangered, proposed, and candidate species as well as critical habitat within the study area were evaluated. The proposed action would have No Effect on the Northern Long-eared Bat (*Myotis septentionalis*), Eastern Black Rail (*Laterallus jamaicensis ssp. jamaicensis*), Piping Plover (*Charadrius melodus*), Red Knot (*Calidris canutus rufa*), and Monarch Butterfly (*Danaus plexippus*). With conservation measures in place, the proposed action would have no measurable impact on the status of the two proposed species and therefore is not likely to jeopardize the continued existence of the Tricolored Bat (*Perimyotis subflavus*) or Alligator Snapping Turtle (*Machrochelys temminckii*). If either species is listed prior to project completion, the direct and indirect effects of the proposed action May Affect, but are Not Likely to Adversely Affect the Tricolored Bat and Alligator Snapping Turtle.

Pursuant to Section 106 of the National Historic Preservation Act of 1966, as amended, the U.S. Army Corps of Engineers determined that the recommended plan has No Effect on historic properties. Pursuant to section 401 of the Clean Water Act of 1972, as amended, a water quality certification will be obtained from the Arkansas Department of Environmental Quality. All conditions of water quality certification shall be implemented in order to minimize adverse impacts to water quality.

All applicable environmental laws have been considered and coordination with appropriate agencies and officials will be completed. Technical, environmental, cost effectiveness, and environmental justice criteria were used in formulation of the alternative plans. All applicable laws, executive orders, regulations, and local government plans were considered in evaluation of alternatives. Based on this report, the reviews by other Federal, state, and local agencies, Tribal Nations, input of the public, and the review by my staff, it is my determination that the recommended plan would not cause significant adverse effects on the quality of the human environment; therefore, preparation of an Environmental Impact Statement is not required.

Date

Damon M. Knarr
Colonel, US. Army Corps of Engineers
District Commander

1. Introduction

Stump Creek is located in Southwest Little Rock, Pulaski County, Arkansas (Figure 1). The stream is a small intermittent urban drainage conveyance that drains an approximate 0.7 square mile area (Figure 2). Stump Creek is 1.13 miles in length from the confluence to its origin just upstream of Baseline Road. From upstream of Baseline Road to the confluence, there are a total of four culverts that control conveyance of flows. They are located at Baseline Road, South Heights Road, Reck Road, and Pine Cone Drive. In recent years, Stump Creek has filled with debris and its meanders have become ineffective at carrying storm water runoff while its riparian corridor has become choked with debris and trash. As a result, numerous homes in the area of Stump Creek sustain flood damages due to the stream's inability to convey floodwaters effectively.

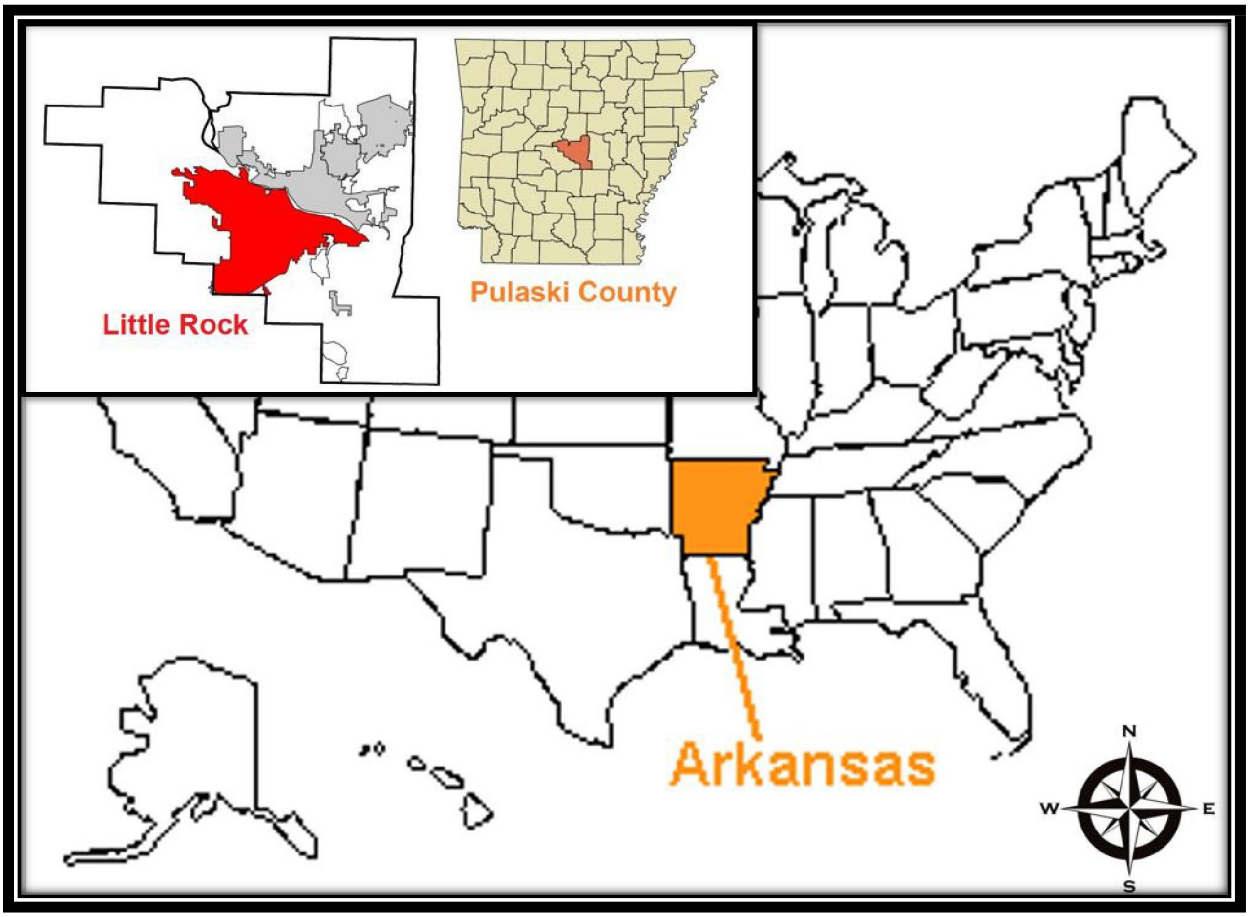

Figure 1 – Study Area Location

Figure 2 – Stump Creek Watershed

1.1 Study Authority

Section 208 of the Flood Control Act 1954, as amended, Public Law 780 – 83d Congress, dated 3 September 1954, authorizes the US Army Corps of Engineers (USACE) to study, adopt and construct in-stream clearing and snagging projects in the interest of flood risk management.

> *Sec. 208. That section 2 of the Flood Control Act of August 28, 1937, as amended by section 13 of the Flood control Act of July 24, 1946, is hereby further amended to read as follows:*
>
> *"That the Secretary of the Army is hereby authorized to allot not to exceed $2,000,000 from any appropriations heretofore or hereafter made for any one fiscal year for flood control, for removing accumulated snags and other debris, and clearing and straightening the channel in navigable streams and tributaries thereof, when in the opinion of the Chief of Engineers such work is advisable in the interest of flood control:* Provided, *That not more than $100,000 shall be expended for this purpose for any single tributary from the appropriations for any one fiscal year."*

1.2 Federal Interest

Federal interest for a Section 208 Continuing Authorities Program (CAP) project was determined by having a potential for an alternative for the project area to meet the CAP criteria. A site visit was conducted 26 October 2020. The Project Delivery Team (PDT) originally believed that an alternative could be implemented within the limits of the CAP program. Therefore, the criterion for Federal interest was considered met. In order to show Federal interest, the study has a local NFS willing to cost share for the feasibility costs over $100,000. A letter of the original Federal Interest Determination (FID), as approved 27 January 2021 by the Regional Planning and Economic Center (RPEC) Director for Civil Works, expressed interest by the City of Little Rock, AR to collaborate in a Feasibility Study. Based on all available information to date, Federal Interest was confirmed.

FID CLOSEOUT REPORT OCTOBER 2021

Hydrologic, hydraulic, and economic analysis were performed after the approval of the original FID. The conclusions reached by those additional analyses determined that there is no Federal Interest in moving forward into the Feasibility Phase because there is not a National Economic Development Plan that reasonably maximizes net benefits compared to costs (Appendix B – Economics and Appendix F – Cost Engineering).

2. Project Purpose and Need

Stump Creek experiences flooding, primarily downstream of the Reck Road crossing in Southwest Little Rock. As commercial and residential development has occurred along the creek over the years, storm water runoff has increased due to changing pervious surfaces to impervious, preventing rainfall percolation through the riparian corridor. This has caused repeated flooding in downstream properties following extended rainfall events.

The City of Little Rock received numerous requests and complaints to address flooding issues along Stump Creek near homes along Arehart Drive Pine Cone Drive. The dates and frequencies of the requests indicated vegetative growth, debris accumulation, and channel aggregation are likely causing increased flooding.

The principal cause of the flood problems is insufficient channel size and constrictions from narrow bridges and culverts and accumulated woody debris and trash in the stream. Portions of Stump Creek currently consist of channelized open channels and culverted sections. Narrow bridges and undersized culverts along Stump Creek contribute to the flooding. Figure 3 depicts the lower reach of Stump Creek and the adjacent properties that are most impacted by flood waters.

This study seeks to address flood flows on Stump Creek and its tributaries through Little Rock, Arkansas that pose risks to personal and charitable properties. The opportunity exists to ease flood risk to personal and charitable properties.

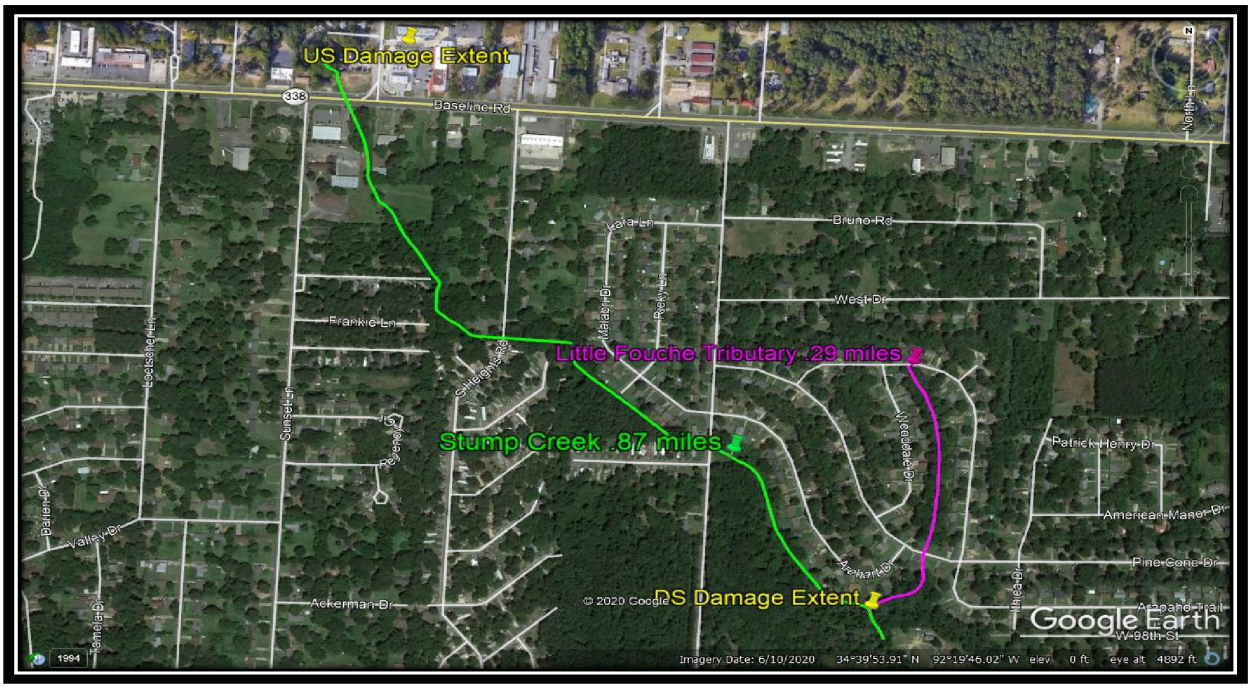

Figure 3 – Flood Damage Extent Within Project Area

3. Public Involvement

Initial scoping efforts included an informal site visit with an Arkansas Game and Fish Commission representative, as well as the public desire for the project relayed to the NFS to prevent nuisance flooding. Consultation with the U.S. Fish and Wildlife Service is currently underway to ensure compliance with the Endangered Species Act and Fish and Wildlife Coordination Act, as Amended, 16 U.S.C. 4601, et seq. Formal public and agency involvement efforts will continue when the draft and final reports are released.

Scoping letters were sent to Tribal Nations and the Arkansas Historic Preservation Program in April of 2021. None of the seven Tribal Nations contacted had any objections. Further information can be found in Attachment B: Cultural Resources.

4. Proposed Action and Alternatives

4.1 Alternatives Development

Specific planning constraints considered when developing alternatives included the following:

1. Actions are limited to clearing and snagging or channel excavation and improvement with limited embankment construction by use of materials from the channel excavation;
2. Avoid increasing flood risk; and,
3. Plans must be consistent with existing Federal, State, and Local laws.

To develop the initial array of alternatives to meet the planning objective of flood risk reduction within the study area, both structural and non-structural management measures were evaluated and are listed below.

1. **Removing Accumulated Snags and Other Debris:** This measure entails the mechanical and/or by-hand clearing of dead and down vegetation, as well as living vegetation (trees and shrubs – especially fast growing invasives).
2. **Clearing the Channel (Excavation):** This measure entails the mechanical removal of built-up sediments within the existing channel alignment.
3. **Straightening the Channel:** This measure entails the mechanical excavation of a new channel alignment, generally with reinforced banks.

4.2 Initial Options Eliminated from Consideration

4.2.1 Straightening Alternative

Straightening Stump Creek was removed from further consideration because USACE no longer uses this measure unless there are no viable alternatives. Channel straightening has been shown to cause long term negative effects to the environment (floral, faunal, and human), as well as to the waterways themselves. The remaining measures were developed into the alternatives listed in Section 4.3.

4.2.2 Non-Structural Alternative

Non-structural plans are designed to reduce urban flood damages by utilizing methods that do not significantly impact the environment and do not attempt to contain or otherwise divert the flow of floodwaters. Damages can be reduced by removing structures from the floodplain, flood proofing/raising structures, permanent evacuation within the floodplain, floodplain management, and flood forecasting/temporary evacuation. Flood proofing includes such measures as raising access roads and escape routes; installing valves on sewer lines; providing watertight coverings for door and window openings; sump pumps to drain seepage; sealing of cracks, steel bulkheads on brick walls to close off entrances; constructing levees and floodwalls around individual buildings or groups of buildings; and coating walls of structures with a waterproof membrane.

Flood proofing is not cost effective for this project due to the small number of affected structures and limited nature of flood damages incurred.

4.3 Alternatives Considered

Hydrologic and hydraulic (H&H) analyses were conducted to evaluate water movement, including volume and rate of flow, within the channel. Data from the U.S. Geological Survey (USGS) Stream Stats and the Federal Emergency Management Agency's (FEMA) latest Flood Insurance Study (FIS) were used. Hydraulic modelling using the officially released Hydrologic Engineering Center River Analysis System (HEC-RAS) version 6.0 was created and applied to each possible alternative (HEC-2).

4.3.1 Alternative 1 – No Action

The Council on Environmental Quality (CEQ) regulations (40 CFR 1500–1508) for implementing the National Environmental Policy Act (NEPA) do not define the "No Action Alternative" stating only that NEPA analyses shall "include the alternative of No Action" (40 CFR 1502.14). The USACE regulations [33 CFR 325 9.b (5) (b)] define the No Action Alternative as "one which results in no construction requiring a USACE permit". For purposes of this Integrated Detailed Project Report, under the No Action Alternative, USACE would implement no changes to Stump Creek.

This is the base condition which assumes existing elevations were represented by the 2011 LiDAR collection. Manning's n values from approximately Reck Road to the confluence with Little Fourche Creek in the channel were 0.08 to represent debris and vegetation in the channel. Manning's n values upstream of Reck Road and other channel areas were 0.042 to represent a more normal channel friction value. The base n values are slightly less than what was used in the HEC-2 model, but a lower n value for two-dimensional (2D) models is common practice as the 2D model is accounting for more of the physics than the traditional one-dimensional (1D) models. With the No Action measure, it is assumed that no project would be implemented by the Federal Government or by local interests to achieve the planning objectives. Under this action, flooding and subsequent damages are likely to increase over time due to increased sediment deposition in the stream channel due to debris and trash blockages at several locations within the study area. Over time, additional woody debris will be deposited into the stream channel as vegetation dies in the riparian corridor.

4.3.2 Alternative 2 – Removing Accumulated Snags and Other Debris

This alternative entails the mechanical and/or by-hand clearing of dead and down, as well as living vegetation to increase channel conveyance capacity. The damage area is downstream from Reck Road. The channel of Stump Creek from Baseline Road to Reck Road did have minor debris accumulation and vegetative encroachment. The channel near Reck Road and downstream had significant evidence of debris accumulation and vegetative encroachment. Reck Road controls the flow and houses directly downstream from Reck Road generally do not see damages until Reck Road overtops. While there is no significant reduction in flood risk from removing accumulated snags and other debris immediately upstream from Reck Road, a properly functioning culvert is essential and Alternative 2 would extend to approximately 50 meters above Reck Road down to the confluence with Little Fourche Creek. Alternative 2 does show a reduction in the water surface elevation to homes near Pine Cone Drive at the 2 percent (%) AEP. To model Alternative 2 in RAS, elevation data was kept the same as existing conditions, and Manning's n values in the channel were lowered from 0.08 to 0.042 to represent a more efficient channel.

4.3.3 Alternative 3 – Clearing the Channel (Excavation)

This measure entails the mechanical removal of built-up sediments within the existing channel alignment. The channel of Stump Creek from Baseline Road to Reck Road showed no significant aggregation in the channel bed. The channel near Reck Road and downstream had significant evidence of sediment aggregation. Clearing the channel includes excavating sedimentation from the channel to approximately the same dimensions as those documented in the FIS from the 1980s resulting in a lower stream invert elevation and a larger cross-sectional area. This alternative is dependent upon Alternative 2 being implemented first and could not be modeled alone in RAS.

4.3.4 Alternative 4 – Combination of Alternative 2 and Alternative 3

Alternative 4 is a combination of Alternative 2 and 3. The floodplain widens further downstream of Reck Road to the extent that homes further away from Reck Road start to experience damages at approximately the 10% AEP flow. Near the confluence of Stump Creek with the drainage ditch that passes under Pine Cone Drive, damages are minimal up to the 2% AEP flow. The various events at which different portions of the stream begin to experience damages makes a combination of Alternative 2 and 3 a viable option as vegetation removal alone lowered the flood risk near Pine Cone Drive but did not have an effect midway between Reck Road and Pine Cone Drive. Excavation lowers flood risk in more locations but might be more extreme than necessary in locations where removing accumulated snags and debris would suffice. There is no significant sediment aggregation in the Stump Creek channel above Reck Road. The channel below Reck Road shows significant evidence of sediment aggregation. Two options were explored: 1) excavation from Reck Road to Pine Cone Drive combined with removal of accumulated snags and other debris from 50 meters above Reck Road down to the confluence with Little Fourche Creek 2) excavation from Reck Road to the confluence with Little Fourche Creek combined with the removal of accumulated snags and other debris up to 50 meters above Reck Road. The excavated portion of the channel would have approximately the same dimensions documented in the FIS from the 1980s. Alternative 4 options would have a reduction in flood risk to homes further down from Reck Road. Again, houses immediately downstream from Reck Road generally do not see damages until Reck Road overtops and are not affected by any alternatives. To model Alternative 4 in RAS, the elevation data for the main channel was adjusted to be representative of the 1980s cross section survey in the original FIS HEC-2 model. Manning's n values for sediment removal locations were 0.035 - slightly less than vegetation and debris removal due to the earthwork resulting in a smoother, more uniform channel.

4.4 Evaluation and Comparison of Alternatives

Each alternative was compared to the initial planning objectives (Table 1).

Table 1 – Screening of Initial Array of Alternatives against the Planning Objective

Plan Name	Planning Objective
Alternative 1 – No Action	**No**
Alternative 2 – Removing Accumulated Snags and Other Debris	**No**
Alternative 3 – Clearing the Channel (Excavation)	**No**
Alternative 4 – Combination of Alternative 2 and Alternative 3	**Yes**

It was determined that Alternative 1 (No Action) does not reduce flood risk within the study area and therefore does not reduce threats to human health and safety either. Alternative 2, removing accumulated snags and other debris, showed to have no effect on existing water surface elevations when run through hydraulic analysis. Alternative 3, clearing the channel (excavation), would see the built-up sediment within the channel removed, enabling stream flow; however, the streambed cannot be reached without first implementing Alternative 3, therefore this alternative by itself is not possible. It was found that Alternative 4, a combination of removing accumulated snags and other debris paired with clearing the channel through excavation, was the only alternative to meet the planning objective. It fulfills the goal of reducing flood risk within the project area.

Alternative 4 will be the only action alternative considered in the Environmental Assessment (EA) moving forward, along with the No Action Alternative.

4.5 Final Array of Action Alternatives

Alternative 4, the combination of removing accumulated snags and other debris paired with clearing the channel (excavation), was the only action alternative found to meet project It is assumed that Alternative 4 construction would occur during the dry season. Under Alternative 4, access routes will be established as depicted in Figure 4.

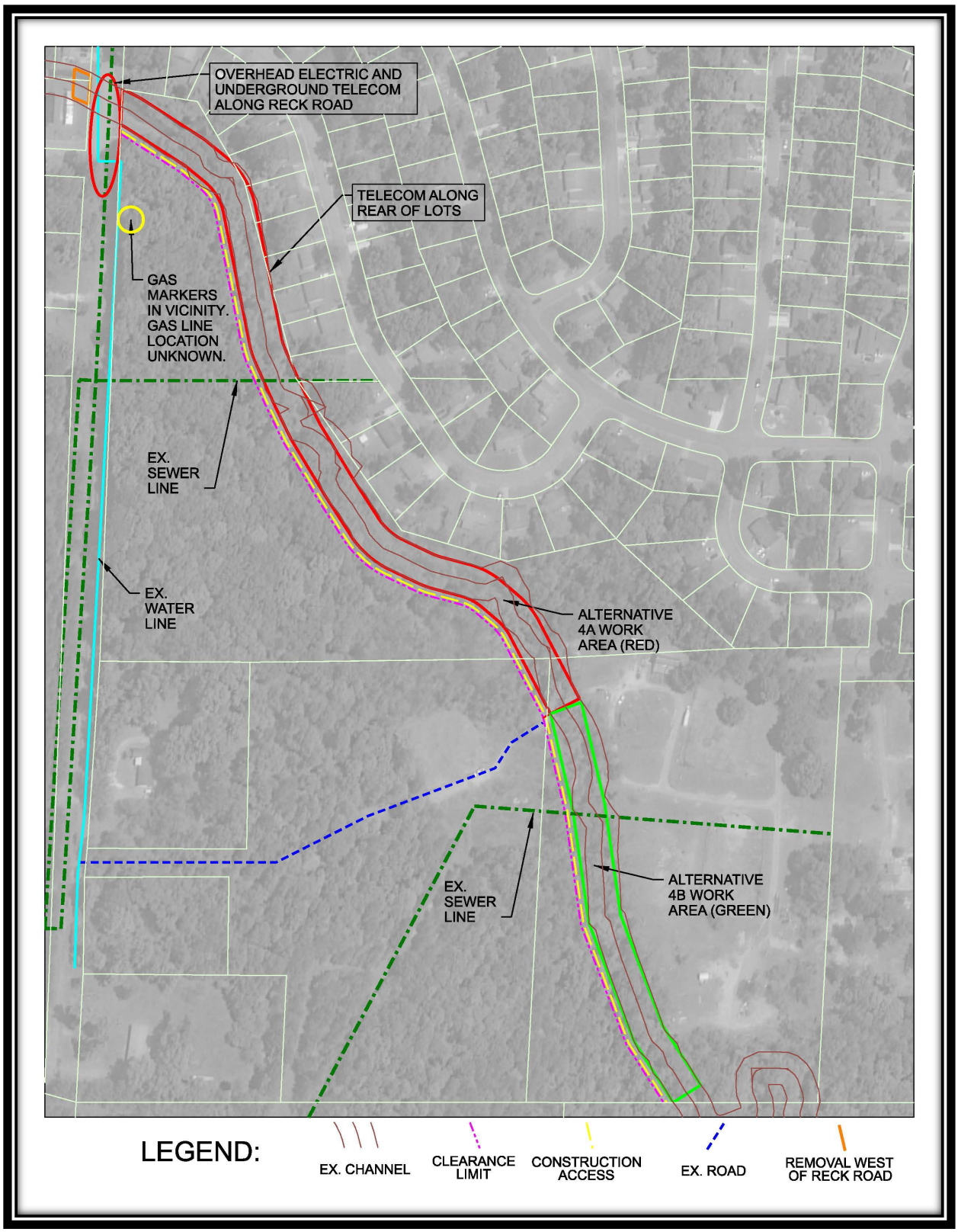

Figure 4 – Construction Access Route Map

The initially planned access road would require a 20-foot wide cleared path (trees removed), and an additional 5-foot of cutting back overhanging brush and limbs (trees remain) will be required to allow vehicular access to the work area. The basis for the width is that crane matting is typically 14 feet wide as a minimum; the additional 6-foot width would help facilitate maneuvering. The clearing along the access would end approximately 2250 feet downstream of Reck Road with a 20-foot by 40-foot "hammerhead" turn-around. Vehicles would have to ingress and egress one at a time using the same route. To maintain stability and minimize impact to soils, 4 -14'x14' crane mats will be used along the access road.

Disturbances for access and staging would be placed outside of environmentally sensitive areas to the greatest extent practicable. Selective brush and tree removal will be implemented to establish the access and staging areas. Ground disturbance for access and staging areas would be temporary and revegetated with native grasses, aside from a path to maintain access post-construction to allow for O&M.

All vegetation, debris, and sediment removed from the channel will be collected and disposed of off-site, and no dredged or filled materials would be deposited into waters of the United States.

