

Arbuckle-Simpson Aquifer Water Bank Development Strategy

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Table of Contents

TECHNICAL PROPOSAL	3
Executive Summary	3
Background Data & Information	4
Project Location	4
Description & Eligibility of Applicant	4
Water Supplies & Demands	6
Municipal Reliance	6
Regulatory Problem	8
Proposed Market Solution	8
Working with Reclamation	9
Project Description	10
Task 1 – Development of a Project Work Plan	10
Task 2 – Outreach and Partnership Building.....	10
Task 3 – Water Market Scoping and Planning Activities	11
Task 4 – Develop a Water Marketing Strategy	12
Task 5 – Draft Technical Report	13
Evaluation Criteria	13
PROJECT BUDGET	23
Funding Plan	23
Budget Proposal	24
Budget Narrative	25
Environmental and Cultural Resources Compliance	27
Required Permits or Approvals	28
Existing Analysis Contributing to the Study	28
ATTACHMENTS	29



TECHNICAL PROPOSAL

Executive Summary

Date: July 17, 2018
Applicant Name: Chickasaw Nation
City, County and State: Ada, Pontotoc, Oklahoma, part of the Chickasaw Nation territory

The Chickasaw Nation (CN) of Oklahoma is pleased to submit this application for grant funding to develop a water bank for the Arbuckle-Simpson Aquifer (ASA) region. This application seeks funding to evaluate and establish a water bank framework, which would allow voluntary, market-based transfers of groundwater pumping rights across the ASA region. Such a water bank is intended to assist municipal water providers that rely upon the ASA and that anticipate future water shortages, absent an ability to obtain additional water supplies. Water supply shortages in the region are anticipated from future demand growth, drought impacts and new regulatory limits on pumping. Recent implementation of a reduced cap on allowable groundwater pumping in the ASA has greatly impacted water supply planning for municipal entities. Beyond the municipal sector, the proposed water bank has the potential to benefit agricultural, industrial, recreational and ecological demands in the region. The study intends to utilize the unique acreage-based groundwater allocation laws in Oklahoma to provide for a simple and open market exchange of groundwater rights across the ASA region.

The Choctaw and Chickasaw Nations have taken on the task of regional water planning for Southeast Oklahoma, coinciding with the location of their jurisdictional territories. As part of this role, the Chickasaw Nation has a vested interest in ensuring that communities across the region are able to meet their water needs. Nowhere is that more important than the ASA region, where recent droughts have caused devastation to the agricultural sector and where many communities were precariously close to running out of water.

The project objectives are to communicate with local stakeholders in order to evaluate the best framework to allow for an efficient transfer of groundwater pumping rights, and to develop a detailed strategy on how to implement the proposed ASA water bank. A diverse set of stakeholders have voiced support for the project, showcasing the need and multiple benefits of the proposed project. Reclamation has previously supported WaterSMART projects in the ASA region, and the proposed market strategy is a specific recommendation and complement to past water planning efforts.

Proposal for Funding Group 1

Project Timeline: 24 months

Estimated Completion Date: January 2021

Reclamation Project: Lake of the Arbuckles and Arbuckle Master Conservancy District



Background Data & Information

Project Location

The Arbuckle-Simpson Aquifer (ASA) is located in southeastern Oklahoma, within Murray, Carter, Johnston and Pontotoc counties¹ (see Figure 1). The aquifer covers approximately 500 square miles and is the principal source of water for more than 110,000 people. It also supplies water for mining and irrigation and is the source for nearly 100 known springs that are culturally important and generate approximately \$100 million in tourism revenues per year. A significant spring fed by the aquifer is Byrds Mill Spring, the City of Ada's primary drinking water source. The U.S. Environmental Protection Agency has designated the eastern portion of the ASA as a "Sole Source Aquifer," a mechanism to protect drinking water supplies in areas with limited water supply alternatives.

The Lake of the Arbuckles, created by the construction of Arbuckle Dam by the U.S. Bureau of Reclamation (USBR) in 1966, serves as a main source of water supply for several municipalities through the Arbuckle Master Conservancy District. The springs, streams and lakes in the Lake of the Arbuckles watershed (see Figure 2) are partly sustained by groundwater flow from the ASA. Unfortunately, the quantity and quality of these water resources are threatened by groundwater withdrawals, land uses such as mining and agriculture, drought and climate change.

The Chickasaw National Recreation Area (NRA) lies wholly within the Lake of the Arbuckles watershed. The springs, streams, and lakes in Chickasaw NRA are significant resources for tourism and recreation, aquatic and terrestrial ecosystems and public water supply. These water resources draw visitors to the park to enjoy water-based recreational activities such as boating, water skiing, sport fishing, swimming and to enjoy the scenic beauty of the Lake. The Lake of the Arbuckles is considered to be one of the best fishing lakes in Oklahoma for catfish, perch, bass and crappie. It is a major attraction that boosts the economy of south-central Oklahoma.

Description & Eligibility of Applicant

The Chickasaw Nation is a federally-recognized Indian tribe and the jurisdictional territory is comprised of 13 counties in south-central Oklahoma. The Chickasaw Nation is economically strong, culturally vibrant and full of energetic people dedicated to the preservation of family, community and heritage. Since the 1980s, the tribal government has focused most of its efforts on building an economically diverse base to generate funds that will support programs and services to Indian people. Under this leadership, the quality of life for all Chickasaws has been greatly enhanced, which is key to the Chickasaw Nation's efforts to pursue self-sufficiency and self-determination, which in turn helps ensure that Chickasaws stay a united and thriving people. The Chickasaw Nation has a strong working relationship with many Federal agencies including the Bureau of Reclamation and the Corps of Engineers, and Oklahoma state and local agencies, which will be vital to a successful outreach program and the collaborative development of water market strategies.

¹ A GIS shapefile of the project location has been submitted with this proposal.

