

City of Fayetteville Staff Review Form

2020-0420

Legistar File ID

6/2/2020

City Council Meeting Date - Agenda Item Only

N/A for Non-Agenda Item

Leif Olson

5/15/2020

SUSTAINABILITY/RESILIENCE (631)

Submitted By

Submitted Date

Division / Department

Action Recommendation:

Approval of Task Order #3 with the Watershed Conservation Resource Center for Stream Restoration Survey and Design, Invasive Species Removal Planning, Construction Procurement Assistance, Construction Oversight, and Project Management on Tanglewood Branch in the Cultural Arts Corridor for a not to exceed fee of \$269,500 plus a 10% project contingency in the amount of \$26,950.

Budget Impact:

4604.860.7800-5860.02

Drainage Projects 2019 Bonds

Account Number

Fund

46040.7800

Arts Corridor Improvements

Project Number

Project Title

Budgeted Item? Yes

Current Budget \$ 300,000.00

Funds Obligated \$ -

Current Balance \$ 300,000.00

Does item have a cost? Yes

Item Cost \$ 296,450.00

Budget Adjustment Attached? No

Budget Adjustment \$ -

Remaining Budget \$ 3,550.00

V20180321

Purchase Order Number:

Previous Ordinance or Resolution Ord. 6141

Change Order Number:

Approval Date:

Original Contract Number

Comments:



MEETING OF JUNE 2, 2020

TO: Mayor and City Council

THRU: Susan Norton, Chief of Staff

FROM: Peter Nierengarten, Environmental Director

DATE: May 15, 2020

SUBJECT: Approval of Task Order #3 with the Watershed Conservation Resource Center for Stream Restoration Survey and Design, Invasive Species Removal Planning, Construction Procurement Assistance, Construction Oversight, and Project Management on Tanglewood Branch in the Cultural Arts Corridor for a not to exceed fee of \$269,500 plus a 10% project contingency in the amount of \$26,950.

RECOMMENDATION:

Approval of Task Order #3 with the Watershed Conservation Resource Center for Stream Restoration Survey and Design, Invasive Species Removal Planning, Construction Procurement Assistance, Construction Oversight, and Project Management on Tanglewood Branch in the Cultural Arts Corridor for a not to exceed fee of \$269,500 plus a 10% project contingency in the amount of \$26,950.

BACKGROUND:

On January 3, 2019 the City Council approved Ordinance Number 6141 approving a Memorandum of Understanding with the WCRC for a term of five years to establish a general framework of cooperation to seek funding, conduct stream restoration projects and to work together on nonpoint source related issues.

The City in partnership with the WCRC developed an EPA Region 6 Wetlands Development Program grant proposal to demonstrate restoration methods on Tanglewood Branch by which the riparian, channel, and natural features will be restored utilizing innovative ecoregion-based vegetation establishment and natural channel design principles. The EPA awarded the grant the City with a start date of October 1, 2019. This project will emphasize the importance of restoring riparian and wetland areas with native plants and follow-up maintenance and monitoring as a critical component of successful stream restoration projects.

Tanglewood Branch is a tributary to the West Fork of the White River and is likely the most urbanized sub-watershed in Beaver Lake drainage area. The project will emphasize the importance of restoring riparian and wetland areas with native plants and follow-up maintenance and monitoring as a critical component of successful stream restoration projects. Tanglewood Branch flows through a relatively isolated 10 acres that is well suited as an urban wildlife corridor. The area where the stream restoration and riparian improvement work will be

conducted is located within the Fay Jones Woods conservation area and will serve to support the larger cultural arts corridor project being developed. A healthy stream and riparian will support wildlife and improve water quality, while the location of Tanglewood Branch creates a unique opportunity for the site to serve as an education tool on native riparian and woodland vegetation of the Ozark Mountains to City residents and visitors. The project demonstrates several newly developed restoration techniques that will restore local ecosystem services to this heavily urbanized area.

DISCUSSION:

The scope of work that the WCRC will complete for the Tanglewood Branch restoration project in the Fay Jones Woods includes:

- Development of a Quality Assurance Project Plan,
- Site monitoring and Collection of Pre and Post Restoration Data,
- Removal of Invasive Vegetation, Native Species Selection and Establishment,
- Restoration Design
- Construction Management
- Training Workshops and Outreach
- Project Management, Administration and Reporting

Specific project tasks associated with the proposed work are congruent with the tasks that were developed in the approved EPA workplan.

BUDGET/STAFF IMPACT:

Cost for this task order will be funded through the 2019 Drainage Projects 2019 Bond.

Attachments:

- Task Order No. 3 for Mayor's Signature
- Attachment 1 – Tanglewood Branch EPA Wetland Grant Narrative
- Attachment 2 – Scope of Work – WCRC Tanglewood Branch
- Task Order No. 3 – Complete document
- Ordinance 6141

\$269,500 TASK ORDER NO. 3**RESTORATION OF THE RIPARIAN, CHANNEL, AND OTHER NATURAL
FEATURES OF TANGLEWOOD BRANCH
IN FAYETTEVILLE, ARKANSAS**

STATE OF ARKANSAS

COUNTY OF WASHINGTON

This Task Order is written pursuant to the Memorandum of Understanding (MOU) as described in Ordinance No. 6141 executed on January 3, 2019. The referenced MOU pertains to potential stream restoration projects and associated services with the Watershed Conservation Resource Center (WCRC). This Task Order entered into and executed on the date indicated below the signature block by and between the City of Fayetteville (CITY) and WCRC Center sets forth the project description, project schedule and associated fees for professional services related to performance of project tasks associated with a grant developed by the WCRC and submitted by the CITY that provides funding for proposed stream and riparian enhancements on Tanglewood Branch in association with the establishment of the Cultural Arts Corridor. The services provided by the WCRC to the City are associated to Federal Assistance Agreement (CD-01F67901-0) "Restoration of the Riparian, Channel, and other Natural Features of Tanglewood Branch in Fayetteville, Arkansas" awarded to the City by the U.S. Environmental Protection Agency (EPA) on September 5, 2019.

Section I - Project Description

The CITY in partnership with the WCRC developed an EPA Region 6 Wetlands Development Program grant proposal to demonstrate restoration methods on Tanglewood Branch by which the riparian, channel, and natural features will be restored utilizing innovative ecoregion-based vegetation establishment and natural channel design principles (Attachment 1). The EPA awarded the grant the City with a start date of October 1, 2019. The project will emphasize the importance of restoring riparian and wetland areas with native plants and follow-up maintenance and monitoring as a critical component of successful stream restoration projects. Tanglewood Branch flows through a relatively isolated 10 acres that is well suited as an urban wildlife corridor. The area where the stream restoration and riparian improvement work will be conducted is located within the Fay Jones Woods conservation area and will serve to support the larger cultural arts corridor project being developed. A healthy stream and riparian will support wildlife and improve water quality, while the location of Tanglewood Branch creates a unique opportunity for the site to serve as an education tool on native riparian and woodland vegetation of the Ozark Mountains to City residents and visitors. The project demonstrates several newly developed restoration techniques that will restore local ecosystem services to this heavily urbanized area.

Section II - Project Timeframe

The WCRC will conduct the work over the period of the grant award which is June 2, 2020 to December 31, 2023.

Section III - Scope of Services

The WCRC will conduct activities in coordination with the City as outlined in Attachment 2 - Scope of Work, which is based on the EPA approved workplan (Attachment 1).

Section IV - Fees and Payments

WCRC will perform the above-referenced Scope of Services for \$269,500 as detailed in the attached project scope of work (Attachment 2).

Section V - Memorandum of Understanding in Effect

Except as amended specifically herein, the Memorandum of Understanding Fayetteville shall remain in full force as originally approved.

IN WITNESS WHEREOF, the parties hereto have caused this TASK ORDER to be duly executed as of the date and year first herein written.

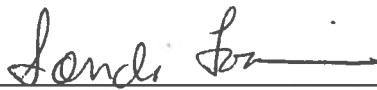
FOR THE CITY OF FAYETTEVILLE

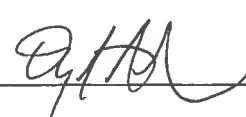
By: _____
Mayor Lioneld Jordan

Attest: _____
Kara Paxton, City Clerk

Date: _____

FOR WATERSHED CONSERVATION RESOURCE CENTER

By: 
Sandi Formica, Executive Director

Attest: 

Date: May 15, 2020

Project Narrative

A. Cover Page

1. Project Title: Restoration of the Riparian, Channel, and other Natural Features of Tanglewood Branch in Fayetteville, Arkansas

2. Track II Application – FY19 or FY20

3. Core Elements: I. Monitoring and Assessment and III. Voluntary Restoration and Protection

Actions: Core Element (CE) I. Set 1: Goals a. Identify program decisions and long term environmental outcome(s) that will benefit from a wetland monitoring and assessment program, **CE III. Set 1 Goals: b.** Consider watershed planning, wildlife habitat, and other objectives when developing your selection process restoration/protection sites, **CE III. Set 1: Goals c.** Provide clear guidance on appropriate restoration and management techniques and success measures, **CE III. Set 3. Develop Strategy for Restoration a.** Increase wetland acreage through restoration (re-establishment), **CE III. Set 3. Develop Strategy for Restoration c.** Establish partnerships to leverage additional protection, and **CE III. Set 4: Refine Protection and Restoration Strategies b.** Monitor restoration sites to ensure that they are implemented and managed correctly and linked to relevant watershed planning efforts.

4. Name of Applicant: City of Fayetteville, Arkansas, DUNS #07-565-7742

5. Key personnel and contact information:

Peter Nierengarten, PE, City of Fayetteville, pnierengarten@fayetteville-ar.gov, (479) 575-8272

Sandi Formica, WCRC, formica@watershedconservation.org, (501) 352-5252

6. Geographic Location: Arkansas - Fayetteville, Washington County; HUC: 11010001, Upper White River Watershed, 12-digit HUC: 11010001-0404, West Fork White River Watershed

7. Total Project Cost: \$739,479 **Federal Dollars Requested:** \$217,702, **Match:** \$521,777

8. Abstract/Project Summary: The City of Fayetteville in partnership with the Watershed Conservation Resource Center proposes to demonstrate a restoration along spring-fed Tanglewood Branch in which the riparian, channel, and natural features will be restored utilizing innovative ecoregion-based vegetation establishment and natural channel design principles. Tanglewood Branch, located in Fayetteville, Arkansas, is a Boston Mountain headwater stream in the West Fork White River (WFWR) watershed. The WFWR is a 303(d) listed stream, state priority for sediment and nutrient reduction, and tributary to Beaver Lake, Northwest Arkansas' drinking water source. The project demonstrates several newly developed restoration techniques that will restore local ecosystem services to this heavily urbanized area:

- 1) 1,500 feet of stream channel will be restored using natural channel design principles, a sustainable alternative to traditional stream hardening methods that use concrete and rip-rap.
- 2) 3,000 feet of riparian will be restored to native vegetation by utilizing innovative planting techniques and removal of invasive vegetation.
- 3) Two distinct seasonal, spring-fed features, a hill-side seep and shale bluff choked with invasive vegetation will be restored.
- 4) Hands-on training workshops will be conducted that train residents, environmental professionals, and surrounding state/tribal/local government in:
 - a. Safe removal techniques of invasive plants along streams
 - b. Identification, selection, and establishment of native plant species in riparian and wet areas to protect water quality and create wildlife habitat.
- 5) Sediment and phosphorus loading reductions will be monitored
- 6) Invasive and native species of plants will be monitored and data provided to Arkansas Natural Heritage Commission's state tracking program.

B. Project Description

1. Project Description

The City of Fayetteville (City) in partnership with the Watershed Conservation Resource Center (WCRC) proposes to demonstrate a restoration along spring-fed Tanglewood Branch that includes the riparian, channel, and spring-fed natural features utilizing innovative techniques that emphasize establishment of ecoregion-based native vegetation, natural channel design principles, and monitoring and maintenance for long-term success. The project will emphasize the importance of restoring riparian and wetland areas with native plants and follow-up maintenance and monitoring as a critical component of successful stream restoration projects. Though located less than a half-mile from the City's town square, the moderately steep to steep hillsides have limited development of the project area. Tanglewood flows through this isolated 10 acres that is well suited for wildlife habitat. The City is in the process of conserving the entire site as a natural area called the Fay Jones Woods as part of a larger cultural arts corridor being developed. A healthy stream and riparian will support wildlife and improve water quality, while the location of Tanglewood Branch creates a unique opportunity for the site to serve as an education tool on native riparian and woodland vegetation of the Ozark Mountains to City residents and visitors.