Operations and maintenance (O&M) strategies will be implemented by the Non-Federal Sponsor (NFS), the City of Little Rock, AR, to ensure construction efforts are effective and maximize the life of the project. For the purposes of the initial study, O&M was assumed to be a 3-person crew cleaning the channel and applying broadleaf killer. Equipment for this task is expected to include some type of off-highway vehicle pulling a cart to gather debris and trash. The crew would perform this cleaning and spraying once a year.

Best Management Practices (BMPs) to be implemented include:

- Best available practical techniques and BMPs would be utilized during construction activities to avoid and minimize potential temporary and long-term adverse impacts.
- Disturbed areas that will not be maintained for O&M access will be revegetated with native grass seed mixture (species to be determined in PED).
- Limiting ground disturbance necessary for staging areas, access routes, etc. to the smallest area necessary to safely operate during construction.
- Movement of heavy equipment and support vehicles would utilize predetermined access roads to the greatest extent possible. Ingress and egress to access the creek will utilize minimal area needed to complete work.
- Refueling and maintenance of vehicles and equipment in designated areas to prevent accidental spills and potential contamination of water sources and the surrounding soils.
- Limiting idling of vehicles and equipment to reduce emissions.
- Minimizing project equipment and vehicles transiting between the staging area and restoration site to the greatest extent practicable, including but not limited to using designated routes, confining vehicle access to the immediate needs of the project, and coordinating and sequencing work to minimize the frequency and density of vehicular traffic.
- Minimizing use of construction lighting at night and when in use, directing lighting toward the construction activity area and shielding from view outside of the project area to the maximum extent practicable.

After establishing these baseline construction plans, Alternative 4 was then evaluated on two different scales, broken down into Alternative 4a and Alternative 4b. In addition to the No Action Alternative, the following two subcategories within Alternative 4 will be considered in this EA.

4.5.1.1 Alternative 4a

Figure 5 depicts the extent of vegetation/debris and sediment removal along Stump Creek in Alternative 4a. This alternative involves clearing and snagging only for approximately 100 feet upstream of Reck Road. Additionally, clearing, snagging, and excavation will occur for the first approximately 1,500 feet downstream of Reck Road. A further 750 feet or so downstream would involve only clearing and snagging, without any excavation. In this alternative, approximately 2,150 cubic yards of debris will be removed and approximately 5,000 cubic yards of sediment excavated.

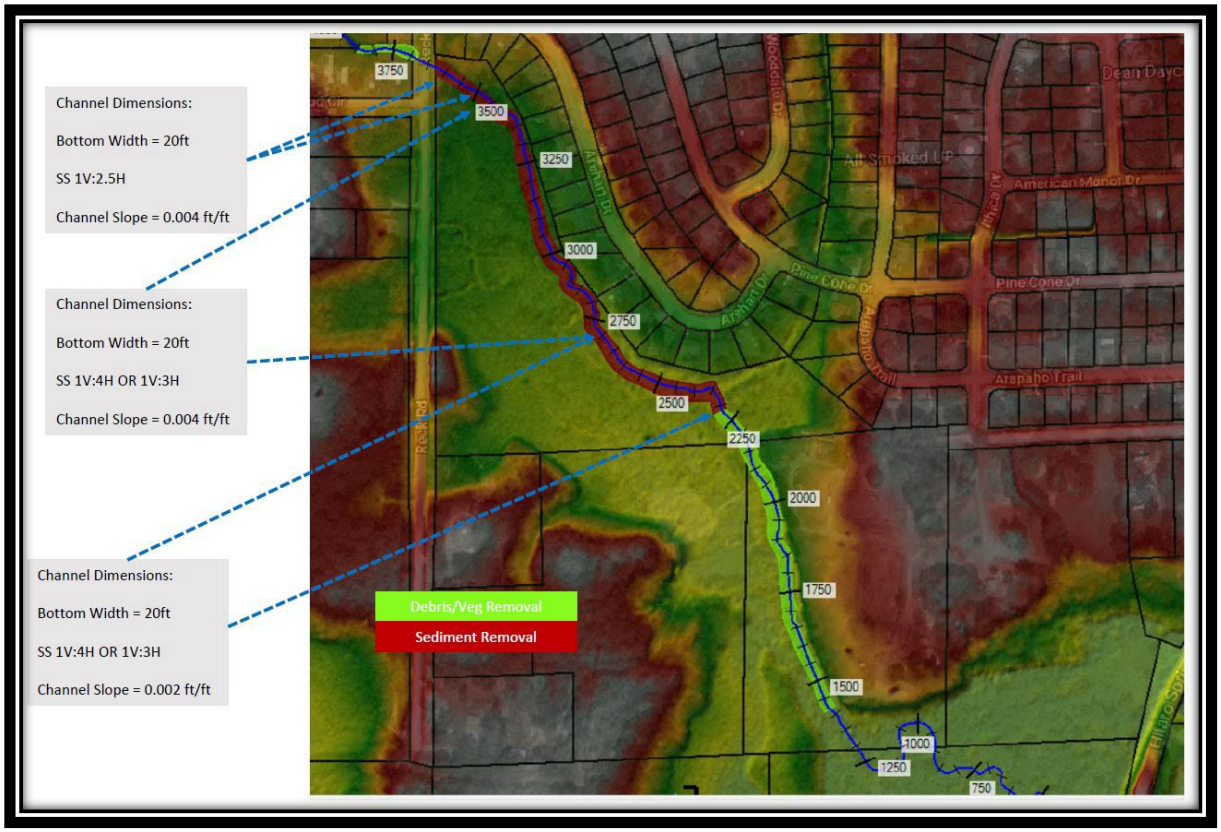

Figure 5 – Alternative 4a Map

4.5.1.2 Alternative 4b

Figure 6 depicts the extent of vegetation/debris and sediment removal along Stump Creek in Alternative 4b. This alternative involves clearing and snagging only for approximately 100 feet upstream of Reck Road. Additionally, clearing, snagging, and excavation will occur for the first approximately 2,300 feet downstream of Reck Road. In this alternative, approximately 3,265 cubic yards of debris will be removed and approximately 10,000 cubic yards of sediment excavated. Alternative 4b was selected as the Preferred Alternative as it was found to be a more robust, responsible, and reliable option, especially considering climate vulnerabilities and environmental justice contexts, by maximizing the effectiveness of the project over its lifespan.

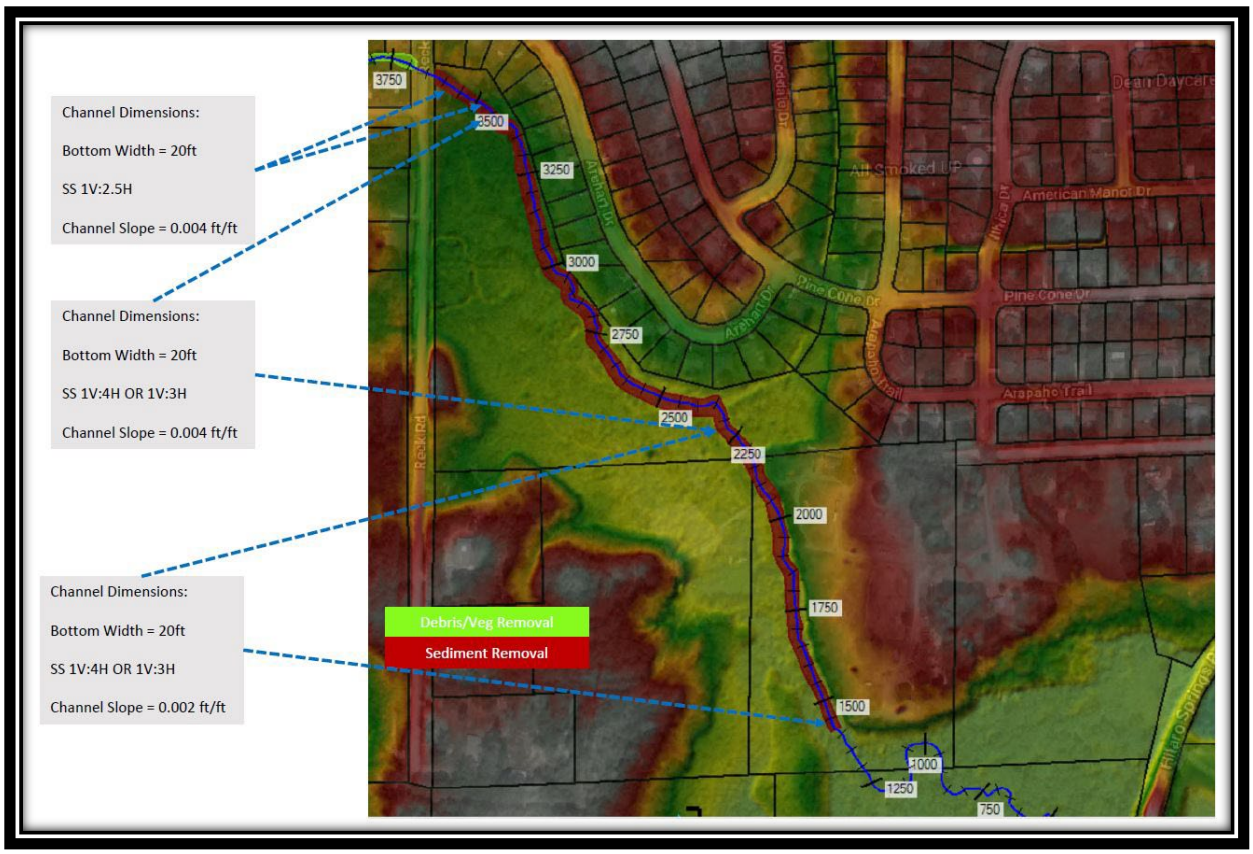

Figure 6 – Alternative 4b Map

5. Environmental Resources

5.1 Climate and Climate Change

Pulaski County is hot in summer, especially at low elevations where Little Rock is located, and moderately cool in winter. Rainfall is fairly heavy and well distributed throughout the year. Snow falls nearly every winter, but snow cover only lasts a few days after each episode. In winter the average temperature is 42 degrees Fahrenheit (°F), with an average daily minimum of 30°F. During summer months, the average temperature is 80°F, with an average daily maximum of 92°F. Annual rainfall averages around 48 to 50 inches, with approximately 31% of this total falling in March, April, and May. The average length of the growing season is 233 days. Average seasonal snowfall is approximately six inches, which typically occurs in January and February, but an occasional snowfall exceeding 12 inches has been recorded in the area.

CEQ drafted guidelines for determining meaningful Greenhouse Gas (GHG) decision-making analysis. The CEQ guidance states that if a project would be reasonably anticipated to cause direct emissions of 25,000 metric tons or more of carbon dioxide (CO2)-equivalent (CO2e) GHG emissions per year, the project should be considered in a qualitative and quantitative manner in NEPA reporting (CEQ, 2015). CEQ proposes this as an indicator of a minimum level of GHG emissions that may warrant some description in the appropriate NEPA analysis for agency actions involving direct emissions of GHG (CEQ, 2015).

The EPA Facility Level Information on Greenhouse Gases Tool shows that there are six GHG contributors within Pulaski County, depicted below in Table 2.

Table 2 – GHG Contributors in Pulaski County, AR

Facility Name	Location	Total Facility Emissions in metric tons carbon dioxide equivalent (mt CO_2e) in 2021
Two Pine Landfill	Jacksonville, AR	29,186
Cecil Lynch	North Little Rock, AR	Facility reporting unavailable.
3M Industrial Mineral Products Division	Little Rock, AR	32,655
Modelfill Landfill	Little Rock, AR	5,436
Little Rock City SW Landfill	Little Rock, AR	84,980
Oswald Generating Station	Little Rock, AR	291,159

Source: EPA Facility Level Information on Greenhouse Gases Tool (2021 Data Year)

Collectively, these facilities contribute approximately 443,416 metric tons CO_2e within Pulaski County, AR.

A literature review was conducted to locate information related to observed and projected climate trends related to the study area, which lies within the Hydrologic Unit Code (HUC) 1111 – Lower Arkansas Subregion. It was found that the general trend for the region is a mild upward trending for average precipitation and extreme precipitation events as well as upward trending average streamflow (USACE 2015). On a greater scale, there has been an increase in the average temperature of the contiguous United States over the past several decades. A detailed report on climate change can be found in Appendix B, Hydrology and Hydraulics.

5.2 Air Quality

The Environmental Protection Agency (EPA) is primarily responsible for regulating air quality nationwide. The Clean Air Act (CAA) (42 U.S.C. 7401 *et seq.*), as amended, requires the EPA to set National Ambient Air Quality Standards (NAAQS) for wide-spread pollutants from numerous and diverse sources considered harmful to public health and the environment. The EPA has set NAAQS for six principal pollutants known as “criteria” pollutants. Criteria pollutants include carbon monoxide, nitrogen dioxide, ozone, particulate matter less than 10 microns, particulate matter less than 2.5 microns, sulfur dioxide, and lead. If the concentration of a criteria pollutant in a geographic area is found to exceed the regulated threshold level for one or more of the NAAQS, the area may be classified as a non-attainment area. Areas with concentrations of criteria pollutants that are below the levels established by the NAAQS are considered either attainment or unclassifiable areas. Pulaski County and Little Rock, Arkansas are in attainment and meet the NAAQS for the criteria pollutants designated in the CAA.

The Arkansas Department of Environmental Quality (ADEQ) maintains an air monitoring networks across the state, monitoring more than nine different parameters. Arkansas is one of a handful of states in the country that currently and consistently meets all Federal air quality standards for criteria pollutants (University 2022).

5.3 Noise

Current contributions to noise pollution in the study area are those typical of residential neighborhoods, primarily vehicular transportation. On a larger scale, noise contributors include traffic from the nearby streets such as Baseline Road that see heavier traffic and are characterized by commercial businesses, as well as local construction and development efforts. No noise thresholds are established by city ordinance.

5.4 Topography, Geology, and Soils

The Arkansas River flows southeast through the central portion of the county. The river channel varies from one-quarter to one-half miles in width as it flows through the metropolitan area of the county. Pulaski County is comprised of portions of four ecoregions: the Arkansas River Valley in the northern portion; the Ouachita Mountain region in the western portion of the county; and the Gulf Coastal and Delta ecoregions in the southern portion. The Stump Creek drainage lies within the Gulf Coastal Ecoregion, which is characterized by low rolling plains that are broken by nearly flat fluvial terraces, bottomlands, sandy low hills, and low cuestas. Potential natural vegetation is oak–hickory–pine forest on uplands and southern floodplain forest on bottomlands.

The alluvial soils in this portion of the Gulf Coastal Plain are level to undulating, with some soils being subject to flooding. Leadville, Smithdale, and Tiak are the main soils on the rolling hills, and Amy and Wrightsville soils are on the flats. The most fertile soils in the county are formed in this bottom land area, and include Keo, Norwood, and Rilla (USDA 1975). The Natural Resources Conservation (NRCS) Web Soil Survey online tool was used to evaluate soil data for the project area. Figure 7 shows the soil types along Stump Creek, and Table 3 provides a legend for the units depicted in the map (USDA 2022).

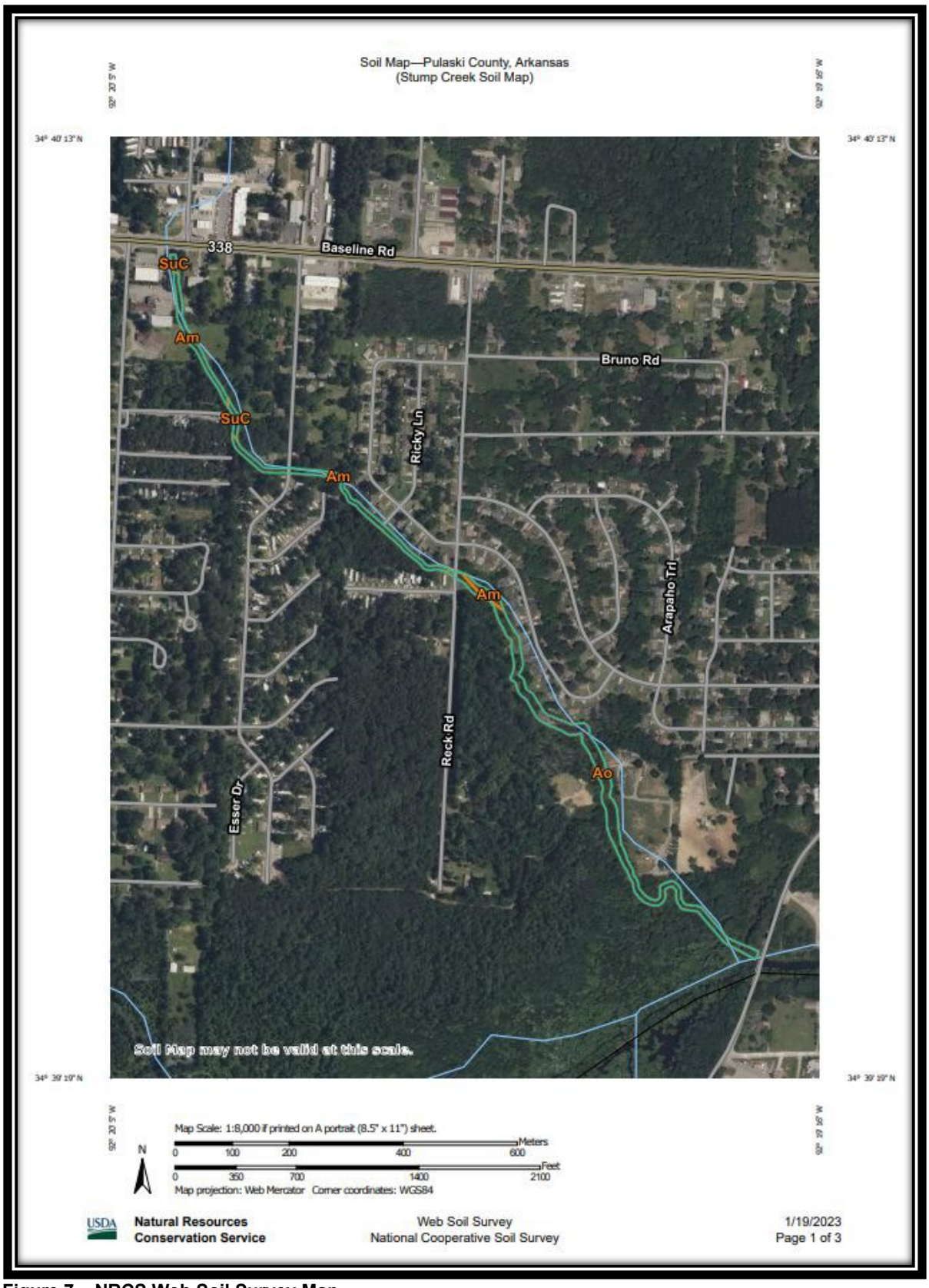

Figure 7 – NRCS Web Soil Survey Map

Table 3 – NRCS Web Soil Survey Map Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
Am	Amy silt loam, 0-1% slopes	1.7	32.9%
Ao	Amy silt loam, 0-1% slopes, frequently flooded	3.2	63.2%
SuC	Smithdale-Urban land complex, 3-8% slopes	0.2	3.8%

Within the project footprint, soils are primarily classified as either not prime farmland or prime farmland if drained (USDA 2022).

5.5 Cultural Resources

Background research conducted using the Arkansas Automated Management of Archeological Data in Arkansas (AMASDA) database indicated that there were no previously recorded historic properties present and no systematic cultural resource surveys have been conducted in the immediate study area. Only one archeological site has been recorded within a 1.5-mile radius of the project area. Site 3PU366 was recorded by the Arkansas Department of Transportation in 1991 as part of the Baseline Road Improvement Project. It was described as an Archaic lithic scatter on a knoll on the west side of Fourche Creek.

USACE personnel visited the site and reviewed all pertinent data such as the AMASDA database, soils, historic imagery, and topographic maps. The project area is in a very low, wetland environment. Based upon this information, USACE determined this area to have a very low probability for the location of historic properties. In addition, the undertaking would require minimal disturbance of the area. The Arkansas State Historic Preservation Office (SHPO) concurred with this determination of no historic properties affected in accordance with 36 CFR § 800.4(d)(1) in a letter dated 21 April 2021. Seven federally recognized Tribal Nations were contacted concerning this finding, and none had any objections.

5.6 Hazardous, Toxic, and Radioactive Waste

Engineer Regulation 1165-2-132, Hazardous Toxic, and Radioactive Waste (HTRW) Guidance for Civil Works Projects, and ASTM E1527-13, Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process, set forth procedures for investing records on possible HTRW sites within a project footprint. An investigation into potential HTRW locations within the Project Area was conducted, and no sites were identified within the Project Area or adjacent areas that could be reasonably expected to affect Stump Creek. A comprehensive HTRW evaluation can be found in Appendix C of the Detailed Project Report, “Feasibility Level HTRW Evaluation – Stump Creek Section 208 Continuing Authorities Program (CAP).”

5.7 Water Quality, Wetlands, and Aquatic Resources

Attachment D, Evaluation of Clean Water Act Section 404(b)(1) Guidelines (Short Form), evaluates potential impacts to waters of the United States as a result of dredging within the channel.

5.7.1 Water Quality

Stump Creek is a tributary of Little Fourche Creek, which discharges to Fourche Creek, then to the Arkansas River in the southeast portion of Little Rock. The Stump Creek watershed is primarily urban, and it receives runoff from storm sewers and roads. The surface water of most tributary streams emptying into Fourche Creek are generally impacted by pollutants common to storm water runoff from pervious surfaces. While urban streams typically have localized water quality impacts due to industrial and residential contaminants, no specific water quality problems have been reported in Stump Creek.

No quantitative water quality data for Stump Creek is available from USGS or ADEQ water quality monitoring databases. Qualitatively, Stump Creek is degraded by trash and debris. The water quality is not at its optimal state as the snags and sediment buildup slow water flow, and water is relatively stagnant outside of rainfall events. The standing pools and excess organic materials can cause low dissolved oxygen content.

5.7.2 Wetlands

The lower end of Stump Creek passes through a bottomland hardwood wetland complex before entering Little Fourche Creek. The water level in this wetland complex is dependent on rainfall events and the degree of standing or backed up water in the Little Fourche Creek/Fourche Creek drainage basin. This wetland area is a part of the 2,000 acre Fourche Bottoms urban wetland complex, which is one of the largest tracts of urban wetlands in the country.

Figure 8 below shows these wetlands as depicted in the U.S. Fish and Wildlife Service (USFWS) Wetland Inventory Mapper database. According to the database, the creek is classified as a riverine, streambed system that flows intermittently and is seasonally flooded (USFWS 2022d).

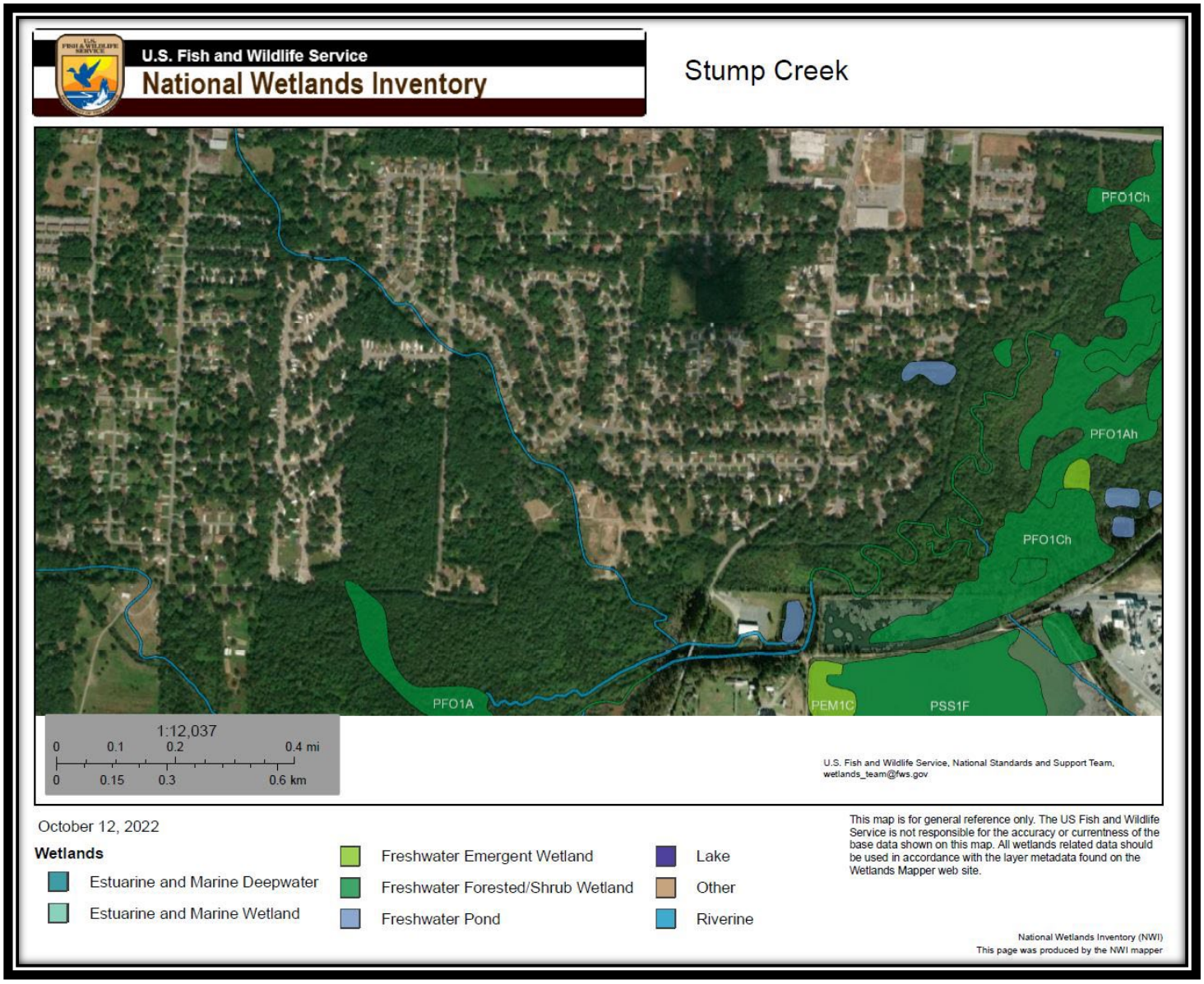

Figure 8 – National Wetlands Inventory Map of Study Area

5.7.3 Aquatic Resources

Typical Gulf Coastal Ecoregion streams have a diverse fishery that includes bass, sunfish, catfish, suckers, darters and minnows. Urban streams generally have a diminished fishery in terms of species and numbers due to a variety of factors, including channelization, substrate modification, instream contamination from development in the watershed, and flashy flow patterns. The Stump Creek watershed is less than one square mile and the stream flow is ephemeral in nature. The substrate in Stump Creek is predominately sand, clay, and fines. Parts of the stream have been channelized. There is some incidental fish habitat in the area, but the lack of flow in the summer months result in sections of dry stream bed and some small enduring shallow pools. The lack of flow and relatively stagnant waters cause a low dissolved oxygen content, which inhibits aquatic species from flourishing. It is unlikely any significant fish populations exist in the project area. Additionally, the widespread snag and debris load that fills Stump Creek greatly inhibits natural flows, habitat potential, and general aquatic habitat structure and function such that little to no aquatic habitat value remains.