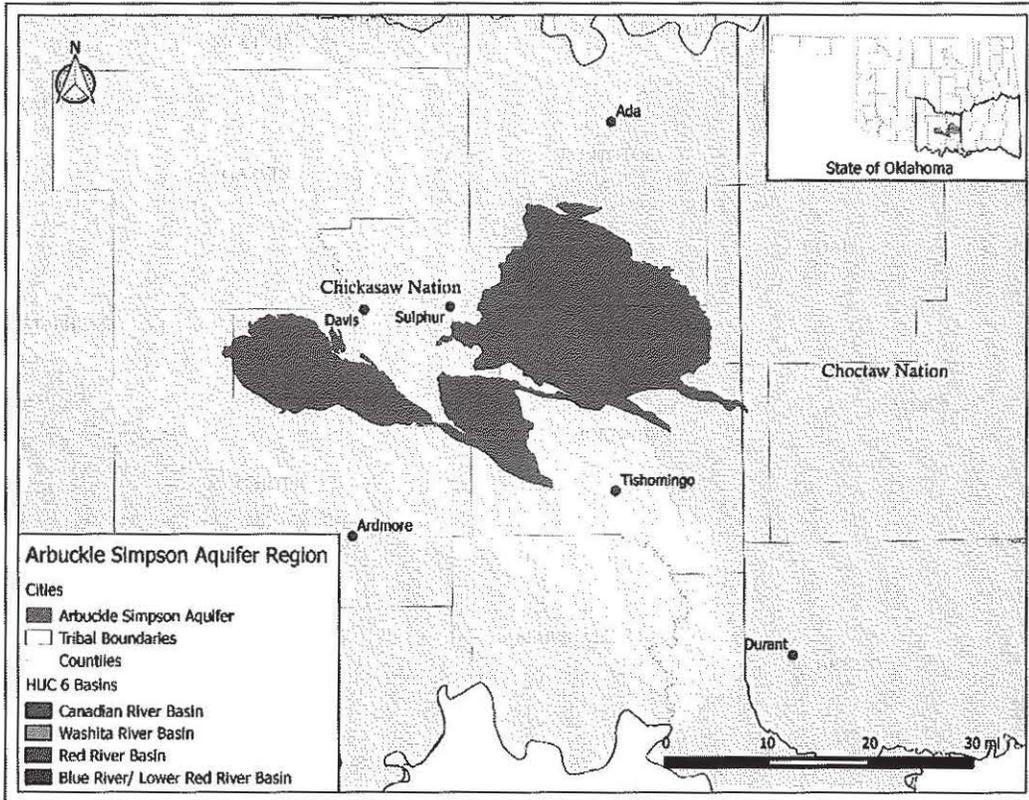


FIGURE 1. GEOGRAPHIC LOCATION OF THE ARBUCKLE SIMPSON AQUIFER

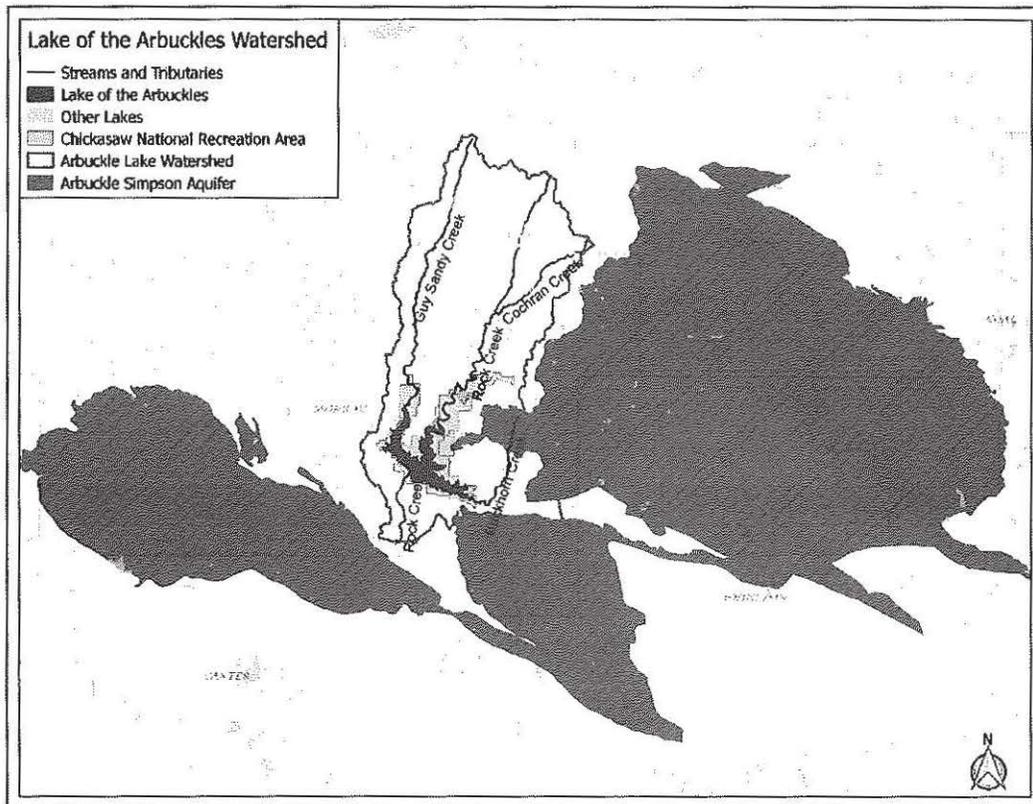


FIGURE 2. STREAMS SUPPLIED BY THE ARBUCKLE-SIMPSON AQUIFER, ARBUCKLE



Water Supplies & Demands

In 2009, a five year state and federal study, known as the Arbuckle Simpson Hydrology Study, was completed to determine the Maximum Annual Yield (MAY) of groundwater in the ASA. The MAY was quantified as the annual volume that could be pumped from the ASA without significantly reducing the natural flow of water from springs or streams emanating from the basin. The study team determined that streamflow impacts would be limited to not more than 25 percent of the five year average baseflow. The resulting MAY was set at 78,404 acre-feet per year (AFY) and represents the sustainable water supply from the basin for water administration purposes.

There are three categories of groundwater use in the ASA: (1) permitted uses, (2) exempt uses and (3) prior rights. Available records indicate that there are currently 15,793 AFY of active groundwater use permits for withdrawals from the ASA. These permitted uses and volumes are summarized in Table 1. Actual groundwater withdrawals are a fraction of permitted uses, with previous studies indicating approximately 4,300 AFY of annual use over the period 1964-2008. The majority (64 percent) of active permits in the ASA are used for municipal (public-supply) purposes. Exempt uses are those household domestic and livestock wells that do not require a state permit. Previous studies have estimated total exempt uses in the ASA as 234 AFY. Prior rights are those groundwater uses that were established prior to the 1973 Groundwater Act requiring a state permit for (non-exempt) groundwater withdrawals. A total of 10 prior rights exist in the ASA with an allocation of 5,400 AFY. Similar to permitted uses, most of these prior rights are not fully exercised on an annual basis. According to the Oklahoma Comprehensive Water Plan (OCWP), when considering all groundwater rights and uses in the ASA, there is estimated to be over 50,000 AFY of water potentially available for future permitting in the ASA. At a basin-wide level, the ASA is not a water short system and additional demands can be satisfied below the sustainable MAY limit set by the State in 2009.

TABLE 1. VOLUME OF ACTIVE GROUNDWATER RIGHT PERMITS IN THE ARBUCKLE SIMPSON AQUIFER

Primary Purpose	Total Permitted Use (AFY)
Agricultural/Irrigation	2,214
Commercial	4
Industrial	2,257
Mining	1,156
Public Supply	10,138
Recreation/ Fish/Wildlife	24
Total	15,793

Municipal Reliance

Within the ASA region there are 47 municipalities and communities that either rely on or have the potential to use water from the ASA, including those that rely upon water discharging from groundwater springs (see Figure 3). These municipal water systems include the cities of Ada and Sulphur, Johnston County Rural Water District #3 and Murray County Rural Water District #1. The OCWP indicates that water demand by these ASA water providers is projected to increase by over 35 percent from 2010 to 2060, with a corresponding increase in demand volume of roughly 2,200 AFY.



The City of Ada provides water to its 17,000 residents, as well as most of the 36,000 residents of Pontotoc County, exclusively from the ASA. Ada also provides water to several surrounding rural water districts. Ada's primary source of water for the last 100 years has been Byrds Mill Spring, which is fed by the ASA. The city also relies upon groundwater from three supplemental wells in the ASA. Ada currently has 7,693 AFY of groundwater rights. However, due to future demand projections, Ada is seeking additional supplies to reliably meet its current and future water demands.

The City of Sulphur is also dependent on the aquifer. The USBR has determined that a water supply deficit will exist for Sulphur by around 2030 if pumping restrictions are adopted (see below). The city is investigating options to exercise 1,997 AFY of surface water rights from Arbuckle Lake to serve as a regional water supply and to address projected shortages. New infrastructure to divert, treat and store a new surface water supply source would be a significant investment for Sulphur.

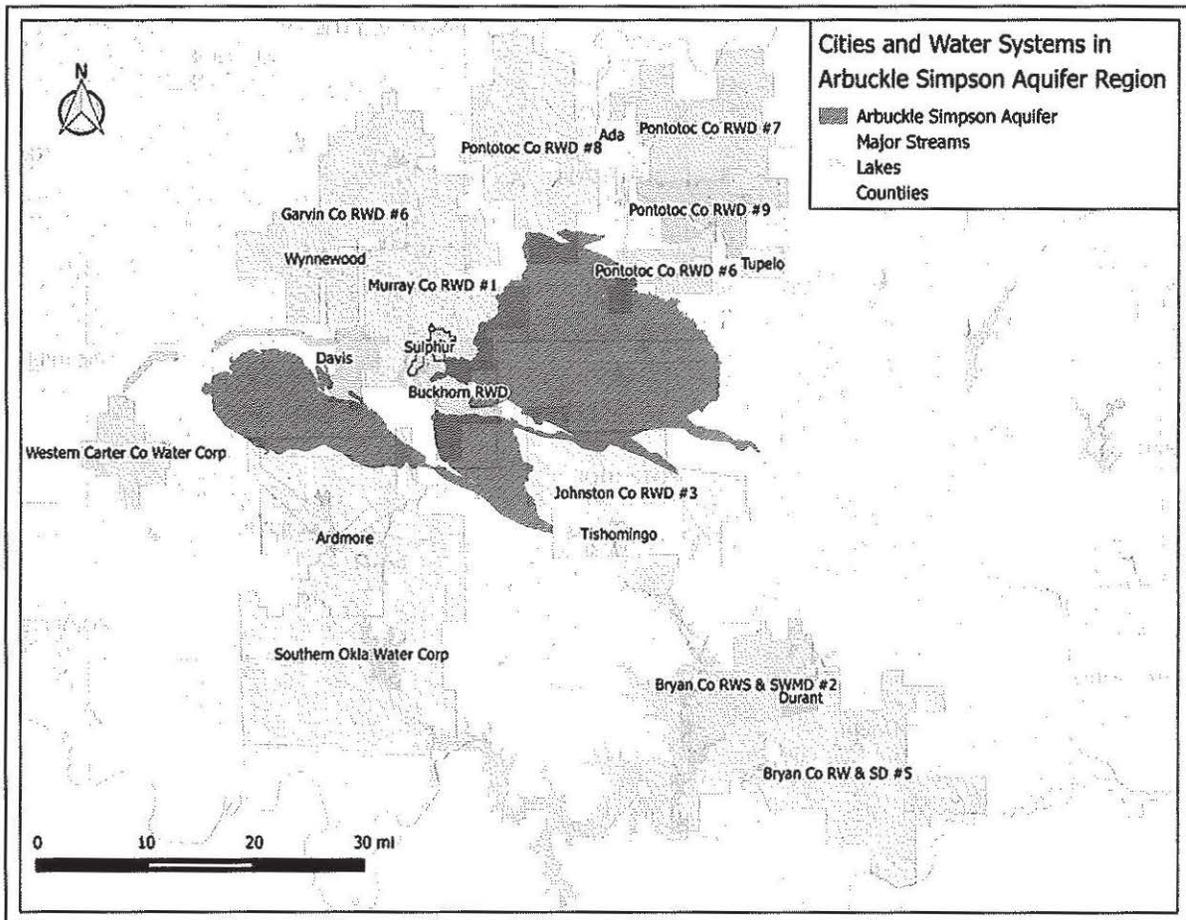


FIGURE 3. MUNICIPAL SYSTEMS IN THE ARBUCKLE SIMPSON AQUIFER REGION



Regulatory Problem

Although the ASA does not suffer from an imbalance in aquifer water supplies and demands, several water users are poised to experience shortage due to new regulatory requirements. In Oklahoma, groundwater rights are established by and are appurtenant to overlying land ownership. Groundwater permits are established not based on beneficial use, but on the acreage of land ownership over the aquifer extents. Each landowner over an aquifer is provided an Equal Proportionate Share (EPS) of the aquifer water supply. Across much of Oklahoma, groundwater hydrology studies have not been completed and the State has adopted a default EPS value of 2.0 AFY per acre of land ownership. This default value was in place for many years in the ASA. Following from the 2009 Hydrology Study, the sustainable volume of pumping indicated by the MAY for the aquifer indicated a significantly reduced EPS of 0.2 AFY per acre. This change resulted in a significant reduction in allowable pumping by groundwater users, particularly municipal water providers who lack large land holdings. For example, preliminary estimates suggest that the City of Ada would need to acquire approximately 5,900 AFY of groundwater rights (equivalent to 29,500 overlying acres) to get back to the permitted groundwater pumping volumes it had in place prior to the recent EPS regulatory change.

