Catchment-Based Landowner Restoration Planning for the Llano River Watershed, Texas

WaterSMART Cooperative Watershed Management Program Phase 1 Grant for Fiscal Year 2021

This proposal was prepared in response to the Funding Opportunity Announcement **No. BOR-DO-21-F003**

Submitted by: *Llano River Watershed Alliance*
PO Box 725, Junction, Texas 76849

Project Manager : *Tyson Broad*

Email : *tysonbroad@gmail.com*
Phone : *(325) 248-3137*

Date : *January 19, 2021*

Table of Contents

TECHNICAL PROPOSAL AND EVALUATION CRITERIA 1
Executive Summary 1
Project Location 2
Technical Project Description 2
Evaluation Criteria. 6

PROJECT BUDGET 26
Budget Proposal 26
Budget Narrative 27

ENVIRONMENTAL AND CULTURAL RESOURCES COMPLIANCE. 28

REQUIRED PERMITS OR APPROVALS 30

APPENDIX 31

Technical Proposal and Evaluation Criteria

1) EXECUTIVE SUMMARY

Date: January 19, 2021
Applicant: Llano River Watershed Alliance
Project Location : Edwards, Sutton, Kimble, Mason and Llano County, Texas

Effective implementation of watershed management plans is challenging in West-Central Texas given the vast expanse of individual watersheds, the paucity of population, and the large percentage of private land ownership. A new paradigm for developing watershed management plans is proposed to facilitate collaboration between landowners and stakeholders at the local catchment level (HUC-14) to increase resiliencies to amplified droughts and floods resulting from climate change and affect positive changes to water supply, water quality, aquatic habitat, and recreation in the Llano River Watershed. The Llano River Watershed Alliance is a diverse landowner and stakeholder group working to conserve the watershed through education, collaboration and community participation. With input from local resource agencies such as Natural Resources Conservation Service and conservation organizations such as Texas Wildlife Association, the Alliance seeks to develop an online GIS database that allows users to identify natural resource issues impacting their selected catchment, and bring affected landowners and stakeholders together to identify, implement, and fund appropriate best management practices to address these resource issues. Compared to traditional, more complex watershed plans that rely on a selected entity working with stakeholders piecemeal across a large area to achieve implementation, this catchment-level approach to watershed plan facilitates local initiative, collaboration, and dialogue to address resource issues at a scale perceptible to the stakeholder concerned about a particular catchment. Such an approach increases the likelihood for the implementation and maintenance of restoration efforts that improve the health of the catchment, incrementally improving the health of the entire watershed.

Phase One of the project will begin in September of 2021 and is estimated to be completed in September of 2023. The project does not involve Federal land.

2) PROJECT LOCATION

The Llano River Watershed is located in West-Central Texas, approximately 100 miles northwest of Kerrville and San Antonio. The watershed primarily covers portions of Sutton, Edwards, Kimble, Mason, and Llano counties, and small portions of Menard, Real, Kerr, Gillespie and San Saba counties. (Figure 1). The North Llano watershed is USGS HUC 12090202, the South Llano is 12090203, and the Llano is 12090204.

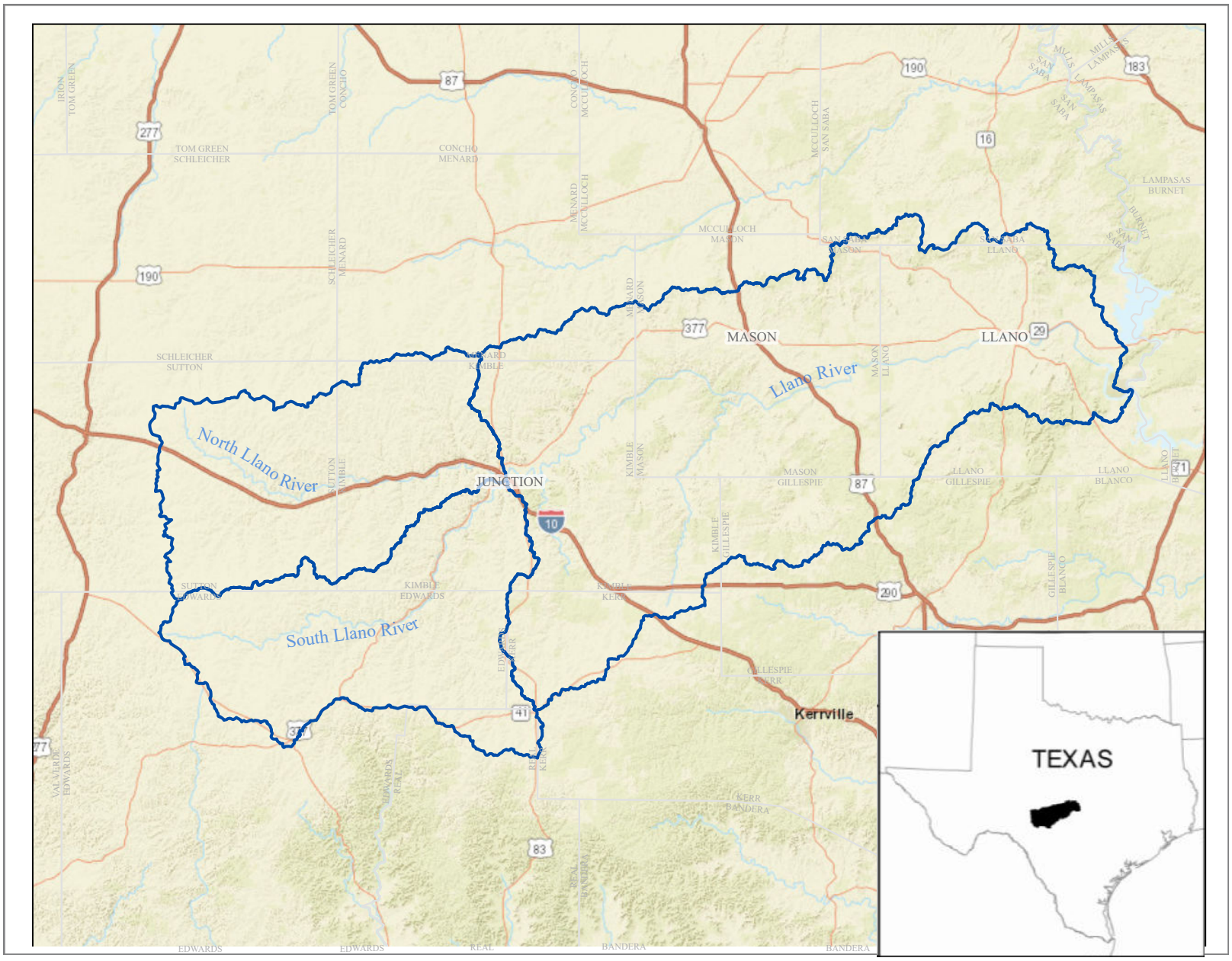

Figure 1. Location of Llano River Watershed, Texas

3) TECHNICAL PROJECT DESCRIPTION

The Llano River Watershed Alliance (Alliance) offers a localized approach for managing land and water resources in this rural and remote portion of Texas. Traditional approaches to watershed management have often proven unsuccessful due to unique and small demographics, great distances, and lack of sustainable financial and human resources. Through the

implementation of this WaterSMART Program, the Alliance seeks to develop a new approach for watershed management better suited to the unique characteristics of the watershed.

Applicant Category

The applicant is submitting this proposal as an existing watershed group. The Alliance was organized by local landowners and stakeholders in 2008 as the South Llano Watershed Alliance to provide a local voice in the protection and preservation of the watershed. In 2015, the Alliance changed to its current name and redefined its mission to include the entire watershed. The Alliance is currently preparing a characterization report for the entire watershed and recently prepared a report for Texas Parks and Wildlife on the 2018 floods on the Llano. To date, the Alliance has partnered with state and federal agencies, research institutes, foundations, and landowners to bring more than $3 million in land and water stewardship research and programs to the watershed and recently partnered with other conservation organizations to land more than $5 million in funding for landowners through the Natural Resources Conservation Service Regional Conservation Partnership Program. The Alliance prepared a Watershed Conservation Plan for the North and South Llano in 2012, and in 2016, was a stakeholder in the development of an EPA-approved Watershed Protection Plan for the Upper Llano (North and South Llano).

Eligibility of Applicant

The Llano River Watershed Alliance is as a grassroots non-profit 501(c)3 organization of landowners and interested stakeholders promoting the sustainable use of the water resources of the Llano. The mission statement of the Alliance is to preserve and enhance the Llano River watershed by encouraging land and water stewardship through collaboration, education, and community participation. The Alliance is non-regulatory and is governed by a diverse Board of Directors whose members consist of livestock grazers, irrigated agricultural producers, fish biologists, municipal elected officials, State Park rangers, river-resort owners, and private property owners. The Board is governed by bylaws and operates on a consensus basis. In addition, Alliance members include State Representatives, owners of commercial hunting ranches, newspaper editors, pecan growers, river outfitters, and commercial developers.

In 2018, the Alliance received a two-year grant through Texas Parks and Wildlife to contract a Project Coordinator to develop outreach materials (such as a weekly newsletter), host educational workshops, prepare a watershed characterization report, update the Texas Parks and Wildlife Best Management Practices website, and partner with other conservation organizations in Central Texas to develop region-wide programs to address issues that affect the Llano and other neighboring watersheds. The Project Coordinator, who is a co-founder of the Alliance, is the applicant for this funding request.