5.8 Terrestrial Resources

5.8.1 Vegetation

General vegetation adjacent to the Stump Creek channel consists of that typical of a wetland bottomland hardwood system. Major forest vegetation types occurring in these areas include: ash (*Fraxinus spp.*), box elder (*Acer negundo*), hackberry (*Celtis occidentalis*), sugarberry (*Celtis laevigata*), black willow (*Salix nigra*), roughleaf dogwood (*Cornus drummondii*), holly (*Ilex spp.*), wild plum (*Prunus americana*), willow oak (*Quercus phellos*), water oak (*Quercus nigra*), and associated mid-story and understory species. Mature loblolly pines (*Pinus taeda*) are also scattered along the banks. This area has been disturbed previously due to street and residential development adjacent to the stream channel. The stream banks of Stump Creek are highly altered in the upper portion of the drainage basin. Some of the stream has been channelized to facilitate storm water drainage. Exotic species such as mimosa (*Albizia julibrissin*) and Chinese privet (*Ligustrum sinense*) are both present along the stream bank. There is some forested vegetation along Stump Creek in the study area downstream of Reck Road. Figures 9, 10, and 11 show the existing vegetation, which includes pine, privet, and various hardwood species.

Figure 9 – Stump Creek at Reck Road

Figure 10 – Stump Creek near Arehart Drive

Figure 11 – Stump Creek Woody Debris

5.8.2 Wildlife

Located near the Fourche Bottoms wetland complex, the lower portion of the Stump Creek watershed could potentially have an abundance of wildlife. Though in an urban setting, sightings of white-tailed deer (*Odocoileus virginianus*), raccoon (*Procyon lotor*), opossum (*Didelphis virginiana*), beaver (*Castor canadensis*), skunk (*Mephitis mephitis*), rabbits (*Sylvilagus floridanus* and *Sylvilagus aquaticus*), squirrels (*Sciuridae* spp.), waterfowl and other bird species are common. Turtles, snakes, frogs, and other amphibians are common along the stream channel.

5.9 Threatened and Endangered Species

5.9.1 Federally Listed Species

An official species list from the USFWS provided pursuant to Section 7 of the Endangered Species Act was generated in the Information for Planning and Consultation (IPaC) program (Attachment A). Federally listed threatened and endangered (T&E) species included the following:

Table 4 – Federally Listed Species

Common Name	Scientific Name	Status
Northern Long-eared Bat	*Myotis septentrionalis*	Endangered
Tricolored Bat	*Perimyostis subflavus*	Proposed Endangered
Eastern Black Rail	*Laterallus jamaicensis ssp. jamaicensis*	Threatened
Piping Plover	*Charadrius melodus*	Threatened
Red Knot	*Calidris canutus rufa*	Threatened
Alligator Snapping Turtle	*Machrochelys temminckii*	Proposed Threatened
Monarch Butterfly	*Danaus plexippus*	Candidate

Federally-listed bird species known to migrate through Pulaski County include the eastern black rail, piping plover, and rufa red knot. While these bird species may occur in the area, there are no known occurrences or critical habitat within the footprint of this project.

The northern long-eared roosts in cavities of both live trees and snags or caves, mines, and other manmade structures during the active season. Hibernation occurs in caves and mines (USFWS 2023a). The USFWS Arkansas Field Office, Delta Sub-Office advised that although the northern long-eared bat is listed as potentially in the study area on IPaC, the study area is actually outside of the species known range(s).

The tricolored bat is currently listed as a proposed endangered species as they face extinction due to the impacts of white-nose syndrome, a deadly disease affecting cave-dwelling bats across the continent. During the winter, tricolored bats are found in caves and mines, and occasionally road-associated culverts in the southern United States. During the spring, summer, and fall, these bats are found in forested habitats where they roost in deciduous hardwood trees, both live and recently dead. They have also been observed roosting in Spanish moss, lichen, and manmade structures such as barns, bridges, and culverts (USFWS 2023b). Potential tricolored bat habitat exists in the study area in taller, more mature canopy cover. There is also a culvert at the upstream portion of the project that could be potential hibernacula for the tricolored bat during the winter.

The eastern black rail requires dense short, vegetative cover that allows movement underneath the canopy. They are found in a variety of salt, brackish, and freshwater marsh habitats that can be tidally or non-tidally influenced, and plant structure is considered more important than plant species composition. They are known to eat aquatic beetles, spiders, snails, and small crustaceans (USFWS 2022a). The project area does not contain eastern black rail habitat due to flooding and dense canopy cover limiting sunlight penetration.

The piping plover is a small migratory shorebird that nests and feeds along costal sand and gravel beaches in North America. Inland habitat includes considerable lake bodies of standing water and natural flows of running water. Piping Plovers forage by gleaning invertebrates from substrate. They are often observed singly or in small groups that use sites opportunistically, and do not have regularly-used stopover sites during migration (USFWS 2022e). The project area does not contain piping plover habitat due to canopy cover and lack of open water.

The red knot is a robin-sized shorebird and is one of the longest-distance migrants in the animal kingdom. The red knot utilizes coastal marine and estuarine habitats with large areas of exposed intertidal sediments during both migration and wintering. Preferred habitats are muddy or sandy coastal areas, specifically, bays and estuaries, tidal flats, and unimproved tidal inlets.

In nonbreeding habitats, red knots require sparse vegetation and open landscapes to avoid predation. While they are known to stopover at inland saline lakes, there is little information to indicate whether red knots may use inland freshwater habitats during migration. Information suggests red knots generally nest in dry areas within 600 feet of freshwater wetland and 31 miles of the ocean (USFWS 2022f). The project area does not contain red knot habitat due to canopy cover and lack of open water. No unvegetated shorelines, marshes, or flooded fields are located in the action area.

The alligator snapping turtle is proposed to be listed as a Federally threatened species and may occur within the study area. Alligator snapping turtles are generally found in deeper water of large rivers and their major tributaries; however, they are also found in a wide variety of habitats, including small streams, bayous, canals, swamps, lakes, reservoirs, ponds, and oxbows. Alligator snapping turtles more often select structure (i.e. tree root masses, stumps, submerged trees, etc.) than open water and may select sites with a high percentage of canopy cover. These turtles are opportunistic scavengers, with fish comprising a significant portion of their diet. They may also consume crayfish, mollusks, smaller turtles, insects, nutria, snakes, birds, and vegetation (USFWS 2021a). While Stump Creek does not provide the desired flows or overhanging stream bank structure that the species prefers, there is still potential alligator snapping turtle habitat within the project footprint.

The monarch butterfly is listed as a candidate species due to its population decline over the past two decades. The iconic orange and black butterfly is known for its lengthy migration, from as far as Canada and across the United States to forested overwintering sites in the mountains of central Mexico and coastal California. Primary drivers affecting the health of the two North American migratory populations are changes in breeding, migratory, and overwintering habitat as well as continued exposure to insecticides and effects of climate change (USFWS 2022c). Habitat for the monarch butterfly is limited to taller mid- and overstory trees. Due to reoccurring flooding, very little ground cover has survived and/or is present in the project area.

5.9.2 State Species of Concern

The Arkansas Natural Heritage Commission (ANHC) monitors other species of concern within the State of Arkansas that may be rare, threatened, or uncommon. A search through their NatureServe database (Attachment B) listed the species in Table 5 as species of concern recorded within a 5-mile radius of the study area, with the one exception being that the ringed salamander was recorded within a 1-mile radius of the study area.

Table 5 – State Listed Species

Common Name	Scientific Name	State Rank
Animals – Invertebrates		
Lilliput	*Toxolasma parvum*	S3***
Animals – Vertebrates		
Ringed Salamander	*Ambystoma annulatum*	S3
Bird-voiced Treefrog	*Hyla avivoca*	S3
Plants – Vascular		
Arkansas Sedge	*Carex arkansana*	S1*
Nuttall's thistle	*Cirsium nuttallii*	S2**

White-leaf leather-flower	*Clematis glaucophylla*	S1
Water pygmyweed	*Crassula aquatica*	S1S3
Wolf's spike-rush	*Leocharis wolfii*	S3
Small-head pipewort	*Eriocaulon koernickianum*	S2
Catchfly prairie-gentian	*Eustoma exaltatum*	S2
Purple fringeless orchid	*Platanthera peramoena*	S2
White water crowfoot	*Ranunculus aquatilis var. diffuses*	S2S3
White-top sedge	*Rhynchospora colorata*	S1
Arkansas meadow-rue	*Thalictrum arkansanum*	S2

*S1 – Critically imperiled in the state. At very high risk of extirpation in the jurisdiction due to very restricted range, very few populations or occurrences, very steep declines, severe threats, or other factors.
**S2 – Imperiled in the state. At high risk of extirpation in the jurisdiction due to restricted range, few populations or occurrences, steep declines, severe threats, or other factors.
***S3 – Vulnerable in the state. At moderate risk of extirpation in the jurisdiction due to fairly restricted range, relatively few populations or occurrences, recent and widespread declines, threats, or other factors.

Two ringed salamanders have been observed at the south end of Reck Road near Little Fourche Creek south of the project area. The ringed salamander is native to hardwood and mixed hardwood-pine forested areas in and around the Ozark Plateau and Ouachita Mountains of Arkansas, Oklahoma, and Missouri (iNaturalist 2023). The species is relatively secretive and is generally not seen outside of rainy nights during the fall breeding season. They breed at night in shallow, murky or muddy ponds. As adults, ringed salamanders prey primarily on earthworms insects, and land snails. Predators include owls, snakes, skunks, raccoons, opossums, and other mammals (AmphibiaWeb 2023).

5.10 Recreation and Aesthetics

Recreational facilities are defined as those amenities that provide relaxation, rest, activity, education, or other opportunities for leisure services and community support that lead to an enhanced quality of life. These include, but are not limited to parks, lakes, trails, athletic fields, playgrounds, and community centers. Recreational areas may include any type of activity in which area residents, visitors, and tourists may participate. Activities include hiking, boating, picnicking, playground use, boating, swimming, fishing, hunting and organized or informal sports.

The Stump Creek drainage basin consists of blocks of private ownership, and recreation in the area could include biking on bordering streets, wildlife viewing, nature walks, bird watching, and other outdoor activities along the creek. Fourche Bottoms, located south of the project area, is a 2,000-acre bottomland hardwood wetland complex, and provides a multitude of recreational opportunities including walking, jogging, nature photography and nature study.

Aesthetics is based on an individual or group of individuals' judgements as to whether an object is visually pleasing or would influence quality of life. Stump Creek and Fourche Bottoms provide a unique outdoor setting fixed amidst the urban community. The intermittent stream and adjacent wetlands provide visual interest for the community; however, the system is marked with garbage and other anthropogenic waste strewn about which detracts from the appeal of the water system.

5.11 Socioeconomic Resources and Environmental Justice

Socioeconomics refer to the attributes of the human environment, particularly the demographic and economic characteristics of an area and its population. Demography specifically refers to the composition of a population in an area and looks at factors such as age and race. Economic characteristics include variables related to the economy, such as employment, income, poverty, and housing. These social characteristics will be examined to recognize any potential environmental justice concerns that the project may induce or alleviate. Information was obtained through the U.S. Census Bureau, American Community Survey (ACS), EPA Environmental Justice Screening Tool v.1 (EJScreen), and EPA Climate and Environmental Justice Screening Tool v.1 (CEJST).

The study area is located in south Little Rock, Pulaski County, Arkansas. The Stump Creek watershed subbasin was used as the extent to evaluate socioeconomic and demographic resources within the project footprint in EJScreen. The watershed falls within census block groups 051190041071, 051190041072, 051190041081, and 051190041083. The more immediate study area falls within the 2010 census tract 051190004108 (herein referred to as census tract 41.08) boundary, and this census tract was used as the extent to evaluate socioeconomic and demographic resources in CEJST. Figure 12 below delineates the extent of census tract 41.08.

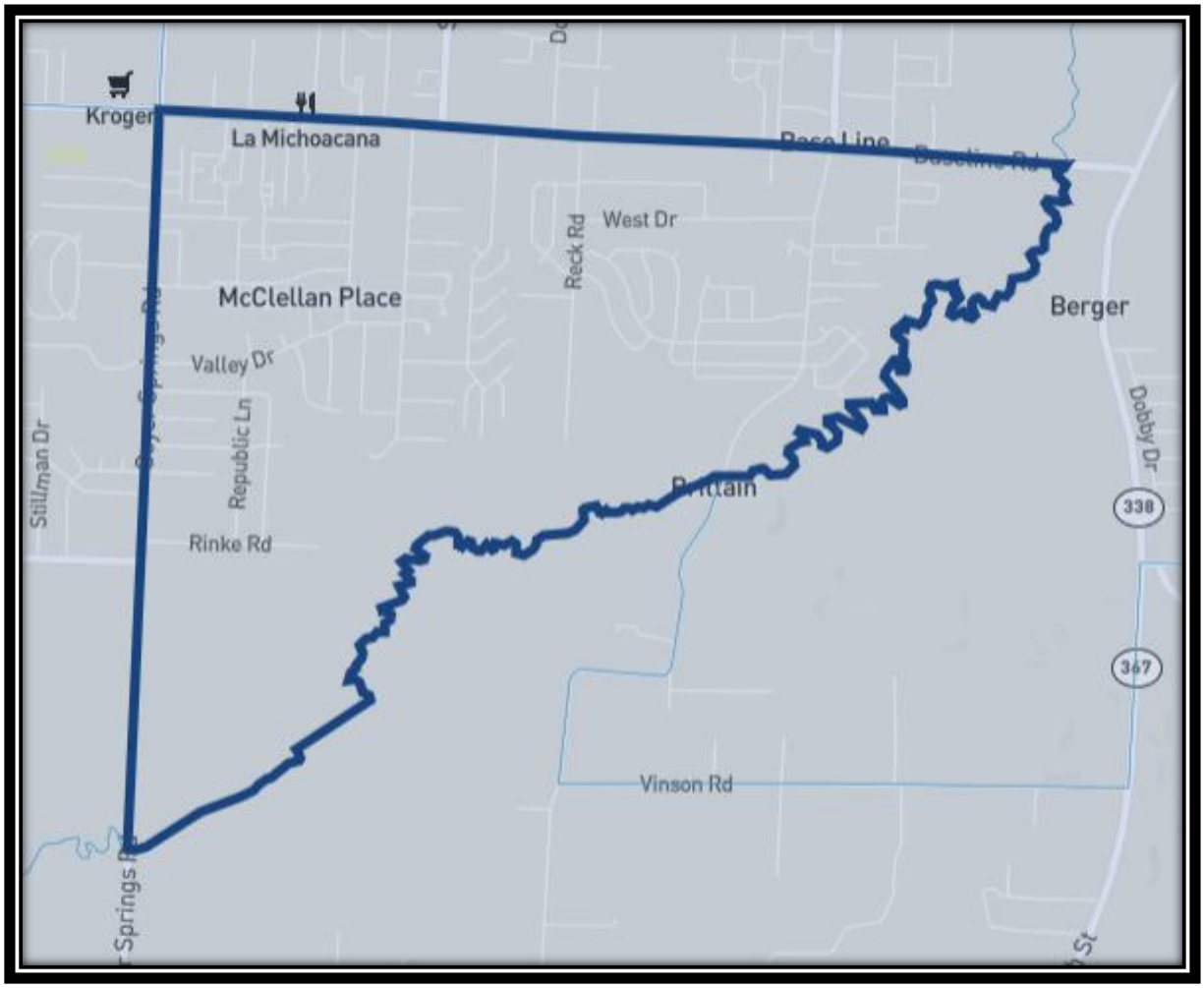

Figure 12 – Census Tract 41.08 Delineation

5.11.1 Demographics

Population

Population estimates for the State of Arkansas, Pulaski County, City of Little Rock, and study area are listed in Table 6 below, with 2021 estimates being the most recent available dataset.

Table 6 – Population Estimates in 2010, 2015, and 2021

Geographic Area	2010 Population Estimate	2015 Population Estimate	2021 Population Estimate
Arkansas	2,921,606	2,978,204	3,025,891
Pulaski County	383,632	392,664	397,821
Little Rock	193,973	197,986	201,984
Census Tract 41.08	5,989	4,614	6,714

Sources: ACS 1-Year Demographic Estimates; ACS 5-Year Demographic Estimates

Table 7 depicts race and ethnicity as well as age attributes of census tract 051190004108, the City of Little Rock, Pulaski County, and the United States, rounded to the nearest whole number. According to the EPA's Climate and Economic Justice Screening Tool (CEJST), 93% of the study area population are people of color.

Demographics

Table 7 – Census Tract Demographics

Tract Demographics					
Race/Ethnicity					
	Census Tract 41.08	**Little Rock**	**Pulaski County**	**Arkansas**	**USA**
White	7%	45%	51%	65%	61%
Black or African American	66%	42%	38%	26%	12%
American Indian and Alaska Native	0%	0%	0%	1%	1%
Asian	0%	3%	2%	1%	6%
Native Hawaiian or Pacific Islander	0%	0%	0%	0%	0%
Other	4%	4%	3%	2%	7%
Two or more races	2%	5%	5%	5%	13%
Hispanic or Latino	23%	8%	7%	5%	19%
Age					
	Census Tract 41.08	**Little Rock**	**Pulaski County**	**Arkansas**	**USA**
Children under 10	24%	14%	13%	12%	12%
Ages 10-64	70%	70%	71%	70%	71%
Elderly over 65	5%	16%	16%	18%	17%

Source: 2021 ACS Demographic and Housing Estimates; 2021 ACS 5-Year Estimates Subject Tables; CEJST

Income and Poverty

Table 8 depicts median income, per capita income, and percent in poverty statistics for census tract 41.08, the City of Little Rock, Pulaski County, the State of Arkansas, and the United States.

Table 8 – Annual Income and Poverty Statistics (2021)

Annual Income and Poverty Statistics					
	Census Tract 41.08	**Little Rock**	**Pulaski County**	**Arkansas**	**USA**
Median Household Income	$44,563	$53,565	$52,479	$52,528	$69,717
Per Capita Income	$18,498	$39,600	$36,564	$29,252	$38,332
Percent in Poverty	25.1%	19.0%	18.0%	16.3%	12.8%

Source: ACS (2021 1-year estimates)

Census Tract 41.08 falls below the regional and national averages for all three metrics, with a median household a poverty rate approximately 6% higher than that of its encompassing city and 12% higher than that of the nation. Median household income in census tract 41.08 is roughly $9,000 less than the City of Little Rock, and per capita income is approximately half of the city's average.

Census tract 41.08 falls in the 90th percentile for low income, meaning people in households where income is less than or equal to twice the federal poverty level (excluding students enrolled in higher education). This indicates that the tract should be considered for further consideration and outreach.

Workforce Development

Communities are identified as disadvantaged in the CEJST within the scope of workforce development if they are in census tracts that are: (1) at or above the 90th percentile for linguistic isolation, low median income, poverty, or unemployment; and, (2) fewer than 10% of people ages 25 or older have a high school education (i.e. graduated with a high school diploma). CEJST reported that 21% of people ages 25 years or older within the census tract have a high school education less than a high school diploma (CEJST 2022). While the census tract does not meet the standards of the first criterion to qualify as a disadvantaged community in terms of the EPA's workforce development metric, it is important to take note that a substantial portion the population lacks a high school diploma or the equivalent. Table 9 below compares the percentage of those with less than a high school education in census tract 41.08 to the encompassing city, county, state, and nation.

Table 9 – Educational Attainment

Educational Attainment					
	Census Tract 41.08	**Little Rock**	**Pulaski County**	**Arkansas**	**USA**
Less than high school graduate	21%	9%	9%	11%	11%

Source: ACS (2021 1-Year Estimates)

Unemployment

Details on the labor force and unemployment rates for the study area, city, state, county, and nation are displayed in Table 10 below. The 2021 annual average unemployment rate in Census Tract 41.08 is approximately half of that of the city, county, state, and country averages.

Table 10 – Unemployment Rates in the Study Area

Unemployment Rates					
	Census Tract 41.08	**Little Rock**	**Pulaski County**	**Arkansas**	**USA**
Civilian Labor Force	3,111	102,290	196,346	1,400,997	166,900,336
Employed	3,033	97,119	184,140	1,323,511	156,380,433
Unemployed	78	5,171	12,206	77,486	10,519,903
Unemployment Rate	2.5%	5.1%	6.2%	5.5%	6.3%

Source: ACS (2021 5-Year Estimates Subject Tables); ACS (2021 1-Year Estimates Data Profiles)

Housing

CEJST defines the housing cost metric as the share of households that are both earning less than 80% of the Housing and Urban Development's Area Median Family Income and are spending more than 30% of their income on housing costs. Census tract 41.08 is characterized by a housing cost in the 91st percentile compared to the rest of the country. Communities are identified as disadvantaged if they are at or above the 90th percentile for the housing cost (EPA 2022a). By this definition, the census tract encompassing the immediate study area is disadvantaged based on the housing cost metric.

Figure 13 depicts the average home value of the homes affected by Stump Creek nuisance flooding compared to the encompassing city, state, and nation home values. The value of homes adjacent to Stump Creek are tangibly less compared to the other averages.

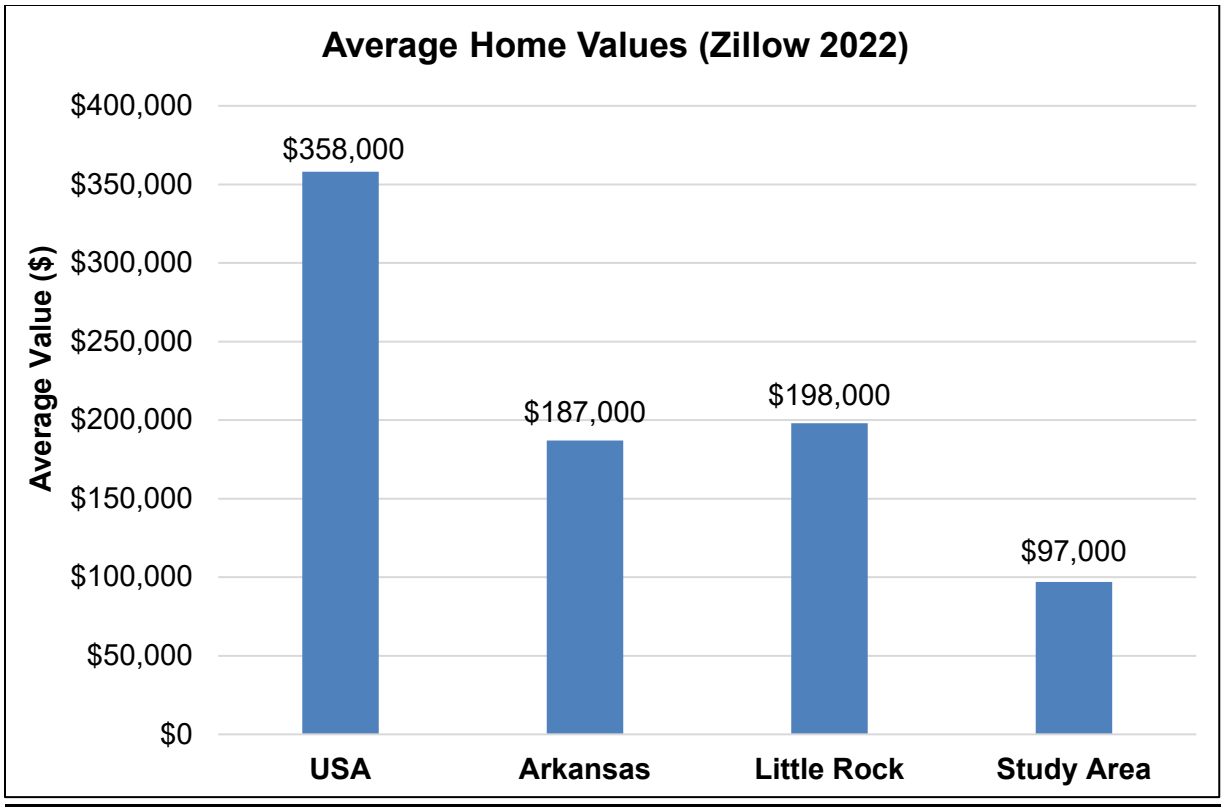

Figure 13 – Average Home Values

5.11.2 Environmental Justice

Environmental Justice (EJ) is the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies.

EO 12898, “Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations,” dated February 11, 1994, aims to avoid the disproportionate placement of adverse environmental, economic, social, or health impacts from Federal actions and policies on minority and low-income populations or communities.

As provided in April 1998 EPA guidance, a minority population is defined as a group of people and/or a community experiencing common conditions of exposure or impact that consists of persons classified by the U.S. Census Bureau as Black, Asian, American Indian or Alaska Native, Hispanic, or other non-white persons, including those persons of two or more races. An aggregate of minority populations over 50% for the entire affected environment indicates increased scrutiny in the environmental justice analysis may be appropriate (e.g. to assess majority minority populations) (EPA, 2016a). The low-income population is defined as a group of people and/or a community that, as a whole, lives below the national poverty level.

EO 13045, “Protection of Children from Environmental Health Risks,” dated April 21, 1997, requires Federal agencies to identify and address the potential to generate disproportionately high environmental health and safety risks to children. This EO was prompted by the recognition that children, still undergoing physiological growth and development, are more sensitive to adverse environmental health and safety risks than adults.

EO 13985, “Advancing Racial Equity and Support for Underserved Communities Through the Federal Government,” dated January 20, 2021, directs the Federal Government to “pursue a comprehensive approach to advancing equity for all, including people of color and others who have been historically underserved, marginalized, and adversely affected by persistent poverty and inequality.”

According to CEJST, a community is highlighted as disadvantaged on the CEJST map if it is in a census tract that is (1) at or above the threshold for one or more environmental, climate, or other burdens, and (2) at or above the threshold for an associated socioeconomic burden (EPA 2022a).