With over 50% impervious surface upstream, Tanglewood Branch has enlarged three to four times because of the increased stormwater runoff. Also, the stream channel and riparian are predominantly covered with invasive bush honeysuckle, a shrub historically sold as an ornamental plant beginning in the late 1800's. The bush honeysuckle and the over-story completely block the sun light, preventing native grasses and wildflowers from growing in the forest or wetland plants from growing in seeps or along the stream. The project will demonstrate innovated restoration methods to restore the local ecosystem services in this urbanized area:

- 1) Approximately, 1000 feet of Tanglewood Branch and 500 feet of a steep tributary that flows to Tanglewood Branch will be restored using natural channel design principles that are a sustainable alternative to traditional engineering methods of hardening stream channels with concrete and rip-rap. Rock and wood structures will be used to stabilize the fairly steep, B-type channel and flood plains will be established and vegetated by constructing soil lifts as needed. A series of step pools will be constructed to stabilize the steep tributary.
- 2) Approximately 3,000 feet of riparian with widths ranging from 10 to 20 feet will be restored by removing invasive vegetation including shrubs, forbs, and trees using both mechanical removal and chemical treatment. These areas will be planted with plants native to the local ecoregions to help reduce erosion and to restore the local ecology.
- 3) Tanglewood Branch is fed by a large spring upstream of the project area. Smaller springs/seepages are found throughout the site. Two unique features will be restored, a hill-side seep and wet shale bluff that are currently choked with invasive vegetation. The spring-fed seepage area will be enlarged and native wetland plants will be established. Native plants, such as, wild hydrangea, typically found on these bluffs, will be incorporated into the site.
- 4) The City and the WCRC will work with partners to conduct hands-on training workshops for states/tribal/government agencies, environmental professionals and the general public.
 - a. Identification, selection, and establishment of native species of plants in riparian and wetland areas to protect water quality and create wildlife habitat.
 - b. Safe removal techniques of invasive plants along streams.
- 5) Sediment and phosphorus loading reductions will be monitored by measuring streambank erosion rates and collecting and analyzing streambank materials.
- 6) Both invasive and native vegetation will be monitored and reported to the ANHC.

2. Description of Need

Tanglewood Branch is a Boston Mountain headwater stream in the West Fork White River (WFWR) watershed. The WFWR is a major tributary to the White River that forms Beaver Lake, the drinking water source for over 450,000 residents in Northwest Arkansas. Tanglewood Branch flows to Town Branch, which flows to the WFWR, an impaired stream on the Arkansas Department of Environment Quality's 303 (d) list, category 4a. The Beaver Lake watershed is an Arkansas Natural Resource Commission priority nutrient reduction. Comprehensive watershed planning conducted in Beaver Lake watershed recommends the reduction of sediment and phosphorus loadings to the WFWR watershed through riparian and channel restorations. Improving Tanglewood branch by reducing streambank erosion, enhancing streambed features, establishing a healthy riparian, and restoring natural features supports local watershed planning and will help to improve water quality and aquatic and terrestrial habitats in the watershed.

The watershed area of Tanglewood Branch at the proposed site is 0.5 mi² and it drains the entertainment district of downtown Fayetteville, which is now over 50% impervious surface. The stream has enlarged and incised from the resulting increased flows, creating unstable streambanks that contribute sediment and nutrients to the watershed. The project demonstrates innovative techniques for addressing channel enlargement as an alternative to traditional engineering approaches, such as, concrete and rip-rap. Restoration utilizing innovative techniques based on natural channel design principles is a progressive approach that will resolve the effects of channel enlargement, while improving water quality and the local ecology.

Tanglewood branch and the surrounding natural features are choked with bush honeysuckle, Privet, Euonymus, and many other invasive plants that not only prevent native plants from establishing in the area, but contaminate Town Branch and the WFWR watersheds with their

seed. The density of these plants almost completely block sunlight, so that large areas of the forest floor are absent of any plants outside of these shrubs. Removal of these invasive plants is necessary, so that a healthy riparian based on the local ecoregion can be established.

This project will result in a high-quality restoration that includes channel, riparian, and spring-fed natural features and that will be monitored for both sediment and phosphorus reduction and native plant establishment. The restoration of 1,500 feet of Tanglewood Branch and its tributary will address the water resource concerns by reducing sediment and nutrients by stabilizing streambanks using natural channel design principles. It is expected that over 80% reduction of sediment and nutrients will be achieved through the channel restoration. In addition, aquatic and terrestrial habitat will be restored. 3,000 feet of riparian that currently has an understory that is mostly invasive vegetation will be restored to native species of plants found in the Boston Mountain ecoregion. Also, a seasonally wet, shale bluff and spring will be restored to promote micro pockets of unique wet habitat. The results of the project will be used to demonstrate the importance of including establishment of native plants based on ecoregions at restoration sites and the use of natural channel design principles to stabilize streambanks. Local residents, state/tribe/local government, and environmental professionals will be trained on how to safely remove invasive species of plants and establish native species for streams and wetlands.

The Track II project supports *Core Element I. Monitoring and Assessment and Activity Set 1: Goals a. Identify program decisions and long term environmental outcome(s) that will benefit from a wetland monitoring and assessment program:* The results will be used by NW AR Cities and State agencies to assess areas that need restoration and encourage techniques that result in water quality and habitat improvement including natural channel design, native plant establishment, and long-term maintenance to create high-quality stream and wetland restorations.

The project supports *Core Element III. Voluntary Restoration and Protection and the following Activities: Set 1 Goals: b. Consider watershed planning, wildlife habitat, and other objectives when developing your selection process restoration/protection sites:* The project is based on watershed planning that promotes the protection of the drinking water source and restores both aquatic and terrestrial habitat in WFWR watershed, a priority area for restoration to protect Beaver Lake. *Set 1: Goals c. Provide clear guidance on appropriate restoration and management techniques and success measures:* Training will be provided on the demonstrated innovative techniques to local residents, state/tribes/local government, and environmental professionals. *Set 3. Develop Strategy for Restoration a. Increase wetland acreage through restoration (re-establishment):* The project will result in 1,500 feet of stream, 3,000 feet of riparian, and two spring-fed features restored. *CE III. Set 3. Develop Strategy for Restoration c. Establish partnerships to leverage additional protection:* Results will be shared with both Beaver Lake and Illinois River watershed groups along with local conservation organizations, the water district, and state government to encourage similar restoration and protection measures. *Set 4: Refine Protection and Restoration Strategies b. Monitor restoration sites to ensure that they are implemented and managed correctly and linked to relevant watershed planning efforts:* The restoration will be monitored and the data will be used to implement adaptive management strategies during the project period, improve restoration techniques for the area, and to evaluate the success of the project. Through the partners, information will be incorporated into local watershed planning.

3. Project Tasks - The project tasks are summarized as follows:

Task 1: Development of Quality Assurance Project Plan (QAPP). A QAPP plan will be developed to assure quality data collection. Responsible: WCRC ***Deliverable: Approved QAPP***

Task 2: Site Monitoring and Collection of Pre and Post Restoration Data. 1) Establish plant monitoring sites along the riparian and natural features areas and collect data during two seasons (late spring and late summer) at the following times: a) pre-restoration; b) following the removal of invasive plants; and c) following channel restoration activities. 2) Establish sites for measuring bank profiles and collect data before and after restoration. 3) Conduct biological assessment before and after restoration. Responsibility: WCRC, ANHC, - 1), WCRC, BWD – 2), 3). **Deliverable:** *plant data, streambank monitoring locations, sediment & nutrient loads.*

Task 3: Removal of Invasive Vegetation, Native Species Selection, and Establishment.

1) Develop re-vegetation site plan 2) Remove invasive vegetation using mechanical and chemical methods. 3) Select native species based local ecoregion and similar sites; identify native plant sources. 4) Incorporate native plants into the riparian, natural features, and during construction of floodplains. Responsibility: WCRC with ANHC assist. **Deliverables:** *summary of invasive vegetation removal, list of native plant species, vegetation establishment summary.*

Task 4: Develop Restoration Design. 1) Collect survey data. 2) Develop final restoration plan that includes the channel, riparian, natural features, and vegetation establishment. 3) Develop construction drawings. 4) Obtain Corps 404 permit, ADEQ authorization, flood plain permit. Responsibility: WCRC – 1), 2), 3), & 4). **Deliverables:** *Restoration plan, construction drawings, 404 permit application, letter of “No-Rise.”*

Task 5: Construction of Restoration Design. 1) Procure construction materials and construction contractor. 2) Prepare site for construction, including installation of safety fence, delivery of materials and equipment, and stake site plan elevations; 3) Conduct construction oversight and construct stream channel, structures, floodplains, and natural features. Responsibility: Applicant - 1), WCRC - 2), 3). **Deliverables:** *Summary of demonstration project construction activities.*

Task 6: Technology Transfer - Training Workshops and Outreach. 1) Provide three hands-on training workshops on invasive vegetation removal along streams and rivers using both mechanical and chemical methods. 2) Provide three hands-on training workshops on native plant selection and establishment. 3) Provide three field tours to developers, city planners, local decision makers, and/or environmental professionals. 4) Incorporate project information into workshops and courses. 5) Develop and install signage on restoration techniques, habitat and plant species. Responsibility: Applicant, WCRC, BWA, IRWP, and FNHA. **Deliverables:** *Workshop Agendas, Summary of Activities*

Task 7: Administrative and Reporting. Project oversight and develop 1) quarterly reports and 2) final report. Responsibility: Applicant. **Deliverables:** *Quarterly and Final Reports*

4. Milestone Schedule

Milestone/Task	Start	End	Product
1A: Develop Draft QAPP	11/01/19	01/31/20	Draft QAPP
1B: Finalize QAPP	02/01/20	03/31/20	Approved QAPP
2: Site Monitoring			
1) Select plant monitoring sites and collect data spring and summer			
a. before restoration	04/30/20	09/30/20	List of plant species
b. following invasive removal	03/15/21	09/30/21	List of plant species
c. following channel restoration	04/01/22	09/30/22	List of plant species
2) Select streambank monitoring sites and measure bank profiles	04/01/20	04/30/20	Map of monitoring sites

a. Before channel restoration	04/01/20	12/31/20	Estimate loadings
b. After channel restoration	07/01/21	10/31/22	Estimate of load reduction
3) Conduct biological assessment			
a. Before restoration	04/01/20	10/31/20	Summary of results
b. After restoration	04/01/21	10/31/21	Summary of results
3: Native Plant Establishment			
1) Develop Site Re-vegetation Plan	12/01/19	02/28/20	Site re-vegetation plan
2) Remove invasive vegetation	05/01/20	12/31/20	Summary of plant removal
3) Select and source native plants	01/01/20	07/31/20	List of plant species
4) Plant restoration areas			
a. Riparian and natural features	04/01/21	04/01/22	Summary of establishment
b. Constructed flood plains	03/01/21	04/31/22	Summary of establishment
4: Restoration Design Development			
1) Complete site survey	04/30/20	6/30/20	Summary of data collected
2) Develop site restoration plan	07/01/20	8/31/20	Restoration layout
3) Develop construction drawings	09/01/20	10/31/20	Construction drawings
4) Obtain necessary permits	09/01/20	12/31/20	Letter of “No-Rise”, 404 Permit, ADEQ STAA
5: Construct Restoration			
1) Obtain construction materials	06/01/20	12/31/20	
2) Prepare site and construction oversight	01/01/21	03/31/21	
3) Complete finishing work	04/01/21	06/30/21	Summary of construction
6: Technology Transfer			
1) Conduct training workshops			Workshop Agendas
a. Invasive Removal	05/01/20	06/30/21	Summary of workshops

b. Native Plant Establishment	11/01/20	11/30/22	Summary of workshops
2) Conduct field tours	06/01/21	11/30/22	Summary of tours
3) Design native plant/ecoregion signage	06/01/21	11/30/22	Signage design
7: Reporting - Quarterly Report	01/30/20	9/30/22	Progress report
Final Report	06/01/22	12/31/22	Final report

5. Detailed Budget - If the applicant receives an award, the sub-award/sub-grant will be properly awarded consistent with the applicable regulations in 40 CFR Parts 30 or 31. The applicant will follow all appropriate procurement standards as required by EPA. The project budget is shown in the table below. The award recipient will administer the grant and procure services. The sub-award recipient, the WCRC, will execute major project tasks associated with this proposal, because of their unique expertise in the area of natural channel design stream restoration, stream assessment, and native riparian vegetation management. Their budget is shown on line “h. and detailed under “Other” Budget and their primary responsibilities are shown in Section B.3.