Proposed Market Solution

While the regulatory change presents a problem, the nature of Oklahoma groundwater law also provides for a simple and straight-forward solution. In Oklahoma, groundwater pumping from an aquifer does not have to occur at the location of the owned water rights. For example, a landowner some distance from a city may sell their groundwater rights to the city and the city can then drill a well and pump water from another location, based on this water right and subject to well spacing rules, as long as the well is developed in the same aquifer. Regulation of groundwater in this form allows for a simple yet effective market-based solution to the regulatory problem.

The Chickasaw Nation proposes to lead an effort to work with state regulatory agencies to establish a market-based water bank for the ASA region. The water bank will allow landowners in the ASA to deposit water rights into the bank and allow permitted groundwater users to withdraw water rights out of the bank. Implementation of such a water bank to facilitate the transfer of groundwater rights among landowners in the ASA region will help the cities of Ada and Sulphur, as well as other groundwater dependent communities, both to maintain their current groundwater withdrawals and to increase groundwater use to meet future demands.

Beyond base supply planning, a water bank will provide a useful resource to address the threat of prolonged drought for municipal water providers. The ASA region experienced an exceptional drought from 2010-2015, causing economic hardship and requiring emergency actions, such as hauling water and drilling emergency wells. The agricultural sector was hit particularly hard. In response, the Chickasaw Nation has developed a Drought Contingency Plan (DCP). Establishing a market or water bank for the flexible transfer of groundwater rights is a mitigation strategy recommended in the DCP to assist in providing adequate and reliable water supplies in the ASA.



Working with Reclamation

The Chickasaw Nation is currently conducting several projects in cooperation with Reclamation under the WaterSMART Program. The proposed water marketing strategy project is complementary to these other WaterSMART projects and stems from specific recommendations of local stakeholders. Previous WaterSMART projects have targeted aspects of water supply and demand management, including drought planning, watershed management and water conservation. The proposed water marketing strategy targets a new and different problem rooted in regulation as opposed to hydrology and use. The proposed project would provide funding to target a unique concern but would contribute to the overall enhancement of regional water supply reliability across the Arbuckle-Simpson Aquifer. The following paragraphs describe the previous projects between the Chickasaw Nation and Reclamation.

Drought Response Program Contingency Planning

The Chickasaw and Choctaw Nations are managing a drought contingency planning process involving all of the water suppliers across the Arbuckle-Simpson Aquifer region as well as other stakeholders. The Arbuckle-Simpson Aquifer Regional Drought Contingency Plan includes a vulnerability assessment, the development of mitigation and response actions and an operational and administrative framework for implementation, monitoring and future adaptation. This project was completed in 2017.

Cooperative Watershed Management Program

The Chickasaw Nation of Oklahoma has been awarded grant funding from Reclamation under the Cooperative Watershed Management Program (CWMP) to establish the Lake of the Arbuckles Watershed Group, to promote the sustainable use of water resources in the Lake of the Arbuckles watershed. The Watershed Group is comprised of a diverse set of stakeholders that are working to collaboratively identify, evaluate and resolve water quantity and quality issues within the Lake of the Arbuckles Watershed through the development of a watershed restoration plan. The project is scheduled for completion by September 2018.

Water and Energy Efficiency Grant Program

The Choctaw and Chickasaw Nations in southern Oklahoma are initiating a project to implement water conservation measures, including installing high-efficiency indoor appliances and fixtures, as well as computer-controlled irrigation systems, at their six largest casinos. The project includes review, monitoring, installation and evaluation of conservation strategies. As part of the monitoring, the team will work with a group specifically focused on measurement and monitoring of water and energy. The group will install monitoring devices on various systems at each facility. These monitoring systems will remain after the contract is completed, allowing the tribes to measure and report on actual conservation savings. The project is anticipated to be completed by March 2019.



Project Description

The Chickasaw Nation is seeking funding to develop and implement a water bank in the ASA region to allow the transfer of groundwater rights (EPS allocations) from land owners to water users. This project has been developed in direct response to concerns about water supply availability during drought and with the recent regulatory changes. This section provides a description of the project approach, which includes the following required elements: (1) a communication and outreach plan to solicit feedback from a diverse group of stakeholders, (2) scoping and planning activities aimed at defining the framework for the water bank and (3) a detailed implementation strategy for establishing the water bank upon completion of the project. This application is seeking an award under Funding Group 1.

Water Bank Concept

The ASA water bank is intended to minimize the time and expense of conducting groundwater right transactions. Absent a water bank option, it is likely that the cities and other high value water uses would be forced to make individual solicitations to landowners in the ASA region, and draft individualized water right transfer documents to secure a water trade. The proposed project directly targets the goals and objectives of the funding program, by reducing water supply shortage (in this case, regulatory shortage) to multiple stakeholders. Beneficiaries of an ASA water bank will include agricultural, industrial, recreational and ecological uses in the region.

In concept, the ASA water bank would be structured as an accounting program to track the use of groundwater right holdings separate from the overlying land base. The project will address a variety of questions that accompany this simple concept, such as water right quantification and recording, tracking water right transactions and public communication. The project approach is intended to target these questions and others, to provide the ASA region a clear path to implementing a water bank.

Approach

Funding awarded will be used to accomplish the following project activities:

Task 1 – Development of a Project Work Plan

A project work plan will be developed to define how the project tasks will be performed, establish a detailed project schedule and identify roles and responsibilities of the project team including the project manager, technical consultants, task force members and stakeholders. The project work plan will be submitted for review and comment by Reclamation.

Task 2 – Outreach and Partnership Building

The purpose of this task is to inform stakeholders and potential water bank participants and to solicit feedback on developing a water bank framework. A communications and outreach plan will be developed which will include identifying potential water market participants and conducting at least two public meetings during the first year of the project. A task force will also be developed to continuously provide feedback on the project. The task force will include



representatives of project partners, including the Chickasaw Nation, Oklahoma Water Resources Board, City of Ada, the Nature Conservancy, the Oka' Institute and other study partners identified through the outreach process.

Outreach to interested and affected stakeholders has been successful and well-attended during other water management projects in the region such as the ASA Drought Contingency Plan and Lake of the Arbuckles Watershed Group. These established stakeholder groups and communication avenues will facilitate an effective outreach program for this project.

Successful completion of this task will result in the compilation and evaluation of feedback from stakeholders and project partners that will be incorporated into the development of the water bank strategy. Feedback from stakeholders on water bank pricing, administrative fees, transfer processes, durations, information sources and contract terms will be important in crafting a water bank framework to fit local needs and objectives.

Task 3 – Water Market Scoping and Planning Activities

At its core, the proposed ASA water bank is an accounting model which will track deposits and withdrawals under an organized, simple, and effective framework. A set of technical analyses will be completed to ensure that the water bank is established in a well-informed manner. Various aspects of the water bank will be researched through engineering, economic and legal studies, as described below.

Engineering Analysis

- Complete studies to quantify the supply and demand aspects of the water bank, including the following items:
 - Inventory the land ownership based in the ASA region to quantify the potential supply of groundwater rights to the water bank;
 - Categorize land owners and supply sources by water use, size of land holdings and ownership type;
 - Identify water demands such as the municipal sector and other water users at risk due to regulatory shortage and during historical drought conditions. Determine potential demand from the water bank; and
 - Categorize potential water demands by water use, volume of demand and ownership type.
- Evaluate hydrologic impacts of various transaction structures in the water bank (such as multi-year leases, dry-year options, or permanent sales).
- Evaluate the suitability of existing water supply infrastructure and the timing and cost of developing alternative (non-groundwater) water sources.
- Research platform options for establishing a user interface for the water bank, communicating information to interested buyers and sellers and establishing the protocols for initiating a water bank transaction.



Economic Analysis

- Evaluate water bank pricing through a valuation of supply-side water use revenues and demand-side costs for water source alternatives. This pricing analysis will provide perspective to potential water bank participants and may serve as a tool for setting a baseline starting price for transactions.
- Research and analyze historical land and water right transactions in Oklahoma, with a focus on the ASA region.
- Research water transfer laws and policies in Oklahoma, with a focus on costs associated with transferring water rights through traditional means.
- Evaluate the economics of various water transaction structures in the water bank and evaluate the suitability of each structure for different demand categories in the region.

Legal Analysis

- Analyze the transferability of EPS allocations under current Oklahoma laws and policies;
- Analyze regulatory requirements for the transfer of permitted rights;
- Evaluate legal and policy issues resulting from the 2016 water settlement agreement between the Choctaw and Chickasaw Nations and the State of Oklahoma and
- Analyze Federal and State compliance concerns.

Task 4 – Develop a Water Marketing Strategy

A water marketing strategy plan document will be developed that will define how the ASA water bank will be implemented. Based on the technical work completed under Task 3, the strategy will define the framework for the water bank, including the following aspects:

- Specific processes for making deposits into the water bank and withdrawals from the water bank,
- Transfer options such as a dry-year option, multi-year lease or permanent sale;
- Pricing structures and baseline (starting) recommendations;
- Legal and administrative requirements and documentation for each water right transfer and costs associated with this requirement;
- Monitoring requirements to ensure compliance and to inform accounting of all groundwater rights in the ASA region and
- User interface and underlying software platform of the water bank.