Census tract 41.08 is considered disadvantaged by EPA standards as it meets the socioeconomic threshold for low income as well as the burden threshold for housing cost. Low income is defined as people in households where income is less than or equal to twice the federal poverty level, and housing cost is defined as the share of households making less than 80% of the area median family income and spending more than 30% of income on housing.

The EPA EJScreen tool (v2.0) was used to identify EJ populations in or near the project area. The EPA issued guidance in 2016 that indicates when using EJScreen, any geographic areas at or above the 80th percentile nationally for any EJ indices should be considered for further review and/or outreach (EPA, 2016b).

Figure 14 depicts the Demographic Index (National Percentiles) within the watershed basin. The Demographic Index in EJScreen is a combination of percent low-income and percent minority, the two demographic factors that were explicitly names in EO 12898 on Environmental Justice. For each census block group, these two numbers are averaged together. Based on EJScreen results, the majority of the watershed basin lies within census blocks that average in the 95-100 percentile for the demographic index. This means that the average person residing in the study area lives near or below the poverty line and is a minority race.

Percent low-income represents the percent of individuals whose ratio of household income to poverty level in the past 12 months was less than 2 (as a fraction of individuals for whom ratio was determined). Figure 15 shows that the majority of the study footprint resides within the 90-100 percentile of the low-income index.

Figure 16 depicts Percent People of Color within the study area, which quantifies the percent of individuals in a block group who list their racial status as a race other than white alone and/or list their ethnicity as Hispanic or Latino. That is, all people other than non-Hispanic white-alone individuals. Figure 13 depicts that the census blocks within the study area average in the 90-95, up to 95-100, percentile of race and/or ethnicity other than solely white. The EJScreen Census 2010 Summary Report on the Stump Creek study area reported that 89% were classified as people of color, which by EPA standard should be considered for further review and/or outreach.

In conclusion, the Stump Creek site-encompassing census tract 41.08 is considered disadvantaged as the housing cost metric falls within the EPA’s threshold to be considered as such, and the Stump Creek watershed subbasin needs to be given further consideration from an EJ perspective as the demographic, percent low income, and people of color indices warrant.

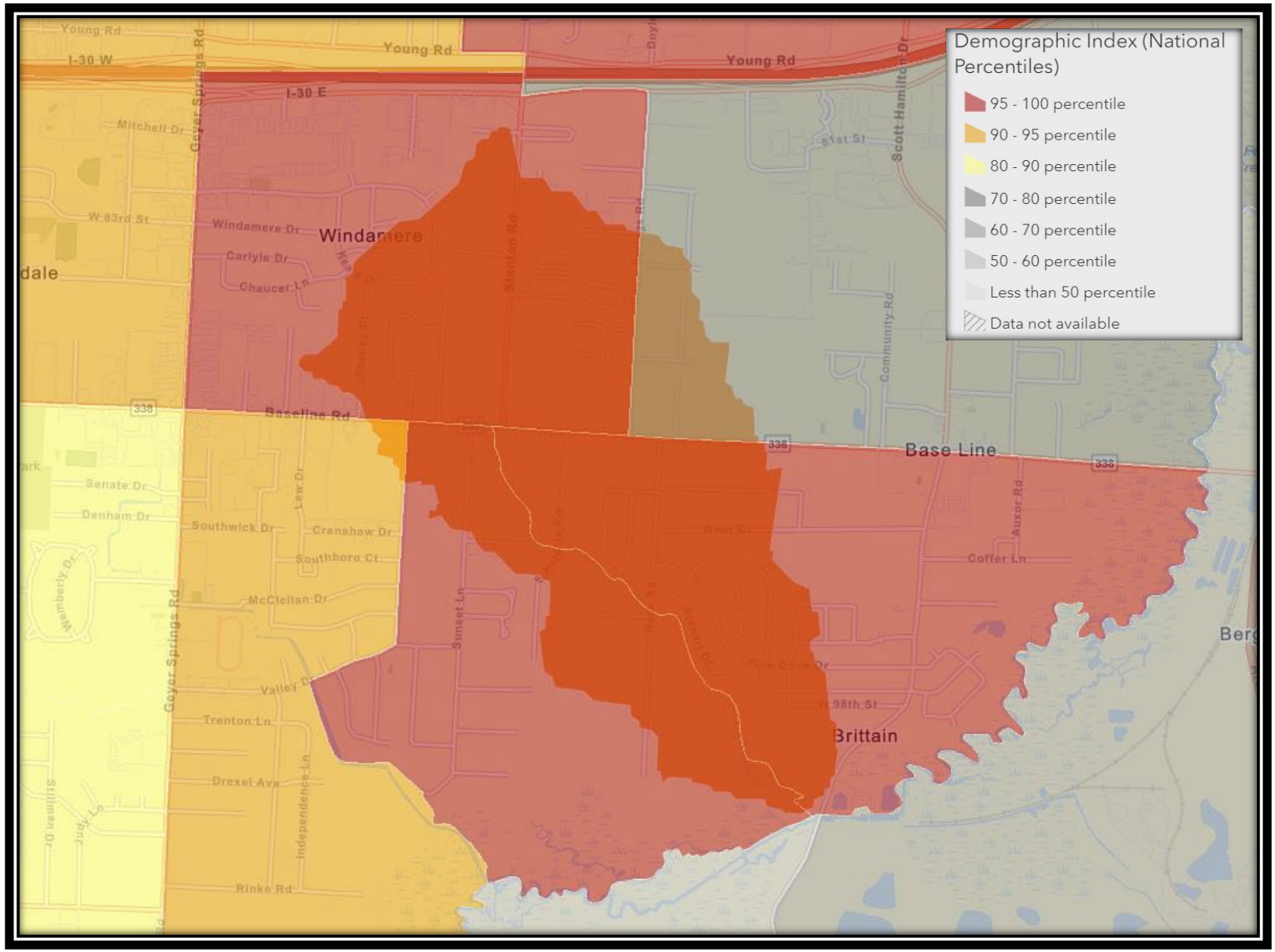

Figure 14 – Demographic Index of the Census Blocks Encompassing the Project Area

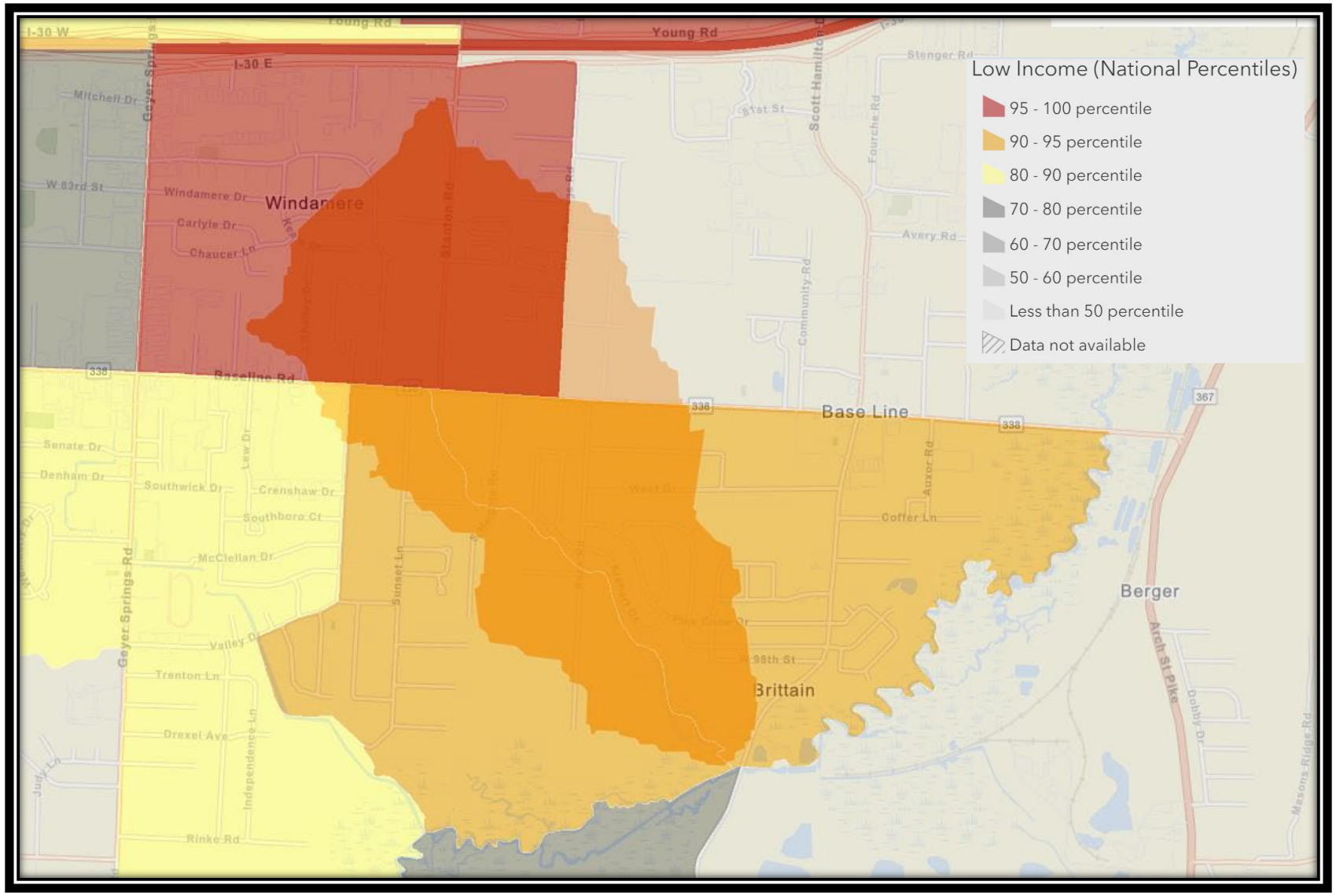

Figure 15 – Income Index of the Census Blocks Encompassing the Project Area

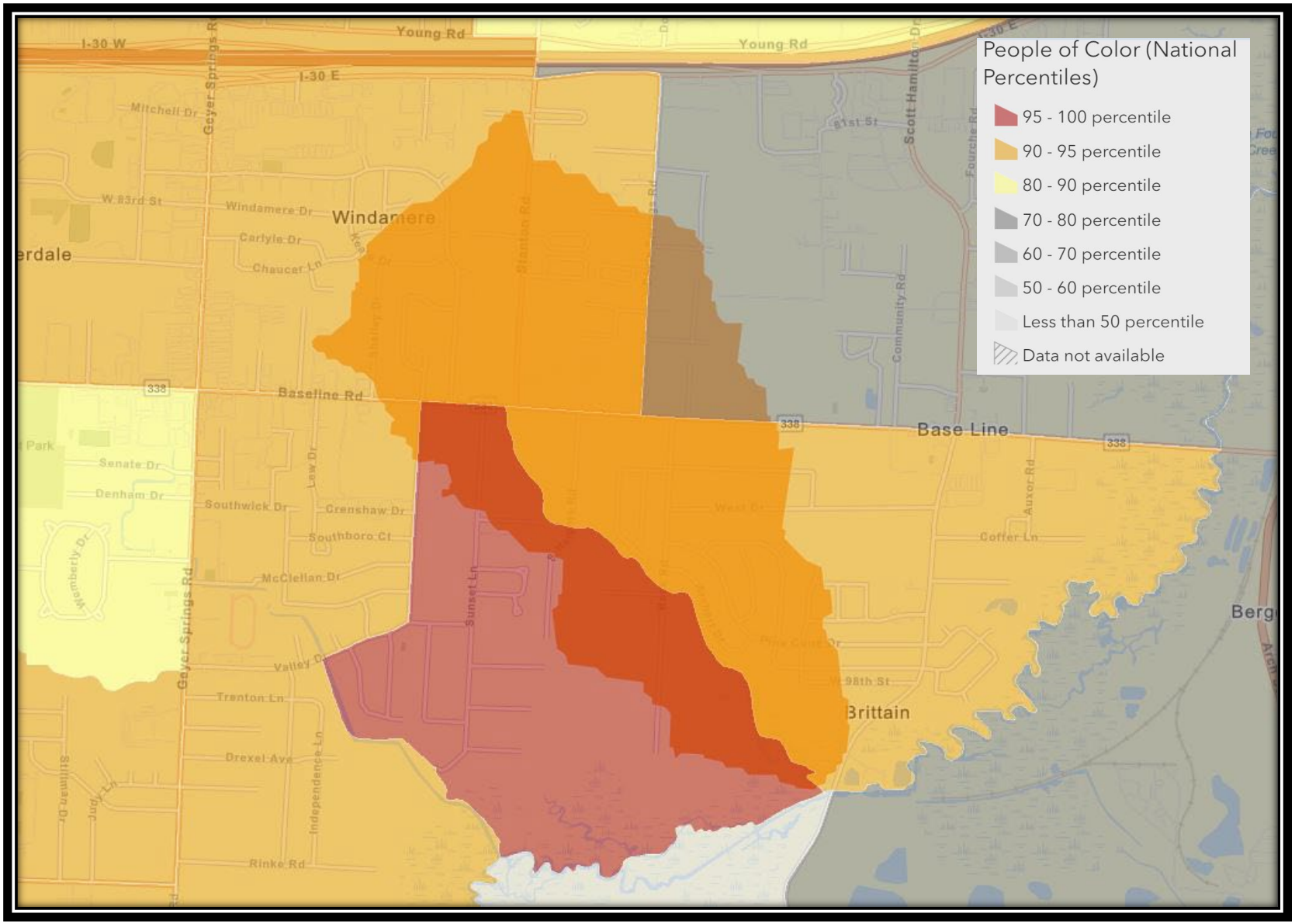

Figure 16 – People of Color Index for the Census Block Encompassing the Project Area

6. Environmental Consequences

The terms impact and effect are synonymous as used in this EA. Impacts may be determined to be beneficial or adverse, and may apply to the full range of natural, aesthetic, historic, cultural, and economic resources of the project area and its surroundings. Definitions and examples of direct and indirect impacts as used in this document are as follows:

- Direct Impact: A direct impact is caused by the proposed action, and occurs at the same time and place.
- Indirect Impact: An indirect impact is caused by the proposed action and is later in time or further removed in distance but is still reasonably foreseeable.

Application of Direct versus Indirect Impacts. For direct impacts to occur, a resource must be present in a particular area. For example, if highly erodible soils were disturbed due to construction, there would be a direct impact to soils from erosion at the construction site. Sediment laden runoff would indirectly affect water quality in adjacent areas downstream from the construction site.

The anticipated project life is 25 years, so future impacts will be evaluated under this time frame. As discussed in this section, the alternatives may create temporary (less than 1 year), short-term (up to 3 years), long-term (3 to 10 years), or permanent effects.

In considering whether the effects of the Preferred Alternative are significant, agencies shall analyze the potentially affected environment and degree of the effects of the action (40 CFR 1501.3). Impacts on each resource can vary in degree or magnitude from a slightly noticeable change to a total change in the environment. For this analysis, the intensity thresholds are defined as follows:

- Negligible: A resource would not be affected, or the effects would be a or below the level of detection, and changes would not be of any measurable or perceptible consequence.
- Minor: Effects on a resource would be detectable, although the effects would be localized, small, and of little consequence to the sustainability of the resource. Mitigation measures, if needed to offset adverse effects, would be simple and achievable.
- Moderate: Effects on a resource would be readily detectable, long-term, localized, and measurable. Mitigation measures, if needed to offset adverse effects, would be extensive and likely achievable.
- Major: Effects on a resource would be obvious and long-term, and would have substantial consequences on a regional scale. Mitigation measures to offset adverse effects would be required and extensive, and success of the mitigation measures would not be guaranteed.

6.1 Climate and Climate Change

6.1.1 Alternative 1 – No Action

Under the No Action Alternative, the trend of rising temperatures, average precipitation events, extreme precipitation events, and average streamflow will continue. A high-level of uncertainty currently exists in predicting future precipitation probabilities at a smaller, sub-global scale such as Little Rock. Although the average future precipitation may be greater than what occurs present-day, it is the consensus of climatologists that future precipitation will occur with higher

intensities separated by longer periods of drought. Therefore, areas at risk for flash floods, such as the Stump Creek study area, could be subjected to an increased risk of flooding in the future.

6.1.2 Alternative 4a

Under Alternative 4a, the trends of rising temperatures, average precipitation events, extreme precipitation events, and average streamflow will continue. Construction efforts would involve the use of heavy machinery to perform clearing, snagging, and excavation; vehicles to dispose of the removed materials; and vehicles for general transportation. These vehicles will contribute greenhouse gases to the environment. While these vehicles will emit greenhouse gases into the air, the impact to climate and climate change is expected to be negligible and temporary. The construction period is expected to take approximately 3 months, and BMPs will be implemented to minimize emissions by limiting idling times of vehicles and equipment so they are used only when necessary. While construction will emit greenhouse gases, vehicle and construction emissions are common in Little Rock, and this alternative is not likely to substantially contribute to further climate change.

6.1.3 Alternative 4b – Preferred Alternative

Under Alternative 4b, the trends of rising temperatures, average precipitation events, extreme precipitation events, and average streamflow will continue. Like Alternative 4a, construction efforts would involve the use of heavy machinery to perform clearing, snagging, and excavation; vehicles to dispose of the removed materials; and vehicles for general transportation. These vehicles will contribute greenhouse gases to the environment. While these vehicles will emit greenhouse gases into the air, the impact to climate and climate change is expected to be negligible and temporary with the use of BMPs. Construction will emit greenhouse gases, but vehicle and construction emissions are common in Little Rock, and this alternative is not likely to substantially contribute to further climate change.

6.2 Air Quality

6.2.1 Alternative 1 – No Action

Under the No Action Alternative, it is expected that air quality will decrease over time as urban growth continues in the City of Little Rock. Urban cities such as Little Rock experience continuous growth and construction efforts, which is accompanied by further vehicular traffic. This trend in growth is likely to cause minor, long-term adverse impacts to the air quality of the Stump Creek project area.

6.2.2 Alternative 4a

Construction activities associated with Alternative 4a may cause negligible, direct, temporary impacts to local air quality. Emissions from construction equipment operations may pollute the local atmosphere; however, these impacts would be limited to the construction period of approximately 3 months. BMPs to include wetting the temporary access road to prevent dust and dirt agitation, ensuring all equipment is up-to-date and properly maintained, and not running machinery while idle will be employed to minimize emissions. Additional emissions may result during post-construction O&M activities, but these activities are expected on an as-needed basis and for durations much shorter than the initial construction timeframe. Because of the temporary nature of construction efforts, minimal O&M efforts, and BMPs to be used, adverse impacts to air quality are not expected to violate any standards set by the Clean Air Act.

6.2.3 Alternative 4b – Preferred Alternative

Similar to Alternative 4a, construction activities associated with Alternative 4b may cause negligible, direct, temporary impacts to local air quality. Emissions from construction equipment

operations may pollute the local atmosphere; however, these impacts would be limited to the construction period. Employment of BMPs to reduce pollution will be used during construction. Alternative 4b differs from 4a in that it requires excavation along a longer length of the creek, therefore machinery will be used for a longer duration and produce slightly higher quantities of emissions. The impacts of these emissions are still expected to be negligible and cease after construction is complete. Additional emissions may result during post-construction O&M activities, but these activities are expected on an as-needed basis and for durations much shorter than the initial construction timeframe. Because of the temporary nature of construction efforts, minimal O&M efforts, and BMPs to be used, adverse impacts to air quality are not expected to violate any standards set by the Clean Air Act.

6.3 Noise

6.3.1 Alternative 1 – No Action

Under the No Action Alternative, no construction would take place that would add to local noise pollution. Ambient noise that is typical of residential neighborhoods would continue as is, though may grow over time as development continues as is typical of urban cities such as Little Rock.

6.3.2 Alternative 4a

Under Alternative 4a, construction to include removing of debris and excavating sediment from the Stump Creek channel would require the use of heavy machinery, contributing to local noise pollution. Commercial and residential construction work is permitted between the hours of 6:00 am to 6:00 pm, Monday through Saturday and 1:00 pm to 6:00 pm on Sunday, with exceptions allowed via permit, as stated in Little Rock, AR Code of Ordinances, Section 18-52 on noise. This construction would occur within the designated time allowed by the City of Little Rock for construction, or a permit would be obtained if work is necessary outside of this window. BMPs would be implemented to minimize machinery running time and therefore minimize noise pollution from construction; however, temporary, minor adverse impacts to noise pollution are expected as a result of this alternative. Noise production would be limited to the period of construction, which is anticipated to be roughly three months. As needed, O&M activities will include inspection and removal of debris on an as needed basis. These will be conducted using the least noise-generating equipment as possible. Equipment could include hand tools, gas-powered hand tools, UTVs, and heavy construction equipment. O&M efforts would be infrequent and in shorter duration than initial effort to remove debris from the stream.

6.3.3 Alternative 4b – Preferred Alternative

Similar to Alternative 4a, Alternative 4b involves construction that requires heavy machinery, which will contribute to local noise pollution. Commercial and residential construction work is permitted between the hours of 6:00 am to 6:00 pm, Monday through Saturday and 1:00 pm to 6:00 pm on Sunday, with exceptions allowed via permit, as stated in Little Rock, AR Code of Ordinances, Section 18-52 on noise. This construction would occur within the designated time allowed by the City of Little Rock for construction, or a permit would be obtained if work is necessary outside of this window. BMPs would be implemented to minimize machinery running time and therefore minimize noise pollution from construction; however, temporary, minor adverse impacts to noise pollution are expected as a result of this alternative. Noise production would be limited to the period of construction, which is anticipated to be roughly three months. As needed, O&M activities will include inspection and removal of debris on an as needed basis. These will be conducted using the least noise-generating equipment as possible. Equipment could include hand tools, gas-powered hand tools, UTVs, and heavy construction equipment. O&M efforts would be infrequent and in shorter duration than initial effort to remove debris from the stream.

6.4 Topography, Geology, and Soils

6.4.1 Alternative 1 – No Action

Under the No Action Alternative, no direct impacts to topography, geology, and soils are expected to occur. Indirect, long-term adverse impacts may occur if snags continue to accumulate and fill the stream, blocking downstream flow and compounding the accumulation of debris and sediment. As the channel is blocked by debris, water would likely begin to cut into the stream bank in order to travel downstream, and stream morphology change over time in response to the blockage. Under this alternative, no Prime Farmland will be affected in accordance with the Farmland Protection Policy Act, 7 U.S.C. 4201, et seq.

6.4.2 Alternative 4a

Under the Alternative 4a, earth-moving activities include snag and debris removal from the length of the channel within the study area and sediment buildup removal on the upper half. A temporary access road would be established to allow vehicles and equipment to reach the creek bank. No impacts to geology are expected as a result. Clearing of vegetation, trash, and sediment would slightly alter the topography in a negligible, beneficial way as the channel would be returned to a more natural state. No impacts to Prime Farmland will occur.

Construction activity and snag removal will loosen and/or remove vegetation along the creek banks, creating an environment where erosion would be more active. Driving equipment along the temporary access road to access the channel will likely loosen soils and agitate dust. Impacts associated with construction will result in minor, short-term adverse impacts to soil; however, erosion will be combatted by using BMPs during planning, construction, and maintenance. The embankment will be designed in a way to reduce velocities from shearing and eroding. Native grasses will be used to revegetate areas impacted by construction and not maintained for maintenance access to reinforce soil stability and reduce lasting impacts on soil erosion. Under this alternative, no Prime Farmland will be lost in accordance with the Farmland Protection Policy Act, 7 U.S.C. 4201, et seq. and CEQ's Prime or Unique Agricultural Lands Memorandum.

6.4.3 Alternative 4b – Preferred Alternative

Alternative 4b is similar to Alternative 4a in that earth-moving activities are expected to have no impacts to geology and negligible, long-term beneficial impacts to topography. No impacts to Prime Farmland will occur. Alternative 4b differs from Alternative 4a in that excavation of sediment buildup will occur along the entirety of the channel within the project area. While the construction area will be greater, Alternative 4b is still expected to impose minor, short-term adverse impacts to soils as effects would be localized and restoration through revegetation is achievable. Under this alternative, no Prime Farmland will be lost in accordance with the Farmland Protection Policy Act, 7 U.S.C. 4201, et seq. and CEQ's Prime or Unique Agricultural Lands Memorandum.

6.5 Cultural Resources

There are no known cultural resources in the proposed stream reach construction area; therefore, none of the alternatives would have any impact on cultural resources. Coordination has been conducted with the State Office of Historic Preservation (SHPO), as well as tribal coordination. These responses are included in Attachment B.

In accordance with Section 106 of the National Historic Preservation Act of 1966, as amended, and its implementing regulation 36 CFR Part 800, USACE is required to consider the impacts a project may have on cultural resources. As noted above, USACE has documented a "no historic properties affected" finding for the project. Consideration of the American Indian Religious Freedom Act with regard to potential interments or burials is necessary during project construction activities. Should human remains or funerary objects be observed during the implementation of any of the alternatives considered, all activity in vicinity of the find will cease immediately, and the USACE Cultural Resources specialist will be called so that appropriate action and consultation can be undertaken without delay.

6.6 Hazardous, Toxic, and Radioactive Waste

As there are no known HTRW sites within the Project Area, no impacts are expected from the implementation of the No Action Alternative or either action alternative. Despite no finding of recognized environmental conditions, there is always a possibility that previously unidentified HTRW could be uncovered, even when a proposed project is entirely within a preexisting project footprint. Care will be taken as the project progresses to identify and address any HTRW concerns that may arise in a timely manner.

6.7 Water Quality, Wetlands, and Water Resources

6.7.1 Alternative 1 – No Action Alternative

Under the No Action Alternative, the existing debris and snags clogging the channel would continue to accumulate more debris and sediment. This streamflow blockage would compound over time, further limiting streamflow, retaining stagnant waters, increasing turbidity, and decreasing dissolved oxygen content. This low quality water will then be transported downstream to Little Fourche Creek during flood events, diluting the water of the Fourche Bottoms wetland complex. The No Action Alternative is expected to cause moderate, long-term impacts to the aquatic resources of Stump Creek.

6.7.2 Alternative 4a

Under Alternative 4a, there would be an increase in erosion and therefore stream turbidity during construction, causing minor, short-term adverse impacts to water quality. However, BMPs to include retaining natural stream meanders and avoiding isolated trapezoidal channels will be employed for turbidity control when working within the wetted stream perimeter. A Short Term Activity Authorization (STAA) will be obtained from the state regulatory agency for this process. Revegetation will be employed to mitigate for impacts upon construction completion. After the stream settles post-construction, Alternative 4a will ultimately improve water quality by decreasing turbidity and increasing dissolved oxygen content through natural stream flow.