Goals

The goal of the Llano River Watershed Alliance is to protect and enhance the Llano watershed. The principle objective for meeting this goal is to create an informed group of landowners and stakeholders who understand and advocate the importance of the resource to the

community and partner with neighbors to work towards its stewardship through the implementation of best land and water management practices.

Approach

Traditional methodologies for developing a watershed plan generally involve a selected entity (organization, university, or agency) working with stakeholders to identify resource issues in a watershed and prioritizing what actions need to be implemented to help address the identified issues. Developing and prioritizing these actions generally involves numerous meetings, workshops and other outreach efforts, all at considerable expenditure of time, money, and resources. Unfortunately, once the plan is completed, it often fails to be fully implemented due to lack of funding, change in organization personnel, or lack of stakeholder interest because the scale of the plan is too large for the landowner or stakeholder to sense an ability to affect change.

Six years ago, the Alliance participated in the development of an EPA-approved Watershed Protection Plan for the upper 2,000 square miles of the Llano watershed. Once completed however, the Plan was only partially implemented because funding was no longer available to retain a Watershed Coordinator to direct the implementation of the Plan. Participating stakeholders, such as the Alliance, lack the capacity to implement a Plan of such magnitude.

Over the past 12 years, the Alliance has hosted numerous land and water resource management workshops for stakeholder across the watershed. The response to these events has varied between well-attended to sparsely-attended. Through these efforts, the Alliance has identified that the most successful and impactful workshops are those with a targeted audience, often neighbors, in the field. Through such targeted workshops, participants can more readily identify and understand resource issues through local examples rather than through conceptualization. And because much of the watershed is owned by absentee landowners from the urban centers of the state, these targeted workshops are often the first opportunity for landowners to meet one another.

Based on these experiences, the Alliance proposes an approach for Task B - Watershed Restoration Planning. The approach will utilize innovative techniques to:

- Develop a series of restoration plans specifically designed for the catchment level (HUC-14);
- Develop programs, using existing technology, to prioritize and develop these catchment-level restoration plans; and
- Review and incorporate an existing state-agency best management practices database into catchment-level restoration plans.

Watershed restoration plans developed at the catchment level (HUC14) appear to be best suited for successful implementation in the Llano watershed. The average catchment size in the Llano is around 1,000 acres and the majority of the parcels are between 100 and 500 acres. Catchment-level plans thus only require a handful of targeted landowners working together to improve water quality and quantity and improve resistance to drought and flood.

Implementing such a catchment-level approach serves several outcomes. 1) It more efficiently uses limited resources to bring stakeholders together to address issues on a manageable scale, which is often not the case with traditional watershed plans. 2) It provides an online venue for including a wider base of stakeholders both resident and non-resident landowners and stakeholders in the discussion. An option that is often not possible due to absentee landowners being able to attend meetings. 3) Provides a potential venue for navigating watershed restoration in a Covid-19 world. 4) Provides a unique concept, the catchment, for getting stakeholders to work together to affect tasing positive changes across the watershed.

Information regarding topography, soils, geology, vegetation type, and land parcel ownership is readily available. Through previous research efforts and watershed plans, the Alliance and other partners have already identified the majority of issues affecting water quality and quantity in the watershed and have identified best management practices to address these impediments.

Utilizing GIS technology, the Alliance proposes to develop a methodology allowing users to locate a point of interest within the Llano watershed and obtain a 6-8 page watershed restoration plan for the selected catchment within the watershed. The plan will contain maps and tables showing the location of the catchment and information related to stream reach, geology and soil type, vegetation cover, and land parcels. Ancillary information related to soil, vegetation type and geology will be used to identify impediments to water quality and quantity. These impediments will be identified using existing field observations, available aerial reconnaissance, and recently completed Natural Resource Conservation Service Ecological Site Descriptions. The database will then match impediments to best management practices to remediate the impediment.

For example, removing Ashe-juniper over karst limestone and allowing native grasses to re-establish is a common practice for improving whealth and has shown potential for decreasing evapotranspiration and conversely, increasing recharge and base flow in the Llano. A restoration plan for a catchment containing Ashe-juniper and karstic limestone formations would include a discussion on the hydrological response from removing Ashe-juniper and allowing the regeneration of native grasses. The plan would also include selected ways to minimize impacts associated with juniper removal, such as avoiding areas with steep slopes, in riparian buffer zones or where potential endangered species habitat may exist. The catchment restoration plan would also include links to additional best management plan that are available from a Texas Parks and Wildlife Department best management plan website the Alliance recently updated for the Department.

The GIS and database are expected to automatically generate 75% of the catchment plan automatically, but most plans will require hands-on editing to incorporate specific issues and available photos for each catchment. As there are more than 2,000 catchments in the Llano, prioritizing which catchments restoration plans to complete during the two-year period of the grant is critical. Prioritization will be given to those catchments with identified freshwater mussel habitat (three species are soon likely to be listed as Endangered Species), riparian habitats that support aquatic habitat for species such as Guadalupe Bass, the State Fish of Texas and mitigate flood impacts, and areas previously identified in model output from the Upper Llano River Watershed Protection Plan as catchments that would provide the largest decreases in

evapotranspiration associated with Ashe-juniper removal. Additional parameters will also prioritize underserved communities (primarily Spanish speaking) and areas identified where heavy recreation is occurring in order to encourage additional stakeholder participation.

There are 805 catchments in the Llano watershed that meet the prioritization scheme mentioned above. After developing the automation process, populating the database, getting peer review and selected stakeholder feedback of prototyped output during the first nine-months of the grant period, the remaining 15-months will focus on creating restoration plans for the prioritized catchments and initiating preliminary outreach to landowners and stakeholders. The Alliance plans to submit a second-round proposal request to WaterSMART to generate restoration plans for the remaining catchments in the Llano and to fully implement outreach efforts.

Outreach efforts to stakeholders are based on the last component of the catchment restoration plans, land parcels. Each restoration plan will contain a map and list of land parcels in that catchment. The Alliance will use these data to inform selected landowners and other stakeholders of the availability of the completed catchment restoration plans on the Alliance website through our newsletter, social media, or direct contact. Initial outreach efforts will discuss the availability, purpose, and content of the plans, as well as provide information regarding programs and funding to help address issues identified in the plans.

Stakeholders will be provided with suggestions for incorporating other stakeholders into the process. While the Alliance will help facilitate the process for landowners and stakeholders coming together to implement catchment plans, the long-term goal is for landowners and stakeholders in the catchment to take ownership of the plan and implementation efforts, similar to the highly successful Texas Parks and Wildlife Department's Wildlife Management Associations, where groups of private citizens join together to manage their property for the benefit of wildlife. The process for group formation and plan implementation is beyond the scope of this grant effort.

4) EVALUATION CRITERIA

Evaluation Criterion A - Watershed Group Diversity and Geographic Scope

The Alliance started in 2008 as the South Llano Watershed Alliance. To assist with development of the Alliance, a characterization report for the South Llano was prepared in 2008 and a stakeholder approved Watershed Conservation Plan for the South Llano was developed in 2012. That same year, a characterization report for both the North and South Llano watersheds was prepared by the Alliance in preparation for development of a Watershed Protection Plan for the Upper Llano that began in 2013 and was approved by EPA in 2016.

In 2015, at the request of stakeholders, the Alliance expanded their geographic scope and changed the name to the Llano River Watershed Alliance to include the entire watershed. To assist with this expansion of scope, the Alliance is currently preparing a characterization report for the entire Llano watershed; this report will be completed in 2021.

The next step for the Alliance is creation of a watershed restoration plan for the entire Llano. Having created the initial conservation plan for the South Llano in 2012 and having participated in the development of the EPA Watershed Protection Plan for the Upper Llano, the Alliance recognizes several impediments to successful implementation of a new plan. The entire watershed covers 4,466 square miles and has a population of only about 25,000, mostly in the lower portion of the watershed. Travel distances across the basin are greater than 100 miles. In addition, population estimates do not represent the 'true' population of the watershed, as over half of the land parcels in the Llano are owned by absentee landowners who primarily live in urban areas. This diverse group of landowners are often a difficult group of stakeholders to engage as they generally seek to escape to their rural properties for short periods of time and have limited interest in participating in planning meetings or workshops. With an increasing urban population and few public spaces in Texas, the number of absentee landowners is certain to continue to increase and diversify, making this inclusion in restoration planning critically important.

This grant request proposes an innovative method for developing a conservation plan that increases both watershed group diversity and expands the geographic scope of the Llano River Watershed Alliance. Using a prioritization ranking system that focuses on catchments (HUC-14) critical to endangered species habitat, riparian restoration, increased recharge, and underserved communities, the proposal targets a diverse array of stakeholders associated with each catchment, and at the same time, targets catchments in portions of the entire watershed . With the focus on smaller watersheds/catchments, the proposal increases opportunities for participation by interests that may lack the ability to find a voice in larger, more traditional watershed plans.

Sub-criterion No. A1. Watershed Group Diversity

With a focus on watershed restoration at the catchment level, the proposal will encourage collaboration amongst a diverse array of stakeholders working to improve conditions in the catchment.