Beyond the framework, the water marketing strategy will identify how stakeholders will interact with the water bank and how it will be advertised to local interests. The long-term sustainability of the water bank will be addressed in the strategy through a description of projected volumes of transfer activity, water bank participants and infrastructure involved in the near and long terms, and administrative costs to oversee operations of the water bank. Any support tools, including software databases, registries, websites or models to facilitate implementation and operation of a water bank that were supported by the stakeholders and project participants, and recommended for implementation, will be described in the strategy.



Task 5 – Draft Technical Report

A technical report will be drafted to provide a summary of the findings and conclusions from the technical analysis, and will define the expected benefits of implementing the ASA water bank. All planning and outreach activities conducted, lessons learned and any other findings will also be included in the final technical report.

Evaluation Criteria

The proposed project is considered to meet and exceed the goals and objectives of the Water Marketing Strategy grant program. The overall objective of the Chickasaw Nation is to develop and apply a simple yet effective water marketing tool to reduce regulatory shortage. The underlying basics of the water supply problem in the ASA region make water marketing and transfers an obvious solution.

Evaluation Criterion A: Water Marketing Benefits

1) Explain whether the water market/activity will address a specific water supply shortfall and describe the extent of benefits to different sectors, including agricultural, municipal/industrial, tribal and environmental sectors, including:

a. Will the water marketing strategy address a specific water supply shortfall?

As described in the background section, many high-value water users in the ASA region are anticipating a near-term water supply shortfall due to new regulatory constraints (as opposed to hydrologic conditions). Future growth in water demands may exacerbate this regulatory shortage. For example, the City of Ada expects to see a water supply shortfall of approximately 2,900 acre-feet per year based on average historical demands, due to the new regulatory requirements. Implementation of a water bank would provide a simple and straight-forward option for eliminating this shortfall due to regulatory limits, by allowing municipalities to transact water rights from landowners across the ASA region.

b. What is the nature and severity of the shortfall and which sectors are affected?

The regulatory change to an EPS of 0.2 AFY per overlying land acre was required to ensure that the ASA remains a sustainable water resource for future generations. However, this regulatory change has greatly impacted high-value municipal water users who have come to rely upon the ASA as a critical water supply but who do not have ownership of the land base to support their historical pumping levels. The nature of the shortfall is clearly regulatory, as the overall sustainable supply of the ASA can meet present and future demands. The municipal sector is the most prominent and obvious sector affected by the shortfall resulting from the regulatory change, and many municipalities have already started to explore individual options for addressing the problem. The volume of the shortfall will vary from municipality to municipality. For example, the City of Ada expects to see a water supply shortfall of approximately 2,900 acre-feet per year based on average historical demands. In addition, many other sectors are anticipated to benefit from the flexibility provided by the proposed ASA water bank. The ASA region does experience severe drought cycles, and the water bank will facilitate short-term water leases to improve the water supply portfolios of users in multiple sectors, including: agriculture, industrial, environmental and recreational.



c. How and to what extent will the water market/water marketing activities, once implemented, address the shortfall?

Implementation of the ASA water bank will directly address the shortfall, by providing a simple and straight-forward tool for participating water users to obtain additional groundwater rights to support their current and future pumping demands. Localized supply shortages in the ASA region resulting from drought will be reduced by allowing water users to quickly acquire supplemental groundwater rights to support pumping or maintain spring flows. Use of the ASA water bank to address the regulatory shortage is almost certain. Use of the water bank to address drought conditions is less certain, but the project team will develop a strategy and water bank framework that is conducive to a variety of transaction structures and user types.

d. Will the water market/water marketing activities benefit multiple sectors and/or types of water uses? If so, to what extent and which sectors and water uses will benefit?

As previously discussed, all groundwater uses currently permitted in the ASA are at risk due to the regulatory change in EPS allocations. Municipal water supply is the primary use of groundwater from ASA. Implementation of an ASA water bank would help the cities of Ada and Sulphur, as well as other groundwater dependent communities, both to maintain their current groundwater withdrawals and to increase groundwater use to meet future water demands. The City of Ada is expected to see a water supply shortfall of approximately 2,900 acre-feet per year without the acquisition of additional groundwater rights. Additionally, the ASA supplies water for mining and irrigation and is the source for nearly 100 known springs that are culturally important to the Chickasaw Nation. The proposed water bank has the potential to also benefit the agricultural, industrial, recreational, and ecological demands in the region by facilitating the transfer of groundwater rights for a variety of reasons, including supplemental supplies during a drought, forbearance to enhance streamflow or emergency supplies in response to infrastructure failures. The multi-sector benefits of the project are evidenced by the diverse group of stakeholders who have voiced support.

2) Explain how and to what extent the proposed water market or water marketing activities will improve water supply sustainability in general in the area upon implementation of the strategy (address all that apply):

a. Increasing resiliency to drought

The ASA region depends upon the aquifer for much of its water supplies, through direct pumping and many spring-fed creeks. In drought periods, many water resources become unreliable which presents a significant drought vulnerability for communities. The recent drought caused significant economic hardship requiring emergency actions, such as hauling water and drilling emergency wells. For example, deep into the drought Pennington Creek almost ran dry, which is the only water supply option for the City of Tishomingo. Other communities in the region are in a similar predicament. Implementation of a water bank can address these issues by providing a mechanism for making water supplies available during times of shortage for those communities that are most vulnerable to drought. As a mitigation strategy recommendation in the ASA Drought Contingency Plan, implementation of a water bank will help build resilience to drought



and protect the sustainability of the aquifer by providing an opportunity for water providers and users across multiple sectors to access alternative supplies.

b. Providing instream flows for ecological purposes, species, recreation or water quality objectives

Declining water levels across the ASA region are responsible for the recent decline in numbers of river cane (*Arundinaria*) and black willow (*Salix nigra*) which are culturally important to both the Chickasaw and Choctaw Nations. The Lake of the Arbuckles and the Chickasaw National Recreation Area provides a valuable recreation resource to the region whose springs and streams fed by the ASA. The state regulatory change will help to sustain the ASA resource and preserve these surface water resources, such that adherence to the reduced EPS by ASA water users will preserve springs and stream flows that provide both ecological and recreational value to the region and to the tribes. Beyond this, the project team will create a flexible water bank structure that can provide for dry-year forbearance agreements and similar tools to preserve spring-fed instream flows during drought periods.

c. Sustaining agricultural communities while still reducing diversions

Most of the agriculture in the ASA region is rainfed and does not rely upon irrigation to supplement the natural water supply. Agricultural groundwater use permits total approximately 2,200 acre-feet per year in the ASA region. Supplemental irrigation has been growing across Oklahoma, as farmers look to improve yields and maintain yields during drought cycles. The water bank will be structured to allow flexible water transfers both to and from the agricultural sector. Those agricultural operations who have invested in irrigation will likely benefit from the water bank, by having a means to expand their groundwater rights portfolio to increase supplemental water supplies during drought periods. The EPS allocation is only 0.2 acre-feet per acre, compared with a crop-weighted irrigation requirement of approximately 1.5 acre-feet per acre for Pontotoc County from the 2012 OCWP, indicating that agricultural operations will greatly benefit from the ability to increase their water rights portfolio through the water bank.

d. Reducing the likelihood of conflicts over water

In the absence of a water bank to facilitate water transactions, the high-value municipal water users in the ASA region will likely revert to individual negotiations and water supply agreements with landowners. These individual transactions have the potential to be costly and inefficient for the municipal buyers, and they also have the potential to be contentious as landowners position themselves to secure the best deal possible without all of the information available. The water bank framework to be developed under the proposed project seeks to provide an open forum for water users to participate, such that transactions are transparent.

e. Demonstrating a water marketing approach that is innovative and which may be applied by others

The proposed project represents the first regional water bank development effort in Oklahoma and could serve as a model for other aquifer regions in the state that face regulatory limits on pumping to sustain the long-term health of the aquifer resource. Much of Oklahoma is still utilizing a default EPS of 2.0 acre-feet per acre, which will likely change as more hydrologic studies



of groundwater aquifers are completed across the state. Beyond Oklahoma, there are other groundwater aquifers and regions in the Western U.S. that apply a similar type of groundwater policy with water right quantities based on overlying land ownership. Some examples include the Denver Basin aquifer in Colorado and Groundwater Conservation Districts in Texas. The ASA water bank could inform water marketing opportunities in these areas outside of Oklahoma.

3) Explain the extent to which the water market/activity will be ready to proceed upon completion of the strategy, addressing each of the following:

a. Describe your plans and timeline for implementing the strategy upon its completion.

One of the most beneficial characteristics of the proposed ASA water bank, which cannot be overstated, is that it is conceptually simple and avoids much of the regulatory process inherent in water marketing in other states. This leads the project team to believe that the ASA water bank will be ready for implementation upon completion of the study. The proposed project will clarify the legal and technical questions that remain outstanding, and several stakeholders have already voiced support and interest in participating in the water bank. Stakeholder feedback during the course of the project and completion of the technical studies will provide a more informed timeline for implementation, but the project team expects that the ASA water bank will be developed and in use within two years of project completion.

b. Are there complex issues, including issues of law or policy, that would need to be resolved before the strategy could be implemented?