The benefits of this alternative will not only benefit the stream channel within the study area, but also downstream wetlands. Connectivity to the Fourche Bottoms wetland system will be maintained. During rain events, fresh water will travel downstream to the adjacent bottomland hardwood wetlands and Little Fourche Creek instead of the stagnant waters being retained in the channel's current state. Water will have a higher dissolved oxygen content and decreased turbidity, benefitting wetland vegetation and aquatic species. Alternative 4a would create minor, long-term beneficial impacts to downstream wetlands by improving the water quality.

Due to the nature of the streambed and lack of perennial flow, there are no significant aquatic features in the project footprint. Individual fish species, potentially consisting of mosquito fish and pirate perch, in the immediate construction area will be temporarily disturbed and likely migrate away from the area during construction of Alternative 4a. They would likely return to the habitat upon construction completion. Adequate fish habitat is limited in this stream channel due

to past modifications to enhance storm water conveyance and low dissolved oxygen content, so adverse impacts to aquatic resources from construction are expected to be minor and short-term, and ultimately beneficial as water quality improves post-construction.

Overall, minor, temporary adverse impacts to water quality and aquatic resources can be expected as a result of Alternative 4a due to short duration debris removal efforts via heavy equipment. However, long-term, minor benefits may be realized as a result of removing the debris that restricts natural river flow, limits water quality, and overall aquatic habitat health. Removal of the debris could restore more natural flows and promote opportunities for increased creek habitat value. These benefits could occur not only within the study area but also the downstream wetland complex. Long-term O&M would ensure Stump Creek maintains a more natural flow regime and not return to a logged, stagnant, low value aquatic system. As such, no aquatic habitat mitigation is required as there would be no permanent loss to aquatic habitats as a result of this alternative. Additional BMPs such as revegetating disturbed areas, leaving creek meanders in place, and others will be developed in PED when detailed design efforts are known.

Under Alternative 4a, all dredged materials will be removed and disposed of off-site, and no materials will be deposited into waters of the United States so as to follow Clean Water Act Section 404(b)(1). A Short Term Activity Authorization (STAA) will be obtained from the state regulatory agency to ensure compliance with Clean Water Act Section 401. Alternative 4a is compliant with EO 11990, Protection of Wetlands, as there will be no net loss to wetlands under these plans. This alternative is fully compliant with Executive Order 11988, Floodplain Management (1977) as it seeks to reduce the risk of flood; minimize the impact of floods on human safety, health, and welfare; and to restore and preserve the natural and beneficial values served by floodplains in carrying out its responsibilities.

6.7.3 Alternative 4b – Preferred Alternative

The expected impacts of Alternative 4b and akin to those of Alternative 4a. Similar to Alternative 4a, the Preferred Alternative will cause temporary increases in stream turbidity during construction, causing minor, short-term impacts to water resources. Alternative 4b would have a slightly greater impact compared to Alternative 4a, as this alternative includes excavating a greater area of the stream; however, its impacts will be localized and temporary. BMPs will be employed to mitigate construction impacts.

Overall, minor, temporary adverse impacts to water quality and aquatic resources can be expected as a result of Alternative 4a due to short duration debris removal efforts via heavy equipment. However, long-term, minor benefits may be realized as a result of removing the debris that restricts natural river flow, limits water quality, and overall aquatic habitat health. Removal of the debris could restore more natural flows and promote opportunities for increased creek habitat value. These benefits could occur not only within the study area but also the downstream wetland complex. Long-term O&M would ensure Stump Creek maintains a more natural flow regime and not return to a logged, stagnant, low value aquatic system. As such, no aquatic habitat mitigation is required as there would be no permanent loss to aquatic habitats as a result of this alternative. Additional BMPs such as revegetating disturbed areas, leaving creek meanders in place, and others will be developed in PED when detailed design efforts are known.

Alternative 4b is pending compliance with the Clean Water Act. As it is the Preferred Alternative, a Section 404(b)(1) short-form has been evaluated (Attachment D) concerning disposal of dredged materials. A Short Term Activity Authorization (STAA) will be obtained from the state regulatory agency to ensure compliance with Clean Water Act Section 401. Under Alternative

4b, all dredged materials will be removed and disposed of off-site, and no materials will be deposited into waters of the United States. Alternative 4b is compliant with EO 11990, Protection of Wetlands, as there will be no net loss to wetlands under these plans. This alternative is fully compliant with Executive Order 11988, Floodplain Management (1977) as it seeks to reduce the risk of flood; minimize the impact of floods on human safety, health, and welfare; and to restore and preserve the natural and beneficial values served by floodplains in carrying out its responsibilities.

6.8 Terrestrial Resources

6.8.1 Alternative 1 – No Action Alternative

Under the No Action Alternative, the existing debris and snags clogging the channel would continue to accumulate more debris and sediment. The nuisance flooding characteristic of the current state of the channel will continue to stress the pines. Waterlogging may occur if floodwaters are held for long periods of time, decreasing oxygen available to plant roots. Invasives such as the mimosa and Chinese privet will continue to thrive. Wildlife may migrate from the area to avoid flooded areas. These indirect adverse impacts are expected to be minor and only compound over time.

6.8.2 Alternative 4a

Under Alternative 4a, existing vegetation along the stream banks would be disturbed, as well as vegetation along the temporary access road. This alternative would remove woody debris from the stream bank and channel of Stump Creek, thus allowing stream flow to reestablish stream meander and flush sediment from the channel. Portions of the stream bank damaged during construction activities would be reseeded when construction is complete. Ultimately this alternative seeks to restore streambank vegetation to its natural state. Clearing of snags, debris, and sediment within the channel and along its embankments would allow riverbank vegetation to thrive. Revegetation of disturbed areas with native grasses will help to mitigate for vegetation lost.

Wildlife could temporarily be disturbed during the construction of Alternative 4a and would likely leave the immediate construction area but are expected to return upon construction completion. Degradation of existing vegetation could limit wildlife food and shelter resources, but restoration and BMP efforts would minimize these impacts.

Alternative 4a is likely to have minor, short-term adverse impacts to terrestrial resources during the construction phase; however impacts will be localized, and restoration efforts will prevent any long-term adverse effects.

6.8.3 Alternative 4b – Preferred Alternative

Like Alternative 4a, the Preferred Alternative would disturb vegetation along the stream banks as well as that which is removed to create an access road. Stream flow would improve as a result of the woody debris and sediment removal within the stream bank and channel of Stump Creek, thus improving water quality and overall function of the water system. This restoration of the natural streambank ecosystem would ultimately help vegetation by allowing riverbank species to thrive after the removal of snags, debris, and sediment. Revegetation of disturbed areas with native grasses will help to restore vegetation lost.

Wildlife may be temporarily disturbed during construction of Alternative 4b and would likely leave the immediate construction area, but species are expected to return upon construction completion. The removal of snags and debris could limit wildlife food and shelter resources, but restoration and BMP efforts would minimize these impacts.

Overall, Alternative 4b is likely to have minor, short-term adverse impacts to terrestrial resources during the construction phase; however, impacts will be localized, and mitigation restoration will prevent long-term adverse effects.

Coordination with the USFWS on Fish and Wildlife Coordination Act compliance is pending, and compliance documentation will be attached to this EA upon completion.

6.9 Threatened and Endangered Species

6.9.1 Alternative 1 – No Action Alternative

Under the No Action Alternative, no activities or construction will occur that would directly or indirectly impact T&E species. The state of Stump Creek would remain the same. The USACE has determined that there would be No Effect to any species listed under the ESA under the No Action Alternative.

6.9.2 Alternative 4a

Under Alternative 4a, no direct or indirect impacts to the listed eastern black rail, piping plover, and red knot, nor the candidate monarch butterfly. Based on the habitat and resources available within the action area as well as known species ranges, these species are not expected to be present or affected by the proposed action. In the event that these species do make a rare appearance within the study area, it would likely be short in duration during migration. A No Effect determination has been made for the northern long-eared bat, eastern black rail, piping plover, red knot, and monarch butterfly.

Time constraints will be implemented on construction efforts, specifically tree cutting, to occur outside of the tricolored bat pup season (May 15 – July 31) to minimize effects on the species as a result of the proposed action. While the existing habitat is of poor quality, the alligator snapping turtle may still be present in the area, and project actions will be removing the snags and structure from Stump Creek, thereby degrading the suitability of the habitat. Because the tricolored bat and alligator snapping turtle are listed, respectively, as proposed endangered and threatened species, the effect determination is based on the whether or not the action is expected to appreciably reduce the reproduction, numbers, or distribution of the species. The proposed action would have no measurable impact on the status of the two species and therefore is not likely to jeopardize the continued existence of the tricolored bat or alligator snapping turtle. If either species is listed prior to project completion, the direct and indirect effects of the proposed action May Affect, but are Not Likely to Adversely Affect the tricolored bat and alligator snapping turtle. If necessary, the USACE will follow all appropriate processes to ensure the handling of tricolored bat and alligator snapping turtle is compliant with the ESA.

Coordination with the USFWS is pending, and compliance documents will be included in Appendix A, Endangered Species Act Coordination, when completed.

6.9.3 Alternative 4b – Preferred Alternative

As under Alternative 4a, Alternative 4b is expected to result in no direct or indirect impacts to the listed eastern black rail, piping plover, and red knot, nor the candidate monarch butterfly. Based on the habitat and resources available within the action area as well as known species ranges, these species are not expected to be present or affected by the preferred alternative. In the event that these species do make a rare appearance within the study area, it would likely be short in duration during migration. A No Effect determination has been made for the northern long-eared bat, eastern black rail, piping plover, red knot, and monarch butterfly. A consistency letter dated February 6, 2023 for the No Effect determination for the eastern black rail, piping plover, and red not was obtained through IPaC determination keys (Attachment A).

Time constraints will be implemented on construction efforts, specifically tree cutting, to occur outside of the tricolored bat pup season (May 15 – July 31) to minimize effects on the species as a result of Alternative 4b. While the existing habitat is of poor quality, the alligator snapping turtle may still be present in the area, and project actions will be removing the snags and structure from Stump Creek, thereby degrading the suitability of the habitat. Because the tricolored bat and alligator snapping turtle are listed, respectively, as proposed endangered and threatened species, the effect determination is based on the whether or not the action is expected to appreciably reduce the reproduction, numbers, or distribution of the species. The proposed action would have no measurable impact on the status of the two species and therefore is not likely to jeopardize the continued existence of the tricolored bat or alligator snapping turtle. If either species is listed prior to project completion, the direct and indirect effects of the proposed action May Affect, but are Not Likely to Adversely Affect the tricolored bat and alligator snapping turtle. If necessary, the USACE will follow all appropriate processes to ensure the handling of tricolored bat and alligator snapping turtle is compliant with the ESA.

Coordination with the USFWS is pending, and compliance documents will be included in Appendix A, Endangered Species Act Coordination, when completed.

6.10 Recreation and Aesthetics

6.10.1 Alternative 1 – No Action

Under the No Action Alternative, the existing debris and snags clogging the channel would continue to accumulate more debris, sediment, and miscellaneous garbage. Over time, this compounding of accumulation would likely decrease the aesthetic appeal of the area, resulting in negligible, indirect adverse impacts to aesthetics. No direct or indirect impacts to recreation are expected as recreation resources are already very limited and access to the area would not change.

6.10.2 Alternative 4a

While there are no significant aesthetic or recreational features in the project area, locals may utilize Stump Creek for these purposes. Under Alternative 4a, the lower section of Stump Creek within the project footprint will remain wooded and retain a meandering stream channel. Debris removal may result in negligible, long-term beneficial impacts to aesthetics as trash may be removed along with the snags, making the stream more visually appealing to passersby. The O&M features of this alternative would ensure that the stream was cleared and cleaned annually. Wildlife and bird observation may occur in the lower reaches of Stump Creek, but this alternative is not expected to affect these activities. Under Alternative 4a, negligible, long-term benefits to aesthetics and no direct or indirect impacts recreational resources are expected to occur.

6.10.3 Alternative 4b – Preferred Alternative

Under the Preferred Alternative, the entirety of the Stump Creek study area will see vegetation and sediment removed. Debris removal would result in negligible, long-term beneficial impacts to aesthetics as trash may be removed along with the snags, making the stream more visually appealing. The O&M features of this alternative would ensure that the stream was cleared and cleaned annually. Wildlife and bird observation may occur in the lower reaches of Stump Creek, but this alternative is not expected to affect these activities. Under Alternative 4b, negligible, long-term benefits to aesthetic and no direct or indirect impacts to recreational resources are expected to occur.

6.11 Socioeconomic Resources and Environmental Justice

6.11.1 Alternative 1 – No Action

Under the No Action Alternative, the risk of flood damages would not be reduced. Loss of income and value as well as community disruption would likely continue, causing moderate, long-term adverse impacts to those in the community and ultimately socioeconomic resources and EJ in the case of a flooding event.

6.11.2 Alternative 4a

Alternative 4a aims to reduce flood risk and therefore reduce damages to residential properties in the study area during future flooding events. This is a moderate, long-term beneficial impact to the socioeconomics of the community. Because it is an impoverished area, reducing the financial burden of repairing flood damages will have a substantial beneficial impact upon residents in the adjacent homes. Because Alternative 4a only removes sediment buildup along the upper half of Stump Creek within the study area, there is a chance that the lower half of the creek will accumulate debris at a faster rate, shortening the life of the project. However, any reduction of flood risk and costs associated with flooding would benefit this low-income community. With a housing cost is in the 91st percentile, local residents are spending a greater fraction of their abnormally low income on housing, so reducing potential flood costs would be a moderate benefit overall.

6.11.3 Alternative 4b – Preferred Alternative

Similar to Alternative 4a, the Preferred Alternative will reduce the financial burden associated with potential flood damages by reducing flood risk. Because this is an impoverished community, reducing the financial burden of repairing flood damages will have a substantial beneficial impact upon local residents. This alternative involves removing snags and sediment deposits along the entirety of Stump Creek, which will enhance flood risk reduction and elongate the longevity of the project. This elongated life of the project ensures that flood damages incurred on the local community are minimized for as long as possible. In a low-income community where the housing cost is in the 91st percentile, local residents are spending a greater fraction of their abnormally low income on housing costs. Decreasing the risk of future flooding events and the costs associated with flooding would be a benefit to the community. Therefore, Alternative 4b would result in moderate, long-term benefits to socioeconomics and EJ within the project footprint.

6.12 Summary of Environmental Consequences

Table 11 – Summary of Environmental Consequences

Resource Area	Alternative 1 – No Action	Alternative 4a	Alternative 4b – Preferred Alternative
Climate & Climate Change	Minor, temporary adverse effects	Negligible, temporary adverse effects	Negligible, temporary adverse effects
Air Quality	None	Negligible, temporary adverse effects	Negligible, temporary adverse effects
Noise	None	Minor, temporary adverse effects	Minor, temporary adverse effects
Topography, Geology, & Soils	Moderate, long-term impacts to topography, geology, & soils	No impacts to geology; negligible, long-term benefits to topography; minor, short-term adverse impacts to soils	No impacts to geology; negligible, long-term benefits to topography; minor, short-term adverse impacts to soils
Cultural Resources	None	None	None
HTRW	None	None	None
Water Quality, Wetlands, & Water Resources	Moderate, long-term adverse impacts to water resources	Minor, temporary adverse impacts to water quality and aquatic resources from construction; minor, long-term beneficial impacts to downstream wetlands	Minor, temporary adverse impacts to water quality and aquatic resources from construction; minor, long-term beneficial impacts to downstream wetlands
Terrestrial Resources	Minor, indirect adverse impacts	Minor, short-term adverse impacts from construction to be minimized through revegetation and BMPs	Minor, short-term adverse impacts from construction to be minimized through revegetation and BMPs
Threatened & Endangered Species	No Effect	No Effect for four listed species; No Jeopardy and, if listed, May Affect but Not Likely to Adversely Affect the tricolored bat and alligator snapping turtle	No Effect for four listed species; No Jeopardy and, if listed, May Affect but Not Likely to Adversely Affect the tricolored bat and alligator snapping turtle
Recreation & Aesthetics	Negligible, indirect adverse impacts	Negligible, long-term benefits	Negligible, long-term benefits
Socioeconomics and EJ	Moderate, long-term adverse impacts	Moderate, long-term beneficial impacts by reducing	Moderate, long-term beneficial impacts by reducing

		financial burden of residential flood damages	financial burden of residential flood damages

7. Cumulative Impacts

No projects aside from the Preferred Alternative are being implemented or are being proposed within the Project Area. Urban growth that is typical of established cities is possible, however a review of historical imagery on Google Earth found that the neighborhoods surrounding the Project Area have not changed significantly since the mid-1990s, and growth in the immediate vicinity is not expected. No cumulative impacts are expected in addition to the project-specific impacts listed above.

The City of Little Rock urban area is a highly altered landscape. This highly localized project will not significantly increase the alteration of the landscape or contribute to significant environmental impacts in the area. Neither the No Action Alternative nor any action alternative will cause significant cumulative impacts to the physical environment. The proposed alternative will reduce flooding frequency in adjacent businesses and residences, resulting in positive economic benefits to the region.

8. Irreversible and Irretrievable Commitment of Resources

NEPA requires that Federal agencies identify “any irreversible and irretrievable commitments of resources which would be involved in the proposed action should it be implemented” (42 U.S.C. § 4332).

Irreversible and irretrievable resource commitments are related to the use of nonrenewable resources and the effects that the use of these resources have on future generations. Irreversible effects primarily result from use or destruction of a specific resource (e.g. energy and minerals) that cannot be replaced within a reasonable period. Irretrievable resource commitments involve the loss in value of an affected resource that cannot be restored because of the action (e.g. extinction of a threatened or endangered species or the disturbance of a cultural site).

The Preferred Alternative would result in the direct and indirect commitment of resources. These would be related mainly to construction components associated with the excavation and clearing activities. Energy typically associated with construction activities would be expended and irretrievably lost. Fuels used during the construction and operation of clearing equipment, placement equipment (e.g. bulldozers, backhoes, etc.) and support vehicles would constitute an irretrievable commitment of fuel resources. Capital and labor resources would also be considered an irretrievable and irreversible commitment of resources. The use of such resources would not adversely affect the availability of such resources for other projects both now and in the future.

9. Environmental Compliance

Table 12 below provides an overview of compliance status for the project. Detailed descriptions of compliance status can be found in Section 6 of this EA.

Table 12 – Environmental Compliance

Guidance	Degree of Compliance
Archaeological and Historical Preservation Act, as Amended, 16 U.S.C. 469, et seq.	Compliant
National Historic Preservation Act, as Amended, 16 U.S.C. 470A, et seq.	Compliant
Executive Order 11593, Protection and Enhancement of the Cultural Environment	Compliant
Clean Water Act, as Amended, 33 U.S.C. 466 et seq.	Pending
Clean Air Act, as Amended, 42 U.S.C. 7401 et seq.	Compliant
Endangered Species Act, as Amended, 16 U.S.C. 1531, et seq.	Pending
Fish and Wildlife Coordination Act, as Amended, 16 U.S.C. 4601, et seq.	Pending
Land and Water Conservation Fund Act, as Amended,16 U.S.C. 4601, et seq.	Compliant
National Environmental Policy Act, as Amended, 42 U.S.C. 4321, et seq.	Pending
Executive Order 11988, Floodplain Management	Compliant
Executive Order 11990, Protection of Wetlands	Compliant
Executive Order 12898, Federal Actions to Address Environmental Justice in Minority and Low-Income Populations	Compliant
Executive Order 13045, Protection of Children from Environmental Health Risks and Safety Risks	Compliant
Executive Order 14008, Tackling the Climate Crisis at Home and Abroad	Compliant
Prime or Unique Agricultural Lands NEPA, CEQ Memorandum August 11, 1980	Compliant
Farmland Protection Policy Act, 7 U.S.C. 4201, et seq.	Compliant

10. List of References and Preparers

10.1 References

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10.2 Preparers

Bob Singleton, Biologist, Little Rock District, USACE

Elizabeth Knapp, Biologist, Fort Worth District, USACE

Christopher Davies, Archaeologist, Little Rock District, USACE

Luke Prendergast, Environmental Engineer, Fort Worth District, USACE

Attachment A – Endangered Species Act Coordination

(pending)

Stump Creek, Little Rock, AR

Section 208

Detailed Project Report and Environmental Assessment

November 2023

US Army Corps of Engineers
Little Rock District

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Arkansas Ecological Services Field Office
110 South Amity Suite 300
Conway, AR 72032-8975
Phone: (501) 513-4470 Fax: (501) 513-4480

In Reply Refer To:
Project Code: 2023-0003380
Project Name: Stump Creek

October 12, 2023

Subject: List of threatened and endangered species that may occur in your proposed project location or may be affected by your proposed project

To Whom It May Concern:

The enclosed species list identifies threatened, endangered, proposed and candidate species, as well as proposed and final designated critical habitat, that may occur within the boundary of your proposed project and/or may be affected by your proposed project. The species list fulfills the requirements of the U.S. Fish and Wildlife Service (Service) under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 *et seq.*).

New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list. Please feel free to contact us if you need more current information or assistance regarding the potential impacts to federally proposed, listed, and candidate species and federally designated and proposed critical habitat. Please note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the Act, the accuracy of this species list should be verified after 90 days. This verification can be completed formally or informally as desired. The Service recommends that verification be completed by visiting the IPaC website at regular intervals during project planning and implementation for updates to species lists and information. An updated list may be requested through the IPaC system by completing the same process used to receive the enclosed list.

The purpose of the Act is to provide a means whereby threatened and endangered species and the ecosystems upon which they depend may be conserved. Under sections 7(a)(1) and 7(a)(2) of the Act and its implementing regulations (50 CFR 402 *et seq.*), Federal agencies are required to utilize their authorities to carry out programs for the conservation of threatened and endangered species and to determine whether projects may affect threatened and endangered species and/or designated critical habitat.

A Biological Assessment is required for construction projects (or other undertakings having similar physical impacts) that are major Federal actions significantly affecting the quality of the human environment as defined in the National Environmental Policy Act (42 U.S.C. 4332(2)(c)). For projects other than major construction activities, the Service suggests that a biological

evaluation similar to a Biological Assessment be prepared to determine whether the project may affect listed or proposed species and/or designated or proposed critical habitat. Recommended contents of a Biological Assessment are described at 50 CFR 402.12.

If a Federal agency determines, based on the Biological Assessment or biological evaluation, that listed species and/or designated critical habitat may be affected by the proposed project, the agency is required to consult with the Service pursuant to 50 CFR 402. In addition, the Service recommends that candidate species, proposed species and proposed critical habitat be addressed within the consultation. More information on the regulations and procedures for section 7 consultation, including the role of permit or license applicants, can be found in the "Endangered Species Consultation Handbook" at:

https://www.fws.gov/sites/default/files/documents/endangered-species-consultation-handbook.pdf

Migratory Birds: In addition to responsibilities to protect threatened and endangered species under the Endangered Species Act (ESA), there are additional responsibilities under the Migratory Bird Treaty Act (MBTA) and the Bald and Golden Eagle Protection Act (BGEPA) to protect native birds from project-related impacts. Any activity, intentional or unintentional, resulting in take of migratory birds, including eagles, is prohibited unless otherwise permitted by the U.S. Fish and Wildlife Service (50 C.F.R. Sec. 10.12 and 16 U.S.C. Sec. 668(a)). For more information regarding these Acts see https://www.fws.gov/program/migratory-bird-permit/what-we-do.

The MBTA has no provision for allowing take of migratory birds that may be unintentionally killed or injured by otherwise lawful activities. It is the responsibility of the project proponent to comply with these Acts by identifying potential impacts to migratory birds and eagles within applicable NEPA documents (when there is a federal nexus) or a Bird/Eagle Conservation Plan (when there is no federal nexus). Proponents should implement conservation measures to avoid or minimize the production of project-related stressors or minimize the exposure of birds and their resources to the project-related stressors. For more information on avian stressors and recommended conservation measures see https://www.fws.gov/library/collections/threats-birds.

In addition to MBTA and BGEPA, Executive Order 13186: *Responsibilities of Federal Agencies to Protect Migratory Birds*, obligates all Federal agencies that engage in or authorize activities that might affect migratory birds, to minimize those effects and encourage conservation measures that will improve bird populations. Executive Order 13186 provides for the protection of both migratory birds and migratory bird habitat. For information regarding the implementation of Executive Order 13186, please visit https://www.fws.gov/partner/council-conservation-migratory-birds.

We appreciate your concern for threatened and endangered species. The Service encourages Federal agencies to include conservation of threatened and endangered species into their project planning to further the purposes of the Act. Please include the Consultation Code in the header of this letter with any request for consultation or correspondence about your project that you submit to our office.

Attachment(s):

- Official Species List

OFFICIAL SPECIES LIST

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

This species list is provided by:

Arkansas Ecological Services Field Office
110 South Amity Suite 300
Conway, AR 72032-8975
(501) 513-4470

PROJECT SUMMARY

Project Code: 2023-0003380
Project Name: Stump Creek
Project Type: Terrestrial Sources of Water Creation/Improvement
Project Description: Proposed vegetation removal and sediment excavation within Stump Creek to reduce local flood risk.

Project Location:

The approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/@34.660975300000004,-92.32586564414544,14z

Counties: Pulaski County, Arkansas

ENDANGERED SPECIES ACT SPECIES

There is a total of 7 threatened, endangered, or candidate species on this species list.

Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species.

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries[1], as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

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1. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

MAMMALS

NAME	STATUS
Northern Long-eared Bat *Myotis septentrionalis* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/9045	Endangered
Tricolored Bat *Perimyotis subflavus* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/10515	Proposed Endangered

BIRDS

NAME	STATUS
Eastern Black Rail *Laterallus jamaicensis ssp. jamaicensis* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/10477	Threatened
Piping Plover *Charadrius melodus* Population: [Atlantic Coast and Northern Great Plains populations] - Wherever found, except those areas where listed as endangered. There is **final** critical habitat for this species. Your location does not overlap the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/6039	Threatened
Red Knot *Calidris canutus rufa* There is **proposed** critical habitat for this species. Species profile: https://ecos.fws.gov/ecp/species/1864	Threatened

REPTILES

NAME	STATUS
Alligator Snapping Turtle *Macrochelys temminckii* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/4658	Proposed Threatened

INSECTS

NAME	STATUS
Monarch Butterfly *Danaus plexippus* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/9743	Candidate

CRITICAL HABITATS

THERE ARE NO CRITICAL HABITATS WITHIN YOUR PROJECT AREA UNDER THIS OFFICE'S JURISDICTION.