A focus of restoration at a smaller scale landscape provides an opportunity for landowners and stakeholders, who traditional may not see the benefit in participating in a larger watershed restoration effort, the opportunity to bring lasting change to their catchment of interest. Such an approach encourages participation and collaboration amongst the diverse stakeholders and provides a sense of ownership and community at the catchment level, importantly, redefining the manner in which most stakeholders perceive their community. The online approach provided by this planning process also increases the participation of absentee landowners, a group traditionally under-represented in previous planning efforts in the Llano.

Outreach efforts by the Alliance for this proposal will target stakeholders at the catchment level via newsletters, social media, websites, and phone calls either from the Alliance, other partner organizations, or from within neighbors in the catchment. Spanish-language materials will be provided where demographics suggest necessary.

A description of the stakeholders within the watershed that affect or are affected by the quantity or quality of water within the watershed ("affected stakeholders").

There are a variety of stakeholders within the watershed that are affected by the quality or quantity of water within the watershed. A representation of some of the these stakeholders is identified by examining water rights. Texas relies upon a prior-appropriation water rights system; there are 180 water rights in the Llano watershed permitting a total allocation of 14,899 acre feet. Two of the largest communities in the watershed (City of Junction and City of Llano) rely on surface water as their sole source of water and account for about 15 percent of permitted use. Industrial and mining water rights, primarily associated with one cedar-oil manufacturing facility, account for 17 percent of permitted use. Irrigation accounts for the remainder of the permitted uses. It is estimated that of the just over 10,000 acre-feet of permitted irrigation, 4,200 acre-feet are actively irrigated with surface water for hay, grass-seed production, pecans and grapes.

There are also numerous affected stakeholders that do not require a water right but are affected by the quantity or quality of the water. Livestock producers (sheep, cattle, goats) constitute at least 90% of agricultural production in the watershed. The tourism industry, primarily hunting, boating and fishing, is obviously affected by the condition of the water supply. A large percentage of working ranches generate at least half of their income from hunting leases (deer and exotics such as axis). The City of Junction calls itself the "Land of Living Waters" and supports several boating liveries and a Texas Parks and Wildlife State Paddling Trail. In addition, Guadalupe Bass, the State Fish of Texas, generates over $75 million to the region. In fact, all residents and absentee landowners of the watershed are affected stakeholders. Because the spring fed Llano River seldom goes totally dry, it provides everyone welcome relief during the hot Texas summers.

For Existing Watershed Groups, an explanation of the current membership of the watershed group and whether the current membership is representative of the affected stakeholders within the watershed. In other words, if the watershed group is already diverse, please provide support demonstrating the diversity of the group.

When the Alliance began in 2008, it focused its nascent efforts on the South Llano River, where the major headwater springs of the Llano watershed are located. Initial stakeholders, who became the organizing members of the South Llano Watershed Alliance, included landowners, ranchers/livestock grazers, irrigators, business owners, fishing guides, conservation groups, city managers, state park employees, and fisheries biologist.

In 2015, the Alliance officially changed its name to the Llano River Watershed Alliance to meet growing request for support from landowners and interested stakeholders. In 2018, funding was secured to assist the Alliance with expanding its membership and outreach to the rest of the watershed. This effort was successful in expanding membership to include all of the interest originally represented by the Alliance (ranchers, irrigators, fishing guides, conservation groups, elected officials, etc) and now also includes state elected officials, journalists, real-estate land developers, canoe-livery owners, restaurant and B&B owners, and absentee landowners across a broader spectrum of the watershed.

The increase in member diversity both geographically and from a water-user perspective has relied on a combination of group workshops and developing restoration efforts with targeted

landowners. Unfortunately, due to concerns regarding Covid-19, most of these efforts have been halted since March of 2020. Once Covid-19 concerns have passed, the Alliance will begin re-focusing its efforts on expanding member diversity via targeted outreach to absentee landowners, with an immediate on restoring riparian areas damaged by the floods of October 2018.

Details on how you plan to target affected stakeholders to ensure that your group will represent a diverse set of stakeholders within the watershed, such as engaging in outreach to include new members, or collaborating with different groups or partners (e.g., outreach or partnership activities, public meetings, newsletters, marketing materials, or recruitment of new members).

While the Alliance membership maintains a diverse membership, efforts need to be renewed to maintain this diversity post-Covid, expanding this diversity to include underserved communities, industrial representatives, additional absentee landowners, and stakeholders in the lower portions of the basin.

Generating stakeholder interest in underserved communities focuses on prioritizing segments of the river with high recreational value for swimming and fishing. Restoration planning for these segments requires collaboration between landowners and recreationist who, at times, may be in conflict with one another, so bilingual outreach efforts for participation will be greater here than in other catchments. Funding sources exist to provide fish stocking, improve riparian areas and river access, and develop boating opportunities at state parks for underserved communities. These programs will be presented as a component of river restoration plans, prepared bilingually for selected areas.

Incorporating industrial representation in the watershed involves prioritizing the few catchments that include these users. Currently, there are few problems associated with water quality and industrial users, but developing restoration plans utilizing public interaction provides an opportunity for all stakeholders to understand how industrial users use and protect the resource, thus reducing the likelihood for concerns or false claims.

Increasing participation by absentee landowners and users in the lower basin will be addressed by prioritizing riparian areas along the river. Because of the high land values associated with these land plots, they are primarily owned by absentee urban landowners with outside sources of income. Stakeholder outreach will involve incentivizing participation through direct mailings from the Alliance and other partners, offering financial support to landowners whom the Alliance has perviously determined have properties damaged by the 2018 flood or have aquatic invasive species on their property. This support is financed through programs outside of this grant proposal.

Any other support demonstrating that the watershed group will include a diverse membership

The Alliance is also currently partnering with other organizations to enhance stakeholder participation in Alliance events and programs. Texas Water Trade (a non-profit designed to develop water right markets) and Texas Nature Conservancy are partnering with the Alliance to

lease water rights from irrigators and industrial users during periods of drought. Using a grant from Southeast Aquatic Resource Partnership, the Alliance is also partnering with Texas Parks and Wildlife to provide resources to riparian landowners who wish to restore lands impacted by the severe floods along the river in October 2018. Since 2018, the Alliance has partnered with 19 other organizations to assist agricultural producers to enhance conservation efforts through a $5 million Regional Conservation Partnership Program.

Sub-criterion No. A2. Geographic Scope

Provide a map illustrating the geographic boundaries of the area in which the watershed group will work.

The map below shows the full extent of the Llano watershed. The Upper Llano includes the North and South Llano rivers above the community of Junction and the mainstream Llano covers the watershed downstream of Junction past Llano. For reference, the outskirts of San Antonio are located in the lower-right portion of the map.

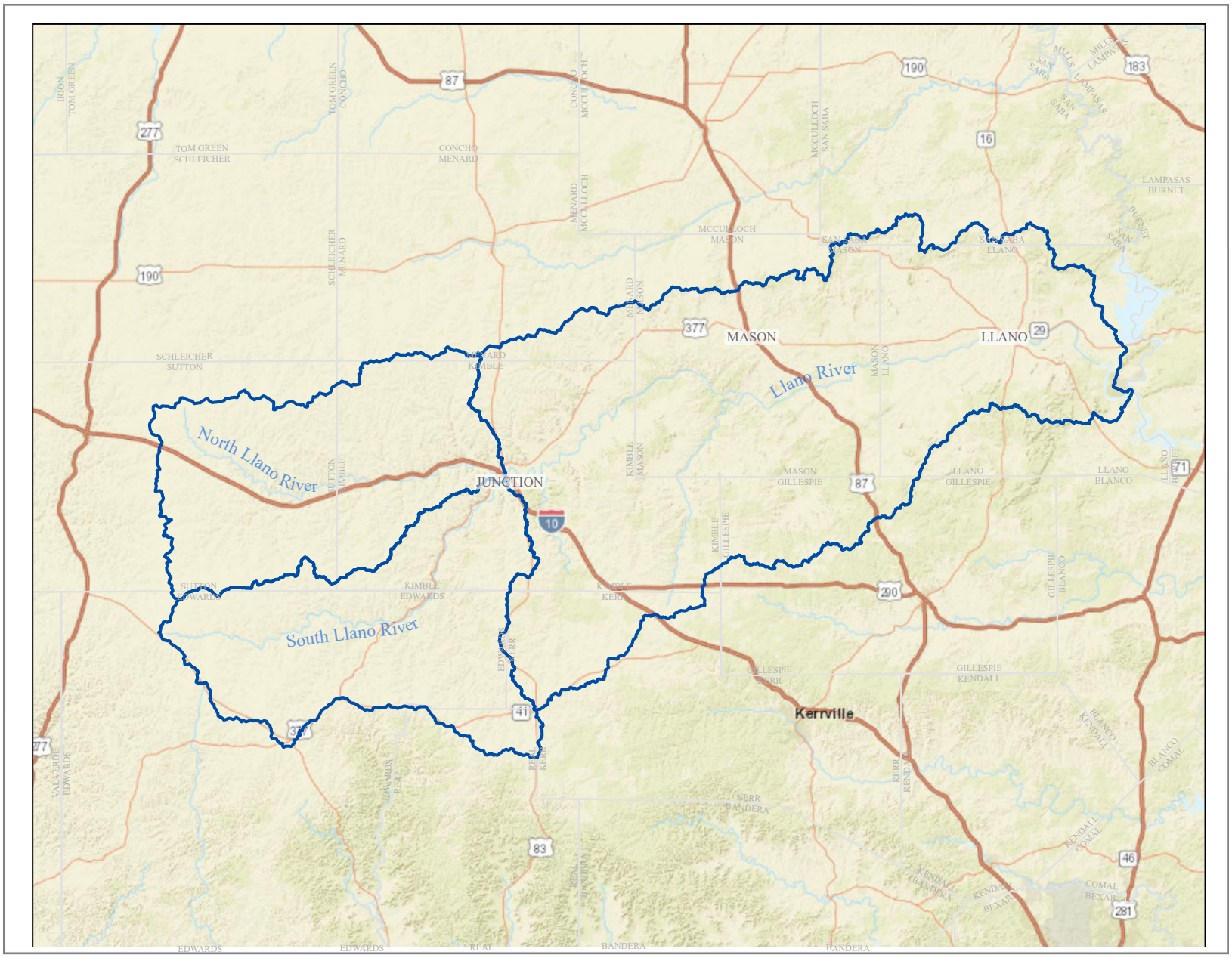

Figure 2. Map of Llano Watersheds : North Llano, South Llano and Llano rivers

Map should also identify the location or boundaries of the stakeholder groups within the area and indicate which stakeholders are currently involved in the group and which will be targeted through outreach. If a map of stakeholder location cannot be provided, please describe the geographic scope of the area to the best of your knowledge.