The federal, non-federal, and total cost for each task identified in Section B.3 are: Task 1. Develop QAPP (F-\$0, NF-\$5,000, T-\$5,000); Task 2.Site Monitoring (F-\$0, NF-\$68,000 T-\$68,000); Task 3.Removal of Invasive and Establish Native Vegetation (F-\$0, NF-\$130,000, T-\$130,000); Task 4.Develop Restoration Design (F-\$0, NF-\$85,000, T-\$85,000); Task 5.Construct Restoration (F-\$217,702, NF-136,777, T-\$354,479); Task 6. Technology Transfer (F-\$0, NF-\$71,000, T-\$71,000); and Task 7. Reporting (F-\$0, NF-\$25,000, T-\$25,000).

Match for this project is in the form of cash and in-kind services provided by the applicant and project partners. The applicant will provide \$457,298 cash match that will be used for procurement of materials (rock, plants, erosion control, etc.), supplies and labor for the removal of invasive plants, supplies and labor for the establishment of native plants, and restoration

design. The BWA will provide \$35,000 of in-kind including personnel to assist with workshops and invasive species removal activities. The BWD will provide \$29,479 in-kind services including personnel to assist with streambank erosion monitoring and biological monitoring.

	<i>Project Budget</i>			<i>“Other” Budget</i>		
Object Class Cat.	Federal	Non-Federal	Total	Federal	Non-Federal	Total
a. Personnel	\$0	\$0	\$0	\$0	\$146,014	\$146,014
b. Fringe	\$0	\$0	\$0	\$0	\$58,960	\$58,960
c. Travel	\$0	\$0	\$0	\$0	\$1,000	\$1,000
d. Equipment	\$0	\$0	\$0	\$0	\$0	\$0
e. Supplies	\$82,702	\$7,298	\$90,000		\$100,000	\$100,000
f. Contract	\$0	\$0	\$0	\$0	\$0	\$0
g. Construction	\$0	\$0	\$0	\$135,000	\$90,000	\$225,000
h. Other	\$135,000	\$514,479	\$649,479	\$0	\$64,479*	\$64,479*
i. Total Direct	\$217,702	\$521,777	\$739,479	\$135,000	\$521,777	\$656,777
j. Indirect	\$0	\$0	\$0	\$0	\$54,025	\$54,025
k. Totals	\$217,702	\$521,777	\$739,479	\$135,000	\$514,479	\$649,479

* Other Non-Federal Funding consists of in-kind match contributions from the BWA (\$35,000) and BWD (\$29,479)

6. Transfer of Results - Technology and information gained from this project will be transferred through the following mechanisms. Data on native plant species will be provided to the ANHC to be included in their state-wide tracking system. Hands-on training workshops will be held that present innovative restoration techniques including ecoregion-based native plant establishment, safe invasive vegetation removal along streams, and natural channel design principles. The Tanglewood Branch site will be used as part of the training and state/tribes/local government wetland programs in surrounding area will be invited to participate. Results will be integrated into local workshops and regional presentations at forums typically attended by

representatives from state/tribes/local government wetland programs in surrounding states. In addition, tours of the site will be given to individuals from local organizations, government offices, and private companies including contractors, environmental professionals, developers, community leaders, city planners and engineers, and civic leaders. Signage will be installed, a fact sheet will be developed and articles will be published in newspapers, newsletters, and web sites.

7. Outputs, Outcomes, and Tracking

i. Link to EPA Strategic Plan - The project objectives and outputs directly contribute to EPA's Strategic Plan, Goal 1, Objective 1.2 and delivers real results to provide Americans with clean air, land, and water. Water infrastructure is improved through the demonstration of stream channel, riparian, and natural features restoration, which will reduce sediment and nutrients to Northwest Arkansas's drinking water source, while restoring aquatic and terrestrial habitat in a so often neglected urban environment. The project supports comprehensive watershed planning that was conducted by an array of partners including state agencies and resulted in the development of the Beaver Lake Watershed Protection Strategy, a watershed plan to improve and protect Beaver Lake, the areas drinking water source. The City is committed to long-term success and will continue to support ongoing maintenance of the site, so native vegetation is established and a sustainable channel restoration is created to be enjoyed by the local communities through the recreation provided by a natural stream with clean water and a healthy Boston Mountain ecosystem. The workshops supported by partnerships, on invasive removal, native vegetation establishment, and natural channel design will provide training and demonstrate the project's innovative techniques to state/tribes/local governments in the area.

ii. Outputs - The expected environmental outputs are:

- 1) Development of restoration strategies to integrate channel, riparian, and natural features, water quality protection, habitat improvement, ecoregion-based native plant establishment, and long-term monitoring and maintenance of restoration sites to ensure longevity and healthy ecosystems will be established.
- 2) Increase ecological services through the development of a 1,500 ft stream restoration to demonstrate the riparian, channel, and natural features will be restored using new, innovated approaches that include the importance of invasive vegetation removal, methods for native vegetation establishment, needed long-term vegetation management strategies, and natural channel design principles to restore hydrology and stabilize the channel.
- 3) Development of 3,000 feet restored riparian area with 10 to 20 feet width that demonstrates the use of riparian restoration to stabilize streams, retain water, and filter runoff.
- 4) Restore two seasonal spring-fed natural features to demonstrate their unique habitat, the needed connectivity to the wider ecosystem, and their ability to help retain and filter runoff.
- 5) Development of training workshops for states/tribes/local government and residents that utilize innovative techniques and provide information that contributes to a broader understanding of streams and wetlands as ecosystems and the importance of native plants establishment and maintenance as critical components of stream and wetland restoration.
- 6) Development of monitoring data to demonstrate the effectiveness of restoration projects.

Outputs are linked to the EPA Strategic Plan because waters are cleaned through improved water infrastructure in partnerships that support drinking water, aquatic ecosystems, & recreation.

iii. Outcomes – The expected environmental outcomes from this project are

- 1) Reduced sediment and phosphorus loadings from accelerated streambank erosion to Beaver Lake watershed by 80%;

2) Reduce invasive species of plants in the riparian by over 90%;

3) Increase percentage of native plants along the riparian to 90%;

4) Increase quality of natural features on the site; and

5) Increase understanding among state/tribe/local government and residents, decision makers, and environmental professionals that to create a high quality restoration that improves both water quality and habitat, a) the channel, riparian areas, wetlands, and other natural features should be included in the restoration design and b) native vegetation establishment and long-term monitoring and maintenance are needed at all restoration sites and should be included in budgets. These outcomes are linked to the EPA Strategic Plan because the results will contribute to aquatic ecosystems and water resources being restored.

iv. Tracking Outputs & Outcomes - Outcomes 1) through 4) will be tracked using the project monitoring with baseline conditions established prior to restoration. Outcome 5) will be tracked by providing questionnaires to workshop participants before and after and comparing results.

8. Programmatic Capability/Technical Experience/Qualifications

i. Organizational Experience - The *City of Fayetteville* has been acknowledged for its environmental awareness for many years and is currently recognized as leading the State of Arkansas in sustainability and green infrastructure policies, including adopting the state's first Invasive Species Ordinance in 2015 and the state's first Climate Action Plan in 2018. The City partnered with the WCRC on several stream restoration projects that have been successful in using natural channel design principles. These projects included evaluating streambank erosion and restoring wetland areas. Examples of projects be found in Section F, Attachment i. The City supports ongoing maintenance of stream restoration sites and establishment of native plants in parks to reduce maintenance and enhance the natural settings. Additionally, the City has

developed a city-wide phosphorus reduction plan and has voluntarily restored several sections of streams as a result of this plan.

The ***Watershed Conservation Resource Center (WCRC)*** is a 501(c) (3) non-profit organization whose mission is to protect, conserve, and restore natural resources. The co-founders and principals of the WCRC, Sandi J. Formica and Matthew Van Eps, have extensive backgrounds and are leading regional experts in watershed management, watershed assessment, stream stability analysis, natural channel restoration design and the utilization of GIS for inventory and evaluation of natural resource condition. The staff has a broad range of experience with the watershed approach and has spent many years working throughout Arkansas on a variety of watershed issues. The WCRC has 12 staff persons and is housed in Fayetteville, AR.

The WCRC is engaged in several watershed assessment and stream restoration projects. The WCRC has received funding for and successfully designed and constructed several stream restoration projects in northwest Arkansas (Section F, Attachment i). Through follow-up monitoring and assessment, the WCRC has developed their own innovative methods for vegetation establishment and long-term maintenance of restorations using natural channel design principles in the Ozark Mountain region where there are flashy, incised, steep-gradient streams. The WCRC is engaged in projects that assess stream stability, assess streambank erosion, and develop streambank erosion prediction curves to estimate pollutant loadings and reductions.

April of 2019, the Arkansas Game & Fish Commission awarded the WCRC a “Conservation Award’ in recognition of extraordinary dedication and contributions to the conservation of Arkansas’s fish, wildlife, and natural resources and as a conservation leader in Northwest, AR.

ii. Staffing Experience & Qualifications - The key personnel for this project are (See Att. ii):

Peter Nierengarten, P.E., Environmental Director, City of Fayetteville – will serve as Project

Coordinator. Beginning in 2012, Peter managed several projects and accomplishments including: adoption of City's first Energy Action Plan and 100% Clean Energy Goals, Launching AR first PACE Program, Fayetteville-Arkansas' only 3-STAR Sustainability Certified Community, AR's first Silver designation of Bicycle Friendly Community, and managing Arkansas' largest solar array on municipal property and Fayetteville's Cultural Arts Corridor Project.

• ***Sandi Formica, Executive Director, Watershed Conservation Resource Center***, will serve as Project Manager. Sandi manages the WCRC, a 501 (c) (3), and conducts project development, design, and management, provides technical oversight, develops grants, and carries-out watershed-based projects. She is a regional expert in watershed assessment and planning, river stability, stream restoration design, and innovative methods to establish native vegetation at restoration sites. She is project manager of 15 successful stream restoration projects in NW AR.

• ***Matthew Van Eps, P.E., Associated Director, Watershed Conservation Resource Center***, will serve as Project Engineer. He is the lead design and project engineer for 15 stream restoration projects that include watershed-based assessments and evaluation of the impacts of various land-use activities on sediment and nutrient loading.

9. Partnership Information - The following organizations have agreed to partner:

- 1) ***Arkansas Natural Heritage Commission (ANHC)*** will provide technical assistance on vegetation monitoring, plant species identification, and native plant selection and sources.
- 2) ***Beaver Water District (BWD)*** will conduct the biological assessment and assist with the streambank monitoring; they will assist with workshops and other outreach activities.
- 3) ***Beaver Watershed Alliance (BWA)*** will assist with vegetation monitoring, conducting workshops and other outreach activities, and workshop advertisement.
- 4) ***Illinois River Watershed Partnership (IRWP)*** will assist with workshops and outreach.

5) *Fayetteville Natural Heritage Association (FNHA)* will participate in the invasive removal and native plant establishment workshops and help advertise workshops to the community.

10. Past Performance – Completed in 2018, in partnership with the WCRC, the City has successfully managed and met the commitments of two EPA Wetlands Program Development Grants: 1) FY14, an “Inventory of Riparian & Streambank Conditions of Urban Streams” was successfully completed in which streambank and riparian conditions of over 28 miles of urban streams was evaluated, streambank erosion prediction curves were developed that estimate sediment and nutrient loadings from streambank erosion, wetlands, prairies, springs, and streambanks in need of restoration were identified. The WCRC worked with the City’s GIS staff to create a data layer so the information is available to the City’s departments, watershed groups, and state/local government. Outputs from this project are being used to improve decision-making ability concerning proposed developments, protection of natural features, priorities when restoring streams, wetlands, and riparian areas, and estimates of the reduction of sediment and nutrients from streambank erosion to improve water quality within the Illinois River and Beaver Lake watersheds. Outcomes met include 1) a redesign of a section of Cato Springs Branch in which approximately 800 feet of channel was going to be destroyed and replaced with a shorter, straight, trapezoidal channel and 2) natural feature information led to the discovery of new locations of aquatic species of greatest conservation concern and rare plants.