YOU ARE STILL REQUIRED TO DETERMINE IF YOUR PROJECT(S) MAY HAVE EFFECTS ON ALL ABOVE LISTED SPECIES.

IPAC USER CONTACT INFORMATION

Agency:	Army Corps of Engineers
Name:	Elizabeth Knapp
Address:	819 Taylor St
Address Line 2:	Rm 3A12
City:	Fort Worth
State:	TX
Zip:	76102
Email	elizabeth.j.knapp@usace.army.mil
Phone:	7135911178

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Arkansas Ecological Services Field Office
110 South Amity Suite 300
Conway, AR 72032-8975
Phone: (501) 513-4470 Fax: (501) 513-4480

In Reply Refer To:
Project code: 2023-0003380
Project Name: Stump Creek
IPaC Record Locator: 305-122030898

February 06, 2023

Subject: Consistency letter for 'Stump Creek' for specified federally threatened and endangered species and designated critical habitat that may occur in your proposed project area consistent with the Arkansas Determination Key for project review and guidance for federally listed species (Arkansas Dkey).

Dear Elizabeth Knapp:

The U.S. Fish and Wildlife Service (Service) received on **February 06, 2023** your effect determination(s) for the 'Stump Creek' (the Action) using the Arkansas DKey within the Information for Planning and Consultation (IPaC) system. The Service developed this system in accordance with the Endangered Species Act of 1973 (ESA) (87 Stat.884, as amended; 16 U.S.C. 1531 et seq.).

Based on the answers provided, the proposed Action is consistent with a determination of “no effect” for the following species as outlined in the Service’s Arkansas Determination Key for project review and guidance for federally listed species.

Species	**Listing Status**	**Determination**
Eastern Black Rail (*Laterallus jamaicensis ssp. jamaicensis*)	Threatened	No effect
Piping Plover (*Charadrius melodus*)	Threatened	No effect
Red Knot (*Calidris canutus rufa*)	Threatened	No effect

Status

Your agency has met consultation requirements for these species by informing the Service of the “no effect” determinations. No further consultation for this project is required for these species. This consistency letter confirms you may rely on effect determinations you reached by considering the Arkansas DKey to satisfy agency consultation requirements under Section 7(a)

(2) of the Endangered Species Act of 1973 (87 Stat. 884, as amended 16 U.S.C. 1531 et seq.; ESA).

The Service recommends that your agency contact the Arkansas Ecological Services Field Office or re-evaluate this key in IPaC if: 1) the scope, timing, duration, or location of the proposed project changes, 2) new information reveals the action may affect listed species or designated critical habitat; 3) a new species is listed or critical habitat designated. If any of the above conditions occurs, additional consultation with the Arkansas Ecological Services Field Office should take place before project changes are final or resources committed.

Bald and Golden Eagle Protection Act: The following resources are provided to project proponents and consulting agencies as additional information. Bald and golden eagles are not included in this section 7(a)(2) consultation and this information does not constitute a determination of effects by the Service.

The Service developed the National Bald Eagle Management Guidelines to advise landowners, land managers, and others who share public and private lands with Bald Eagles when and under what circumstances the protective provisions of the Bald and Golden Eagle Protection Act may apply to their activities. The guidelines should be consulted prior to conducting new or intermittent activity near an eagle nest. Activity specific guidelines begin on page 10 of the document. To access a copy of the National Bald Eagle Management Guidelines please visit the Service's Bald and Golden Eagle Management webpage and scroll down to the Guidance and Tools section: https://www.fws.gov/library/collections/bald-and-golden-eagle-management

If the recommendations detailed in the National Bald Eagle Management Guidelines cannot be followed, you may apply for a permit to authorize removal or relocation of an eagle nest in certain instances. To obtain an application form or contact information for Regional Migratory Bird Permit Offices please visit the Service's Bald and Golden Eagle Management webpage and scroll down to the Permits section: https://www.fws.gov/library/collections/bald-and-golden-eagle-management

Action Description
You provided to IPaC the following name and description for the subject Action.

1. Name

Stump Creek

2. Description

The following description was provided for the project 'Stump Creek':

> Proposed vegetation removal and sediment excavation within Stump Creek to reduce local flood risk.

Approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/@34.660962049999995,-92.32580982698771,14z

Species Protection Measures

Qualification Interview

1. Have you made an effects determination of "no effect" for all species in the area of the project? A "no effect" determination means the project will have no beneficial effect, no short-term adverse effects, and no long-term adverse effects on any of the species on the IPaC-generated species list for the proposed project or those species habitat. A project with effects that cannot be meaningfully measured, detected or evaluated, effects that are extremely unlikely to occur, or entirely beneficial effects should not have a "no effect" determination. (If unsure, select "No").

   No

2. Is the action authorized, funded, or being carried out by a Federal agency?

   Yes

3. Are you the the action agency or the designated non-federal representative?

   Yes

4. Choose the agency you represent in this consultation with the U.S. Fish and Wildlife Service:

   b. U.S. Army Corps of Engineers

5. [Semantic] Does the project intersect designated critical habitat for the Leopard Darter?

   Automatically answered
   No

6. [Semantic] Does the project intersect designated critical habitat for the Neosho Mucket?

   Automatically answered
   No

7. [Semantic] Does the project intersect designated critical habitat for Yellowcheek Darter?

   Automatically answered
   No

8. [Semantic] Does the project intersect designated critical habitat for Rabbitsfoot?

   Automatically answered
   No

9. [Semantic] Does the project intersect the American burying beetle consultation area?

   Automatically answered
   No

10. [Semantic] Does the project intersect the red-cockaded woodpecker AOI?

    Automatically answered
    No

11. [Semantic] Does the project intersect the Eastern black rail AOI?

    Automatically answered
    Yes

12. Have you made a "no effect" determination for Eastern Black Rail? Eastern Black Rails are small, secretive marsh birds that may occur in freshwater wetlands in Arkansas.

    Yes

13. [Semantic] Does the project intersect the red knot AOI?

    Automatically answered
    Yes

14. Have you made a "no effect" determination for Red Knot? Red knots may be transiently found feeding along shorelines, marshes, or flooded fields in Arkansas during migration periods.

    Yes

15. [Semantic] Does the project intersect the Piping Plover AOI?

    Automatically answered
    Yes

16. Have you made a "no effect" determination for Piping Plover? Piping Plovers may be transiently found feeding along shorelines, marshes, or flooded fields in Arkansas during migration periods.

    Yes

17. [Semantic] Does the project intersect the Whooping Crane AOI?

    Automatically answered
    No

18. [Semantic] Does the project intersect the interior least tern AOI?

    Automatically answered
    No

19. [Semantic] Does the project intersect the Gray Bat AOI?

    Automatically answered
    No

20. [Semantic] Does the project intersect the Ozark Big-eared Bat AOI?

    Automatically answered
    No

21. [Semantic] Does the project intersect the Indiana bat AOI?

    Automatically answered
    No

22. [Semantic] Does the project intersect the Northern Long-eared bat AOI?

    Automatically answered
    No

23. [Semantic] Does the project intersect the Benton County Cave Crayfish AOI?

    Automatically answered
    No

24. [Semantic] Does the project intersect the Hell Creek Cave Crayfish AOI?

    Automatically answered
    No

25. [Semantic] Does the project intersect the Ozark cavefish AOI?

    Automatically answered
    No

26. [Semantic] Does the project intersect the Missouri bladderpod AOI?

    Automatically answered
    No

27. [Semantic] Does the project intersect the Geocarpon AOI?

    Automatically answered
    No

28. [Semantic] Does the project intersect the running buffalo clover AOI?

    Automatically answered
    No

29. [Semantic] Does the project intersect the Pondberry AOI?

    Automatically answered
    No

IPaC User Contact Information

Agency:	Army Corps of Engineers
Name:	Elizabeth Knapp
Address:	819 Taylor St
Address Line 2:	Rm 3A12
City:	Fort Worth
State:	TX
Zip:	76102
Email	elizabeth.j.knapp@usace.army.mil
Phone:	7135911178

Attachment B – Arkansas Natural Heritage Commission State Species Report

Stump Creek, Little Rock, AR

Section 208

Detailed Project Report and Environmental Assessment

November 2023

US Army Corps of Engineers
Little Rock District

Arkansas Natural Heritage Commission
Division of Arkansas Heritage
Department of Parks, Heritage and Tourism
Pulaski County

	Scientific Name	Common Name	Federal Status	State Status	Global Rank	State Rank
Animals-Invertebrates						
	Amblyscirtes aesculapius	Lace-winged Roadside-Skipper	-	INV	G3G4	S1S3
	Amblyscirtes belli	Bell's Roadside-Skipper	-	INV	G4	S3S4
	Argynnis diana	Diana Fritillary	-	INV	G2G3	S2S3
	Arianops copelandi	Copeland's mold beetle	-	INV	GNR	S1
	Calephelis borealis	Northern Metalmark	-	INV	G3	S3
	Chlosyne gorgone	Gorgone Checkerspot	-	INV	G5	S3
	Dryobius sexnotatus	six-banded longhorn beetle	-	INV	GNR	S2
	Erynnis martialis	Mottled Duskywing	-	INV	G3	S2S3
	Euphyes dion	Dion Skipper	-	INV	G5	S3
	Euphyes dukesi	Dukes' Skipper	-	INV	G3G4	S1S2
	Faxonius acares	Redspotted Stream Crayfish	-	INV	G3G4	S3S4
	Hesperia leonardus	Leonard's Skipper	-	INV	G4	S3
	Hesperia meskei	Meske's Skipper	-	INV	G3G4	S1S2
	Hesperia metea	Cobweb Skipper	-	INV	G4	S3
	Lirceus bicuspidatus	an isopod	-	INV	G3	S2
	Lucanus elaphus	giant stag beetle	-	INV	G3G5	S2
	Papaipema eryngii	Rattlesnake-master borer moth	-	INV	G2	S1
	Poanes yehl	Yehl Skipper	-	INV	G4	S1S3
	Polygonia progne	Gray Comma	-	INV	G5	S2S3
	Problema byssus	Byssus Skipper	-	INV	G4	S3
	Satyrium favonius ontario	Oak Hairstreak	-	INV	G4G5T4	S3
	Somatochlora ozarkensis	Ozark emerald	-	INV	G3	S1
	Synurella bifurca	an amphipod	-	INV	GNR	S3?
	Telegonus cellus	Golden Banded-Skipper	-	INV	G4	S2S3
✓	*Toxolasma parvum*	Lilliput	-	INV	G5	S3
	Uniomerus tetralasmus	Pondhorn	-	INV	G5	S2
Animals-Vertebrates						
	Aimophila ruficeps	Rufous-crowned Sparrow	-	INV	G5	S1
✓★	*Ambystoma annulatum*	Ringed Salamander	-	INV	G4	S3
	Anguilla rostrata	American eel	-	INV	G4	S3
	Calcarius pictus	Smith's Longspur	-	INV	G4G5	S2N
	Centronyx henslowii	Henslow's Sparrow	-	INV	G4	S1B,S2N
	Crotalus atrox	Western Diamond-backed Rattlesnake	-	INV	G5	S2S3
	Crotaphytus collaris	Eastern Collared Lizard	-	INV	G5	S2
	Dryobates borealis	Red-cockaded Woodpecker	LE	SE	G3	S1
	Erimyzon sucetta	lake chubsucker	-	INV	G5	S3
	Gallinula galeata	Common Gallinule	-	INV	G5	S2B
	Haliaeetus leucocephalus	Bald Eagle	-	INV	G5	S3B,S4N

	Scientific Name	Common Name	Federal Status	State Status	Global Rank	State Rank
	Hybognathus placitus	plains minnow	-	INV	G4	SH
✓	*Hyla avivoca*	Bird-voiced Treefrog	-	INV	G5	S3
	Ixobrychus exilis	Least Bittern	-	INV	G4G5	S2B
	Limnothlypis swainsonii	Swainson's Warbler	-	INV	G4	S3B
	Liodytes rigida	Glossy Swampsnake	-	INV	G5	S3
	Myotis austroriparius	southeastern bat	-	INV	G4	S3
	Myotis grisescens	gray bat	LE	SE	G3G4	S2S3
	Myotis lucifugus	little brown bat	-	SE	G3G4	S1
	Myotis septentrionalis	northern long-eared bat	LE	SE	G2G3	S1S2
	Ophisaurus attenuatus	Slender Glass Lizard	-	INV	G5	S3
	Polyodon spathula	paddlefish	-	INV	G4	S3
	Porphyrio martinicus	Purple Gallinule	-	INV	G5	S1B
	Pseudacris streckeri	Strecker's Chorus Frog	-	INV	G5	S2
	Rallus elegans	King Rail	-	INV	G4	S1B
	Spilogale putorius	eastern spotted skunk	-	INV	G4	S2S3
	Sternula antillarum athalassos	Interior Least Tern	-	INV	G4T3Q	S3B
Plants-Vascular						
	Amorpha canescens	lead-plant	-	INV	G5	S1
	Amsonia hubrichtii	Ouachita bluestar	-	INV	G3	S3
	Apocynum sibiricum	clasping dogbane	-	INV	GNR	S1
	Bergia texana	Texas bergia	-	INV	G5	S2
	Callirhoe alcaeoides	plains poppy-mallow	-	INV	G5?	S1?
	Callirhoe bushii	Bush’s poppy-mallow	-	INV	G3	S3
✓	*Carex arkansana*	Arkansas sedge	-	INV	G4	S1
	Carex bromoides ssp. bromoides	brome sedge	-	INV	G5T5	S2
	Carex bullata	button sedge	-	INV	G5	S1
	Carex comosa	bottle-brush sedge	-	INV	G5	S1S2
	Carex decomposita	cypress-knee sedge	-	INV	G3G4	S2
	Carex seorsa	swamp star sedge	-	INV	G5	SH
	Carex stricta	tussock sedge	-	INV	G5	S3
✓	*Cirsium nuttallii*	Nuttall's thistle	-	INV	G5	S2?
✓	*Clematis glaucophylla*	white-leaf leather-flower	-	INV	G4?	S1
✓	*Crassula aquatica*	water pygmyweed	-	INV	G5	S1S3
	Crataegus macrosperma	fan-leaf hawthorn	-	INV	G5	S1
	Cypripedium kentuckiense	Kentucky lady’s-slipper	-	INV	G3	S2
	Dalea lanata var. lanata	woolly prairie-clover	-	INV	G5TNR	S2S3
	Dichanthelium arenicoloides	rosette grass	-	INV	GNR	SNR
	Dichanthelium auburne	rosette grass	-	INV	GNR	SNR
	Dichanthelium chrysopsidifolium	rosette grass	-	INV	GNR	SNR
	Dichanthelium consanguineum	blood rosette grass	-	INV	G5	SNR
	Dulichium arundinaceum var. arundinaceum	three-way sedge	-	INV	G5T5	S2S3
✓	*Eleocharis wolfii*	Wolf’s spike-rush	-	INV	G3G5	S3
✓	*Eriocaulon koernickianum*	small-head pipewort	-	SE	G2	S2
	Erythrina herbacea	coral-bean	-	INV	G5	S1
✓	*Eustoma exaltatum*	catchfly prairie-gentian	-	INV	G5	S2

	Scientific Name	Common Name	Federal Status	State Status	Global Rank	State Rank
	Gaura sinuata	wavy-leaf gaura	-	INV	G4G5	SH
	Gratiola brevifolia	sticky hedge-hyssop	-	INV	G4	S3
	Heliotropium convolvulaceum	phlox heliotrope	-	INV	G5	S2
	Hexalectris spicata var. spicata	crested-coralroot	-	INV	G5T4T5	S2
	Hypoxis sessilis	glossy-seed star-grass	-	INV	G3	S1
	Lathyrus pusillus	low vetchling	-	INV	G5?	S2
	Liatris compacta	Ouachita blazing-star	-	INV	G3	S3
	Marshallia caespitosa var. signata	leafy Barbara's-buttons	-	INV	G4T4	S1
	Micranthes virginiensis	early saxifrage	-	INV	G5	S1S2
	Nemastylis geminiflora	celestial-lily	-	INV	G4	S3
	Nemastylis nuttallii	Nuttall's pleat-leaf	-	INV	G3	S2
	Panicum rigidulum ssp. pubescens	red-top panic grass	-	INV	G5T5?	S1
	Paspalum bifidum	pitchfork paspalum	-	INV	G5	SNR
	Pellaea wrightiana	Wright's cliff-brake	-	INV	G5	S1
	Penstemon cobaea	showy beardtongue	-	INV	G4	S3
	Platanthera cristata	crested fringed orchid	-	INV	G5	S1S2
	Platanthera flava	rein orchid	-	ST	G4?	S2S3
✓	*Platanthera peramoena*	purple fringeless orchid	-	ST	G5	S2
	Polygala incarnata	pink milkwort	-	INV	G5	S1S2
	Prenanthes barbata	barbed rattlesnake-root	-	INV	G3	S2
✓	*Ranunculus aquatilis var. diffusus*	white water crowfoot	-	INV	G5T5	S2S3
	Ranunculus flabellaris	yellow water crowfoot	-	INV	G5	S3
✓	*Rhynchospora colorata*	white-top sedge	-	SE	G5	S1
	Sabatia campanulata	slender rose-gentian	-	SE	G5	S1
	Schoenoplectus californicus	California bulrush	-	INV	G5	S1S2
	Spiraea tomentosa	hardhack	-	INV	G5	S2
	Spiranthes praecox	giant ladies'-tresses	-	INV	G5	S1S2
	Stenanthium gramineum	featherbells	-	INV	G4G5	S3
	Streptanthus maculatus ssp. obtusifolius	Arkansas twistflower	-	INV	G3T3Q	S3
✓	*Thalictrum arkansanum*	Arkansas meadow-rue	-	ST	G2Q	S2
	Tradescantia paludosa	confederate spiderwort	-	INV	G4?Q	S1S2
	Trifolium carolinianum	Carolina clover	-	INV	G5	S1?
	Trifolium stoloniferum	running buffalo clover	-	INV	G3	SH
	Trillium ozarkanum	Ozark trillium	-	INV	G3	S3
	Utricularia macrorhiza	greater bladderwort	-	INV	G5	SH
	Uvularia perfoliata	perfoliate bellwort	-	INV	G5	S3
	Veratrum virginicum	bunchflower	-	INV	G5	S2
	Vicia ludoviciana ssp. ludoviciana	Louisiana vetch	-	INV	G5TNR	SH
	Special Elements-Natural Communities					
	Mississippi River Bottomland Depression		-	INV	GNR	S4
	Ozark-Ouachita Dry Oak Woodland		-	INV	GNR	S5
✓	West Gulf Coastal Plain Nepheline Syenite Glade		-	INV	GNR	S1
	Special Elements-Other					
	Colonial nesting site, swallows & swifts		-	INV	GNR	SNR

	Scientific Name	Common Name	Federal Status	State Status	Global Rank	State Rank
✓	Colonial nesting site, water birds		-	INV	GNR	SNR

★ - These elements of special concern have been recorded within a 1-mile radius of the study area.

✓ - These elements of special concern have been recorded within a 5-mile radius of the study area

Attachment C – Cultural Resources

Stump Creek, Little Rock, AR
Section 208
Detailed Project Report and Environmental Assessment

November 2023

US Army Corps of Engineers
Little Rock District

DEPARTMENT OF THE ARMY
U.S. ARMY CORPS OF ENGINEERS, FORT WORTH DISTRICT
P.O. BOX 17300
FORT WORTH, TX 76102-0300

April 15, 2021

Mr. Scott Kaufman
Deputy State Historic Preservation Officer
Arkansas Historic Preservation Program
1100 North Street
Little Rock, AR 72203

Dear Mr. Kaufman:

The U.S. Army Corps of Engineers, Little Rock District (USACE) and the City of Little Rock, the non-federal sponsor, are initiating a study to evaluate opportunities to plan for and provide removal of accumulated snags and other debris from Stump Creek in the interest of flood reduction. The study area is located in the $NW^{1/4}$ of Section 5, T. 1 S., R. 12 W., Little Rock, Pulaski County, Arkansas. This study is being conducted under the authority of Section 208 of the Flood Control Act of 1954, as amended.

USACE personnel have visited the site and reviewed all pertinent data such as the AMASDA database, soils, historic imagery, and topographic maps. The proposed project area is in a very low, wetland environment. Based upon this information, the USACE believes this area to have a very low probability for the location of historic properties. In addition, the undertaking would require minimal disturbance of the area. The USACE seeks your concurrence on our determination of **No Historic Properties Affected** regarding the proposed undertaking.

The USACE Little Rock District looks forward to continuing to work closely with you throughout the course of this undertaking. Should you have any questions, or require any further information concerning the above, please contact Mr. Christopher G. Davies, Cultural Resources Manager, Regional Planning and Environmental Center at (501) 324-7134 or at christopher.g.davies@usace.army.mil.

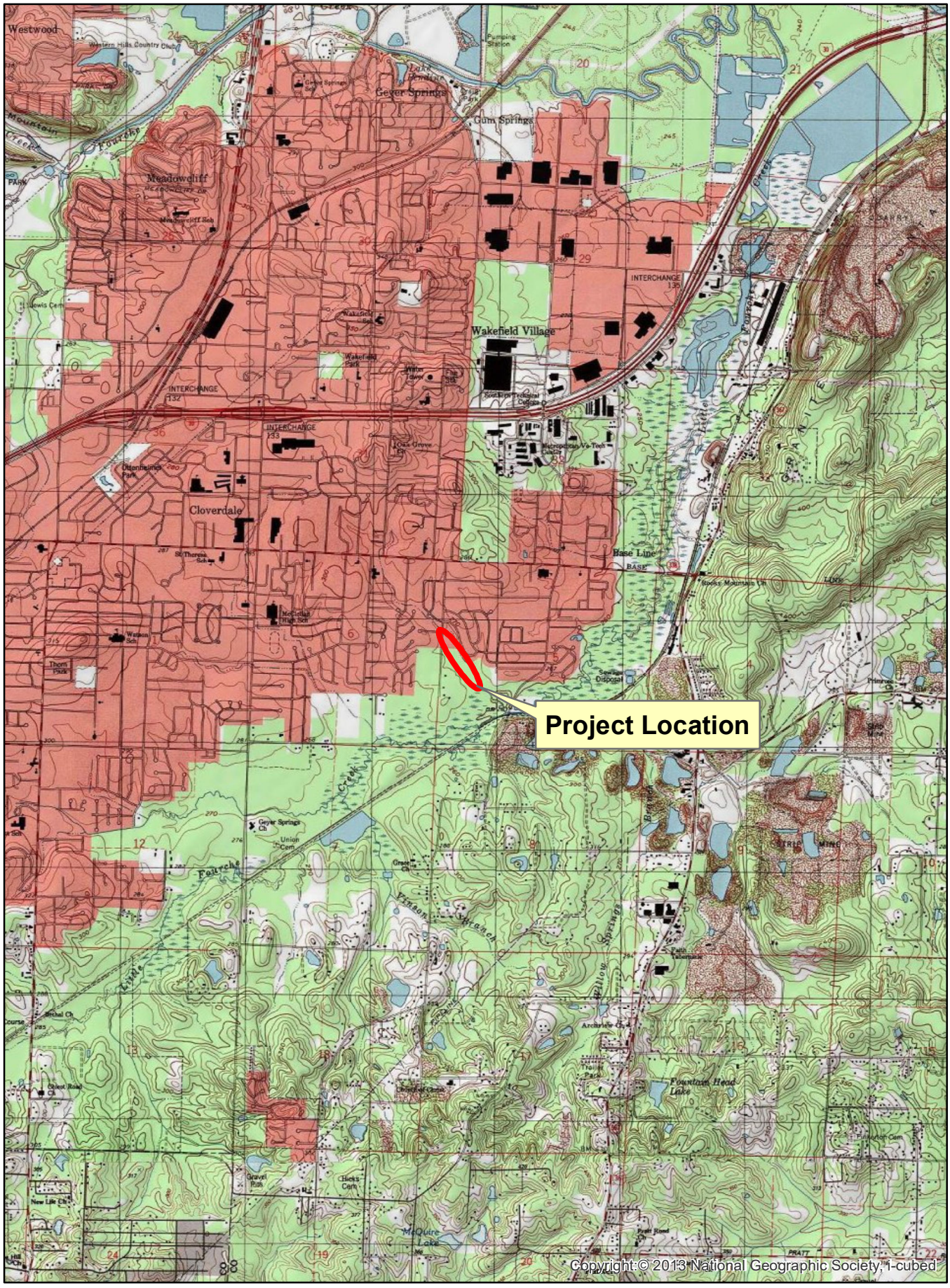
Sincerely,

Amanda McGuire

Amanda M. McGuire
Chief, Environmental Branch
Regional Planning and Environmental Center

Enclosures

Topographic Map Displaying General Project Location



0 0.475 0.95 1.9 Miles

Aerial Map Displaying General Project Location

0 0.275 0.55 1.1 Miles

Figure 9 – Photo showing water and woody debris in Stump Creek

Figure 10 – Photo showing water, sediment, and woody debris in Stump Creek

Figure 11 – Photo showing sediment and woody debris in Stump Creek

Asa Hutchinson
Governor
Stacy Hurst
Secretary

April 21, 2021

Ms. Amanda McGuire
Chief, Environmental Branch
Regional Planning and Environmental Center
U.S. Army Corps of Engineers, Fort Worth District
P.O. Box 17300
Fort Worth, TX 76102-0300

RE: Pulaski County — Little Rock
Section 106 Review — COE
Proposed Undertaking — Debris Removal from Stump Creek
AHPP Tracking Number: 107779

Dear Ms. McGuire:

The staff of the Arkansas Historic Preservation Program (AHPP) reviewed the submission for the proposed undertaking in Section 5 of Township 1 South, Range 12 West in Little Rock, Pulaski County, Arkansas. As described, the undertaking entails removal of accumulated snags and other debris from Stump Creek. The intent of the undertaking is to mitigate flood risk.

Based on the provided information, the AHPP concurs with the finding of **no historic properties affected in accordance with 36 CFR § 800.4(d)(1)** for the proposed undertaking.