With the exception of irrigators, stakeholder groups are dispersed throughout the watershed. The principal municipal water suppliers are located in the communities of Rocksprings, Junction, Mason, and Llano, as are most of the business owners, journalist, and real estate developers. Stakeholders representing underserved communities tend to be located in these communities as well. The principle industry in the watershed is located near Junction. As the majority of the watershed is rural, landowners and livestock producers are located throughout the watershed. Canoe liveries and fishing stakeholder groups are located along the South Llano and Llano River.

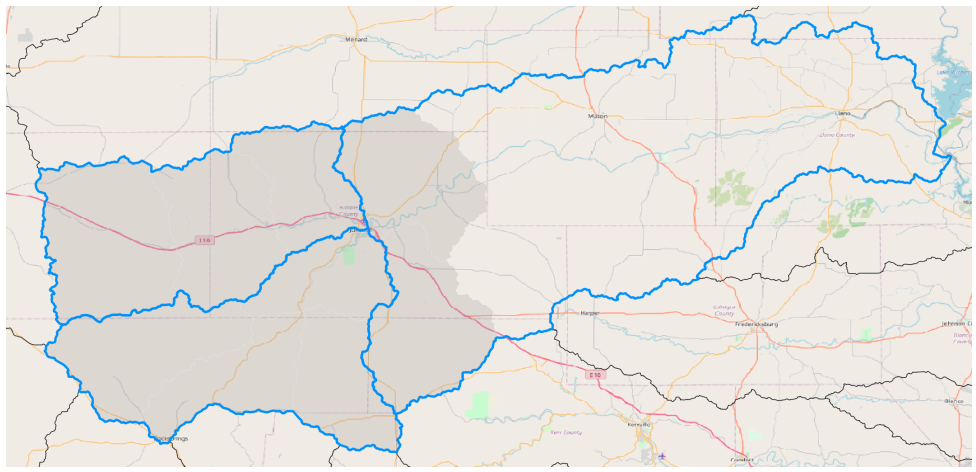

Figure 3. Map showing regional extent of irrigation - Llano watershed

Because the topography of the watershed becomes significantly rockier where the river begins to cross Paleozoic and Precambrian rocks, irrigation stakeholders are primarily located above the Kimble-Mason county lines where this transition occurs. The gray-shaded area on the map (left) demarcates the boundary for irrigators.

The shaded area also represents the geographic extent of the majority of original stakeholders in the Alliance. More recently, additional stakeholders have been added in the lower (non-shaded) portion of the watershed, but this area will be targeted for additional outreach.

Describe the extent to which the planned membership of the watershed group will represent the full geographic scope of the area in which the group intends to work. If applicable, describe the extent to which the watershed group already represents the geographic scope of the area.

With 2,180 catchments in the watershed, it is not possible for restoration plans to be generated for every catchment within a two-year period. Rather, the Alliance proposes a system that prioritizes the preparation of restoration plans for areas most critical to protecting water quality and quantity: riparian zones and recharge areas. Prioritizing these catchments in the watershed also facilitates the inclusion of additional stakeholders from underserved communities and absentee landowners.

The maps on the next page show catchments that will be prioritized for the first round of the grant proposal. The map on the left shows all catchments with riparian habitat (P1-Priority One) and the map on the right shows all catchments previously identified to have the highest increases in recharge resulting from brush control (P2-Priority Two).

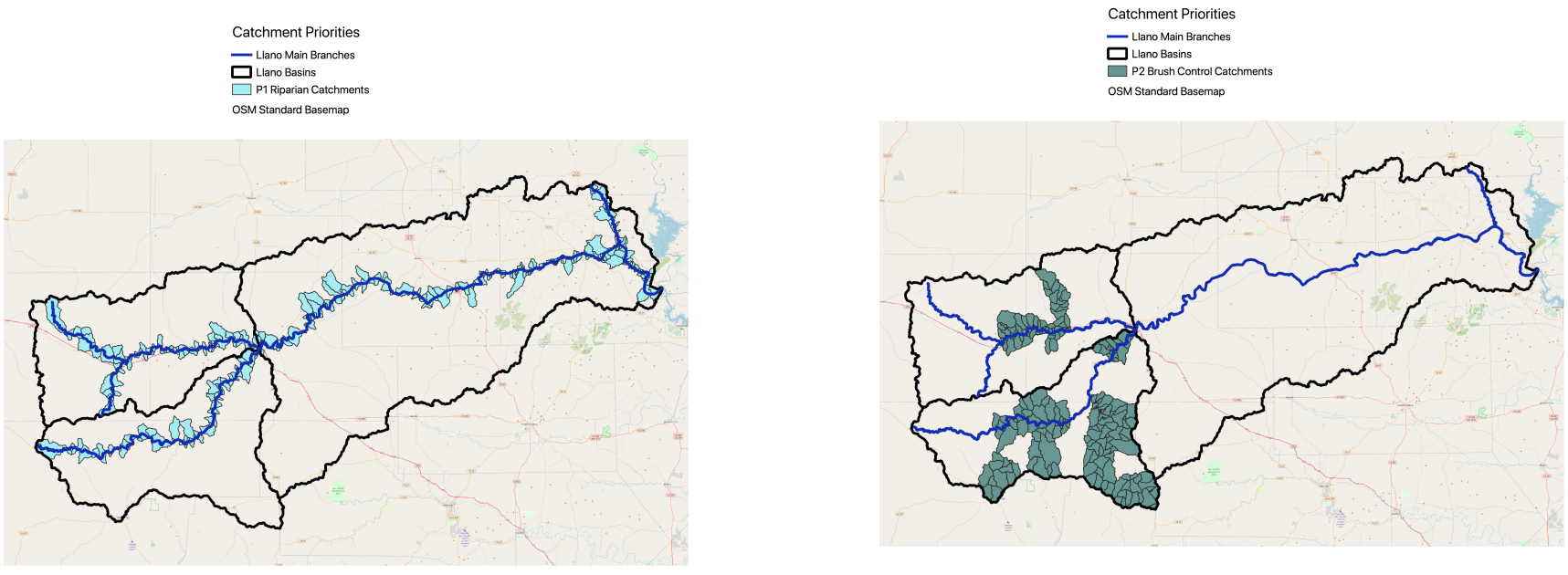

Figure 4. Prioritized Catchments Llano Watershed. Riparian (left); Brush Control (right)

When the Alliance began as the South Llano Watershed Alliance in 2008, the South Llano was selected as it has the greatest number of large headwater springs that are critical to the water quality and quality of the Llano. Understandably, stakeholders in the South Llano are best represented by the Alliance, followed by the North Llano and then the Llano. Within the Llano watershed, stakeholders in Mason County are better represented than stakeholders in Llano County.

Describe the efforts that you will undertake to ensure the the watershed group will target stakeholders that represent the full geographic scope of the area in which the watershed group will work.

The lower portion of the watershed (figure 4) is the least represented area of the watershed. While it does not contain the large springs that supply that majority of flow to the Llano, it is the most populous area of the watershed. Restoration within catchments in this area are important for minimizing erosion and sedimentation and maintaining water quality.

Prioritizing the development of restoration plans for catchments with riparian zones will target landowners along the river who suffered damage during the near-record-breaking floods of 2018. Many of these landowners are absentee landowners, a stakeholder group under-represented in the Alliance. Erosion and sedimentation are of concern to these stakeholders due to the damage caused to shorelines and infrastructure as well as navigational problems resulting from shifting sandbars. In addition, recent proposals by sand and gravel operators to mine materials from the river has resulted in a groundswell of concerns.

Prioritizing riparian areas will also bring focus to a rapidly-growing concern: recreation. During Covid-19 restrictions, limits on travel resulting in exceptionally high use of the Llano for recreation. This increase in use strained already frayed relationships between recreationist and landowners. Addressing these concerns as part of a restoration plan will increase interest in stakeholder participation, including amongst the under-served populations, a currently underrepresented group of stakeholders in the Alliance.