There are no legal and policy issues that are seen as roadblocks to implementing the ASA water bank, and there are relatively few legal and policy issues that need to be resolved as part of the project. In most states, the establishment of a water bank to facilitate water transfers is complicated by legal issues of non-injury, speculation, and approved changes to the elements of a water right. The ASA water bank does not have to deal with these same issues, because of the flexible nature of groundwater laws in Oklahoma and in the ASA region. As stated previously, the ASA water bank is largely an accounting framework to ensure that exercise of groundwater rights is tied to specific land parcels. The project team will work with Oklahoma state agency officials to develop a water bank framework that provides adequate documentation, monitoring and verification to ensure that the state groundwater policies are being followed. Another legal and policy issue that the project team will consider is that of shared water management roles in Southeast Oklahoma following from the August 2016 water settlement agreement between the Chickasaw and Choctaw Nations and the State of Oklahoma.

c. Explain whether previous planning, outreach and/or water marketing activities have been completed.

The ASA region has seen a relatively large number of water planning studies and outreach/collaboration efforts over the past decade. These past efforts have included:

- Arbuckle-Simpson Aquifer Drought Contingency Plan (DCP) funded by Reclamation and managed by the Chickasaw Nation. The plan identifies mitigation and response actions that can be implemented at the local and regional levels, including a water bank.
- The Chickasaw and Choctaw Nations completed a project working with the US Army Corps of Engineers to identify suitable locations for wastewater reuse in southeast Oklahoma.



A list of 12 communities has been identified for further investigation, including Ada and Durant. The City of Sulphur is also contemplating indirect wastewater reuse whereby treated wastewater would be conveyed back into Lake of the Arbuckles to supplement supply.

- The Choctaw and Chickasaw Regional Water Plan builds on available water resource data and provides a careful review and science-based assessment of policy alternatives that will ensure that the region's water resources are sustainably developed and managed for the health and benefit of current and future generations. The Choctaw and Chickasaw Regional Water Plan provides communities with the tools and foundations to develop long-term strategies to protect, and if necessary, restore the integrity of water resources in southeast Oklahoma.
- The Oklahoma Comprehensive Water Plan (OCWP) contains a wealth of data and policy recommendations for the state and individual watershed planning regions. The plan includes valuable future population and water demand projections, and water availability data. One of the more interesting recommendations, codified in state law with the passage of House Bill 3055 in 2012, is a statewide goal of consuming no more fresh water in 2060 than was consumed in 2010. The legislation emphasizes the desire to use education and incentives, rather than mandates or regulatory mechanisms to achieve this goal, which will necessarily involve cooperative and collaborative efforts such as the proposed ASA water bank.
- The ASA Hydrology Study was conducted by the Oklahoma Water Resources Board, in collaboration with Reclamation and others. It is a comprehensive investigation of the ASA including an assessment of the climate, geology, geochemistry and available water resources for the allocation of water rights.

Evaluation Criterion B: Level of Stakeholder Support and Involvement

1) Identify stakeholders in the planning area who have committed to be involved in the planning process.

- a. Describe their commitment, e.g., will they contribute funding or in-kind services or otherwise engage in the planning process?*

Letters of support from the City of Ada, the Oka' Institute, Johnson County Industrial Authority, and The Nature Conservancy have been received committing to the proposed project for establishing an ASA water bank. These stakeholder interests have agreed to serve on a task force to inform the development of the detailed water bank strategy. The Chickasaw Nation (as the applicant) has committed to providing both funding and in-kind services to support the project, as detailed in the budget section of this proposal. The Oklahoma Water Resources Board (OWRB), the state agency responsible for water rights permitting in Oklahoma, has provided a letter of support for this project. The OWRB will be a critical resource for determining the legal and policy aspects of the ASA water bank and will be a key participant in its implementation.

- b. Please explain whether the project is supported by a diverse set of stakeholders. For example, is the project supported by entities representing environmental, agricultural, municipal, tribal, or recreation uses?*



The ASA water bank is supported by a diverse group of stakeholders representing regional water interests. Stakeholder diversity is a testament to the need for the proposed project and its potential to impact multiple beneficiaries. Table 2 summarizes the stakeholder support that the Chickasaw Nation has received for the proposed project, and includes representatives from municipal, environmental, agricultural, recreation, industrial, tribal and institutional water users and researchers.

TABLE 2. STAKEHOLDER SUPPORT FOR WATER BANK STUDY IN THE ARBUCKLE SIMPSON AQUIFER REGION

Representation	Stakeholder Support
Municipal	City of Ada
Environmental	The Nature Conservancy
Agricultural	The Oka' Institute
Industrial	Johnson County Industrial Authority
Tribal	Chickasaw Nation
Institutional	Oklahoma Water Resources Board

- c. Describe stakeholders in the planning area who have expressed their support for the planning process, whether or not they have committed to participate.*

As summarized in Table 2, the project has received support from a variety of stakeholders in the ASA region. The Citizens for the Protection of the Arbuckle Simpson Aquifer has expressed support for this project. The Noble Foundation, which represents agricultural interests, has also expressed support. Letters of support are included in Appendix B.

- d. Is there opposition to the proposed strategy? If so, describe the opposition and explain how it will be addressed. Opposition will not necessarily result in fewer points.*

Currently, the project team is not aware of any opposition to the proposed project.

- e. Do any separate planning efforts express support for the proposed water market/transaction? Or, will the proposed water marketing strategy complement other ongoing or recent planning efforts within the area?*

Stakeholders of Lake of the Arbuckles Watershed Group have expressed support for this study. The study will complement other ongoing planning efforts within the area including the Arbuckle Master Conservancy District Water Management Plan and the Drought Contingency Plan (DCP) involving all of the water suppliers across the ASA region. The development of an ASA water bank was an identified strategy made through the DCP process and is a logical next step in the managing water supplies for the region.

- f. Describe what efforts that you will undertake to ensure participation by a diverse array of stakeholders in developing the water marketing strategy.*

The Chickasaw Nation represents a tribal government and associated business and social endeavors including agriculture production, manufacturing, water planning, educational facilities, recreational resource management and environmental stewardship. The Chickasaw Nation is recognized for their community involvement and support for sustainable use of natural



resources. This reputation and the Nation's overall presence in the region will serve to encourage collaboration with a diverse array of stakeholders across the region. The list of stakeholders in Table 2 who have already voiced support for the ASA water bank is a reflection of the Nation's ability and desire to ensure that the project is a collaborative process. The stakeholders that currently have a working relationship with the Chickasaw Nation will be relied upon to provide valuable feedback on the ASA water bank strategy. Other stakeholders who have been identified under the project outreach task include those participating in the Arbuckle Simpson DCP and Lake of the Arbuckles Watershed Group, including representatives from federal, state and local agencies and organizations. These stakeholder interests include recreation and tourism, the environment, potable water purveyors and industrial water users, livestock grazing, irrigated agriculture production and private property owners. The proposed project will follow a defined communication plan (see Table 2 above) to conduct outreach to potential partners and participants from a diverse set of stakeholders that will work collaboratively to inform the development of the ASA water bank.

Evaluation Criterion C: Ability to Meet Program Requirements

1) *Describe how the three elements of a water marketing strategy will be addressed within the required timeframe. Please include an estimated project schedule that shows the stages and duration of the proposed work including major tasks, milestones, and dates.*

The Chickasaw Nation is ready to proceed with the proposed project to study and develop a strategy for implementing the ASA water bank. The required elements will be addressed within a 2-year project timeline, after notice to proceed. In accordance with this, the project team has identified the following nine objectives that must be met to complete the project and ensure that each of the three required elements are addressed.

Element 1 – Outreach and Partnership Building

- Objective 1– Develop an Outreach Plan
- Objective 2– Perform outreach activities to inform and solicit feedback from a diverse group of Stakeholders
- Objective 3 - Establish Taskforce of project partners

Element 2 – Scoping and Planning Activities

- Objective 4 – Develop Project Work Plan
- Objective 5 – Conduct Engineering and Economic Analysis
- Objective 6 – Complete Legal Analysis of Water Settlement Constraints and Water Rights
- Objective 7 – Research Platforms and Interfaces for the Water Bank

Element 3 – Develop Water Marketing Strategy

- Objective 8 – Develop a Water Marketing Strategy Plan
- Objective 9 – Complete Final Technical Project Report

An estimated schedule (timeline) that shows the stages and duration of the proposed work, including major activities is shown in Figure 4. The total project duration is anticipated to be two years represented by eight annual quarters. The tasks will be initiated concurrently to ensure flow of information between the tasks and efficient completion of objectives.



Activity	Project Quarter							
	1Q1	1Q2	1Q3	1Q4	2Q1	2Q2	2Q3	2Q4
1) Outreach and Partnership Building	█							
2) Water Market Scoping and Planning	█							
3) Develop Water Marketing Strategy						█		

FIGURE 4. PROJECT TIMELINE

2) Describe the availability and quality of existing data and models applicable to the proposed water marketing strategy.

Prior planning efforts and data described previously in the Evaluation Criteria B section are readily available and will be utilized for this study. These prior efforts will allow the project team to focus efforts on building the framework for the ASA water bank, without the need to initiate studies on baseline water supply and demand data. These prior efforts also provide the project team with a head start on outreach and partnership building to ensure the collaborative development of the ASA water bank.

3) Identify staff with appropriate technical expertise and describe their qualifications.

The Chickasaw Nation will share the cost of this project and will provide the project manager and the project facilitator through in-kind services (see Appendix E). Grant funds will be used to hire a consultant team of engineers and economists to assist in the technical analysis and to help develop the water bank strategy. The support provided by the consultants will ensure that the water bank will be well-informed and effective from inception. Figure 5 provides a staffing chart for the proposed project, followed by brief descriptions of key team members.