Tribes that have expressed an interest in the area include the Caddo Nation, the Cherokee Nation, the Choctaw Nation of Oklahoma, the Jena Band of Choctaw Indians, the Muscogee (Creek) Nation, the Osage Nation, the Quapaw Nation, and the Shawnee Tribe. We recommend consultation in accordance with 36 CFR § 800.2(c)(2).

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 Eric Mills of my staff at 501-324-9784 or email eric.mills@arkansas.gov.

Sincerely,

Eric R. Mills Digitally signed by Eric R. Mills Date: 2021.04.21 15:30:55 -05'00'

for
Scott Kaufman
Director, AHPP

cc: Dr. Melissa Zabecki, Arkansas Archeological Survey

DEPARTMENT OF THE ARMY
U.S. ARMY CORPS OF ENGINEERS, FORT WORTH DISTRICT
P.O. BOX 17300
FORT WORTH, TX 76102-0300

August 20, 2021

Ms. Samantha Robinson
Tribal Historic Preservation Officer
Alabama-Quassarte Tribal Town
Post Office Box 187
Wetumka, Oklahoma 74883

Dear Ms. Robinson:

The U.S. Army Corps of Engineers, Little Rock District (USACE) and the City of Little Rock, the non-federal sponsor, are initiating a study to evaluate opportunities to plan for and provide removal of accumulated snags and other debris from Stump Creek in the interest of flood reduction. The study area is located in the NW$^{1/4}$ of Section 5, T. 1 S., R. 12 W., Little Rock, Pulaski County, Arkansas. This study is being conducted under the authority of Section 208 of the Flood Control Act of 1954, as amended.

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The USACE Little Rock District looks forward to continuing to work closely with you throughout the course of this undertaking. Should you have any questions, or require any further information concerning the above, please contact Mr. Christopher G. Davies, Cultural Resources Manager, Regional Planning and Environmental Center at (501) 324-7134 or at christopher.g.davies@usace.army.mil.

Sincerely,

Amanda McGuire

Amanda M. McGuire
Chief, Environmental Branch
Regional Planning and Environmental Center

Enclosures

DEPARTMENT OF THE ARMY
U.S. ARMY CORPS OF ENGINEERS, FORT WORTH DISTRICT
P.O. BOX 17300
FORT WORTH, TX 76102-0300

August 20, 2021

Dr. Linda Langley
Tribal Historic Preservation Officer
Coushatta Tribe of Louisiana
Post Office Box 10
Elton, Louisiana 70532

Dear Dr. Langley:

The U.S. Army Corps of Engineers, Little Rock District (USACE) and the City of Little Rock, the non-federal sponsor, are initiating a study to evaluate opportunities to plan for and provide removal of accumulated snags and other debris from Stump Creek in the interest of flood reduction. The study area is located in the NW$^{1/4}$ of Section 5, T. 1 S., R. 12 W., Little Rock, Pulaski County, Arkansas. This study is being conducted under the authority of Section 208 of the Flood Control Act of 1954, as amended.

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Sincerely,

Amanda McGuire

Amanda M. McGuire
Chief, Environmental Branch
Regional Planning and Environmental Center

Enclosures

DEPARTMENT OF THE ARMY
U.S. ARMY CORPS OF ENGINEERS, FORT WORTH DISTRICT
P.O. BOX 17300
FORT WORTH, TX 76102-0300

August 20, 2021

Mr. Kenneth H. Carleton
Tribal Historic Preservation Officer
Mississippi Band of Choctaw Indians
Post Office Box 6610
Choctaw, Mississippi 39350

Dear Mr. Carleton:

The U.S. Army Corps of Engineers, Little Rock District (USACE) and the City of Little Rock, the non-federal sponsor, are initiating a study to evaluate opportunities to plan for and provide removal of accumulated snags and other debris from Stump Creek in the interest of flood reduction. The study area is located in the NW$^{1/4}$ of Section 5, T. 1 S., R. 12 W., Little Rock, Pulaski County, Arkansas. This study is being conducted under the authority of Section 208 of the Flood Control Act of 1954, as amended.

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Sincerely,

Amanda McGuire

Amanda M. McGuire
Chief, Environmental Branch
Regional Planning and Environmental Center

Enclosures

DEPARTMENT OF THE ARMY
U.S. ARMY CORPS OF ENGINEERS, FORT WORTH DISTRICT
P.O. BOX 17300
FORT WORTH, TX 76102-0300

August 20, 2021

Dr. Andrea Hunter
Tribal Historic Preservation Officer
The Osage Nation
P.O. Box 779
Pawhuska, Oklahoma 74056

Dear Dr. Hunter:

The U.S. Army Corps of Engineers, Little Rock District (USACE) and the City of Little Rock, the non-federal sponsor, are initiating a study to evaluate opportunities to plan for and provide removal of accumulated snags and other debris from Stump Creek in the interest of flood reduction. The study area is located in the NW$^{1/4}$ of Section 5, T. 1 S., R. 12 W., Little Rock, Pulaski County, Arkansas. This study is being conducted under the authority of Section 208 of the Flood Control Act of 1954, as amended.

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Sincerely,

Amanda McGuire

Amanda M. McGuire
Chief, Environmental Branch
Regional Planning and Environmental Center

Enclosures

DEPARTMENT OF THE ARMY
U.S. ARMY CORPS OF ENGINEERS, FORT WORTH DISTRICT
P.O. BOX 17300
FORT WORTH, TX 76102-0300

August 20, 2021

Everett Bandy
Tribal Historic Preservation Officer
The Quapaw Nation
P.O. Box 765
Quapaw, Oklahoma 74363

Dear Mr. Bandy:

The U.S. Army Corps of Engineers, Little Rock District (USACE) and the City of Little Rock, the non-federal sponsor, are initiating a study to evaluate opportunities to plan for and provide removal of accumulated snags and other debris from Stump Creek in the interest of flood reduction. The study area is located in the NW$^{1/4}$ of Section 5, T. 1 S., R. 12 W., Little Rock, Pulaski County, Arkansas. This study is being conducted under the authority of Section 208 of the Flood Control Act of 1954, as amended.

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Sincerely,

Amanda McGuire

Amanda M. McGuire
Chief, Environmental Branch
Regional Planning and Environmental Center

Enclosures

DEPARTMENT OF THE ARMY
U.S. ARMY CORPS OF ENGINEERS, FORT WORTH DISTRICT
P.O. BOX 17300
FORT WORTH, TX 76102-0300

August 20, 2021

Dr. Ian Thompson
Tribal Historic Preservation Officer
The Choctaw Nation of Oklahoma
Post Office Drawer 1210
Durant, Oklahoma 74701

Dear Dr. Thompson:

The U.S. Army Corps of Engineers, Little Rock District (USACE) and the City of Little Rock, the non-federal sponsor, are initiating a study to evaluate opportunities to plan for and provide removal of accumulated snags and other debris from Stump Creek in the interest of flood reduction. The study area is located in the NW$^{1/4}$ of Section 5, T. 1 S., R. 12 W., Little Rock, Pulaski County, Arkansas. This study is being conducted under the authority of Section 208 of the Flood Control Act of 1954, as amended.

USACE personnel have visited the site and reviewed all pertinent data such as the AMASDA database, soils, historic imagery, and topographic maps. The proposed project area is in a very low, wetland environment. Based upon this information, the USACE believes this area to have a very low probability for the location of historic properties. In addition, the undertaking would require minimal disturbance of the area. A concurrence letter from the Arkansas State Historic Preservation Office is enclosed.

The USACE Little Rock District looks forward to continuing to work closely with you throughout the course of this undertaking. Should you have any questions, or require any further information concerning the above, please contact Mr. Christopher G. Davies, Cultural Resources Manager, Regional Planning and Environmental Center at (501) 324-7134 or at christopher.g.davies@usace.army.mil.

Sincerely,

Amanda McGuire

Amanda M. McGuire
Chief, Environmental Branch
Regional Planning and Environmental Center

Enclosures

DEPARTMENT OF THE ARMY
U.S. ARMY CORPS OF ENGINEERS, FORT WORTH DISTRICT
P.O. BOX 17300
FORT WORTH, TX 76102-0300

August 20, 2021

Ms. Corain Lowe-Zepeda
Tribal Historic Preservation Officer
The Muscogee (Creek) Nation
Post Office Box 580
Okmulgee, Oklahoma 74447

Dear Ms. Lowe-Zepeda:

The U.S. Army Corps of Engineers, Little Rock District (USACE) and the City of Little Rock, the non-federal sponsor, are initiating a study to evaluate opportunities to plan for and provide removal of accumulated snags and other debris from Stump Creek in the interest of flood reduction. The study area is located in the NW$^{1/4}$ of Section 5, T. 1 S., R. 12 W., Little Rock, Pulaski County, Arkansas. This study is being conducted under the authority of Section 208 of the Flood Control Act of 1954, as amended.

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Chief, Environmental Branch
Regional Planning and Environmental Center

Enclosures

Attachment D

EVALUATION OF SECTION 404(b)(1) GUIDELINES
(SHORT FORM)

Stump Creek, Little Rock, AR

Continuing Authorities Program Section 208
Clearing and Snagging

Detailed Project Report and Environmental Assessment

November 2023

US Army Corps
of Engineers
Little Rock District

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Acronyms

BMPs	Best Management Practices
CAP	Continuing Authorities Program
NEPA	National Environmental Policy Act
NFS	Non-Federal Sponsor
O&M	Operations and Maintenance
PED	Pre-Engineering and Design Phase
STAA	Short Term Activity Authorization
SWPPP	Stormwater Pollution Prevention Plan
TSP	Tentatively Selected Plan

1. Introduction

Stump Creek is located in Southwest Little Rock, Pulaski County, Arkansas (Figure 1). The stream is a small intermittent urban drainage conveyance that drains an approximate 0.7 square mile area (Figure 2). Stump Creek is 1.13 miles in length from the confluence to its origin just upstream of Baseline Road. From upstream of Baseline Road to the confluence, there are a total of four culverts that control conveyance of flows. They are located at Baseline Road, South Heights Road, Reck Road, and Pine Cone Drive. In recent years, Stump Creek has filled with debris and its meanders have become ineffective at carrying floodwater runoff while its riparian corridor has become choked with debris and trash. As a result, numerous homes in the area of Stump Creek sustain flood damages due to the stream's inability to convey floodwaters effectively.

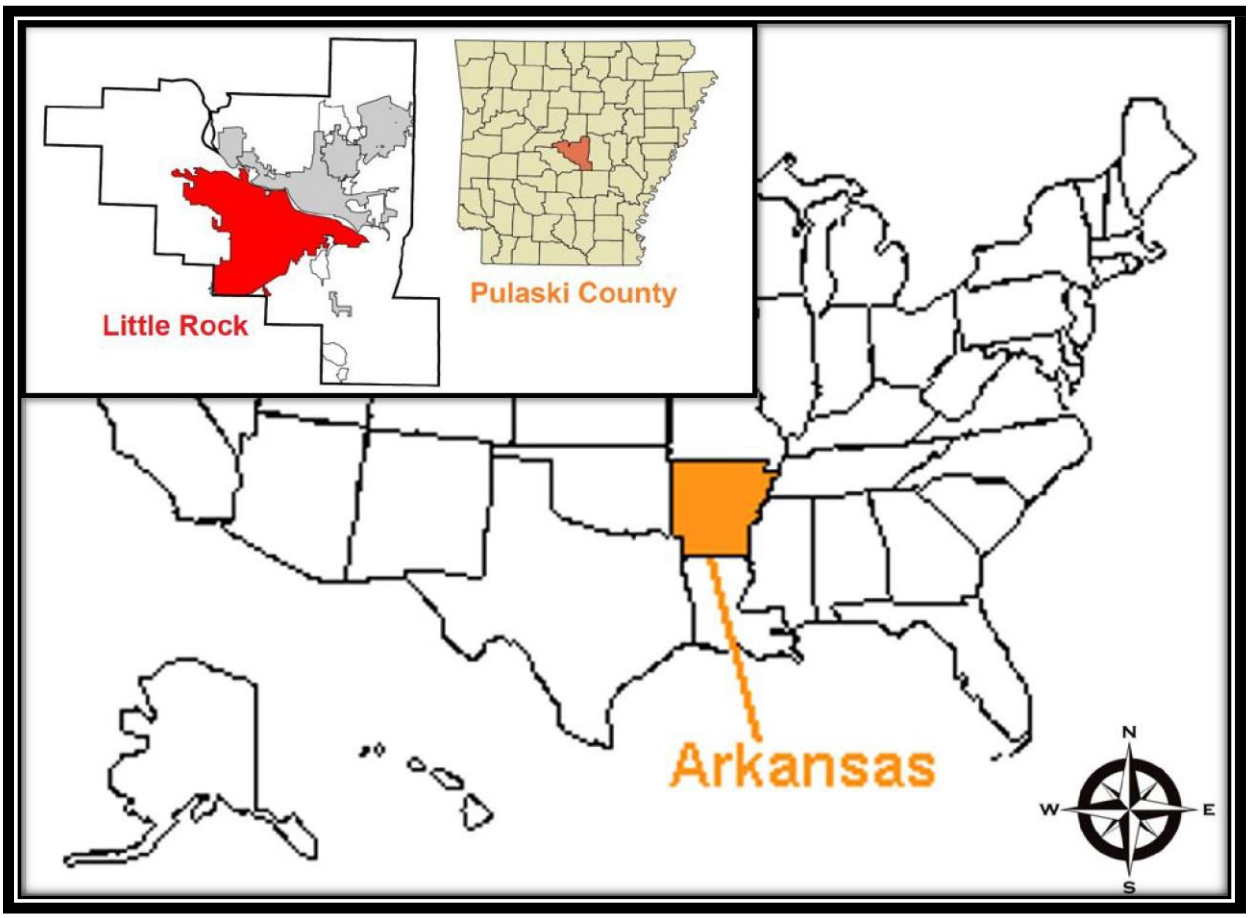

Figure 1 – Study Area Location

Figure 2 – Stump Creek Watershed

1.1 Project Authority

The authority for this study is Section 208 Continuing Authority Program, Clearing and Snagging for Flood Risk Management, of the Flood Control Act of 1954 (33 U.S.C. 701g), as amended, which permits the U.S. Army Corps of Engineers (USACE) to undertake the investigation, design, and construction of flood control projects having a total Federal cost of less than $500,000 per project without specific congressional action. The Non-Federal Sponsor (NFS) for this project is the City of Little Rock, Arkansas.

2. Plan Formulation

The objective of the Stump Creek study was to determine the best plan to reduce flood risk within the study area. Initially, three management measures were evaluated as a means to meet the planning objective: removing accumulated snags and other debris, clearing the channel (excavation), and straightening the channel. Straightening the channel was removed from consideration as it has been shown to cause long term negative effects to the environment as well as waterways themselves. From there, four alternatives were formulated:

1. **Alternative 1 – No Action:** No changes would be implemented to Stump Creek.
2. **Alternative 2 – Removing Accumulated Snags and Other Debris:** Mechanical and/or by-hand clearing of dead and downed, as well as live, vegetation to increase channel conveyance capacity within the study area.
3. **Alternative 3 – Clearing the Channel (Excavation):** Mechanical removal of built-up sediments within existing channel alignment in the study area.
4. **Alternative 4 – Combination of Alternatives 2 and 3:** Mechanical and/or by-hand clearing of dead and downed, as well as live, vegetation as well as mechanical removal of built-up sediment within the existing channel to increase channel conveyance capacity within the study area.

Evaluation of the three action alternatives found that Alternative 2, removing accumulated snags and other debris, alone would not reduce flood risk within the area as hydraulic analysis showed that water surface elevations would be the same as the No Action alternative or the existing conditions. Alternative 3 would also not meet the flood risk reduction objective as it is not a complete solution in itself and is dependent upon clearing and snagging occur prior to excavation. These two alternatives were eliminated from further consideration.

In addition to the No Action Alternative, Alternative 4 was carried forward for further analysis as it was found to be a complete solution and would meet the flood risk reduction objective. Alternative 4 was then divided into two potential alternatives that both included clearing and snagging the same length of stream but differed in the length of stream to be excavated.

Alternative 4a involves clearing and snagging only for approximately 100 feet upstream of Reck Road. Additionally, clearing, snagging, and excavation will occur for the first approximately 1,500 feet downstream of Reck Road. A further 750 feet or so downstream would involve only clearing and snagging, without any excavation.

Alternative 4b involves clearing and snagging only for approximately 100 feet upstream of Reck Road. Additionally, clearing, snagging, and excavation will occur for the first approximately 2,300 feet downstream of Reck Road.

2.1 Tentatively Selected Plan

Alternative 4b was chosen as the Tentatively Selected Plan (TSP) because it meets the study objective of flood risk reduction and maximizes benefits to fulfill Federal environmental justice objectives while avoiding adverse impacts to wetland and riverine habitat. While Alternative 4a may meet the objective of reducing flood risk within the study area, the additional length of excavation incorporated in Alternative 4b would extend the project life compared to Alternative 4a and is a more complete solution to the problem at hand. By not excavating sediments from the lower 750 feet of stream, further debris and sediment buildup over time would still be possible. The TSP best serves the need to reduce flood risk to local residences and will not cause any further adverse impacts compared to Alternative 4a.

3. Project Description

The Integrated Draft Detailed Project Report and Environmental Assessment details the planning process undertaken for the Continuing Authorities Program (CAP) Section 208 Stump Creek Study and documents the environmental assessment to satisfy National Environmental Policy Act (NEPA) requirements. The Stump Creek study is a single-purpose, CAP Section 208 Flood Risk Management feasibility study being cost-shared with the City of Little Rock, Arkansas.

The TSP incorporates clearing and snagging only for approximately 100 feet upstream of Reck Road. Additional clearing, snagging, and excavation will occur for the first approximately 2,300 feet downstream of Reck Road. It is assumed that construction efforts would occur during the dry season.

below depicts the extent of clearing, snagging, and excavation planned in the TSP. It is assumed that construction efforts would occur during the dry season.

TSP measures and the accompanying operations and maintenance plans have been developed to feasibility level of design (i.e. estimates, design level that is not detailed enough for construction) based on currently available data and information developed during plan formulation. There is significant institutional knowledge regarding excavation, clearing, and snagging construction; however, there is still some, though minimal, uncertainty from a construction standpoint. Uncertainties relating to measure design and performance are mainly centered on site-specific, design-level details (i.e. exact sediment quantities, extent of erosion control needs, precise access route and staging locations, timing and duration of construction, engineering challenges, etc.), which would be addressed during the pre-engineering and design phase (PED).

Operations and maintenance (O&M) strategies will be implemented by the Non-Federal Sponsor (NFS), the City of Little Rock, AR, to ensure construction efforts are effective and maximize the life of the project. For the purposes of the initial study, O&M was assumed to be a 3-person crew cleaning the channel and applying broadleaf killer. Equipment for this task is expected to include some type of off-highway vehicle pulling a cart to gather debris and trash. The crew would perform this cleaning and spraying once a year.

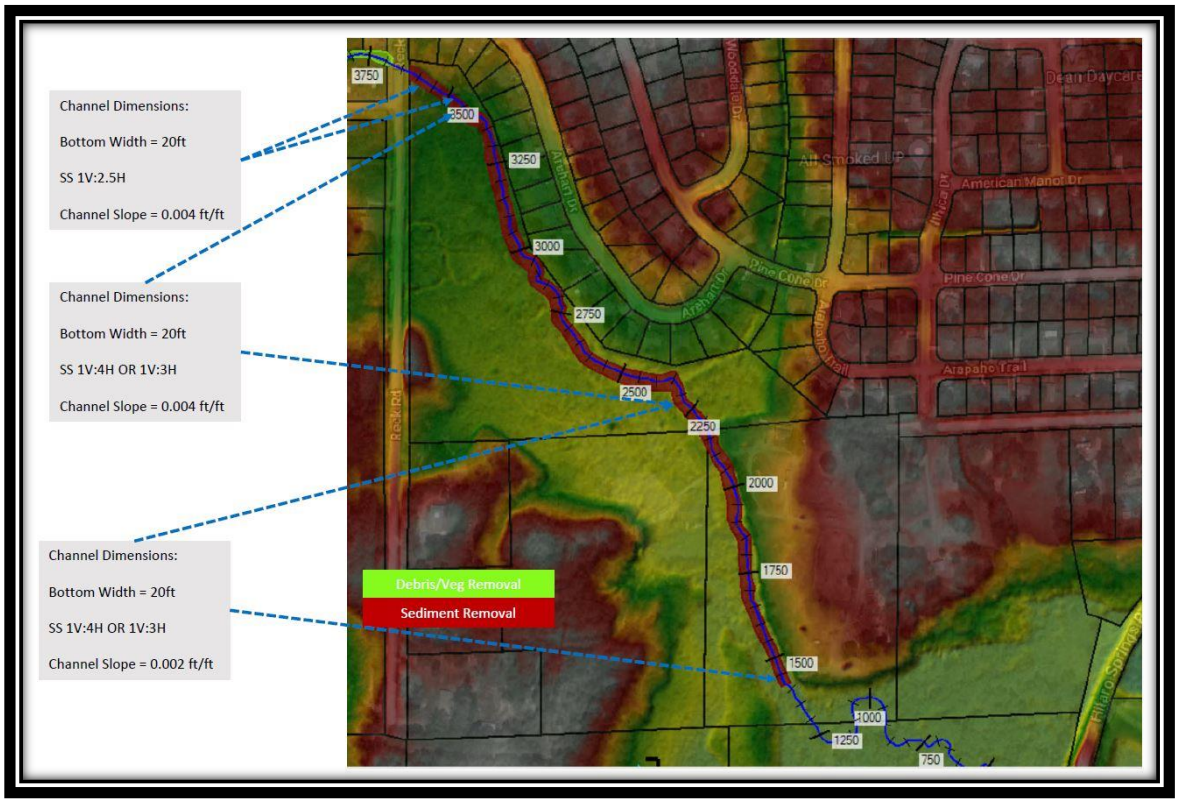

Figure 3 – Alternative 4b Map

3.1 Access Routes

This project is located within the City of Little Rock on the east side of Reck Road between Arehart Drive and Barwood Circle. A preliminary access route has been identified along the right bank of Stump Creek, outlined in yellow in Figure 4; however, final staging areas and access routes would be determined during PED. The initially planned access road would require a 20-foot wide cleared path (trees removed), and an additional 5-foot of cutting back overhanging brush and limbs (trees remain) will be required to allow vehicular access to the work area. The basis for the width is that crane matting is typically 14 feet wide as a minimum; the additional 6-foot width would help facilitate maneuvering. The clearing along the access would end approximately 2250 feet downstream of Reck Road with a 20-foot by 40-foot "hammerhead" turn-around. Vehicles would have to ingress and egress one at a time using the same route.

It may be possible to use an existing unimproved gravel road (dashed blue line in Figure 4) to return to Reck Road, allowing a complete one-way circuit for haul vehicles for most of the project length. The likelihood of using this access is uncertain at this time.

Access from the neighborhood along the left bank of the channel was considered, but due to the tight clearances between houses as well as the removal and restoration of fencing, landscape, yards, and trees this option was not considered further.

Disturbances for access and staging would be placed outside of environmentally sensitive areas to the greatest extent practicable. Selective brush and tree removal will be implemented to establish the access and staging areas. Ground disturbance for access and staging areas would be temporary and revegetated with native grasses, aside from a path to maintain access post-construction to allow for O&M.

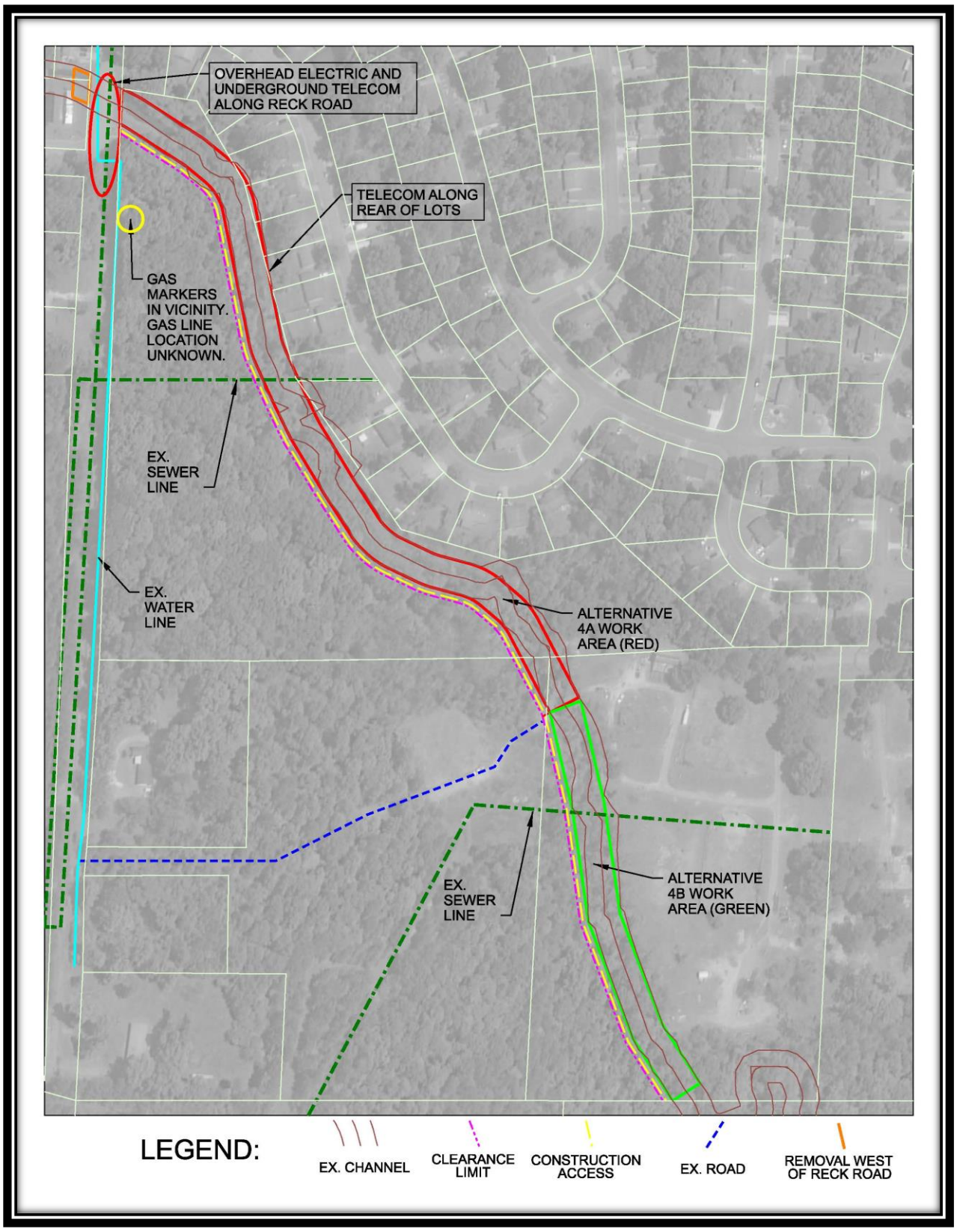

Figure 4 – Construction Access Route Map

3.2 Temporary Structures

Final plans for temporary structures will be determined by the Contractor. However, it is possible that a cofferdam may be constructed to dewater the channel and allow wet soils along the bank to drain in order to improve the workability of the soil. The cofferdam would be constructed at the downstream end of the project with an excavator and a temporary pumping system would be installed to pump the water over the cofferdam. The PDT found that, after evaluating the risks and likely ineffectiveness of a potential cofferdam, it wouldn't be an effective means to facilitate the needed construction; however, it should be noted that it is still a possibility as construction methods are up to the Contractor.