Evaluation Criterion B - Addressing Critical Watershed Needs

The Alliance was formed to create an informed group of landowners and stakeholders who understand the importance of the resource to the community and partner with neighbors to identify and address critical watershed needs and issues through the implementation of best land and water management practices. Since our inception, the Alliance has partnered with Federal, state and local agencies, other conservation organizations, and stakeholders to to better understand the hydrology, ecology, and socio-economic issues that affect the watershed.

Sub-criterion No. B1. Critical Watershed Needs or Issues

Please describe in detail the critical issues or needs occurring within the watershed including, for example: declining ecological resiliency, water shortages, flooding, structural impairments, water supply, water quality issues (e.g., addressing Total Maximum Daily Loads, or targeting high priority activities in your state's "Measure W" watersheds), endangered species issues, conflicts over water supply, and other related issues faced by affected stakeholders. Endangered species issues may focus on, but are not limited to, activities prioritized by resource agencies such as National Oceanic and Atmospheric

DESCRIPTION OF WATERSHED

The Llano River watershed is a 4,466 square mile basin located in West-Central Texas. The watershed includes the mainstem of the Llano River and the headwater tributaries of the North Llano and South Llano rivers; the total length of the mainstream river is approximately 105 miles, with the length of the headwater tributaries about 55 miles each. Elevations in the watershed range from 825 feet above sea level near the Llano River's confluence with the Colorado River near Kingland, to 2,480 feet above sea level on the Edwards Plateau. Woody brush (including stands of mesquite, Ashe juniper, and live oak) accounts for about 70% of watershed landcover. An additional 15-20% of the watershed is comprised of rangeland. The predominately rural watershed has a population approximating 25,000, but over 50% of the parcels are owned by absentee landowners, mostly from urban areas of the state.

WATER SUPPLY, USE, AND RIGHTS

The headwater tributaries of the Llano River, the North Llano and South Llano rivers, are located in the Edwards Plateau, the largest continuous karst region in the US. Where these tributaries have carved canyons into the limestone, exposing the karst features, springs emerge along the canyon walls. These springs provide constant flow to the South Llano and relatively constant flow to the North Llano. Unlike other rivers in this portion of Texas, the Llano River, just below the confluence of the North and South Llano, has never gone dry in recorded history. The US Geological Survey estimates that 81% of the flow in the upper reaches of the Llano are from base flow. In the lower reaches, where estimates of base flow are 62%, the river has gone dry during periods of severe drought.

The state of Texas claims ownership of surface waters in the state; use of these waters is administered by through a prior-appropriation water rights system. A total of 14,899 acre-feet of water rights are issued in the Llano watershed. Of this, the City of Junction (1,000 acre-feet) and City of Llano (1,880) are the largest water right holders. Most of the remaining rights are for

irrigation purposes, with many rights either unused or not fully utilized. There are only a few mining and industrial water rights. During the drought of 2011, the City of Llano, with the most senior water right on the river, made a 'call' on upstream water right holders, stopping all upstream withdrawals for non-municipal purposes.

Conversely, groundwater in Texas is owned by the overlying landowner and unregulated if used for domestic and livestock purposes. Groundwater used for municipal, industrial and irrigation purposes requires a permit from a groundwater conservation district. The number of unregulated wells is increasing dramatically as large ranches are divided into smaller parcels and primarily sold to urban dwellers for weekend homes.

ISSUES

A Watershed Conservation Plan for the North and South Llano rivers was prepared in 2012 by the South Llano Watershed Alliance, the predecessor of the Llano River Watershed Alliance. This plan identified concerns and mapped a course of action for Alliance projects. Later in 2016, the Alliance participated in the stakeholder process to develop an EPA-approved Watershed Protection Plan as part of that agency's Healthy Watershed Initiative. The Alliance is currently developing a characterization report for the Llano watershed in its entirety. The major issues summarized below have been identified through these efforts.

Flow Reductions

Decreases in streamflow are primarily driven by drought cycles. The source of the Llano River is primarily springflow from the karst Edwards Plateau. The 100th meridian, identified by John Wesley Powell as the climatic boundary between the United States' humid east and arid west, transects the Llano watershed and the Edwards Plateau. Consequently, the region suffers through frequent drought. While the South Llano River has never ceased flowing, the North Llano is dry about 6% of the time. During the 1950s the City of Llano had to rely on water delivered by train as the Llano River, its only source, was dry for 88 days. Water budgets determine that when average annual precipitation drops to 70% of average on the Plateau, the volume of recharge to the aquifer beneath approaches zero, due to increases in evapotranspiration. Such lack of recharge can have an impact on river base flows for many years. With projected increases in temperature, evaporation is expected to increase, and recharge and base flow levels are expected to decrease in the watershed.

Flooding

Conversely, because of the steep terrain, lack of soils, and the watershed's location in what is known as "Flash Flood Alley", significant flooding can result. In October of 2018, the second largest recorded flood on the Llano reached just over 40 feet with recorded flows of 278,000 cubic feet per second. These type of flood events are expected recur with greater frequency with changes to the climate.

Endangered Species

Three candidate species of freshwater mussels (Texas pimple back, Texas fatmucket, and false spike) are currently under review for potential threatened or endangered status listings. The Alliance is currently assisting US Fish and Wildlife Service with preparation of outreach materials for landowners regarding the potential listing. In addition, Texas Parks and Wildlife lists several of species of concern in the Llano, particularly the Guadalupe Bass, the State Fish of Texas.

Invasive and Exotic Species

Invasive plant species are established along riparian corridors in the watershed. The most prevalent species are elephant ear (*Colocasia esculenta) and* giant reed (*Arundo donax).* These species displace native riparian plants, sometimes developing into dense monoculture stands and tend to utilize much more water than native species. Invasive and exotic terrestrial species, especially axis deer and feral hogs, impact riparian zones, resulting in stream bank erosion, periodic bacterial exceedances and lack of stream side forest canopy regeneration.

Riparian Habitat Alteration

Loss of woody riparian vegetation and riparian clearing have resulted in bank failure and cutbanks. Severe overgrazing from wildlife (native and exotic) and in some cases livestock, results in limited recruitment of native vegetation that normally protect riparian areas from excessive erosion. In some cases, improper mowing or habitat clearing has also resulted in reduced riparian habitat and increased stream bank erosion.

Water Quality

Historically, the Llano River and its tributaries have had few water quality standard exceedances, indicating that the river is a healthy ecosystem that supports high to exceptional aquatic life use. However, more recent data, collected through the development of the Upper Llano watershed protection plan, indicate sporadic exceedances of water quality for *E. Coli* in surface waters of the North Llano, generally as a result of low flows and feral hogs. Additionally, the wastewater treatment plants at Junction and Mason have begun to experience chronic problems related to their discharge. Groundwater exceedances for *E. Coli* have occurred throughout the watershed, usually as a result of failed septic systems.

Urban Stormwater Runoff

Stormwater runoff associated with impervious cover and contaminant runoff is an identified problem in local communities. The area of special concern is around the Interstate 10 intersection in Junction where storm water runoff from truck stops and gasoline stations discharges into the North Llano River.

Recreational Conflicts

Conflicts between landowners and river recreationist is a long-identified issue in the Llano especially related to littering and trespass. This conflict is clouded in uncertainty over the difficultly surrounding determination of the gradient boundary, the boundary used to separate public lands along the river from private uplands.

Sub-criterion No. B2. Developing Strategies to Address Critical Watershed Needs or Issues

Please describe in detail how the group plans to positively contribute to the management of the issues and needs of the watershed through the proposed activities.

Task B -Watershed Restoration Planning: Describe the process the watershed group will use to develop a watershed restoration plan and how completing the plan will contribute to the management of the critical watershed issues and needs.

- ***How does the group plan to gather information regarding the critical issues and needs of the watershed (e.g., contacting government agencies, talking to stakeholders, literature research, monitoring and modeling activities)? Will the group use science to identify best practices to manage land and water resources and adapt to changes in the environment? If so, how?***
- ***Will the group identify opportunities to resolve conflicts? If so, how?***
- ***Will the group complete an analysis to prioritize issues within the restoration plan?***
- ***If the watershed group will build on previous efforts, describe these efforts and how the watershed group will expand upon them through the proposed work.***

The Llano River Watershed Alliance has guided or participated in several stakeholder processes to identify issues and develop strategies to address these issues in the watershed. The collection of management measures to address these concerns have been developed in a scientific and holistic manner to improve both the quality and quantity of flows through the Alliance's Watershed Conservation Plan, the EPA-approved Watershed Protection Plan and the restructuring of Texas Parks and Wildlife Best Management Practice website. Although many of these strategies were originally developed for the upper portions of the watershed, they have many of the same applications throughout the entire basin.

The Alliance will develop a watershed restoration plan for each catchment in the Llano watershed using a GIS database. Prioritization for restoration plan development for this round of funding will be given to catchments with riparian habitat and areas where land stewardship most effectively enhances recharge. Identified catchment issues will be based on soils, land cover, and geology from the GIS output, as well as the Alliance's knowledge of water resource issues based on scientific field observations, published literature, and stakeholder feedback. Strategies to address the identified issues will be linked in the database for each identified issue and supplemented with information from Texas Parks and Wildlife best management practices website and Natural Resource Conservation Service Ecological Site Descriptions. This database will then be used to generate catchment restoration plans to be stored on Alliance website and available via an interactive map interface.