Completed in 2017, the WCRC in partnership with the City completed an EPA Section 319 grant, administered by ANRC, to restore a 1,250 long eroding riverbank on the White River near Fayetteville. Environmental outputs were the WCRC designed & constructed a natural channel design based riverbank restoration project that reduced lateral erosion, reduced sediment and nutrient loads, and enhanced the aquatic/terrestrial habitat. This project helped to reduce

sediment and nutrient loadings to the White River. The estimated load reductions achieved by this project are 4700 ton/yr and 4200 lb/yr of for sediment and phosphorus, respectively.

Environmental outcomes were met with a 98% annual reduction in sediment and nutrient loads.

Completed in the summer of 2016, the WCRC in partnership with the City successfully designed and implemented a stream restoration on Ground Cherry Creek using EPA Section 319 grant funds. This restoration achieved multiple beneficial objective using a natural channel design approach resulting in the restoration of 2,000 feet of degraded stream. The WCRC successfully managed this project and met all reporting requirements. Environmental outputs included design & construction of a natural channel that reduced channel instability, reduced sediment and nutrient loads, and enhanced the aquatic/terrestrial habitat. Environmental outcomes were met as sediment and nutrient loads were reduced annually by 98%.

C. Restoration Demonstration Project Information Tanglewood Branch has incised and enlarged as a response to over 100 years of watershed changes. Because of the confining lateral bedrock, the channel has stabilized vertically, but there is still lateral streambank erosion. Also, where there is not erosion, invasive vegetation is holding the streambanks. The understory of the riparian is almost exclusively invasive vegetation. In addition to stabilizing the channel using natural channel design principles, the invasive vegetation must be carefully removed and replaced with native species of plants to prevent accelerated streambank erosion. Planting techniques will be demonstrated along with the construction of soil lifts to create native vegetated floodplains that provide stability. Using rock step pools and log vanes to relieve stress on the streambanks will allow time for long-term native vegetation establishment. The WCRC will irrigate during the summer months, continue with invasive vegetation control, plant additional natives as needed, and repair damage from storm flows. The City financially supports

the WCRC to conduct long-term inspection and maintenance at all City restoration sites, so upon project completion, the WCRC expects to monitor and maintain the site for an additional 5 years. The watershed is almost completely developed, so the project will be designed to handle the excessive flood waters expected with an over 50% impervious surface. In addition, the streambank monitoring data will be used to estimate sediment and nutrient load reductions. The following permissions will be obtained: 1) USACE Section 404 permit; 2) letter of “no rise;” and 3) ADEQ temporary authorization.

D. Quality Assurance / Quality Control The applicant will collect environmental data to determine streambank erosion rates, sediment/nutrient delivery, monitor plants, conduct biological assessment, and develop the restoration design. To comply with Quality Assurance and Quality Control requirements, they will develop and submit a Quality Assurance Project Plan within 3 months of the start date.

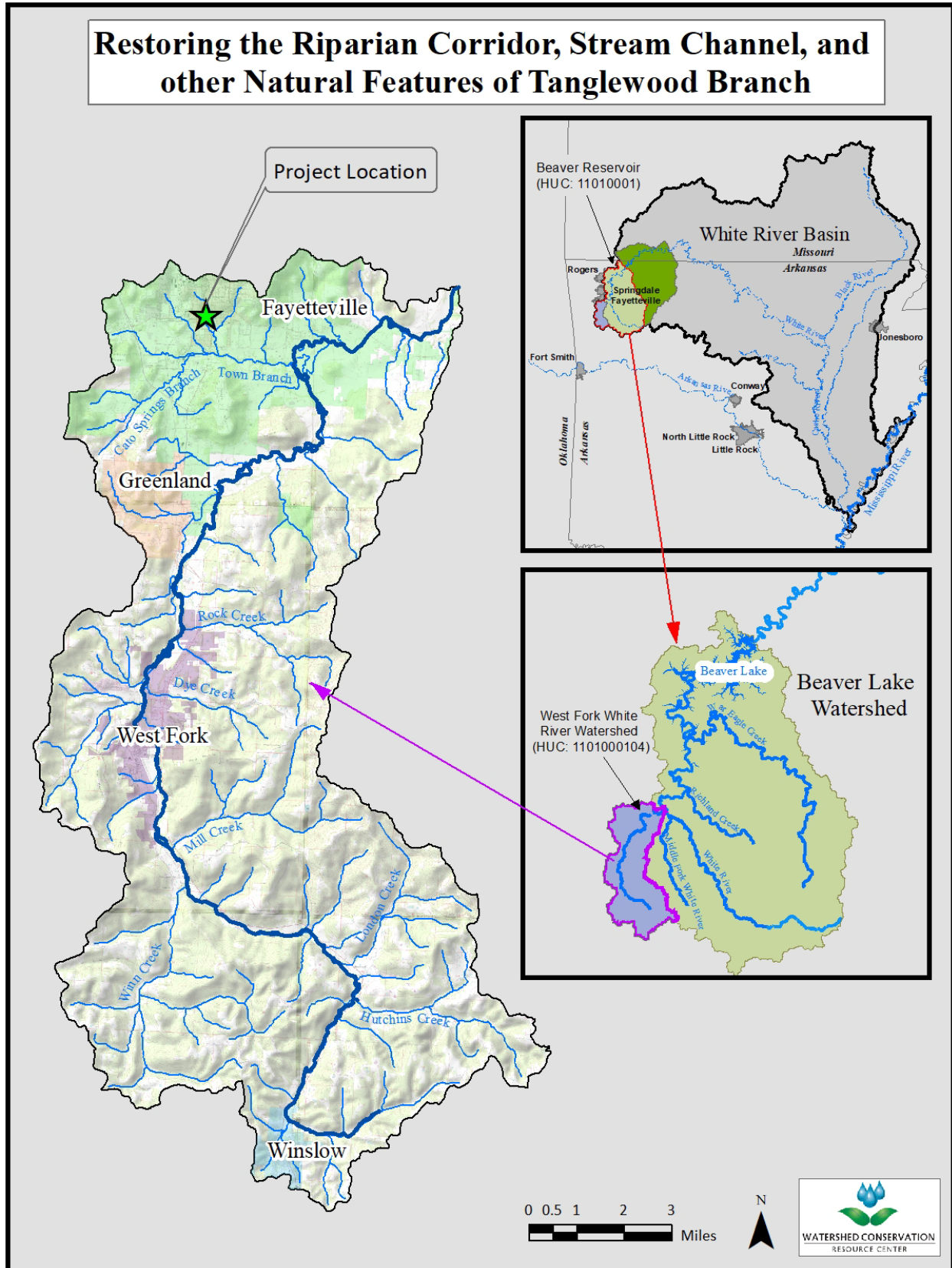
E. Invasive Species Control The applicant will monitor and work towards the elimination of invasive species from the site and will not introduce any to the site. Project partners will provide assistance in developing invasive species control plan. If invasive species are detected or promoted, response will be rapid to control populations in an environmental manner, as approved by the EPA Project Officer.

F. Attachments

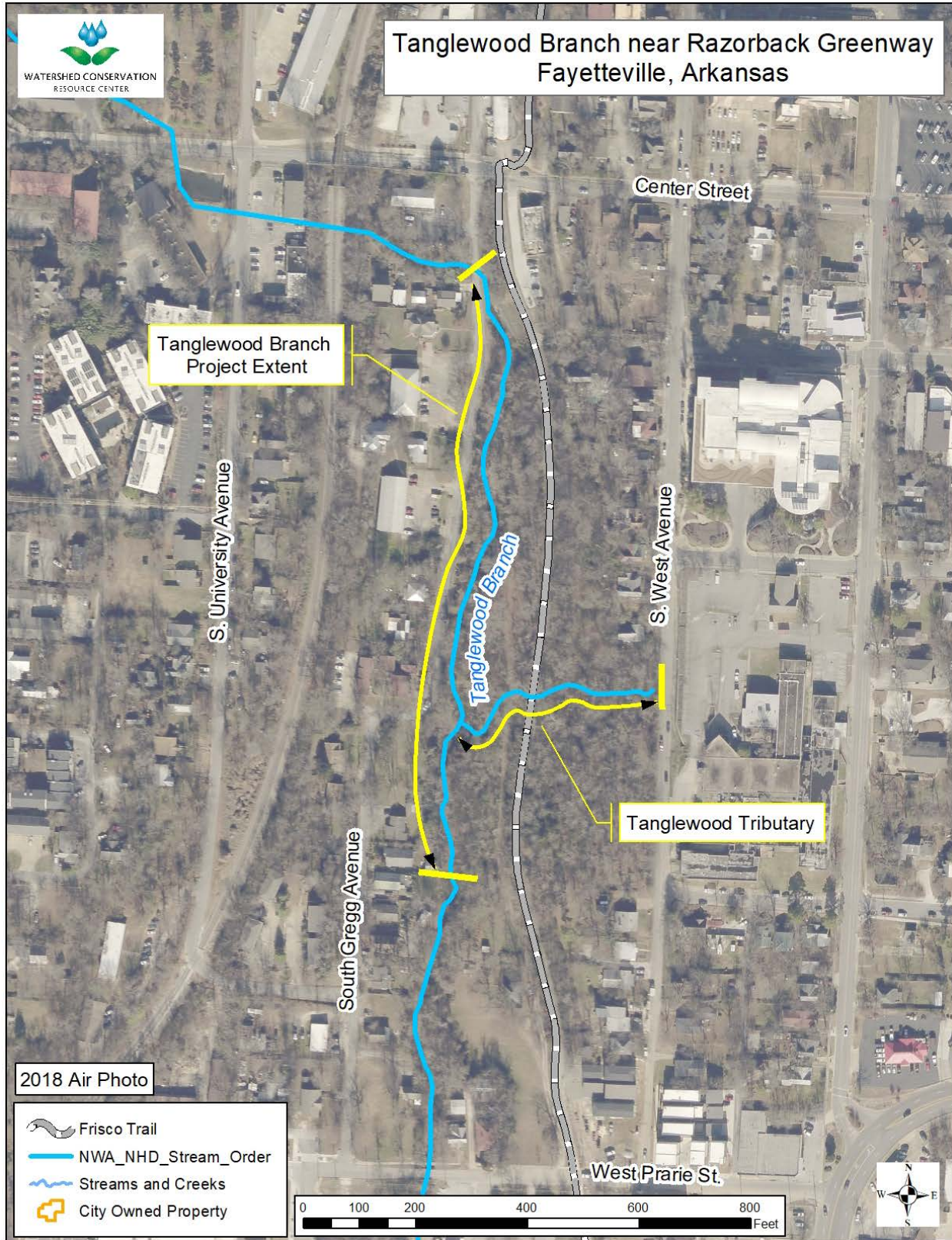
- i Maps and Restoration Examples
- ii. Staff Resumes
- iii. Commitment Letters

Attachment i.
Project Maps & Restoration Examples

**Restoring the Riparian Corridor, Stream Channel, and
other Natural Features of Tanglewood Branch**



Attachment i. Project Maps & Restoration Examples



Attachment i. Project Maps & Restoration Examples



Example of Urban Stream Restoration Design and Implementation Performed by the WCRC. This project is located on Ground Cherry Creek in Southwest Fayetteville. Changes to the landscape resulted in a degraded stream with significant lateral erosion and vertical channel instability (Before Photos on Left). The WCRC implemented a restoration design to provide stability to the channel and improve aquatic and terrestrial habitat (After Photos on Right). The work was completed in 2016 under an EPA Section 319(h) Grant administered by Arkansas Natural Resources Commission.

Attachment i.

Project Maps & Restoration Examples



WHITE RIVER ASSESSMENT AND RESTORATION

Project Partners

Arkansas DEQ
Arkansas Natural Resource Commission
U.S. Environmental Protection Agency
Watershed Conservation Resource Center
City of Fayetteville, Arkansas
Beaver Water District
Beaver Watershed Alliance

The Watershed Conservation Resource Center (WCRC) worked with project partners to stabilize a riverbank on the White River near the Nolan Wastewater Treatment Plant in Fayetteville, AR. Beaver Reservoir is located only a few miles downstream of the project site. The project was funded by an EPA Section 319(h) grant administered by the Arkansas Natural Resources Commission with matching funds provided by the City of Fayetteville and other project partners. Implementation of the bank stabilization plan began in October 2015 and was completed in December 2016.