Instead, the use of 4 -14'x14' crane mats along the access road to maintain stability will be implemented and working during the dry season should improve soil workability. The typical cross section of the creek, access road, and crane mat plans is depicted below in Figure 5. No other temporary structures are expected at this time.

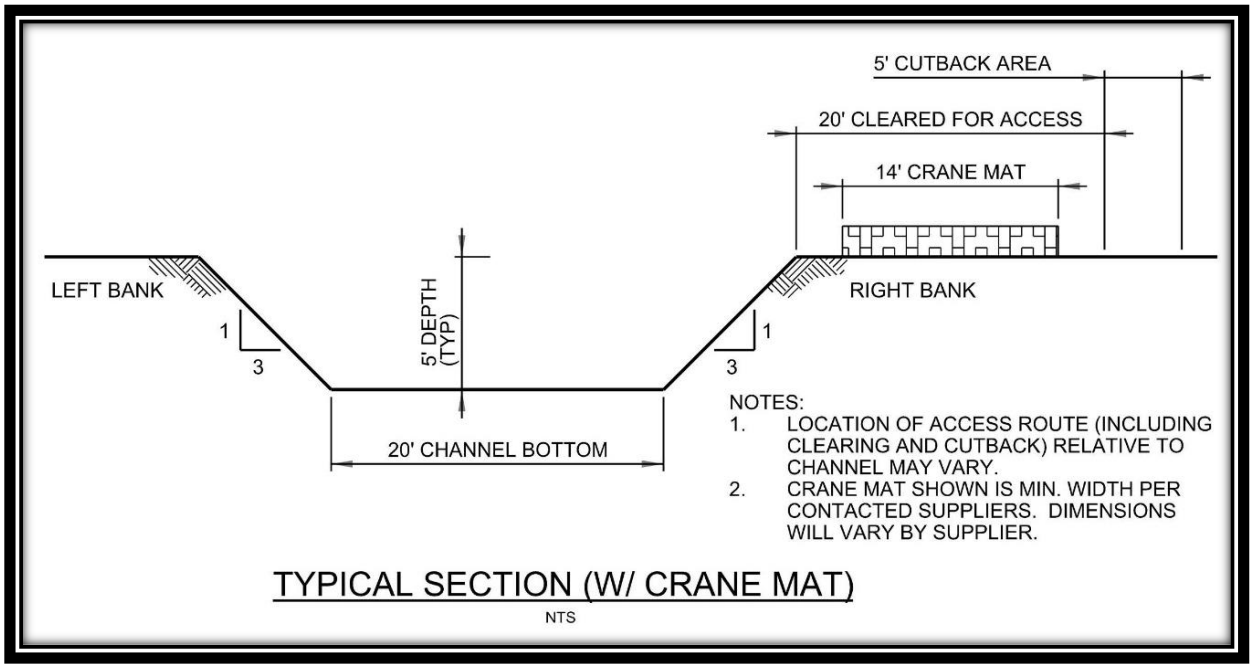

Figure 5 – Typical Section

3.3 Debris and Sediment Removal

Clearing and snagging entails the mechanical and/or by-hand clearing of dead and down vegetation, as well as living vegetation (trees and shrubs – especially fast growing invasives). Excavation includes the mechanical removal of built-up sediments within the existing channel alignment. It was estimated that vegetation and debris cover a third of the area to an average depth of 2 feet. The TSP involves removing an estimated 3,265 cubic yards of debris and excavating approximately 10,000 cubic yards of sediment. A more precise quantity of debris and sediment to be removed will be determined during PED.

For sediment removal and shaping of the channel, the team considered the use of a medium sized tracked excavator to accomplish this task. Loads of debris and sediment from the excavator would then be placed in haul units (e.g. dump trucks) on the access road. The haul units would remove the material from the project site. Removal of debris and sediment upstream of Reck Road could be accomplished with a small front-end loader. A water truck with a hose

could be used to flush the culvert although some clearing by hand or small equipment may be necessary. On-site temporary or permanent storage of removed material was not considered with this study due to limited access, public relations, and risk of high-water events washing stored debris back into the channel. All removed material will become the property of the contractor, be immediately removed from the site, and be disposed of in accordance with Federal, State, and local laws. No excavated materials would be disposed of into waters of the United States.

Another risk with debris and sediment removal is removal of trees and vegetation on the left bank of the channel. This bank backs up to residential properties, and removal of root material could potentially degrade the left bank and result in damage to fences and properties on that side. This is a low risk that can be mitigated by using more hand methods of tree removal on the left bank and redressing and possible recompacting of the bank material after work in the area.

3.4 Maintenance

The Contractor would be responsible for maintaining the operability of work areas and access. Maintenance would likely be regrading and reshaping the access road and work areas with a bulldozer or grader, replacing displaced or missing rock and gravel from dump truck loads, and repairing damages and other problems as they arise. Maintenance would also occur with use crane mat panels for access as the panel would have to be periodically repositioned and leveled for adequate vehicular operation. Maintenance is typically not a separate pay item but is subsidiary to other work pay items. Specific events of maintenance are not prescribed; the Contractor is required to maintain operability of construction and will have the responsibility for determining when maintenance occurs.

Long-term O&M strategies will be implemented by the City of Little Rock to ensure construction efforts are effective and maximize the life of the project. For the purposes of the initial study, O&M was assumed to be a 3-person crew cleaning the channel and applying broadleaf killer. Equipment for this task is expected to include some type of off-highway vehicle pulling a cart to gather debris and trash. The crew would perform this cleaning and spraying once a year.

3.5 Erosion Control

Erosion control measures will be put in place to minimize the erosion during construction. This includes the use of crane mats on any access roads along the stream bank to distribute the weight of heavy equipment and minimize erosion from vehicular traffic. All temporarily impacted areas would be revegetated with native grasses to minimize erosion from vegetation removal.

The Contractor will be required to prepare and submit a Storm Water Pollution Prevention Plan (SWPPP) for the construction site and will be responsible for providing and implementing the measures set forth in the SWPPP.

4. Environmental Resources

At its confluence with Little Fourche Creek, Stump Creek has a drainage area of approximately 0.71 square miles and is 1.13 miles in length from the confluence to its origin just upstream of Baseline Road. The upper portion of the basin is characterized by steeper slopes and is highly urbanized which transitions to a shallower slope towards the confluence with the Little Fourche Creek. From upstream of Baseline Rd to the confluence, there are a total of four (4) culverts that control conveyance of flows. These are located at Baseline Road, South Heights Road, Reck Road, and Pine Cone Drive.

4.1 Water Quality

Stump Creek is a tributary of Little Fourche Creek, which discharges to Fourche Creek, then to the Arkansas River in the southeast portion of Little Rock. The Stump Creek watershed is primarily urban, and it receives runoff from storm sewers and roads. The surface water of most tributary streams emptying into Fourche Creek are generally impacted by pollutants common to storm water runoff from pervious surfaces. While urban streams typically have localized water quality impacts due to industrial and residential contaminants, no specific water quality problems have been reported in Stump Creek.

Qualitatively, Stump Creek is degraded by trash and debris. The water quality is not at its optimal state as the snags and sediment buildup slow water flow, and water is relatively stagnant outside of rainfall events. The standing pools and excess organic materials can cause low dissolved oxygen content.

While the project purpose under CAP Section 208 authority is to evaluate means to reduce flood risk, the clearing, snagging, and minor excavation associated with the TSP will aid in restoring Stump Creek to a more natural, healthy riverine system.

Under the TSP, there would be a temporary increase in loosened sediment and erosion as a result of clearing, snagging, and excavation causing minor, short-term adverse impacts to water quality. However, BMPs to include retaining natural stream meanders and avoiding isolated trapezoidal channels will be employed for turbidity control when working within the wetted stream perimeter. After the stream settles post-construction, the TSP is expected to ultimately improve water quality by facilitating freshwater flow through the system. Long-term, the increased flows will decrease stagnant waters and improved dissolved oxygen content. This long-term improvement in water quality may also benefit the adjacent larger wetland complex as the inflow received from Stump Creek would be of higher quality.

A Short Term Activity Authorization (STAA) permit will be obtained from the Arkansas Department of Energy and Environment for this process. All excavated materials will be disposed of off-site, and no materials will be deposited into waters of the United States.

4.2 Wetlands

The lower end of Stump Creek passes through a bottomland hardwood wetland complex before entering Little Fourche Creek. The water level in this wetland complex is dependent on rainfall events and the degree of standing or backed up water in the Little Fourche Creek/Fourche Creek drainage basin. This wetland area is a part of the 2000 acre Fourche Bottoms urban wetland complex, which is one of the largest tracts of urban wetlands in the country. The turquoise polygon depicted in extent map in the lower right corner of **Error! Reference source not found.** below shows these wetlands as depicted in the U.S. Fish and Wildlife Service's Wetland Inventory Mapper database. According to the database, the creek is classified as a riverine, streambed system that flows intermittently and is seasonally flooded.

The TSP will not result in the loss of any wetland acreage, and no adverse impacts to the downstream Fourche Bottoms wetland system are expected. The design does not include stream straightening and will follow and use existing stream morphology the greatest extent practicable. The beneficial long-term water quality impacts of this alternative will not only benefit the stream channel within the study area, but also downstream wetlands. Connectivity to the Fourche Bottoms wetland system will be maintained. During rain events, freshwater will travel downstream to Little Fourche Creek and the adjacent bottomland hardwood wetlands instead of the stagnant waters being retained in the channel's current state. Water is expected to have a higher dissolved oxygen content and decreased turbidity, benefitting wetland vegetation and aquatic species.

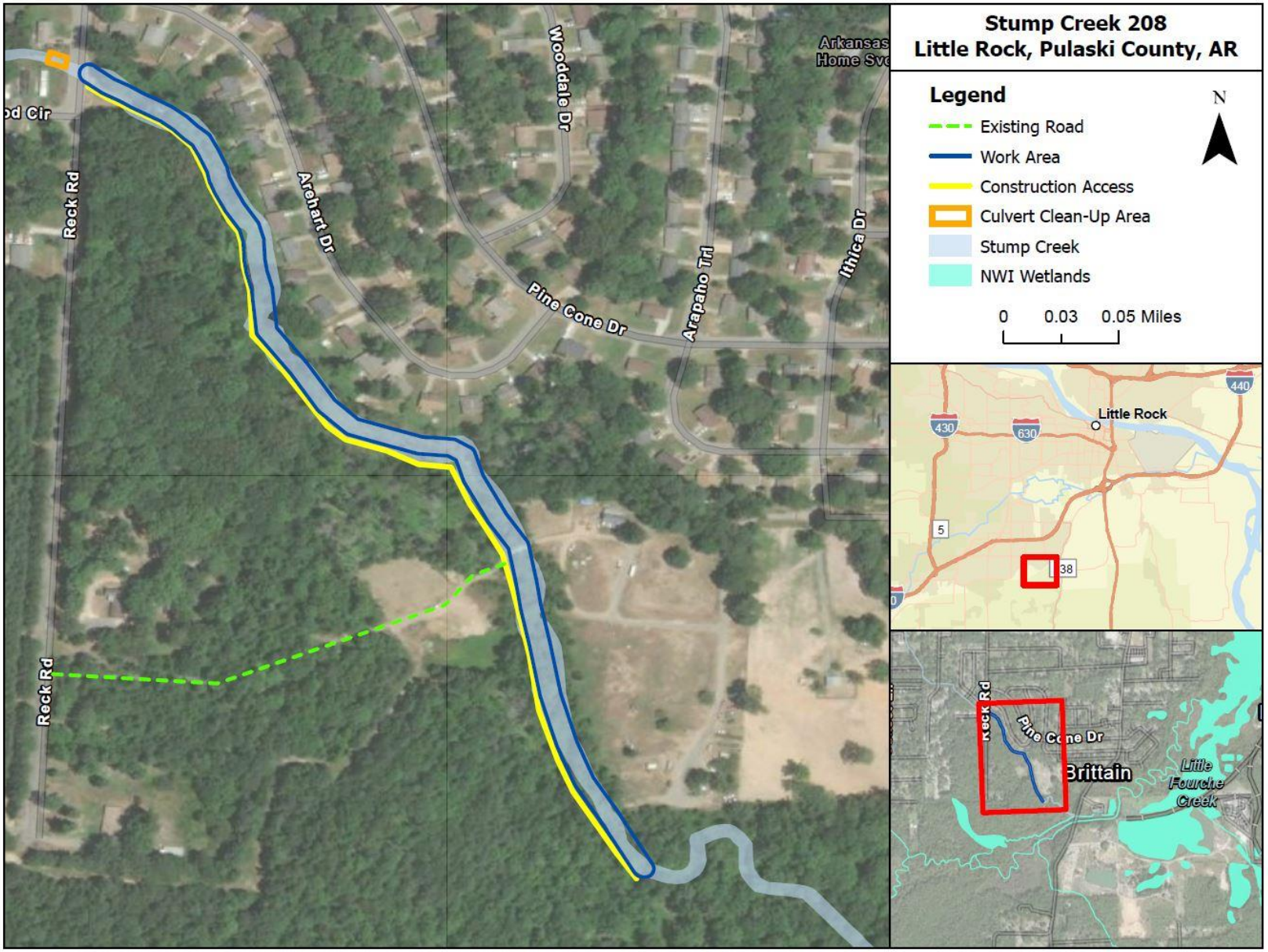

Figure 6 – Stump Creek Project Map

4.3 Aquatic Resources

Typical Gulf Coastal streams have a diverse fishery that includes bass, sunfish, catfish, suckers, darters and minnows. Urban streams generally have a diminished fishery in terms of species and numbers due to a variety of factors, including channelization, substrate modification, instream contamination from development in the watershed, and flashy flow patterns. The Stump Creek watershed is less than one square mile and the stream flow is ephemeral in nature. The substrate in Stump Creek is predominately sand, clay, and fines. Parts of the stream have been channelized. There is some incidental fish habitat in the area, but the lack of flow in the summer months result in sections of dry stream bed and some small enduring shallow pools. The lack of flow and relatively stagnant waters cause a low dissolved oxygen content, which inhibits aquatic species from flourishing. It is unlikely any significant fish populations exist in the project area.

Due to the nature of the streambed and lack of perennial flow, there are no significant aquatic features in the project footprint. Individual fish species, potentially consisting of mosquito fish and pirate perch, in the immediate construction area will be temporarily disturbed and likely migrate away from the area during construction of Alternative 4a. They would likely return to the habitat upon construction completion. Adequate fish habitat is limited in this stream channel due to past modifications to enhance storm water conveyance and low dissolved oxygen content, so adverse impacts to aquatic resources from construction are expected to be short-term, and ultimately beneficial as water quality improves post-construction.

4.4 Vegetation

General vegetation adjacent to the Stump Creek channel consists of that typical of a wetland bottomland hardwood system. Major forest vegetation types occurring in these areas include: ash (*Fraxinus spp.*), box elder (*Acer negundo*), hackberry (*Celtis occidentalis*), sugarberry (*Celtis laevigata*), black willow (*Salix nigra*), roughleaf dogwood (*Cornus drummondii*), holly (*Ilex spp.*), wild plum (*Prunus americana*), willow oak (*Quercus phellos*), water oak (*Quercus nigra*), and associated mid-story and understory species. Mature loblolly pines (*Pinus taeda*) are also scattered along the banks.

This area has been disturbed previously due to street and residential development adjacent to the stream channel. The stream banks of Stump Creek are highly altered in the upper portion of the drainage basin. Some of the stream has been channelized to facilitate storm water drainage. Exotic species such as mimosa (*Albizia julibrissin*) and Chinese privet (*Ligustrum sinense*) are both present along the stream bank. There is some forested vegetation along Stump Creek in the study area downstream of Reck Road.

Selective tree cutting will be implemented to the greatest extent practicable while establishing access paths; however, a 20-foot wide path with 5-foot of overhead limb trimming is required to allow the necessary equipment access to the stream. Conservation of native, mature tree species will be prioritized, and non-native, nuisance, less desirable species will be targeted during tree removal.

4.5 Wildlife and Endangered Species Act

Located near the Fourche Bottoms wetland complex, the lower portion of the Stump Creek watershed could potentially have an abundance of wildlife. Though in an urban setting, sightings of white-tailed deer (*Odocoileus virginianus*), raccoon (*Procyon lotor*), opossum (*Didelphis virginiana*), beaver (*Castor canadensis*), skunk (*Mephitis mephitis*), rabbits (*Sylvilagus floridanus* and *Sylvilagus aquaticus*), squirrels (*Sciuridae* spp.), waterfowl and other

bird species are common. Turtles, snakes, frogs, and other amphibians are common along the stream channel.

Table 1 – Federally Listed Species

Common Name	Scientific Name	Status
Northern Long-eared Bat	*Myotis septentrionalis*	Endangered
Tricolored Bat	*Perimyostis subflavus*	Proposed Endangered
Eastern Black Rail	*Laterallus jamaicensis ssp. jamaicensis*	Threatened
Piping Plover	*Charadrius melodus*	Threatened
Red Knot	*Calidris canutus rufa*	Threatened
Alligator Snapping Turtle	*Machrochelys temminckii*	Proposed Threatened
Monarch Butterfly	*Danaus plexippus*	Candidate

Under the proposed action, no direct or indirect impacts to the listed eastern black rail, piping plover, and red knot, nor the candidate monarch butterfly, are expected. Based on the habitat and resources available within the action area as well as known species ranges, these species are not expected to be present or affected by the proposed action. In the event that these species do make a rare appearance within the study area, it would likely be short in duration during migration. A No Effect determination has been made for the northern long-eared bat, eastern black rail, piping plover, red knot, and monarch butterfly.

Time constraints will be implemented on construction efforts, specifically tree cutting, to occur outside of the tricolored bat pup season (May 15 – July 31) to minimize effects on the species as a result of the proposed action. While the existing habitat is of poor quality, the alligator snapping turtle may still be present in the area, and project actions will be removing the snags and structure from Stump Creek, thereby degrading the suitability of the habitat. Because the tricolored bat and alligator snapping turtle are listed, respectively, as proposed endangered and threatened species, the effect determination is based on the whether or not the action is expected to appreciably reduce the reproduction, numbers, or distribution of the species. The proposed action would have no measurable impact on the status of the two species and therefore is not likely to jeopardize the continued existence of the tricolored bat or alligator snapping turtle. If either species is listed prior to project completion, the direct and indirect effects of the proposed action May Affect, but are Not Likely to Adversely Affect the tricolored bat and alligator snapping turtle. If necessary, the USACE will follow all appropriate processes to ensure the handling of tricolored bat and alligator snapping turtle is compliant with the ESA.

Coordination with the USFWS is pending, and compliance documents will be included in Appendix A, Endangered Species Act Coordination, when completed.

5. Conclusion

Overall, minor, short-term adverse impacts to water quality and aquatic resources can be expected as a result of the TSP, but these impacts are limited to the active construction period of approximately three months. The benefits of restoration efforts and ultimately the stream restoration features of the project itself would create long-term beneficial impacts to Stump Creek and the downstream Fourche Bottoms wetland complex.

No other projects are known to be occurring nearby, thus this project will not cumulatively contribute to adverse environmental impacts outside of the expected project-specific effects.

All materials, both cleared vegetation and excavated sediment, will be removed from the project site and disposed of in accordance with all applicable regulations at a designated off-site location. In conclusion, considering Federal environmental justice indicators, integration of avoidance and minimization practices on water quality and aquatic habitats, no other alternative provides the same level of flood risk reduction to residences in the project area.

6. Guideline Compliance

1. Review of Compliance (230.10(a)-(d))		
A review of the proposed project indicates that:	**Yes**	**No***
a. The placement represents the least environmentally damaging practicable alternative and, if in a special aquatic site, the activity associated with the placement 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).	**X**	
b. The activity does not appear to:		
1) Violate applicable state water quality standards or effluent standards prohibited under Section 307 of the Clean Water Act;	**X**	
2) Jeopardize the existence of Federally-listed endangered or threatened species or their habitat; and	**X**	
3) Violate requirements of any Federally-designated marine sanctuary (if no, see section 2b and check responses from resource and water quality certifying agencies).	**N/A**	
c. The activity will not cause or contribute to significant degradation of waters of the U.S. including adverse effects on human health, life stages of organisms that are dependent on the aquatic ecosystem, ecosystem diversity, productivity and stability, and recreational, aesthetic, and economic values (if no, see values, Section 2)	**X**	
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)	**X**	

2. Technical Evaluation Factors (Subparts C-F)			
	Not Applicable	**Not Significant**	**Significant***
a. Physical and Chemical Characteristics of the Aquatic Ecosystem (Subpart C)			
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 fluctuation/ hydroperiod		**X**	

2. Technical Evaluation Factors (Subparts C-F)			
	Not Applicable	**Not Significant**	**Significant***
6) Alteration of salinity gradients	**X**		
b. Biological Characteristics of the Aquatic Ecosystem (Subpart D)			
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 and amphibians)		**X**	
c. Special Aquatic Sites (Subpart E)			
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)			
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, and similar preserves	**X**		

*** Where a 'Significant' category is checked, add explanation below.**

3. Evaluation of Dredged or Fill Material (Subpart G)	
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. Evaluation of Dredged or Fill Material (Subpart G)	
3) Results from previous testing of the material or similar material in the vicinity of the project	**N/A**
4) Known, significant sources of persistent pesticides from land runoff or percolation	**X**
5) Spill records for petroleum products or designated (Section 311 of Clean Water Act) hazardous substances	**X**
6) Other public records of significant introduction of contaminants from industries, municipalities, 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**

List appropriate references: Appendix C – HTRW

3. Evaluation of Dredged or Fill Material (Subpart G) (continued)	Yes	No
b. An evaluation of the appropriate information in 3a above indicates that there is reason to believe the proposed dredged or fill material is not a carrier of contaminants, or that levels of contaminants are substantively similar at extraction and placement sites and not likely to degrade the placement sites, or the material meets the testing exclusion criteria.	**X**	

4. Placement Site Delineation (230.11(f))	
a. The following factors as appropriate, have been considered in evaluating the placement site:	**N/A**
1) Depth of water at placement site	
2) Current velocity, direction, and variability at placement site	
3) Degree of turbulence	
4) Water column stratification	
5) Discharge vessel speed and direction	
6) Rate of discharge	
7) Fill material characteristics (constituents, amount, and type of material, settling velocities)	
8) Number of discharges per unit of time	
9) Other factors affecting rates and patterns of mixing (specify)	

List appropriate references: N/A

4. Placement Site Delineation (230.11(f)) (continued)	Yes	No
b. An evaluation of the appropriate factors in 4a above indicates that the placement site and/or size of mixing zone are acceptable.	**N/A**	

5. Actions to Minimize Adverse Effects (Subpart H)	Yes	No
All appropriate and practicable steps have been taken, through application of recommendations of 230.70-230.77 to ensure minimal adverse effects of the proposed discharge.	**X**	

List actions taken:

1) Best available practical techniques and BMPs would be utilized during construction activities to avoid and minimize potential temporary and long-term adverse impacts.
2) Disturbed areas that will not be maintained for O&M access will be revegetated with native grass seed mixture (species to be determined in PED).
3) Limiting ground disturbance necessary for staging areas, access routes, etc. to the smallest area necessary to safely operate during construction;
4) Movement of heavy equipment and support vehicles would utilize predetermined access roads to the greatest extent possible. Ingress and egress to access the creek will utilize minimal area needed to complete work.
5) Refueling and maintenance of vehicles and equipment in designated areas to prevent accidental spills and potential contamination of water sources and the surrounding soils;
6) Limiting idling of vehicles and equipment to reduce emissions;
7) Minimizing project equipment and vehicles transiting between the staging area and restoration site to the greatest extent practicable, including but not limited to using designated routes, confining vehicle access to the immediate needs of the project, and coordinating and sequencing work to minimize the frequency and density of vehicular traffic; and,
8) Minimizing use of construction lighting at night and when in use, directing lighting toward the construction activity area and shielding from view outside of the project area to the maximum extent practicable.

6. Factual Determination (230.11)	Yes	No*
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 placement site (review Sections 2a, 3, 4, and 5 above)	**X**	

b. Water circulation, fluctuation and salinity (review Sections 2a. 3, 4, and 5)	**X**	
c. Suspended particulates/turbidity (review Sections 2a. 3, 4, and 5)	**X**	
d. Contaminant availability (review Sections 2a. 3, and 4)	**X**	
e. Aquatic ecosystem structure and function (review Sections 2b and c, 3, and 5)	**X**	
f. Placement site (review Sections 2, 4, and 5)	**X**	
g. Cumulative impacts on the aquatic ecosystem	**X**	
h. Secondary impacts on the aquatic ecosystem	**X**	

7. Evaluation Responsibility	
a. This evaluation was prepared by: Position:	**Elizabeth Knapp** **Biologist,** **Regional Planning & Environmental Center**

8. Findings (Select One)	
a. The proposed placement site for discharge of or fill material complies with the Section 404(b)(1) Guidelines.	**X**
b. The proposed placement site for discharge of dredged or fill material complies with the Section 404(b)(1) Guidelines with the inclusion of the following conditions: N/A	
c. The proposed placement 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 proposed discharge will result in significant degradation of the aquatic ecosystem 3) The proposed discharge does not include all practicable and appropriate measures to minimize potential harm to the aquatic ecosystem	

_____ Date	_____ Brandon Wadlington Interim Chief, Environmental Branch, RPEC