Alliance outreach will inform stakeholders of available catchments and provide a guidance regarding methods for collaborating with neighbors and stakeholders in the catchment to begin addressing the identified issues. Programs and sources of funding will also be identified. Collaboration between landowners and stakeholders in the implementation of these strategies will significantly contribute to the management of these issues, reduce their impacts and increase overall watershed resiliency.

Flow Reductions

Brush control, in conjunction with follow-up prescribed burns, is a key management measure to improve upland rangeland, enhance water supplies, and mitigate reduced the expected future reduction in base flows due to increased temperatures. By increasing the water-holding capacity of the uplands, precipitation is stored in the soil, rather than producing runoff, allowing infiltration into the underlying aquifer.

In developing the watershed protection plan, Texas Tech University designed an ecological model to identify those areas of the watershed where brush management practices would show the greatest benefit for decreasing evapotranspiration, and consequently, increasing recharge and base flows. This proposal will build on these previous efforts by designating all of these areas all as priority catchments, and further the work by identifying for the landowners in relevant catchment plans, areas with steep slopes or potential endangered species habitat, where brush removal should not occur.

The primary funding mechanism for this activity is through Natural Resources Conservation Service or Texas Parks and Wildlife. These agencies provide additional consultation for landowners and provide oversight to the implementation of correct practices. As these actions are undertaken by individual landowners, the potential for conflict is low.

Flooding

Healthy riparian habitat is key to mitigating the impacts of floods. In order to improve and sustain streambank stability and stream health, implementation of riparian management measures such as bank stabilization, recruitment of woody riparian vegetation and control of exotic invasive will be recommended in the relevant catchment plans. These recommendations are taken included the EPA-approved watershed protection plan and this proposal expands the opportunity for implementation.

Riparian areas that sustained significant damage from the 2018 flood, as well as areas where exotic invasive species occur, have been mapped by the Alliance and Texas Parks and Wildlife through aerial reconnaissance. Catchments containing these areas will be prioritized in developing restoration plans.

These recommendations offer a new paradigm in riparian management. Many landowners still follow the traditional management guidelines that remove the riparian vegetation in order for the floodwaters to more easily move downstream The restoration plans will provide links to

Best Management Practices guides designed specifically Texas Hill Country streams. Providing such background information should allay any concerns landowners have regarding implementing this new paradigm.

Endangered Species

The Alliance is working with US Fish and Wildlife Service to develop outreach materials for stream-side landowners who have concerns about the potential listing of freshwater mussels in Central Texas. These materials will discuss how the listing may or may not impact existing land-management strategies, the importance of mussels to the health of Central Texas rivers, what management techniques can be employed by the landowner to help maintain mussel populations, and what programs are available to fund these activities.

Developing catchment restoration plans for river segments with identified mussel beds will be a priority for the Alliance. When completed, this information will be incorporated into the catchment restoration plans.

Invasive and Exotic Species

The Alliance is partnering with Texas Parks and Wildlife to control invasive plant species along the river. Control of these species is offered to landowners at no-costs, with priority given to landowners furthest upstream in order to prevent reintroductions further downstream. Where applicable, catchment restoration plans where these species have been identified will contain information regarding the availability of this program along with studies showing that there are no impacts to aquatic species following the treatment of plant species.

The Alliance is also partnering with other Hill Country conservation organizations to help control axis deer, utilizing a bounty a program. Bounty programs are also available for feral hogs through county predator control programs. The majority of riparian catchment restoration programs will contain information about these programs. As some stakeholders raise axis deer for commercial hunts under high fences, discussions regarding axis control will specify that the targeted species are free-range axis. Outreach associated with these efforts is prioritized based on areas with the highest axis density. The feral hogs programs are more difficult to prioritize as these species are widespread across the entire region.

Riparian Habitat Alteration

The Alliance is currently implementing a grant through the Southeast Aquatic Resource Partnership to assist landowners with restoration of riparian areas damaged in the 2018 floods. A component of this effort, in partnership with Texas Parks and Wildlife and Hill Country Alliance, is to instill proper and effective riparian management with landowners.

The Alliance and 19 other partners are also working with Natural Resources Conservation Service to implement a $5 million Resource Conservation Partnership Program that focuses on restoration funding for projects that benefit water supply and water quality. Riparian habitat restoration is a priority component of this effort.

Both of these partnership efforts will be highlighted in catchment restoration plans for riparian areas. As with strategy development for flooding (see above), information will be included to help landowners better understand this new paradigm.

Water Quality

Identified water quality issues are often linked to low flow conditions and the presence of feral hogs. Strategies identified to increase base flows and reduce feral hog populations should help mitigate this issue. More specifically, addressing waste-water treatment plant discharge and failing septic systems and can directly improve water quality.

Waste-water plant discharge issues are beyond the scope of this proposal. However, the Alliance plans to include information related to proper septic system maintenance in applicable catchment plans, prioritizing those septic systems in close proximity to waterways. This approach builds upon the management strategy identified in the EPA watershed protection plan. The Alliance foresees no opportunity for stakeholder conflict on this issue.

Urban Stormwater Runoff

Although the Llano watershed is primarily rural in nature, there are identified problems associated with stormwater runoff in urban areas. Specifically, issues surrounding the Interstate 10 intersection in Junction has been a source of controversy for many years. As these issues are primarily addressed by municipalities rather than individuals, the nature of this proposal does not lend itself to proposing strategies to mitigate this issue.

Recreational Conflicts

Conflicts between landowners and river recreationist is a long-identified issue in the Llano especially related to littering and trespass. During this past year, Covid-19 travel restrictions resulted in an increase in local and regional use of waterways for paddling, fishing, and swimming and an increase in associated problems with littering and trespass.

To mollify these conflicts, the Alliance prepared a series of articles in the weekly newsletter related to locating the gradient boundary that separates private uplands from the public access along the river. Additionally, the Alliance worked with Texas Parks and Wildlife to increase the number of landowner-leased access points along the river and obtained and dispersed hundreds of mesh trash bags along access points.

The inclusion of an array of stakeholders in the development and implementation of watershed restoration plans should include not only landowners, but stakeholders who recreate on the river. Bringing these two groups together to discuss implementation of a catchment restoration plan will be a key opportunity to resolve conflicts in the watershed.

The catchment restoration plan, where appropriate, will include a discussion on State law related regarding navigability and determining the gradient boundary. It will also include

information related to Texas Parks and Wildlife leased access program, River Access and Conservation Area which not only provides additional access opportunities, but provides stream bank restoration incentives for landowners.

Evaluation Criterion C - Implementation and Results

The Llano River Watershed Alliance proposal fits well within the proposed timeline and will be a timely compliment to other planning efforts, especially the Flood Planning effort from Texas Water Development Board which will be finishing the first round of planning in 2023.

Sub-criterion No. C1—Project Implementation

Applicants should describe their plan for implementing the proposed scope of work. Please include an estimated schedule that shows the stages and duration of the proposed work. The schedule should include:

- ***Major tasks (e.g., stakeholder outreach; development of bylaws, a mission statement, and articles of incorporation; or development of a watershed restoration plan and project design)***
- ***Milestones for each task***
- ***Start and end dates for each task and milestone***
- ***Costs for each task The timeline and budget for each task in the proposal is presented in Table 1 and described in more detail below.***

Table 1 on the next page shows milestones, task, and subtasks by quarter, along with hours and associated cost of each task. The implementation of the project is as follows.

<u>Quarter 1</u>

- **Data Preparation** will begin during the first quarter of the project. All necessary GIS data will be obtained, converted to standardized projections, and clipped to display only the Llano watershed.
- **Data Analysis** will proceed after the data are prepared. Analysis will include developing summary statistics related to catchment area, demographics, soils, geology, vegetation, etc.
- **Data Synthesis** will be the third step in this process. Links will be prepared between soil type, geology, vegetation and impediments to water quality and quantity utilizing field observations, aerial reconnaissance, and peer-reviewed publications.
- **Catchment Automation and Compilation** will also begin this quarter in the development of catchment location maps to be included in each restoration plan.

<u>Quarter 2</u>

- **Catchment Automation and Compilation** will continue during this quarter with the development of stream profiles and geology, soils and vegetation maps maps to be included in each restoration plan.
- **Data Synthesis** will continue this quarter and involve linking catchment attributes to impediments to water quality and quantity.

Quarter 3

- **Data Synthesis** will involve a 3rd party domain expert review of catchment descriptions and characteristics and any necessary response to review.
- **Data Relationships** will involve the association of catchment impediments to Best Management Practices
- **Catchment Automation and Compilation** will continue during this quarter with the finalization of vegetation maps and the creation of landowner parcel maps for each catchment plan.
- **Publishing Preparation** will begin this quarter with the development of Open Source Python Programs to build catchment reports by using catchment related elements such as statistics, maps, text and links to Best Management Practices specific to that catchment.