Background: The White River, located in Northwest Arkansas, forms Beaver Lake, which is the primary drinking water source for over 400,000 people in NW Arkansas. The Arkansas Department of Environmental Quality placed the White River on the 1998 State 303(d) list of impaired waterways citing sedimentation and turbidity issues as a result of surface erosion, which includes streambank erosion, as the cause. As of 2017, the White River remains on the impaired list. Measurement of erosion indicated that the bank was retreating at an average rate of over 8 ft/yr generating over 4,800 tons of sediment each year. Erosion of the riverbank also contributed over 11,000 lb of total nitrogen and over 4,000 lb of total phosphorus to the waterway yearly.



Design & Implementation: The WCRC utilized natural channel design principles to develop the restoration plan. Streamline Environmental, LLC of Magnolia Springs, AL constructed the channel to specific dimensions designed to restore the river to a stable form based on local reference reach data. A 'toe wood' bench was designed and constructed using large trees, boulders, and gravel. Trees for the project were salvaged from local construction developments. The edge of the bench, with exposed root wads and boulders provides excellent fish habitat and also reduces the power of the passing floodwaters.

The use of native vegetation is a critical component of the stabilization design. Soil layers consisting of topsoil wrapped in a coconut fiber blanket, were constructed on top of the two benches, provide a medium for plants to take root and grow and provide additional weight to secure the trees used in the structure. These soil lifts were seeded with a mix of native riparian seed types. Approximately 500 trees, 4,000 shrubs, and 1,000 grass plugs. Maturing plants help to bind the structure through root growth and will also help to dissipate water velocity as the leaves, branches, and stems of the plants interact with flood waters.

Post Restoration: The restored bank provides water quality benefits almost immediately following construction. Several floods have taken place since the completion of heavy construction and inspections conducted indicated that no erosion occurred along the previously eroding riverbank. For more information, visit www.watershedconservation.org or contact the WCRC at (479) 444-1916.

Attachment i. Project Maps & Restoration Examples

WHITE RIVER ASSESSMENT AND RESTORATION



A. Before Construction



B. Construction of Boulder and Wood Toe Bench



C. Toe Wood Bench Completed



D. WCRC Staff Planting Vegetation



E. Bench Construction Completed



F. One Year After Construction

Clockwise from top left: A. The 18-ft tall cut-bank at the project site was eroding at an average rate of 8 ft/yr generating an estimated 4,800 ton/yr of sediment. B. The river bank was stabilized using a combination of boulders, trees, and gravel to construct a toe wood bench that slows water near the bank and improves aquatic habitat. C. Approximately 1,200 feet of toe wood was installed along the bank. D. WCRC staff planted over 5,500 native trees, shrubs, and grasses along the stabilized bank and in the adjacent riparian area. E. Two bench levels, the inner berm and bankfull, were designed to protect the river bank at a variety of flow rates. F. The completed stabilization project with increasing vegetation density in September 2017.

The [Watershed Conservation Resource Center \(WCRC\)](#) is a nonprofit organization whose mission is to protect, restore and conserve natural resources using a watershed approach. The [WCRC](#) would like to thank their project partners, [City of Fayetteville](#), [Arkansas Natural Resources Commission](#), [Arkansas Department of Environmental Quality](#), [U.S. EPA Region 6](#), [Beaver Water District](#), and [Beaver Watershed Alliance](#) for their contributions.

Attachment ii. Staff Resumes

Peter Nierengarten, PE, LEED AP

7 E. Trenton Blvd. • Fayetteville, AR 72701
503-367-4444 (cell) • 479-575-8272 (work)

EDUCATION

University of Arkansas - College of Engineering, Fayetteville, AR

- Masters of Science (M.S.), Civil Engineering (June 2001, GPA 3.83)
- Bachelors of Science (B.S.), Civil Engineering (Dec. 1999, GPA 3.78)

WORK EXPERIENCE

City of Fayetteville – Environmental Director, Fayetteville, AR, (July 2012 - Present)

- Supervised work of Sustainability Department, and Parking Division Staff (12 employees) from 2014 – present
- Supervised Fayetteville Recycling & Trash Division Staff (63 employees) from 2018 – present
- Supervise, interview, hire, fire and provide performance reviews for 3 direct report staff
- Leading development of 10MW Solar Array Development at Fayetteville Waste Water Plants (2018 – 2019)
- Leading development of Waste & Recycling Rate Study (2018)
- Led development and adoption of Fayetteville's first comprehensive Energy Action Plan (2018)
- Led \$1.77 M grant receipt and design of Downtown Fayetteville Cultural Arts Corridor (2017 - present)
- Led Fayetteville Downtown & Entertainment District Parking and Mobility Study (2017 – 2018)
- Led creation of City's first Bicycle Coordinator Position
- Led creation and development of Fayetteville's Energy Improvement District and implementation of Arkansas first Property Assessed Clean Energy (PACE) Program in Fayetteville
- Led development of Transportation Master Plan Request for Qualifications (RFQ) and Recycling Master Plan Request for Proposals (RFP)
- Partnered with the Engineering and Transportation Divisions to apply for and receive a total of \$965,000 in grant funding for construction of active transportation infrastructure in 2014
- Led development and adoption of Wedington Corridor Master Plan (2013)
- Led adoption of City's first comprehensive Invasive Species Ordinance (2015) & first Urban Agriculture Ordinance (2013)
- Managed Fayetteville's application to STAR Communities and award as a 3-STAR Community (2014)
- Led development and adoption of Fayetteville's Active Transportation Plan (2015) & Silver Bicycle Friendly Community Designation (2016)

Portland Water Bureau – Engineer, Portland, OR, (August 2003 – July 2012)

I worked in several positions within the Portland Water Bureau - Engineering Services Group:

Portland Water Bureau Energy Manager

- Planned and coordinated monthly meetings of Water Bureau Energy Management Committee
- Managed and coordinated multiple energy efficiency (electricity and natural gas) projects including: Pump optimization, pump/motor replacement and rehabilitation, HVAC commissioning, occupancy sensor installation, weatherization and water heater replacement
- Managed design and installation of 267 kW ground mounted solar array
- Developed project Basis-of-Design Planning Report for 30 kW micro-turbine generator installation
- Annual reporting of Water Bureau energy consumption and operational efficiency for Sustainability Plan metrics
- Prepared Operations Guidance Manual for most efficient operation of water booster pump stations
- Presented Water Bureau Pump Station Optimization at 2011 Pacific NW Sec AWWA Conference and 2012 AWWA Sustainable Water Management Conference
- Served as sustainability advocate and provided LEED and energy efficiency review for two new Water Bureau LEED Gold Buildings

Portland Water Bureau Project Management & Asset Management Group

- Managed all aspects of the final design and construction phase for Stephenson Pump Station Replacement, including: \$830k construction contract, submittal review, RFI's, change orders, payments, construction meetings, inspections, coordination of PWB Construction Crew Tie-ins, start up and training, preparation of as-built plans, preparation of O & M manuals, and warranty repairs

Attachment ii.

Staff Resumes

- Managed all aspects of the design of 6,500 LF of 36" Transmission Main through downtown Portland, including: \$250k consultant design contract, alignment selection, development of design details and acquisition of permits
- Performed Triple Bottom Line Business Case analysis on multiple proposed water system improvements, equipment purchases and business practices
- Managed \$225k on-call consultant contracts for specialized condition assessment and leak detection for 21 miles of large diameter transmission mains
- Managed inspection and condition assessment of pump stations and transmission main valves
- Co-Author of Pump Station Asset Management Planning Report
- Developed and managed business risk exposure metrics for Capital Improvement Project review
- Taught Principals of Asset Management Class as part of Water Bureau and city-wide training
- Managed and supervised work of multiple Engineering Interns

Portland Water Bureau Maintenance Engineering Group

- Managed design and construction of multiple pressure reducing valve installations, large meter replacements, large valve replacements and vault modifications
- Designed and coordinated multiple emergency repairs and system relocations
- Designed water system modifications to mitigate multiple pressure surge problems
- Provided engineering field support for multiple CIP water main relocations and tie-ins
- Supervised Water Bureau Construction Crews
- Interviewed, hired and managed work of Engineering Technicians
- Provide technical analysis and recommendations for damage claims against the Water Bureau
- Led bio-diesel vehicle purchase for Maintenance Engineering Group
- Designed, constructed and coordinated installation of portable water dispensing station with the goal of reducing bottled water consumption at community events

Portland Water Bureau Bicycle Committee

- Promoted Annual Bicycle Commute Challenge
- Coordinated installation of bicycle parking Water Bureau facilities
- Taught Bicycle Commuter – Safety & Maintenance Clinic
- Procured Water Bureau fleet bicycle, helmet, maps, repair supplies and pannier bags for employee use
- Served on city-wide bicycle committee

USI Consulting Engineers – Project Engineer, Springdale, AR, (Oct. 2001 – July 2003)

- Managed work of junior engineers, engineering interns and survey crew
- Part of design team for 42" water transmission main design for Central Arkansas Water
- Designed and managed construction of small waterline and sanitary sewer project in Fayetteville, AR
- Managed stormwater master planning and design for Cities of Fayetteville, AR and Springdale, AR

ACTIVITIES

- Southeast Sustainability Directors Network (SSDN) Steering Committee Member (2012 – 2017), Co-Chair (2015-16)
- Urban Sustainability Director Network (USDN) Steering Committee Member (2015 – Present)
- US Green Building Council – Arkansas Board Member (2017 – Present)
- Alternate to Mayor on Boston Mountain Solid Waste District Board (2018 -Present)
- Alternate to Chief of Staff on Ozark Regional Transit Board (2014 – Present)
- Member of American Water Works Association (2006-2012)
- Friends of Trees (Portland, OR) Volunteer Crew Leader (2007-12)
- Sunnyside Neighborhood Association Board Member and Treasurer (2004-06)
- Member of Friends of Lake Fayetteville Watershed Protection Group (2002-03)

COMPUTER SKILLS

- Advanced User of GIS, MS Office Products and AutoCAD

REFERENCES AVAILABLE UPON REQUEST

Attachment ii. Staff Resumes

Resume: Sandi J. Formica

Ms. Formica is the co-founder and executive director of the Watershed Conservation Resource Center. She has a proven administrative ability in the development, implementation and management of environmental programs; supervision and evaluation of professional staff, grant development, writing and budgeting; and establishment of working relationships with a variety of government agencies, industries and the public. Demonstrated technical expertise of the watershed management approach; sediment and nutrient watershed assessment; nonpoint and point source pollution; development, execution and management of special environmental projects; data evaluation and interpretation; animal-waste management system design and BMPs; identification of effective best management practices; water quality monitoring; pollution prevention; and environmental chemical processes. Regional expert in stream restoration and assessment; environmental model development and assessment; TMDL development and implementation; chemical analysis; environmental regulations; NPDES and state permitting; and technical report writing. Ms. Formica has special skills of effectively communicating scientific/engineering data and natural environmental processes to non-technical people and coordinating stakeholders to resolve environmental issues. She has created the Mid-South Watershed Training Program, which has been providing training courses instrumental to watershed management to environmental professional throughout the country since 2005. Instrumental in implementing the watershed approach in Arkansas by working directly with local communities and natural resource agencies. Principal Investigator on several applied research projects including watershed assessments which include data inventories, pollutant load estimates, source identification and prioritization, development of potential solutions, and watershed monitoring; evaluation of waste management systems and BMP implementation in protecting water, soil, and air quality; and development of local, volunteer-based programs which share resources to provide improved manure handling and utilization to minimize impact to environment and costs to farmers.

DETAILED EXPERIENCE

Executive Director (December 2004 to Present), Watershed Conservation Resource Center (WCRC), Little Rock, AR. Oversee and manages newly formed environmental non-profit organization. Responsible for project design; grant writing; developing budgets; providing technical assistance; and carrying-out watershed based projects. Current projects include a regional watershed education program for environmental professionals; unpaved road survey and sediment evaluation; stream bank erosion evaluation and prioritization; stream restoration design and implementation; and watershed sediment source and load estimate evaluation.