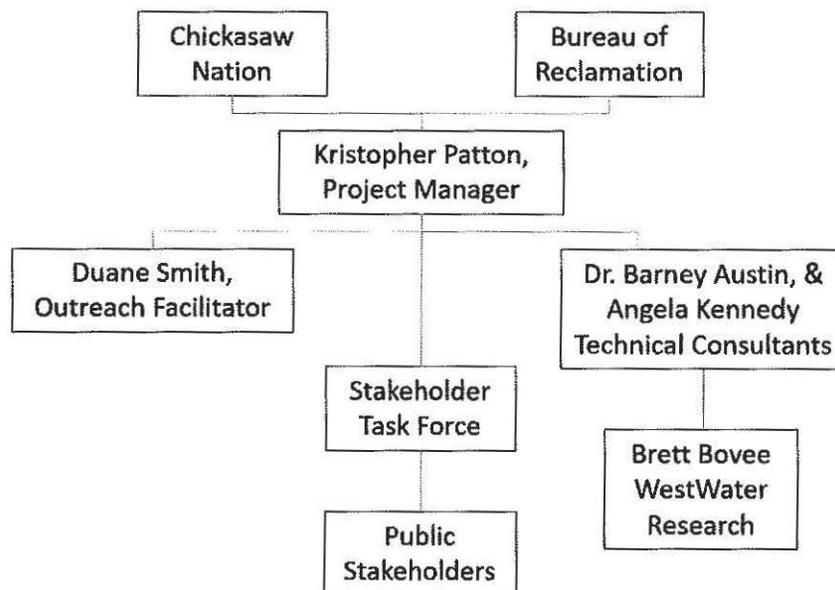


FIGURE 5. PROPOSED PROJECT TEAM



- Kristopher Patton, the study project manager, is the senior manager of water policy and planning for the Chickasaw Nation.
- Duane Smith, the study outreach facilitator, is the former executive director of the Oklahoma Water Resources Board and has led the stakeholder process for both the ASA Drought Contingency Plan and the Lake of the Arbuckles Watershed Group.
- Dr. Barney Austin has worked in the area of water resources for more than 23 years, previously serving as the director of the Surface Water Division for the Texas Water Development Board and actively participating in the development of state water plans in Texas, Oklahoma and California.
- Angela Kennedy is a licensed P.E. in Oklahoma and managed the Texas Water Bank and Trust as a Regional Water Planning project manager for the Texas Water Development Board.
- Both Dr. Austin and Ms. Kennedy provide support to the Chickasaw Nation's water resources planning program including the Lake of the Arbuckle Watershed Group project and the Arbuckle Simpson Drought Contingency Planning effort.
- Brett Bovee, with WestWater Research, brings nearly 15 years of experience conducting a variety of engineering, economic and water rights studies across the Western states. Mr. Bovee and the WestWater team bring unparalleled experience in Western U.S. water markets, water right transactions and valuing water resources.

Evaluation Criterion D: Department of Interior Priorities

The proposed project will support current priorities of the Department of the Interior as described below:

1) Creating a conservation stewardship legacy second only to Roosevelt

The proposed project is based upon years of science and an effort to apply best practices to manage the ASA. The need for the project has resulted from sustainable management of the ASA which necessitated a reduction in EPS allocations. The ASA water bank will allow aquifer water users to be flexible and adapt to environmental changes by allowing the sustainable water right allocations to be traded in the ASA region.

2) Restoring trust with local communities

The Chickasaw Nation hopes to strengthen communication in the water sector between stakeholders by providing a simple and transparent tool to re-allocate water rights in the ASA region. The proposed ASA water bank will provide a standardized and transparent means to conduct water transactions, thereby seeking to avoid conflicts among stakeholders who are seeking to best manage available water resources. The diverse group of stakeholders (see Table 2) includes representatives at all levels of government, such that the lines of communication from the local to state levels will be open and applied to produce a workable water bank framework.

3) Striking a regulatory balance

The proposed ASA water bank is needed because of a water supply shortage caused by new regulatory limits placed on groundwater pumping. These new EPS limits are needed to ensure long-term sustainability of the aquifer but also place a burden on public water agencies in the



ASA region who have come to rely upon groundwater resources beyond the capacity provided by their land-holdings. The ASA water bank seeks to ease the regulatory burden of the new EPS limits by providing a simple and straight-forward way for water users to acquire additional groundwater rights and avoid curtailment of existing wells. The resulting administration will be a balanced regulatory approach, with both sustainable groundwater pumping limits but the ability for high value municipal, industrial and other water users to increase their limits through market transactions.

4) Other Federal initiatives

The proposed project will support implementation of the National Drought Resiliency Partnership by conducting a water bank planning study as recommended by the ASA Drought Contingency Planning process. Implementation of a water bank to facilitate the sustainable use of water from the ASA will also serve to support the Environmental Protection Agency (EPA) sole source initiative. Portions of the ASA received sole source designation by the EPA in 1989.



PROJECT BUDGET

Funding Plan

The project is proposed to be funded by a Water Marketing Strategy Grant award with monetary and in-kind contributions from the Chickasaw Nation.

TABLE 3. SUMMARY OF NON-FEDERAL AND FEDERAL FUNDING SOURCES

Funding Sources	Amount
Non-Federal Entities	
Chickasaw Nation In-Kind	\$104,351*
Chickasaw Nation Cash Match	\$44,877
Non-Federal Sub-Total	\$149,228
Other Federal Entities	
None	\$0
Other Federal Subtotal	\$0
REQUESTED RECLAMATION FUNDING	\$149,228

The following paragraphs respond to the Funding Plan questions outlined in the FOA.

- *How you will you make your contributions to the cost share requirement, such as monetary and/or in-kind contributions and source funds contributed by the applicant (e.g. reserve account, tax revenue, and/or assessments).*

The cost share requirement will be provided as in-kind contributions and monetary contributions by the Chickasaw Nation. A reserve fund maintained by the Chickasaw Nation will be the source of the monetary contribution.

- *Describe any in-kind costs incurred before the anticipated Project start date that you seek to include as costs.*

The project does not propose to include any in-kind costs as part of the project budget before the anticipated project start date.

- *Provide the identity and amount of funding to be provided by funding partners, as well as the required letters of commitment.*

The project will be funded by the Chickasaw Nation which has provided a letter of commitment attached to this proposal.

- *Describe any funding requested or received from other Federal partners*

The project has not received any funding from other Federal partners.

- *Describe any pending funding requests that have not yet been approved, and explain how the Project will be affected if such funding is denied.*



There are no pending funding requests that would affect the proposed project.

Budget Proposal

Table 5 provides a summary of the proposed project budget. The project budget includes contracts with Aqua Strategies and WestWater Research to conduct the engineering and economic tasks, respectively. The budget narrative then explains the budget proposal in more detail.

TABLE 4. BUDGET PROPOSAL

BUDGET ITEM DESCRIPTION	COMPUTATION		Quantity Type	TOTAL COST
	\$/Unit	Quantity		
Salaries, Wages and Fringe				
Kris Patton, Project Manager	\$80	402	hours	\$32,160
Stephen Greetham, Chickasaw Legal	\$133	162	hours	\$21,546
Water Resource Planner, To Be Hired	\$68	53	hours	\$3,604
Travel				
Mileage	\$0.535	4920	miles	\$2,632
Lodging	\$151	12	days	\$1,809
Per diem	\$50	24	days	\$1,200
Equipment				
				\$0
Supplies and Materials				
				\$0
Contracts				
Technical Consultants	\$194,105	1	lump sum	\$194,105
Duane Smith, Outreach Facilitator	\$150	276	hours	\$41,400
Other				
				\$0
TOTAL DIRECT COSTS				
Indirect Costs				
TOTAL ESTIMATED PROJECT COSTS				\$298,456
Total In-Kind				\$104,351
Total Cash Match				\$44,877
Total Federal Request				\$149,228



Budget Narrative

The proposed total project cost is \$294,843. This application requests Reclamation funding of \$149,228 to support 50 percent of the proposed project cost. The applicant will support the remaining 50 percent of the project costs with \$100,738 of in-kind services and a \$44,877 cash match. The following items provide more detail on the proposed budget.

Salaries and Wages: Hourly rates listed for Chickasaw staff are inclusive of fringe benefits and are included as in-kind leverage for the project. The rates are listed in the budget proposal table.

Fringe Benefits: Chickasaw Nation fringe benefits are calculated at 35 percent of wages. All personnel fringe will be provided in-kind by the Chickasaw Nation.

Travel: Travel is required by the applicant staff to attend stakeholder meetings and to conduct outreach and partnership building activities. The trips are anticipated to be by automobile and overnight stays are required for only a portion of those trips.

Equipment: Equipment having a value of over \$5,000 is not anticipated for the project.

Materials and Supplies: Materials and supplies are not anticipated for this project.

Other: N/A

Indirect Costs: The Chickasaw Nation calculates indirect cost at its federally negotiated rate of 19.46 percent of direct costs, excluding contracts greater than \$5,000.

Contractual: The scope of the work will require technical consultants to conduct the engineering and economic analysis. Detailed budgets for Aqua Strategies and WestWater Research are included in Tables 5 and 6, respectively. The CN is active in matters of water resource protection and overall economic development throughout its treaty area. In the interest of providing background, insight and scientific evaluation allowing CN planners and decision makers to make informed decisions regarding these interests, Duane Smith & Associates, as directed, will provide water resources support encompassing the CN water interests. These interests include surface and groundwater within any and all watersheds covering the 13 counties of the Chickasaw Nation service area. Duane Smith & Associates will work with CN representatives, personnel, legal counsel and other consultants to perform services and provide goods. Mr. Smith receives an annual salary of \$200,000 from the Chickasaw and Choctaw Nations.