							Timeframe							
Milestone	**Task**	**Subtasks**	**Start Date**	**End Date**	**Cost**	**Hours**	**Q1**	**Q2**	**Q3**	**Q4**	**Q5**	**Q6**	**Q7**	**Q8**
Data Preparation	Collect/Compile Data	Acquire GIS data, standardize projections, clip to basins	9/1/2021	10/21/2021	$5,760	144								
Data Analysis	Catchment Core Statistics	Perform basin-wide GIS analysis for developing core catchment summary statistics	10/22/2021	11/5/2021	$1,600	40								
Data Synthesis	Hydrologist Description	Develop descriptions and characteristics for catchments from input data attributes	11/8/2021	2/28/2022	$12,800	320								
Data Synthesis	Additional Domain Expert Review	3rd party expert review of descriptions and characteristics	3/1/2022	3/15/2022	$1,600	40								
Data Relationships	Hydrologist BMP's	Associate catchment descriptions to Best Management Practices	3/1/2022	4/20/2022	$5,760	144								
Catchment automation and compilation	GIS Thematic Map Programming	Create Catchment Location Maps	11/8/2021	12/28/2021	$5,760	144								
Catchment automation and compilation	GIS Thematic Map Programming	Create Catchment Drainage Stream Profile	12/29/2021	2/17/2022	$5,760	144								
Catchment automation and compilation	GIS Thematic Map Programming	Create Catchment Geology maps	2/18/2022	2/22/2022	$320	8								
Catchment automation and compilation	GIS Thematic Map Programming	Create Catchment Soils maps	2/23/2022	2/25/2022	$320	8								
Catchment automation and compilation	GIS Thematic Map Programming	Create Catchment EMS Ecotype (vegetation) maps	2/28/2022	3/14/2022	$1,600	40								
Catchment automation and compilation	GIS Thematic Map Programming	Create Catchment Landowner Parcels maps	3/15/2022	3/17/2022	$320	8								
Publishing Preparation	Python Programming	Build Catchment Report Elements into DB (Stats, Maps, Text, Links)	3/18/2022	5/9/2022	$5,760	144								
Publishing Preparation	Python Programming	Assemble Catchment Reports from DB content	5/10/2022	6/29/2022	$5,760	144								
Publishing Preparation	Python Programming	Develop code to create Output (HTML and/or PDF)	6/30/2022	8/19/2022	$5,760	144								
Publishing Output	Website Programming	Develop Website User Access/Output	9/3/2022	10/24/2022	$5,760	144								
Catchment Restoration Report Enhancement	Hydrologist work	Develop Additional Catchment Specific Analysis and Information	9/3/2022	10/24/2022	$5,760	144								
Catchment Restoration Report Enhancement	Hydrologist work	Develop Hydrogeology & Narratives	10/25/2022	2/14/2023	$12,800	320								
Maintenance and Deployment	IT	YR 2 Web Site maintenance & deployment	10/25/2022	8/31/2023	$2,880	72								
Dissemination	Outreach	Prepare Outreach Materials and initiate Dissemination to Users	2/14/2023	8/31/2023	$2,880	72								
Administrative Requirements	Reporting	Quarterly Financial and Performance report	9/1/2021	8/31/2013	$960	24								
					$89,920	**2248**								

Table 1. Scope of Work —Timeline and Costs for Llano River Watershed Alliance Proposal

Quarter 4

- **Publishing Preparation** will wrap up this quarter with the development of Open Source Python Programs to generate draft catchment reports from the GIS system and database.

Quarter 5

- **Publishing Output** will focus on the development of a user interface to identify and select catchments.
- **Catchment Restoration Report Enhancement** efforts begin this quarter with the addition of specific analysis and information not generated by the GIS system and database. Enhancement will also include the development of specific hydrogeological narratives for features such as springs.
- **Maintenance and Deployment** of the website will begin this quarter. Such activities involve adding catchment reports to the website and finalizing the User Interface to access to catchment reports from the website.

Quarter 6

- **Catchment Restoration Report Enhancement** will continue this quarter with the continued addition of specific analysis and information not generated by the GIS system and database.
- **Maintenance and Deployment** of the website will continue this quarter. In addition to the activities mentioned in Quarter 5, other actives involve testing the functionality and content of the website to verify it works as designed, deploying pages, code and content so that users can easily find and access the catchment reports.
- **Dissemination** of the website content will begin with preparation of outreach materials.

Quarter 7

- **Maintenance and Deployment** of the website will continue this quarter focusing on finalizing the functionality and content of the website and identifying and correcting any necessary changes. Feedback on the website design will be solicited from selected members of the Alliance.
- **Dissemination** of the website content will continue with outreach to potential users via the Alliance weekly newsletter, social media, and direct contact via email.

Quarter 8

- **Maintenance and Deployment** of the website will be the major final task of the project. Activities involved will finalizing layout and content, correcting system bugs, and generating outreach materials regarding the availability of the reports.
- **Dissemination** of the website content will continue with outreach to potential users via the Alliance weekly newsletter, social media, and direct contact via email and follow up via phone.

Quarters 1-8

- **Administrative Requirements** are quarterly financial and performance reports as well as final reports.

Sub-criterion No. C2—Building on Relevant Federal, State, or Regional Planning Efforts

Please describe how the proposed activities of the watershed group will complement or meet the goals of relevant Federal, state or regional planning efforts. Such plans may include but are not limited to:

- ***Water conservation plans***
- ***Drought contingency plans***
- ***Plans that meet the criteria identified in the U.S Environmental Protection Agency's (EPA) Nonpoint Source Management Program***
- ***Plans that meet the EPA's criteria for Watershed-Based Plans***
- ***Or other relevant plans or planning efforts***

Applicants should describe how the proposed activities of the watershed group will complement or meet the goals of applicable Federal, state or regional water plans.

The proposed activities for this proposal complement or meet the goals of the following relevant or applicable Federal, state or regional plans:

FEDERAL

The Llano River Watershed Alliance served on the watershed coordination committee that developed the Upper Llano River Watershed Protection Plan (WPP), an EPA-approved plan. The Project Manager for this proposal was the Watershed Coordinator for the plan's development. The proposal utilizes model output from the WPP to prioritize catchments identified as best suited for enhancing recharge through brush control. In addition, several recommended actions of the WPP are incorporated into the Alliance's proposal. These include promoting septic system maintenance and providing information regarding control and management of feral hogs, white-tailed deer and non-native exotics such as axis deer. The proposal also incorporates numerous WPP components related to grazing management, brush control for range improvement and water supply enhancement, and stream bank and riparian buffer restoration.

STATE

The Texas Water Development Board (TWDB) relies on a Regional Water Planning process that relies on stakeholder-driven planning process on a 5-year cycle. The Llano watershed is located within three of the regional planning areas. Each of the latest plans discuss utilizing brush management to increase water supply. The Alliance proposal compliments these efforts as the proposal prioritizes developing catchment restoration plans that focus on brush management to increase water supply.

In addition, TWDB has recently initiated a process for regional flood control planning, similar to the regional water planning process. A critical component of these plans are non-structural flood mitigation methods, such as improving riparian areas. As developing restoration plans for catchments with riparian habitats is the first priority for the Alliance proposal, it nicely dove-tails with one of the state's newest programs.

REGIONAL PLANNING

The Alliance is a participant in the Native Fish Conservation Areas of the Southwestern USA, a partnership initiative let by Texas Parks and Wildlife. This proposal compliments several of the initiatives identified in this landscape-scale conservation initiative to improve aquatic habitats and freshwater fishes. Notable, the plan compliments the South Llano River Conservation Demonstration Area, a partnership between South Llano River State Park and the Texas Tech University Llano River Field Station to improve riparian habitat in the lower reaches of the South Llano. The plan also compliments efforts to increase recreational access along the South Llano River and manage invasive aquatic species along the Llano River.

Evaluation Criterion D - Department of the Interior and Bureau of Reclamation Priorities

The Alliance proposal meets several of the Department priorities, especially related to creating a conservation stewardship legacy second only to Teddy Roosevelt and restoring trust with local communities. The proposal also leverages science and technology to improve water supply reliability to communities, addresses ongoing drought, and improves water supplies for rural communities, all Bureau of Reclamation priorities. As there are no Federal lands within the Llano watershed, many of the listed priorities are not applicable.

DOI Priority 1 - Creating a conservation stewardship legacy second only to Teddy Roosevelt

A. Utilize science to identify best management practices to manage land and water resources and adapt to changes in the environment.

This priority is at the heart of this proposal. Catchment restoration plans will utilize peer-reviewed science and modeling output, in conjunction with Texas Parks and Wildlife best management practices to manage land and water resources, to develop strategies that address impediments to water quality and water quantity and create landscape-scale resilience to changing hydrological conditions resulting from climate change.

DOI Priority 3 - Restoring trust with local communities

B. Expand the lines of communication with Governors, state natural resource offices, Fish and Wildlife offices, water authorities, county commissioners, Tribes, and local communities.

By designing catchment-based restoration plans that empower local landowners and stakeholders to affect change in their local watershed, the lines of communication and level of trust between neighboring landowners will improve. For absentee landowners, these plans may provide the initial opportunity to meet their neighbors. The restoration plans will provide

suggestions regarding agency programs and funding sources, providing a means for landowners to develop relationships with their local resource agency.

USBR Priority 3 - Leverage Science and Technology to Improve Water Supply Reliability to Communities.

As discussed in DOI Priority One, this priority is at the heart of this proposal. Restoration plans developed for this proposal will be prioritized for catchments previously identified through ecological modeling to provide the greatest enhancement to recharge. Enhancing recharge enhances base flow and increases the reliability of water supplies during drought.

USBR Priority 4 - Addressing Ongoing Drought

Continuing the discussion from USBR Priority 3, restoration plans developed through this proposal will also prioritize areas with riparian habitat. Healthy riparian habitat is key to maintaining adequate stream bank storage and providing additional water supplies to river during times of drought.