Watershed Conservation Resource Center

Executive Director

Years of Experience

Thirty-Eight

Education

M.S., 1984, Chemical Engineering.
University of Arkansas, Fayetteville, AR.

B.S., 1982, with Honors. Chemical
Engineering, University of Arkansas,
Fayetteville, AR

Special Recognition

Partnership for Environmental Excellence
Award EPA Region VI (Project Manager &
Co-Principle Investigator for 319 Projects
conducted in Buffalo River watershed)

Recipient of the 2010 Ginger Tatom Award for
conservation achievement presented by the
Arkansas Watershed Advisory Group

Synergistic Activities

2000 – 2004; chair, Arkansas Watershed
Advisory Group (AWAG): Initiated and help
developed this multi-agency & organization
working group that assists watershed
partnerships in Arkansas

2002 and 2004; co-chair and chair, AWAG
Watershed Conference: Developed,
organized, and carried-out two state
watershed conferences which focused on
environmental training and education

October 2004; Arkansas Geomorphology
Assessment Group: Initiated the forming of
this group of professionals to encourage
collaboration on assessment techniques and
projects in Arkansas

1992 – 2009; instructor, presenter, &
coordinator, Environmental Outreach:
Throughout Arkansas, has developed
presentations and training materials along with
coordinating meetings & training on watershed
management, BMPs, and assessment

Employment History

Watershed Conservation Resource Center,
December 2004 to present. Arkansas

Department of Environmental Quality, 1992 to
2004 FTN Associates, LTD., 1989 to 1992

Aluminum Company of America, 1989

St. Catherine's Indian School, 1986 to 1988

Badische Corporation, 1984 to 1985

University of Arkansas, Chemical Engineering
Department, 1981 to 1984

Attachment ii. Staff Resumes

Resume: Sandi J. Formica

Environmental Preservation Division Chief (May 2001 to December 2004), Arkansas Department of Environmental Quality, Little Rock, AR. Managed non-regulatory, technically-based Division of 11 employees with an annual budget of \$1 million. The Division consisted of three sections, Environmental Projects, Environmental Outreach, and Program Development. Programs and projects from these sections include applied research on effectiveness of best management practices at confined animal operations; watershed assessments which include evaluations of stream stability; development and implementation of watershed approach which includes providing both planning and technical assistance to watershed groups; providing water quality training to both high school teachers and students statewide; and the development of an agency pollution prevention program. All programs and projects emphasize implementation, education, and awareness. Over 9000 public contacts were made in 2002 from Division technical transfer workshops, information meetings, presentations, poster sessions, organizational meetings, and public outreach events.

Program Support Manager (January 1999 to April 2001), Arkansas Department of Environmental Quality, Little Rock, AR, Section Manager, Watershed and Technical Support Section (WTSS), Environmental Preservation Division. Responsible for the development, management, and administration of the WTSS program to 1) provided technical expertise and planning through proactive environmental projects that investigate both the environmental and economic benefits of potential solutions and 2) developed and implement state watershed strategies which focus on voluntary participation, local stakeholder involvement, and identifying viable solutions. Coordinated, supervised and evaluated the WTSS professional staff of five engineers and scientists. Secured funding for special projects including approximately two million dollars of environmental grant to improve and protect the state's natural resources.

Arkansas Department of Pollution Control & Ecology, Little Rock, AR.

- **Engineer II and Project Manager (Nov 1994-Dec 1998), Environmental Preservation Division**
- **Inspection Engineer II (Feb 1992-Sep 1994), Water Division**

Chemical Engineer (July 1989 to February 1992), FTN Associates, LTD., Little Rock, AR.

Chemical Engineer (January 1989 to June 1989), Aluminum Company of America, Bauxite, AR.

Secondary Mathematics and Science Teacher (August 1986 to May 1988), St. Catherine's Indian School, Santa Fe, NM.

Chemical Engineer (May 1984 to August 1985), Badische Corporation, Freeport, TX

Research and Departmental Assistant (August 1981 to April 1984), Chemical Engineering Department, University of Arkansas, Fayetteville, AR.

Select Publications:

S.J. Formica, M.A. Van Eps, M.A. Nelson, A.S. Cotter, T.L. Morris, J.M. Beck. "WFWR watershed - Sediment Source Inventory and Evaluation." Proceedings-ASAE Conference "Self-Sustaining Solutions for Streams, Wetlands, and Watersheds," held September 12-15, 2004, St. Paul, MN.

M.A. Van Eps, S.J. Formica, T.L. Morris, J.M. Beck, A.S. Cotter. "Using a Bank Erosion Hazard Index (BEHI) to Estimate Annual Sediment Loads from Streambank Erosion in the West Fork White River Watershed." Proceedings from ASAE Conference "Self-Sustaining Solutions for Streams, Wetlands, and Watersheds," held September 12-15, 2004, St. Paul, MN.

Brye, K.R., T.L. Morris, D.M. Miller, S.J. Formica, M.A. Van Eps. 2004. "Estimating Bulk Density in Vertically Exposed Stoney Alluvium Using a Modified Excavation Method." *Journal of Environmental Quality*.

Formica, S.J.; Giese, J.; Kresse, T.M.; Morris, T.; and Van Eps, M.A. 2001. "Using Data, Communication, and Education to Improve Swine Waste Management in the Buffalo River Watershed." Published in the proceedings-2nd National Conference, Nonpoint Source Pollution Information & Education Programs May 15-17 Chicago, IL.

Formica, S.J.; Anderson, W.M.; Van Eps, M.A.; Morris, T.; and Srivastava, Puneet. 2001. A Community Approach to Handling and Utilizing Dairy Manure in the Buffalo River Watershed." Proceeding of the Natural Resource, Agriculture, and Engineering Service, "Dairy Manure Systems: Equipment and Technology," Mar 20-22, Rochester, NY.

Formica, S.J.; Giese, J.; Kresse, T.M.; Morris, T.; Van Eps, M.A.; and Anderson, W.M. 2001. "Buffalo National River Watershed: Partnerships to Improve Swine Waste Management." EPA Section 319 Success Stories, Vol. 3.

Srivastava, Puneet; Formica, S.J.; and Van Eps, M.A. 2001. "A Watershed Approach to Assess the West Fork of the White River." Abstract published in the proceedings of Arkansas Water Resource Center, TMDL and Related Water Quality Issues Conference" held April 3-4, Fayetteville, AR.

Pote, D.H.; Reed, B.A.; Daniel, T.C.; Nichols, D.J.; Moore, P.A., Jr.; Edwards, D.R.; and Formica, S.J. 2001. "Water-Quality Effects of Infiltration Rate and Manure Application Rate for Soils Receiving Swine Manure." *Journal of Soil and Water Conservation*, Vol. 56, No.1.

Van Eps, M.A.; Formica, S.J.; Kresse, T.M.; Czamomski, A.; Morris, T.; Van Schaik, E.; Giese, J. 1998. "Survey of Arkansas Swine Liquid Waste Systems." Proceedings from "International Conference on Agricultural Engineering" held in Oslo, Norway. Paper No. 98-E-017

Formica, S.J.; J.A. Baron; L.T. Thibodeaux and L.T. Valsaraj. 1988. PCB Transport into Lake Sediments; Conceptual Model and Laboratory Simulation. *Env. Science and Tech.*, Vol. 22, No. 12, p. 1435.

Attachment ii. Staff Resumes

Resume: Matthew A. Van Eps, PE

Matthew Van Eps, PE, is the associate director and co-founder of the Watershed Conservation Resource Center. Mr. Van Eps has a diverse and unique work experience history that has facilitated the development of specialized watershed assessment, conservation and restoration skills. He is the project engineer for several stream restoration designs and implementation projects in Arkansas. His background has served to develop his understanding of the physical, chemical, biological, and anthropogenic processes affecting watershed resources. He has been a project engineer on numerous watershed assessment projects in both rural and urban settings. He was also the project engineer for several projects that evaluated the implementation of BMPs to reduce the impact of confined animal operation on water quality in Arkansas. Mr. Van Eps has a broad background in watershed management and has expertise in many aspects of the field including assessment, regulatory issues, stream stability analysis, stream restoration design practices, integration of stakeholder involvement, nutrient management, non-point source pollution; and BMP identification and implementation.

Associate Director (December 2004 to Present), Watershed Conservation Resource Center (WCRC), Little Rock, AR.

Provides technical, engineering, and project design expertise for recognized environmental nonprofit organization. Stream restoration design development and implementation project engineer. Responsible for all GIS applications; restoration design; and field data collection. Assists with budgeting; grant development; and project development.

Engineer PE, Environmental Projects Section Manager, AR Dept. of Environmental Quality September 1997- December 2004. West Fork White River Watershed Assessment.

Project engineer for a watershed assessment of the West Fork White River in Northwest Arkansas. Surveyed the West Fork White River (WFWR) and tributaries evaluating the erosion potential of stream banks using a Bank Erosion Hazard Index. Developed and implemented a progressive and efficient data collection and presentation process utilizing a GIS interface and hand-held computing technology. Selected suitable locations for the installation of permanent cross-section locations to assist in evaluating stream stability of the WFWR. Performed computations and analysis of geomorphology data collected for the WFWR assessment. Collected data to develop a bank erosion sediment delivery model. Reviewed Quality Assurance Project Plans (QAPP) to be submitted to the EPA addressing stormwater and biological sampling methods in the watershed.

Urban Watershed Assessment.

Principal investigator for assessing the condition of the Rock Creek watershed in Little Rock, Arkansas. Developed project proposal, work

Watershed Conservation Resource Center Associate Director

PE License #: 10661

Years of Experience

Twenty-Five

Education

University of Arkansas- Fayetteville, Arkansas
Master of Engineering Degree in Environmental Engineering, December 1996

Virginia Polytechnic Institute and State University - Blacksburg, Virginia
Bachelor of Science Degree in Chemical Engineering, May 1993

Professional Training

Dr. Rosgen's Wildland Hydrology Courses:
-Applied Fluvial Geomorphology
-River Morphology & Applications
-River Assessment & Monitoring
-River Restoration & Natural Channel Design

Special Recognition

Partnership for Environmental Excellence Award
EPA Region VI

Employment History

Watershed Conservation Resource Center 2004
- present
Arkansas Department of Environmental Quality
1997 - 2004
Challenge Environmental Laboratories 1997
University of Arkansas Civil Engineering
Department 1994 to 1996

Synergistic Activities

Member of Green Infrastructure Environmental Subcommittee for Fayetteville Green Infrastructure Project 2009

Guest Lecturer for Ecological Engineering course at the University of Arkansas 2009

Guest Lecturer for Environmental Soil and Water Science course at the University of Arkansas 2009

Presented Stream Morphology concepts to attendees of the Region 6 MS4 annual meeting in 2007

Selected Publications:

M.A. Van Eps, S.J. Formica, T.L. Morris, J.M. Beck, A.S. Cotter. "Using a Bank Erosion Hazard Index (BEHI) to Estimate Annual Sediment Loads from Streambank Erosion in the West Fork White River Watershed." Proceedings from ASAE Conference "Self-Sustaining Solutions for Streams, Wetlands, and Watersheds," held September 12-15, 2004, St. Paul, MN.

Attachment ii. Staff Resumes

Resume: Matthew A. Van Eps, PE

plan, budget, and EPA approved QAPP documentation for urban watershed assessment. Supervised and coordinated the collection and analysis of data including: land use, impervious surface analysis, and delineation of watershed and sub-watershed boundaries utilizing GIS; utilization of visual watershed assessment methods and handheld PC GIS interface for rapid assessment and prioritization; evaluation of historical flow data to determine changes in local hydrology; development of a flow weighted storm water quality sampling program; and collected and evaluated fluvial geomorphology data to determine stream stability and restoration potential.

Fluvial Geomorphology Data Collection and Evaluation.

Collected and analyzed fluvial geomorphology data to establish relationships between watershed area and stream channel geometry for the Boston Mountain physiographic region. Obtained and evaluated historical USGS gage station records to determine flood return frequency as well as gage height and channel geometry relationships. Collected stream bank erosion data to develop relationship between stream bank erosion variables and erosion rates. Performed a bank erosion survey for the City of Rogers, Arkansas for 15 miles of Osage Creek and headwater tributaries. Provided comment, critical review and technical assistance on proposed stream bank stabilization projects to increase success and reduce costs.