TABLE 5. AQUA STRATEGIES PROJECT BUDGET

Task	Sub-Task	
Project Work Plan	Develop Project Work Plan	\$2,170
Outreach and Partnership Building	Communications and Outreach Plan	\$10,670
	Stakeholder Meetings	\$8,240
	Task Force Meeting	\$8,240
	OWRB Communications & Involvement	\$1,560
	Partnership Building (Individual Meetings)	\$1,560
	Prepare Presentations & Documents	\$4,560
Scoping and Planning	Planning/Scoping: Project Work Plan	\$16,650
	Quantify Water Rights & Use	\$6,380
	Identify Water Suppliers at Risk	\$5,880
	Identify Potential Water Right Holders	\$6,380
	Determine Infrastructure Issues	\$7,160
	Benefits & Challenges / Hydrologic Impacts	\$5,920
Water Market Strategy	Develop Water Marketing Plan	\$13,060
Technical Report	Draft Technical Report	\$12,805
	Final Technical Report	\$7,045
	Labor Total	\$118,280
	Travel Expenses	\$8,900
	Project Total	\$127,180

TABLE 6. WESTWATER RESEARCH PROJECT BUDGET

Task	Sub-Task	TOTAL
1. Work Plan	Review Work Plan	\$1,015
2. Outreach	Attend 2 public meetings	\$4,130
	Help develop / review outreach materials	\$950
	Define questions that should be asked of participants	\$3,645
3. Scoping & Planning	Evaluate Water Bank pricing	\$13,880
	Research transactions	\$7,000
	Research transfer laws	\$2,740
	Research water project costs	\$5,480
	Evaluate transfer mechanisms	\$5,465
4. Develop Water Marketing Strategy	Define framework	\$7,000
	Help define implementation strategies	\$4,665
5. Technical Report	Draft economic analysis sections of report	\$2,400
	Review draft report	\$2,590
	Final presentation / meeting	\$3,265
	Labor Total	\$64,225



Travel Expenses	\$2,700
Project Total	\$66,925

Environmental and Cultural Resources Compliance

Measurement, monitoring, field work or other activities requiring environmental compliance information under this requirement are not proposed to complete this study. Existing measurement data collected under existing tribal, state and federal programs will be used to complete the project.

- *Will the proposed Project impact the surrounding environment (e.g., soil [dust], air, water [quality and quantity], animal habitat)?*

The proposed project will not impact the surrounding environment.

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

Yes, there are Federal threatened and endangered species in the area of the Arbuckle-Simpson Aquifer. Species listed for Murry, Carter, Johnson, and Pontotoc counties in Oklahoma include the endangered Whooping Crane (*Grus americana*), endangered Least Tern (*Sterna antillarum*), endangered American Burying Beetle (*Nicrophorus americanus*), threatened Piping Plover (*Charadrius melodus*), threatened Red Knot (*Calidris canutus rufa*), threatened Northern Long-eared Bat (*Myotis septentrionalis*), threatened Arkansas River Shiner (*Notropis Girardi*) and the candidate Sprague’s Pipit (*Anthus spragueii*). The proposed project will not impact local threatened and endangered species or critical habitat.

- *Are there wetlands or other surface waters inside the Project boundaries that potentially fall under Clean Water Act (CWA) jurisdiction as “Waters of the United States?” If so, please describe and estimate any impacts the proposed project may have.*

The project will not have any impact on Waters of the United States.

- *When was the water delivery system constructed?*

The proposed project involves the entire Arbuckle-Simpson Aquifer region which includes many individual municipal water systems established during the 19th and 20th centuries.

- *Will the proposed project result in any modification of or effects to, individual features of an irrigation system (e.g., headgates, canals, or flumes)? If so, state when those features were constructed and describe the nature and timing of any extensive alterations or modifications to those features completed previously.*

The proposed project will not result in any modifications to irrigation systems.

- *Are there any known archeological sites in the proposed area?*

The proposed project will not involve any measurement, monitoring or field work. An inventory of known archeological sites was not completed for this proposal.

- *Will the proposed Project have a disproportionately high and adverse effect on low income and minority populations?*



The proposed project will not have an adverse effect on low income and minority populations. The project is intended to provide reliable water supplies to communities in the Chickasaw Nation territory that include low-income community members.

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

The proposed project will not affect the tribe's access to sacred or ceremonial sites nor will it result in any other impacts on tribal 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?*

The proposed project will not contribute to the introduction, continued existence, or spread of noxious weeds or non-native species.

Required Permits or Approvals

No permits are anticipated during the completion of this project.

Existing Analysis Contributing to the Study

The following previous planning studies will be relied upon to conduct the proposed water marketing analysis:

- The Oklahoma Comprehensive Water Plan, Oklahoma Water Resource Board, <http://www.owrb.ok.gov/supply/ocwp/ocwp.php>
- Choctaw and Chickasaw Nations Regional Water Plan, <http://www.swt.usace.army.mil/Media/News-Releases/Article/491322/corps-of-engineers-choctaw-and-chickasaw-nations-enter-study-agreement/>
- Chickasaw and Choctaw Nations Wastewater Reuse Study Phase II, [www.westernstateswater.org/wp-content/uploads/2014/12/Abate USACE Full-Council.pdf#page=8](http://www.westernstateswater.org/wp-content/uploads/2014/12/Abate_USACE_Full-Council.pdf#page=8)
- Arbuckle Simpson Aquifer Drought Contingency Plan (DCP), <https://www.chickasaw.net/News/Press-Releases/Release/Drought-Resiliency-Project-Focuses-on-Arbuckle-Reg-1972.aspx>
- Arbuckle Simpson Hydrology Study, https://www.owrb.ok.gov/studies/groundwater/arbuckle_simpson/arbuckle_study.php
- Hydrogeology and Simulation of Groundwater Flow in the Arbuckle-Simpson Aquifer, South-Central Oklahoma, <https://pubs.usgs.gov/sir/2011/5029/>



ATTACHMENTS

- Letters of Support
- Tribal Authority Letter in Lieu of Tribal Resolution
- Mandatory Federal Forms

JULIE CUNNINGHAM
EXECUTIVE DIRECTOR



MARY FALLIN
GOVERNOR

**STATE OF OKLAHOMA
WATER RESOURCES BOARD**
www.owrb.ok.gov

May 31, 2018

Ms. Irene Hoiby
Bureau of Reclamation
Financial Assistance Services
Mail Code: 84-27852
PO Box 25007
Denver, CO 80225

Re: Bureau of Reclamation
WaterSMART: Water Marketing Strategy Grants for FY 2018

Dear Ms. Hoiby:

We are pleased to support the Chickasaw Nation on a proposal to evaluate the feasibility of establishing a "water bank" for the Arbuckle Simpson aquifer region. Water right allocation banking was a listed within the Priority Recommendations in the 2012 Oklahoma Comprehensive Water Plan as a potential tool to increase water-supply reliability in the State.

A water bank that can be used to facilitate the temporary or permanent transfer of water rights to assist users meet demands in times of shortage, thereby helping to prevent water conflicts fits well within State Water Plan objectives. Any users of water with this type of system would have to comply with all applicable state laws and regulations.

Please contact me at 405-530-8800 if you should require further information.

Sincerely,

Kent Wilkins, Chief
Planning and Management Division
Oklahoma Water Resources Board



THE OKLAHOMAN

3800 N. CLASSEN BOULEVARD • OKLAHOMA CITY, OKLAHOMA 73118
TELEPHONE (405) 530-8800 • FAX (405) 530-8900

Stephen B. Allen • Jennifer Castillo • Charles Darby • Bob Drake
F. Ford Drummond • Jason W. Hiltch • Robert L. Melton • Matt Muller • Robert Stallings





Protecting nature. Preserving life.

May 8th, 2018

Ms. Irene Hoiby
Bureau of Reclamation
Financial Assistance Services
Mail Code: 84-27852
PO Box 25007
Denver, CO 80225

Re: Bureau of Reclamation
Water Smart: Water Marketing Strategy Grants for FY 2018
Funding Opportunity: BOR-DO-17-F014

Dear Ms. Hoiby:

We are pleased to support the Chickasaw Nation's proposal to evaluate the feasibility of establishing a Water Bank for the Arbuckle Simpson aquifer region. The Chickasaw Nation is a long-term conservation partner of The Nature Conservancy; we have been working together on the Arbuckle Simpson Aquifer for more than a decade.

The Bureau of Reclamation is soliciting grant proposals for their recently formed Water Marketing Grant Program to develop a water marketing strategy to help prevent water-related conflicts and contribute to water sustainability. Water marketing refers to the lease, sale or exchange of water or water rights, or voluntary agreements governing water rights, water use or water management between willing participants. A Water Bank is an institution designed to accept deposit of a water right, which will not be used by the owner during the time it is in the bank, and to make the right available for withdrawal by the water right depositor or another entity. This approach is a great match to other conservation work being conducted by the Conservancy and other partners.

Water Banks can be used to help water users meet demands in times of shortage, thereby helping to prevent water conflicts. The long-term goal would be the development of a Water Bank to aid municipalities with a sufficient supply of water in times of need. This study should be completed in two years. We would be willing to serve on the task force to help develop this watershed plan.

Sincerely,

Mike Fuhr
State Director

THE NATURE CONSERVANCY OF OKLAHOMA

10425 S. 82nd E. Avenue, Ste. 104 | Tulsa, OK 74133 | (918) 585-1117
408 N.W. 7th Street | Oklahoma City, OK 73102 | (405) 858-8557
nature.org/oklahoma | facebook.com/nature.ok | twitter.com/nature_ok

JOHNSTON COUNTY INDUSTRIAL AUTHORITY

P.O. Box 485

Tishomingo, OK 73460

May 4, 2018

Ms. Irene Holby
Bureau of Reclamation/Fin'l. Assistance Service
Mail Code: 84-27852
P O Box 25007
Denver, CO 80225

RE: Bureau of Reclamation
Water Smart: Water Marketing Strategy Grant for FY 2017; Funding Opportunity: BOR-DO-17-FO14

Dear Ms. Holby:

Please accept this letter from the Board of the Johnston County Industrial Authority (JCIA) in support of the Chickasaw Nation's proposal to evaluate the feasibility of establishing a Water Bank for the Arbuckle Simpson Aquifer region.