USBR Priority 6 - Improve Water Supplies for Tribal and Rural Communities

Increasing recharge and improving riparian habitat, two prioritized goals for this proposal, will increase the volume of water stored within the aquifer and within the stream banks. This additional stored water, when released to the river during periods of low flow, increases base flows and improves the reliability of water supplies for downstream rural communities in the Llano.

Project Budget

The budget for this proposal is outlined in detail below. The budget includes no costs to be incurred prior to the start of the proposal. The budget does not include any costs for purchase of water or land or for securing of an easement.

1) Budget Proposal

Table 2. - Total Project Cost Table

Source	Amount
Costs to be reimbursed with requested Federal funding	$99,911
Cost to be paid by the applicant	$0
Value of third-party contributions	$0
TOTAL PROJECT COST	$99,911

Table 3 - Budget Proposal

BUDGET ITEM DESCRIPTION	$/Unit	Quantity	Quantity Type	TOTAL COST
Salaries and Wages				
Tyson Broad - Program Manager	40	992.8	Hours	$39,712.00
Tim McGrath - GIS Analyst	40	1,215.2	Hours	$48,608.00
Fringe Benefits				
Part Time Employees	0	0	Hours	$0.00
Travel				
No Travel	0	0	Miles	$0.00
Equipment				
No Equipment	0	0		$0.00
Supplies & Materials				

BUDGET ITEM DESCRIPTION	$/Unit	Quantity	Quantity Type	TOTAL COST
No Supplies	0	0		$0.00
Contractual				
Domain Expert Review	1,600	1	Contract	$1,600.00
Other				
Other	0	0		$0.00
		Total Direct Costs		$89,920.00
Indirect Costs				
Type of Rate	1	10	Percentage	$9,991.00
Total Estimated Project Costs				$99,911.00

2) Budget Narrative

The budget for this proposal includes salaries, contractual work, and indirect costs. There are no fringe benefits, travel, equipment, supplies and materials, or other miscellaneous cost associated with the proposal. There are no cost to be incurred prior to the award.

Salaries and Wages

Tyson Broad is the Program Manager for the Project and will become a part-time employee of the Alliance if the proposal is approved. An additional part-time employee, Tim McGrath, will be hired as the GIS Analyst should the proposal be approved. The fully burdened rate for both employees is $40/hour. There are no additional fringe rates. Labor rates and proposed hours associated with individual task are detailed in Table 1.

Fringe Benefits

There are no fringe benefit costs associated with the proposal.

Travel

There are no travel costs associated with the proposal.

Equipment

There are no equipment costs associated with the proposal.

Materials and Supplies

There are no costs for materials and supplies associated with the proposal.

Contractual

Contract costs of $1,600 are requested to provide expert review of catchment descriptions and impediment identifications developed for the project. As these correlations are critical to the development of sound restoration plans, a review of the criteria is recommended.

Third-Party In-Kind Contributions

There are no in-kind contributions for this proposal.

Environmental and Regulatory Compliance

No costs are anticipated for environmental and regulatory compliance.

Indirect Costs

The Llano River Watershed Alliance does not have a federally approved indirect cost rate and proposes the *de minimus* rate of 10 percent. This amount is $9,991.

Environmental and Cultural Resources Compliance

It is expected that the Alliance proposal will have no impact on environmental and cultural resources in the Llano watershed.

Will the proposed project impact the surrounding environment (eg., soil [dust], air, water [quality and quantity], animal habitat?

As the project as proposed only develops restoration plans, there will be no impact to the surrounding environment. Best Management Practices recommended in the plans are designed to improve water quality and quantity and minimize impacts to animal habitat.

Are you aware of any species listed or proposed to be listed as a Federal threatened or endangered species, or designated critical habitat in the project area? If so, would they be affected by any activities associated with the proposed project?

The Golden-cheeked warbler and Tobush fishhook cactus are currently listed as endangered species. Three species of freshwater mussels may be listed in the near future. The project as proposed only develops plans and will not impact any of these species. Recommendations listed

in the plans will be specifically written to avoid any impact to the currently listed species or those species likely to be listed.

Are there wetlands or other surface waters inside the project boundaries that potentially fall under CWA jurisdiction as "Waters of the United States"? If so, please describe and estimate any impacts the proposed project may have.

The Llano River and many of its tributaries are considered "Waters of the United States". As the project as proposed only develops plans and does not implement them, there will be no impacts to these waters. Recommendations listed in the plans will be written to avoid any impact to these waters.

When was the water delivery system constructed?

This question is not applicable to the proposal.

Will the proposed project result in any modification of or effects to, individual features of an irrigation system?

No irrigation systems will be impacted by this proposal.

Are any buildings, structures, or features in the irrigation district listed or eligible for listing on the National Register of Historic Places?

This question is not applicable to the proposal.

Are there any known archeological sites in the proposed project area?

Yes. The Llano River was widely used by early Native Americans.

Will the proposed project have a disproportionately high and adverse effect on low income or minority populations?

No. In fact the project is designed to have positive effects on these populations.

Will the proposed project limit access to, and ceremonial use of, Indian sacred sites or result in other impacts on tribal lands?

No. It is unknown if there are such sites in the proposed project area. However, the proposed project will not limit access or use of any lands.

Will the proposed project contribute to the introduction, continued existence, or spread of noxious weeds or non-native invasive species known to occur in the area?

No. The recommendations in the plan are designed to reduce noxious weeds and non-native species in the watershed.

Required Permits or Approvals

The project, as proposed, will not require any permits or approvals.

Appendix

1) **Letter of Support from Upper Llanos Soil and Water Conservation District**
2) **Letter of Support from Texas Wildlife Association**
3) **Llano River Watershed Alliance Board Resolution**

Leave more leaves to grow more roots to grow more leaves

UPPER LLANOS SOIL AND WATER CONSERVATION DISTRICT #225
902 College Street Junction, Texas 76849 Phone: 325-446-2722
www.ulswcd.com upperllanos@swcd.texas.gov

January 18, 2021

Tyson Broad
c/o Llano River Watershed Alliance
PO Box 725
Junction, Texas 76849

Re: US Bureau of Reclamation WaterSMART Proposal

Dear Tyson:

Since 1947, Upper Llanos Soil and Water Conservation District (SWCD) has worked with landowners to promote effective land use, protect, establish and ensure conservation and proper ecology in the headwaters of the Llano River. We believe in providing education opportunities for landowners, teachers and students through hands-on programs, scholarships and workshops.

The Upper Llanos SWCD supports the Llano River Watershed Alliance application to Bureau of Reclamation's WaterSMART Cooperative Watershed Management Program. The proposed effort, "*Catchment-Based Landowner Restoration Planning for the Llano River Watershed, Texas*", provides critical outreach and technical assistance to landowners and compliments the efforts of the SWCD.

We wish you success in your grant application and look forward to continuing our partnership with the Llano River Watershed Alliance.

Sincerely,

Quinton McKinney

Quinton McKinney, Chairman
Upper Llanos Soil and Water Conservation District

Tyson Broad
c/o Llano River Watershed Alliance
PO Box 725
Junction, Texas 76849

January 15, 2021

Re: US Bureau of Reclamation WaterSMART Proposal

Dear Tyson:

The Texas Wildlife Association (TWA) is a non-profit 501 c3 organization serving Texas wildlife and its habitat, while protecting property rights, hunting heritage, and the conservation efforts of those who value and steward wildlife resources.

Lyndon Johnson once said, “Saving the water and the soil must start where the first raindrop falls.”

TWA believes it is vitally important to our stakeholders to work with our partners to discover innovative methods to engage private landowners in stewardship of private lands, where the first raindrop falls. This is why we fully lend our support for the application to and implementation of Bureau of Reclamation’s WaterSMART Cooperative Watershed Management Program. The proposed effort, “*Catchment-Based Landowner Restoration Planning for the Llano River Watershed, Texas”,* will provide critical outreach and technical assistance to landowners to implement conservation practices to improve water resources in the Llano Watershed. We believe this proposal will be well received and is well timed to complement and enhance our ongoing efforts through the Texas Hill Country.

We wish you success in your grant application and look forward to working with Llano River Watershed Alliance as an important regional partner.

Iliana A. Peña
Director of Conservation
Texas Wildlife Association

January 11, 2021

A Resolution of the Llano Watershed Alliance to Authorize Proposal Application to US Bureau of Reclamation WaterSMART Cooperative Watershed Management Program.

Whereas the Llano River Watershed Alliance (Alliance):

Is a non-profit 501 c3 organization of landowners and interested stakeholders whose mission is to preserve and enhance the Llano River watershed by encouraging land and water stewardship through collaboration, education, and community participation, and

Is proposing a two-year grant proposal entitled "*Catchment-Based Landowner Restoration Planning for the Llano River Watershed, Texas",* to the US Bureau of Reclamation under the WaterSMART Cooperative Watershed Management Program for implementing watershed restoration in the Llano watershed, and

Recognizes there is no requirement for the Alliance to match funds for this proposal.

Be it therefore Resolved on this day, January 15, 2021, that the Alliance authorizes the Llano River Watershed Alliance submittal of a grant application by Tyson Broad to the US Bureau of Reclamation and for Tyson Broad, an employee of the Alliance, to serve as the Project Manager. In such capacity, Mr. Broad will work with Reclamation to meet established deadlines for entering into this agreement.

Andrew Burnard
President

Gary Garrett
Vice-President