Received over 200 hours of fluvial geomorphology training from Dave Rosgen, P.H., Ph.D. Assisted Dr. Rosgen during training courses conducted in Northwest Arkansas, including selection of sites for students to observe geomorphologic process and providing assistance to students performing assessments in the field. Provided field based instruction of basic fluvial geomorphology concepts to attendees of the 1st Arkansas Watershed Advisory Group Conference in October 2002. He is an instructor for the Basic Field Techniques to Determine Stream Morphology training course presented by the WCRC Mid-South Watershed Training Program.

Watershed Conservation Resource Center Associate Director

Selected Publications:

S.J. Formica, M.A. Van Eps, M.A. Nelson, A.S. Cotter, T.L. Morris, J.M. Beck. "West Fork White River Watershed - Sediment Source Inventory and Evaluation." Proceedings from ASAE Conference "Self-Sustaining Solutions for Streams, Wetlands, and Watersheds," held September 12-15, 2004, St. Paul, MN.

Brye, K.R., T.L. Morris, D.M. Miller, S.J. Formica, M.A. Van Eps. 2004. "Estimating Bulk Density in Vertically Exposed Stony Alluvium Using a Modified Excavation Method." *Journal of Environmental Quality*. In Press.

Formica, S.J.; Giese, J.; Kresse, T.M.; Morris, T.; and Van Eps, M.A. 2001. "Using Data, Communication, and Education to Improve Swine Waste Management in the Buffalo River Watershed." Published in the proceedings of the 2nd National Conference, "Nonpoint Source Pollution Information & Education Programs," held May 15-17, Chicago, IL.

Formica, S.J.; Anderson, W.M.; Van Eps, M.A.; Morris, T.; and Srivastava, Puneet. 2001. "A Community Approach to Handling and Utilizing Dairy Manure in the Buffalo River Watershed." Published in the proceedings of the Natural Resource, Agriculture, and Engineering Service, "Dairy Manure Systems: Equipment and Technology," held March 20-22, Rochester, NY.

Formica, S.J.; Giese, J.; Kresse, T.M.; Morris, T.; Van Eps, M.A.; and Anderson, W.M. 2001. "Buffalo National River Watershed: Partnerships to Improve Swine Waste Management." To be published in U.S. EPA Section 319 Success Stories, Volume 3.

Srivastava, Puneet; Formica, S.J.; and Van Eps, M.A. 2001. "A Watershed Approach to Assess the West Fork of the White River." Published in the proceedings of the Arkansas Water Resource Center, "TMDL and Related Water Quality Issues Conference" held April 3-4, Fayetteville, AR.

Attachment iii. Letters of Commitment



U.S. Environmental Protection Agency Region 6
May 15, 2019

Subject: Letter of support for Tanglewood Branch Restoration grant application

To Whom It May Concern:

The Beaver Watershed Alliance (Alliance) is a 501(c)3 non-profit organization whose primary purpose is to foster communication among diverse stakeholders and restore water quality of impaired stream and lake areas in the Beaver Lake Watershed, with the objective of maintaining a long-term, high-quality drinking water supply to meet current and future needs in Northwest Arkansas. Tanglewood Branch, a spring-fed stream located in the Boston Mountains Ecoregion of the Arkansas Ozarks, is a tributary to the West Fork of the White River, a 303(d) listed stream segment. Tanglewood Branch, in the City of Fayetteville (City), has experienced severe stream bank erosion and habitat loss and is among the most urbanized drainage basins in the Beaver Lake Watershed. The Alliance has been involved in the efforts of the City to establish an ecological corridor for this headwater stream. To this end, the Alliance is strongly in support of, and wishes to join in partnership with the Watershed Conservation Resources Center (WCRC) in the restoration of the riparian zone, stream channel and other natural features Tanglewood Branch.

The WCRC is developing an EPA grant proposal to restore 1,500 feet of stream channel, 3,000 feet of riparian zone and two spring-fed wetlands type features to reestablish local ecosystem services in this highly urbanized area. The Alliance will participate in this proposed project by conducting hands-on workshops at the site to train participants in 1) safe removal techniques for invasive exotic plants along streams and 2) the identification, selection and establishment of native species in riparian and wetland areas of Tanglewood Branch. The goals of these workshops and the activity they generate is to protect water quality and restore wildlife habitat in Tanglewood Branch and downstream. Additionally, we will monitor invasive and native species of plants in the Tanglewood Branch for the Arkansas Natural Heritage Commission plant tracking program and assist the project with outreach and other activities. We place a value of these in-kind services at \$35,000.

We look forward to working closely with the City and the WCRC on the restoration of Tanglewood Branch and furthering the protection of the West Fork of the White River and Beaver Lake. If you have questions about this letter of support, or need additional information, please do not hesitate to contact me.

Sincerely,


Clell J. Ford

Executive Director, Beaver Watershed Alliance

Cc: Peter Nierengarten, Sustainability Directory, City of Fayetteville,
Sandi Formica, Executive Director, Watershed Conservation Resource Center

To proactively protect, enhance and sustain water quality in Beaver Lake and the integrity of its watershed.
Beaver Watershed Alliance | 614 E. Emma Ave. Suite M438, Springdale, AR 72764 | 479.750.8007

Attachment iii. Letters of Commitment

P.O. Box 400 Lowell, AR 72745 Ph 479.756.3651 Fx 479.751.4356



May 15, 2019

To EPA Region 6:

Beaver Water District is the largest water utility in the Northwest Arkansas Metropolitan Area, serving potable water to more than 320,000 persons in the cities of Bentonville, Rogers, Springdale and Fayetteville. On average, we produce roughly 56 million gallons of clean, safe drinking water each day. The quality of that drinking water and our ability to provide it at an economical rate are highly dependent upon the source of the water, Beaver Lake. So much of what we do depends on Beaver Lake, which is why we have chosen to invest heavily in stream and riparian restoration programs to maintain its water quality.

The District wholeheartedly supports The City of Fayetteville and the Watershed Conservation Resource Center (WCRC) in their grant proposal 'Restoring the Riparian, Channel, and other Natural Features of Tanglewood Branch in Fayetteville, AR.' Tanglewood Branch resides in the West Fork watershed in the White River system, an impaired watershed that has been identified as a priority for restoration based on watershed planning. This restoration will reduce sediment and nutrient loading to the lake and ensure this section of Tanglewood Branch is healthy for the foreseeable future.

Of interest to the district is the need for high quality restoration in these water systems. The WCRC is unique in their approach to stream and riparian restoration due to their focus on improving water quality and aquatic habitats and their long-term success rate for similar projects. Their work is always of the utmost quality that can stand the extreme hydrologic variability observed in our region. We need organizations such as the WCRC to demonstrate the most effective techniques and participate in knowledge transfer so that other entities begin to adopt them. The hands-on workshops proposed will be pivotal in accomplishing this goal.

BWD will be participating in the project by providing in-kind match to support streambank and biological monitoring of the project area totaling \$29,479. If you have any questions, please feel free to contact me at 479-756-3651.

Sincerely

A handwritten signature in blue ink, appearing to read 'James McCarty', is written over a blue circular stamp.

James McCarty
Environmental Quality Manager
Beaver Water District

CC: Lane Crider, CEO
Bill HagenBurger, COO
Amy Wilson, Manager of Public Affairs

Attachment iii. Letters of Commitment



THE DEPARTMENT OF ARKANSAS
HERITAGE

May 17, 2019

Asa Hutchinson
Governor

Stacy Hurst
Director

Arkansas Arts Council

Arkansas Historic
Preservation Program

Arkansas Natural
Heritage Commission

Arkansas State Archives

Delta Cultural Center

Historic Arkansas Museum

Mosaic Templars Cultural Center

Old State House Museum

To Environmental Protection Agency, Region 6:

The Arkansas Natural Heritage Commission (ANHC) fully supports the City of Fayetteville and the Watershed Conservation Resource Center (WCRC)'s grant proposal 'Restoring the Riparian, Channel, and other Natural Features of Tanglewood Branch in Fayetteville, AR.' Their holistic approach to stream and natural features restoration in which natural channel design techniques are integrated with long-term native vegetation establishment is important to demonstrate and promote high-quality restoration of natural resources. The workshops that are proposed in this grant are needed to train other environmental professionals on this restoration approach. This project also supports our efforts to promote restoration in urban environments that create corridors of habitat for wildlife within urban areas.

The ANHC will also provide technical expertise to help develop the vegetation monitoring, plant species identification, native plant selection, and sourcing of native plants for restoration. Contribution of our staff's time on this project will amount to \$400.00 in-kind matching funds. The WCRC has provided their data to ANHC from previous work on native plants and identification of natural features, and we will include any rare species data collected through this project in our statewide database for tracking species of conservation concern. Such data from past WCRC projects have been incorporated into our database, and the natural features data have been used to identify new sites for aquatic species of conservation concern, such as the Arkansas Darter (*Etheostoma cragini*) and Least Darter (*E. microperca*). We look forward to acquiring new data from the proposed project.

The activities proposed by the City and the WCRC as part of the proposed project complement our agency's conservation work and will help to improve and protect natural resources and water quality in the Beaver Lake watershed. Thank you for your consideration of this significant restoration project.



1100 North Street
Little Rock, AR 72201

(501) 324-9619
fax: (501) 324-9618

info@naturalheritage.com
www.naturalheritage.com

An Equal Opportunity Employer

Sincerely,

Bill Holimon
Director
Bill.Holimon@arkansas.gov
501.324.9761

Attachment iii. Letters of Commitment



May 17, 2019

To EPA Region 6:

The Board of Directors of the Illinois River Watershed Partnership (IRWP) fully supports the City of Fayetteville and Watershed Conservation Resource Center's (WCRC) grant proposal for a streambank restoration project on Tanglewood Branch of the White River Watershed.

IRWP's mission is to improve the integrity of the Illinois River Watershed through education and outreach, water quality monitoring, and the implementation of conservation and restoration projects. We seek to identify and implement environmentally viable and economically feasible conservation and restoration projects in the watershed; to cooperate with the scientific community to identify water quality impacts, causes, and sources; and to increase public awareness of the Illinois River and natural resources across the Northwest Arkansas region.

Tanglewood Branch is located within the White River Watershed, which is adjacent to the Clear Creek tributary of the Illinois River Watershed. This project will be of benefit to the entire area through removal of invasive species and re-establishment of native riparian and wetland species. This particular stream reach has been problematic due to extensive establishment of bush honeysuckle and Chinese privet. Additionally, this project will offer an additional demonstration site for field tours and workshops. WCRC and IRWP previously partnered on several such educational events targeting landowners, the general public, and built-environment professionals and found there is significant interest in natural channel design and ecological restoration methods.

We are excited to participate in the continued efforts of the City of Fayetteville and WCRC to implement an urban stream and wetland restoration project using natural channel design. We are proud of this region and so grateful for the natural beauty and quality of life that we enjoy.

Thank you for your consideration and support of this significant stream and ecological restoration project.

Sincerely,

A handwritten signature in blue ink, appearing to read "Nicole H".

Nicole Hardiman, Ph.D.
Executive Director
Illinois River Watershed Partnership
Post Office Box 205
Cave Springs, AR 72718
Email: director@irwp.org

Attachment iii. Letters of Commitment



Promoting the conservation of natural areas in the greater Fayetteville area to balance the needs of people and wildlife for generations to come

May 15, 2019

RE: Restoring the Riparian, Channel, and other Natural Features of Tanglewood Branch in Fayetteville, AR

To: Peter Nierengarten, Sustainability Director
City of Fayetteville

Dear Peter:

The Fayetteville Natural Heritage Association (FNHA) is a 501(c)3 non-profit organization whose mission is to promote the conservation of natural areas in the greater Fayetteville area to balance the needs of people and wildlife for generations to come. We value the partnership formed with the City of Fayetteville; one that has helped preserve our natural heritage for over 16 years. Tanglewood Branch, in the City of Fayetteville (City), has experienced severe stream bank erosion and habitat loss and is among the most urbanized drainage basins in the watershed area. As Fayetteville grows and becomes more urbanized, our natural areas are becoming more important for the protection of water resources, plant communities and wildlife.