The JCIA was established in 1968 under the provisions of Title 60, of the Oklahoma Trust Act. Its board members are appointed by the Johnston County Commissioners and charged with the JCIA's purpose to promote the development of industry within the territorial limits of the Beneficiary's municipality, (which lies within the Aquifer region) thereby providing employment to benefit and strengthen the economy of both the Beneficiary and the State of Oklahoma. Within this purpose, we recognize the significance of the proposed feasibility study to evaluate the buying and selling of water rights through a Water Bank, in order to address supply shortages in our region due to increases in demand, the threat of drought, and the reductions in allowed pumping of Aquifer groundwater.

We understand the Bureau of Reclamation is soliciting grant proposals for the newly formed Water Marketing Grant Program to develop a water marketing strategy to help prevent water-related conflicts and continue to have a sustainable water source for this region. The Chickasaw Nation meets the eligibility requirements for this grant as it is an Indian tribe in the western United States, directly connected to the Arbuckle Simpson Aquifer as it lies within their jurisdictional territory, and is the primary water supply for the municipalities within the Nation's boundaries. Furthermore, the Nation is in a position to promote the sustainable use of water resources through their collaboration and communication with local, state and federal stakeholders. The outreach and partnerships the Nation has established with so many municipalities, community organizations and stakeholders only strengthens their ability to succeed in exploring the feasibility of an effective Water Bank implementation. As in the past, we support and stand ready to assist the Chickasaw Nation in their endeavors.

Sincerely,



Cindy Matheny, Chair

Johnston County Industrial Authority



EAST CENTRAL UNIVERSITY

1100 East 14th Street, PMB J-4 | Ada, OK 74820 | 580.559.5151

www.ecok.edu/oka-institute | facebook.com/OkaInstituteECU | twitter.com/OkaInstituteECU

May 7, 2018

Ms. Irene Hoiby
Bureau of Reclamation
Financial Assistance Services
Mail Code: 84-27852
PO Box 25007
Denver, CO 80225

RE: Bureau of Reclamation
Water Smart: Water Marketing Strategy Grants for FY 2018
Funding Opportunity: BOR-DO-18-F010

Dear Ms. Hoiby:

It is my understanding the Bureau of Reclamation is soliciting grant proposals for their Water Marketing Grant Program to develop a water marketing strategy to increase water supply reliability through investments and attention to local water conflicts. The ultimate goal is to ensure water sustainability.

It is, therefore, my privilege and great honor to provide support for the Chickasaw Nation on a proposal to evaluate the feasibility of establishing a Water Bank for the Arbuckle Simpson Aquifer region. The Chickasaw Nation is a wonderful steward of the natural resources of our area and they are known for their leadership in cutting edge ideas which promote long term sustainability of our water resources. It has been my privilege to work with Governor Anoatubby and many other leaders in the Nation for over two decades.

To evaluate the feasibility of establishing a Water Bank is one of those cutting edge ideas. The result of the comprehensive study of the Arbuckle Simpson Aquifer was a reduced amount of available water for municipalities and rural water districts. This necessitates that these entities acquire more groundwater rights to meet their growing needs for water. A Water Bank could well be the answer to facilitating those additional water rights to those entities in need of them and to ensuring that the pricing of acquiring those rights would be fair and reasonable. This could in fact be a perfect solution to the grant's goal of preventing water-related conflicts and ensuring water sustainability.

Not only do I believe that this proposal has great merit, I and the Oka' Institute are most willing to serve on the task force to help develop this watershed plan. Please do not hesitate to contact me if additional information is needed. Thank you for your consideration of the Chickasaw Nation's proposal.

Respectfully,

Susan Paddack
Executive Director
spaddack@ecok.edu | O: 580.559.5152 | C: 580.279.3937

"To create practical water solutions both locally and globally driven by research and data that result in long-term sustainable ecological management and economic development" – Vision Statement, The Oka' Institute



CITY OF ADA
A Municipal Corporation

Cody Holcomb, PE, MBA
City Manager
231 South Townsend
Ada, Oklahoma 74820-6443
580-436-6300 Fax 580-436-8052

May 31, 2018

Ms. Irene Hoiby
Bureau of Reclamation
Financial Assistance Services
Mail Code: 84-27852
P.O. Box 25007
Denver, Colorado 80225

Subject: Bureau of Reclamation
Water Smart: Water Marketing Strategy Grants for FY 2018
Funding Opportunity: BOR-DO-18-F010

Dear Ms. Hoiby:

The City of Ada is pleased to support The Chickasaw Nation on a proposal to evaluate the feasibility of establishing a Water Bank. We understand the purpose of the grant will be to evaluate the feasibility of local water suppliers utilizing water bank(s) to aid in the development and use of groundwater for the Arbuckle-Simpson region.

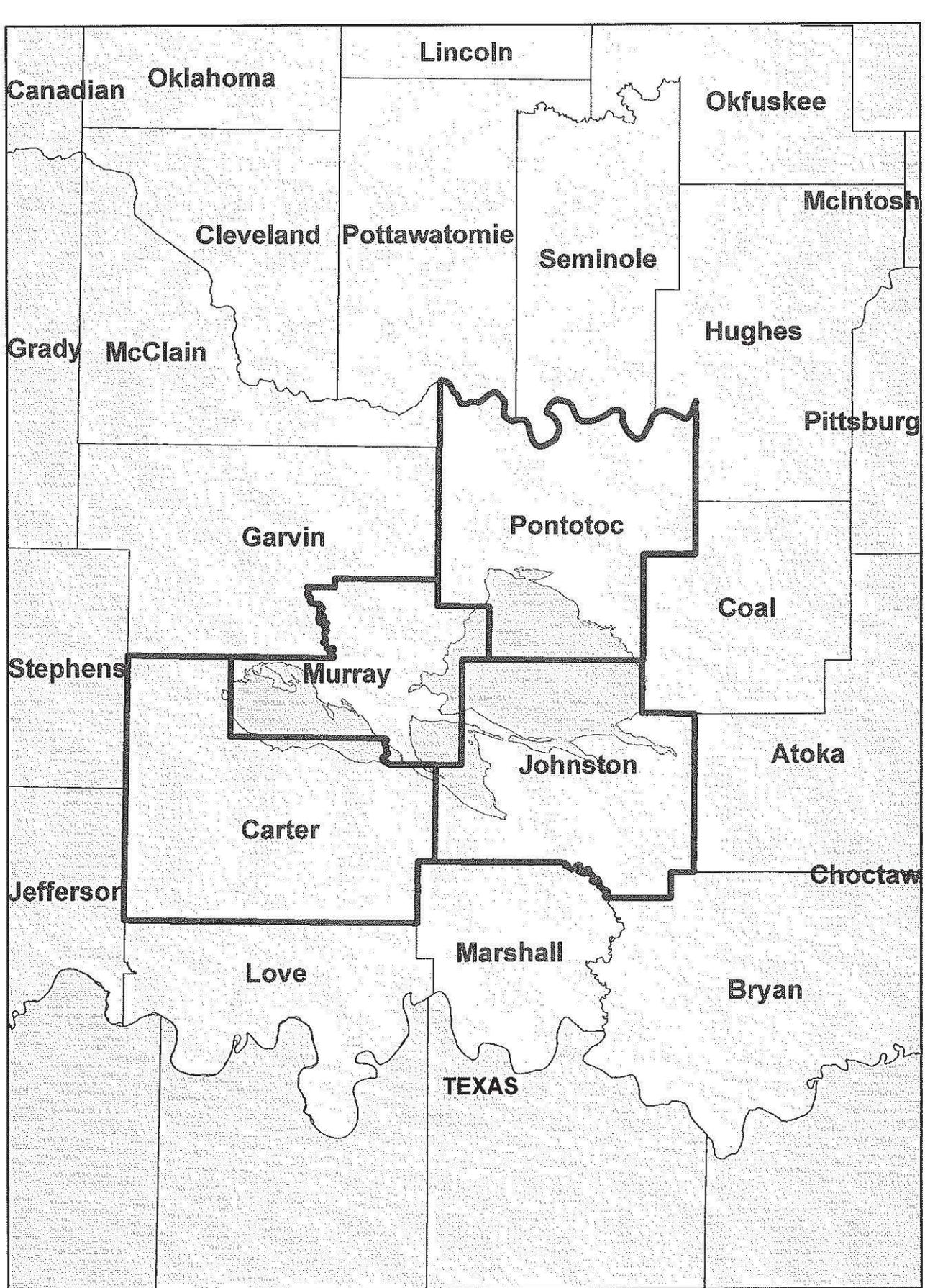
The City of Ada relies solely on the Arbuckle-Simpson Aquifer as its drinking water source and, as such, is interested in considering and implementing policy that ensures water availability and use sustainability. We would be willing to serve on the taskforce to help and assist in the development of the water marketing and use strategies.

Respectfully,

Cody Holcomb
City Manager

Copy: Dr. Tre' Landrum, Mayor
Angie Dean, Assistant City Manager
Frank Stout, City Attorney

Water Marketing Study Area



Legend

- Chickasaw_WaterMarket_StudyArea
- OK Counties
- Arbuckle Simpson Outcrop Area
- TX Counties