FNHA supports the Watershed Conservation Resource Center and the City to implement natural stream restoration techniques to restore the urban channel, improve water quality, remove invasive plant species, establish native vegetation and educate the public on the benefits of such actions. FNHA supports outreach activities to Fayetteville residents and environmental professionals to promote native plant sharing and hands-on collection techniques to increase native vegetation and wildlife habitat throughout the City. FNHA would promote these efforts on social media, emails, and through other promotion media.

We encourage this proposal to be funded to advance overlapping missions and to further partnerships to restore and protect our community's natural resources.

Respectfully,

Jennifer Ogle, President
Dot Neely, Vice President
Bob Caulk, Treasurer
Craig Edmonston, Secretary
Tom Dureka, Governing Board Member
Pete Heinzelmann, Governing Board Member
Terri Lane, Governing Board Member
Becky Roark, Governing Board Member
Dana Smith, Governing Board Member
Barbara Taylor, Governing Board Member

*P.O. Box 3635 Fayetteville, Arkansas 72702
fayettevillenatural.org*

Attachment 2 Scope of Work

Stream Restoration Survey and Design, Invasive Species Removal Planning, Construction Procurement Assistance, Construction Oversight, and Project Management:

Tanglewood Branch Fayetteville, Arkansas

By Watershed Conservation Resource Center

May 12, 2020

Specific project tasks associated with the proposed work are described below and are congruent with the tasks that were developed in the approved EPA workplan. A budget for the work presented by task and to be billed based on task completion percentage can be found on the final page of this scope.

Task 1: Development of Quality Assurance Project Plan (QAPP). The WCRC will develop a draft QAPP. The QAPP will be submitted to the EPA for review, and final edits will be made. The purpose of the QAPP is to assure quality data collection. The deliverable for successful completion of this task is an EPA approved QAPP.

Task 2: Site Monitoring and Collection of Pre and Post Restoration Data. 1) The WCRC will work with project partners to establish plant monitoring sites along the riparian and natural features areas of the Tanglewood Branch project areas. At these sites, the WCRC will collect data during two seasons (late spring and late summer) at the following milestones during the project period: a) prior to any restoration; b) following the removal of invasive plants; and c) following channel restoration activities. 2) The WCRC will establish sites for measuring bank profiles in order to estimate sediment loading from eroding streambanks within the project area. The WCRC will collect data over a one year period prior to restoration and will then collect data over a one-year period following restoration. 3) The WCRC will work with partners and professional service providers to perform biological assessment of fish and macroinvertebrate populations in Tanglewood Branch before and after restoration. The deliverables for this task include: 1) A written report summarizing the community composition and density of riparian

plant species, 2) A written summary of streambank erosion rates observed along Tanglewood Branch, and 3) A written summary of the aquatic biology before and after restoration. The WCRC will be responsible for paying for professional services associated with biological monitoring.

Task 3: Removal of Invasive Vegetation, Native Species Selection, and Establishment.

In order to improve the ecology and aesthetics of the Tanglewood Branch riparian corridor, the WCRC will develop a riparian corridor vegetation management plan. The WCRC will solicit bids or quotes for work to remove invasive species identified in the management plan under the guidance of the City. The WCRC will provide training and oversight to the vendor's work. The WCRC will identify sources of native species that are appropriate for the ecoregion and similar sites where plants can be procured. The WCRC will solicit bids for work to incorporate native plants into the riparian areas, natural features, and during construction of floodplains under guidance from the City. The WCRC will provide oversight to vendors providing services to plant native species. The WCRC will be responsible for development of construction services procurement documents in coordination with the City. The WCRC will be responsible for developing bid documents, written quotes, and vendor selection for materials and items needed for invasive species removal and native vegetation establishment. Deliverables for this work include a written summary of invasive species removal and native species planting.

Task 4: Develop Restoration Design. The WCRC will provide professional services associated with the development of a stream restoration plan that includes construction drawings. Specifically the WCRC will: 1) Collect survey data. 2) Develop a final restoration plan that includes the channel, riparian, natural features, and vegetation establishment. 3) Develop construction drawings. 4) Obtain Corps 404 permit, ADEQ authorization, and a local flood plain permit. Deliverables for this work will include a stream restoration plan, construction drawings, approved 404 permit application, and an ADEQ Short-term Activity Authorization Permit.

Task 5: Construction of Restoration Design. The WCRC will assist the City with the procurement of construction materials to be used for the project by researching and soliciting bids for materials. The WCRC will develop a bidding document for the City to retain the services of a qualified contractor to construct the restoration project. Prior to construction, the WCRC will assist with the receiving of materials for construction and will stake the site as

needed for construction activities. The WCRC will provide construction oversight for all phases of stream restoration construction activity. The deliverable will be a report that summarizes the performance and completion of restoration activities that will be incorporated into the final report for the grant.

Task 6: Technology Transfer - Training Workshops and Outreach. The WCRC will provide services for the development and facilitation of three hands-on training workshops that will focus on invasive species vegetation removal along streams and rivers using both mechanical and chemical methods. The WCRC will also provide three hands-on training workshops on native plant selection and establishment. During the course of the grant period, the WCRC will provide three field tours to developers, city planners, local decision makers, and/or environmental professionals. The WCRC will work with project partners to develop and install interpretive signage on restoration techniques, habitat and plant species for placement near the restoration work. The WCRC will provide copies of workshop agendas, sign-in sheets, and a written summary of outreach activities for inclusion in quarterly and final reporting.

Task 7: Administrative and Reporting. The WCRC will prepare quarterly reports as well as a final report. Quarterly reports will be required for the WCRC to receive invoices prepared for the City.

Task	Task Description	Amount	% Task Completed This Quarter	% Cumulative Complete	Payment Amount Requested This Quarter	Cumulative Payments Requested to Date	Start	End	Deliverable/Product
1A	Develop Draft QAPP	\$3,500					6/1/2020	6/30/2020	Draft QAPP
1B	Finalize QAPP	\$1,500					7/1/2020	7/31/2020	Approved QAPP
2	Site Monitoring								
2.1	1) Select plant monitoring sites and collect data spring and summer								
2.1.a	a. before restoration	\$8,000					3/15/2021	9/30/2021	Map of monitoring sites, List of Plant Species
2.1.b	b. following invasive removal	\$6,000					4/1/2022	9/30/2022	List of plant species
2.1.c	c. following channel restoration	\$6,000					4/1/2020	4/30/2020	List of plant species
2.2	2) Select streambank monitoring sites and measure bank profiles								
2.2.a	a. Before channel restoration	\$6,000					4/1/2020	12/31/2020	Sediment load estimate
2.2.b	b. After channel restoration	\$4,000					7/1/2021	10/31/2022	Sediment load reduction estimate
2.3	3) Conduct biological assessment								
2.3.a	a. Before restoration	\$5,000					4/1/2020	10/31/2020	Summary of sampling results
2.3.b	b. After restoration	\$5,000					4/1/2021	10/31/2021	Summary of Sampling results
3	Native Plant Establishment								
3.1	1) Develop Site Re-vegetation Plan	\$10,000					6/1/2020	7/31/2020	Site re-vegetation plan and bid documents
3.2	2) Oversee Removal of invasive vegetation	\$10,000					8/1/2020	10/31/2020	Summary of plant removal
3.3	3) Select and source native plants	\$2,500					1/1/2020	7/31/2020	List of plant species and bid specifications
3.4	4) Oversee Planting of restoration areas	\$10,000							Written summary of planting effort
3.4.a	a. Riparian and natural features						4/1/2021	4/1/2022	Summary of establishment
3.4.b	b. Constructed flood plains						3/1/2021	4/31/2022	Summary of establishment
4	Restoration Design Development								
4.1	1) Perform geomorphology survey	\$15,000					8/1/2020	8/31/2020	Summary of data collected
4.2	2) Develop site restoration plan	\$25,000					9/1/2020	9/30/2020	Restoration layout
4.3	3) Develop construction drawings	\$25,000					10/1/2020	10/31/2020	Construction drawings
4.4	4) Obtain necessary permits	\$20,000					9/1/2020	12/31/2020	Letter of "No-Rise", 404 Permit, ADEQ STAA
5	Construct Restoration								
5.1	1) Bid work and materials	\$8,000					6/1/2020	12/31/2020	Bid Documents for Contractor. Bid Requests
5.2	2) Construction Coordination, Site Staking, and Construction Oversight	\$32,000					1/1/2021	3/31/2021	WCRC to Provide Construction Oversight
5.3	3) Oversight of site finishing work	\$10,000					4/1/2021	6/30/2021	Written Summary of Construction Efforts
6	Technology Transfer								
6.1	1) Conduct training workshops								Workshop Agendas
6.1.a	a. Invasive Removal	\$10,000					6/1/2020	6/30/2021	Summary of workshops
6.1.b	b. Native Plant Establishment	\$10,000					11/1/2020	11/30/2022	Summary of workshops
6.2	2) Conduct field tours	\$7,000					6/1/2021	11/30/2022	Summary of tours
6.3	3) Design native plant/ecoregion signage	\$5,000					6/1/2021	11/30/2022	Signage design
7	7: Reporting - Quarterly Report								
7.1	1) Quarterly Reports	\$16,500					1/30/2020	9/30/2022	Progress report
7.2	2) Final Report	\$8,500					6/1/2022	12/31/2022	Final report
	Total	\$269,500							

Attachment 2 -Tanglewood Branch Restoration Scope of Work



113 West Mountain Street
Fayetteville, AR 72701
(479) 575-8323

Ordinance: 6141

File Number: 2018-0723

WATERSHED CONSERVATION RESOURCE CENTER MOU:

AN ORDINANCE TO WAIVE THE REQUIREMENTS OF FORMAL COMPETITIVE BIDDING AND APPROVE A MEMORANDUM OF UNDERSTANDING WITH THE WATERSHED CONSERVATION RESOURCE CENTER FOR A TERM OF FIVE YEARS TO ESTABLISH A GENERAL FRAMEWORK OF COOPERATION TO SEEK FUNDING, CONDUCT STREAM RESTORATION PROJECTS AND TO WORK TOGETHER ON NONPOINT SOURCE RELATED ISSUES

WHEREAS, the Watershed Conservation Resource Center is a nonprofit organization with regional experts that strive to protect, conserve and restore natural resources by utilizing the watershed approach, environmental outreach, and providing planning and technical assistance to landowners, communities, and government; and

WHEREAS, the City has successfully partnered with the Watershed Conservation Resource Center in the past to receive approximately \$3,100,000.00 in federal grants for stream restoration and the Watershed Conservation Resource Center has been instrumental in securing these grant funds due to its relationship with federal grant agencies and a proven track record of successful stream restoration projects; and

WHEREAS, the purpose of the Memorandum of Understanding is to establish a general framework for cooperation between the Watershed Conservation Resource Center and the City to seek funding and conduct stream restoration projects to achieve the common goal of restoring unstable sections of streams to a morphologically stable form utilizing a natural channel design approach and to work together on nonpoint source related issues associated with reducing nutrients and improving riparian and other natural areas.

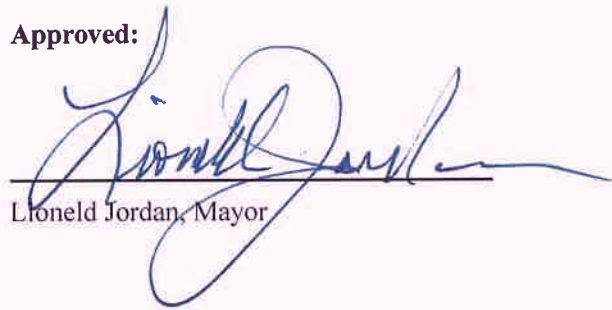
NOW, THEREFORE, BE IT ORDAINED BY THE CITY COUNCIL OF THE CITY OF

FAYETTEVILLE, ARKANSAS:

Section 1: That the City Council of the City of Fayetteville, Arkansas hereby determines an exceptional situation exists in which competitive bidding is deemed not feasible or practical and therefore waives the requirements of formal competitive bidding and approves a Memorandum of Understanding between the City of Fayetteville, Arkansas and Watershed Conservation Resource Center to establish a general framework for cooperation to seek funding and conduct stream restoration projects and to work together on nonpoint source related issues for the next five years.

PASSED and APPROVED on 1/3/2019

Approved:


Lionel Jordan, Mayor

Attest:


Sondra E. Smith, City Clerk Treasurer