

Improving the Water Quality in the Lake Thunderbird Watershed with Collaborative Project  
Implementation and Education through the Establishment of the Lake Thunderbird Watershed  
Partnership

Funding Opportunity Announcement No. BOR-DO-19-F010 WaterSMART: Cooperative  
Watershed Management Program FY 2019 Phase I Grant Application Technical Proposal

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# Technical Proposal

## Executive Summary:

**Date:** November 13, 2019

**Applicant Name:** City of Norman, Oklahoma

**City:** Norman

**County:** Cleveland

**State:** Oklahoma

The Lake Thunderbird watershed is located in central Oklahoma and drains 256 square miles in Oklahoma and Cleveland Counties including areas within the municipalities of Norman, Oklahoma City and Moore, as well as small parts of unincorporated Oklahoma and Cleveland Counties (HUC 11090203). The watershed drains into Lake Thunderbird which was created by the Bureau of Reclamation as authorized by Congress in 1960. The primary purpose of Lake Thunderbird is as the drinking water source for the Cities of Norman, Del City, and Midwest City. Secondary benefits include flood control, recreation and fish and wildlife habitat. Population within the watershed has increased significantly since the completion of the Norman Dam in 1965. In August 2010, Lake Thunderbird was placed on the Oklahoma Department of Environmental Quality's 303(d) List of Impaired Waterbodies for impaired beneficial uses of public/private water supply and warm water aquatic community. This led to the establishment of a Total Maximum Daily Load (TMDL) by the Oklahoma Department of Environmental Quality in November of 2013. The TMDL Report did not stipulate specific control actions (regulatory controls) or management measures (voluntary best management practices) necessary to reduce nutrients within the Lake Thunderbird watershed. Instead, it recommended that watershed-specific controls and best management practices be identified and implemented through a separate stakeholder-involved process. The preliminary goal of this project is to establish a new formalized watershed group for the Lake Thunderbird watershed. The objectives to meet this goal include: 1) establishing the Lake Thunderbird Watershed Partnership (LTWP) as a legal entity with the State of Oklahoma and the U.S. Internal Revenue Service; 2) enhancing and expanding the public outreach materials and strategies available for use by LTWP members by engaging stakeholders through a Unified Public Education and Outreach Plan; and 3) conducting pre-planning activities necessary to develop an outline of an Integrated Watershed Management Program. Poor water quality and the continued need for water for multiple beneficial uses makes it critical to plan for the future.

**Length of Time and Completion Date:** This project will take approximately two years with a completion by September 30, 2021.

**Location on a Federal Facility:** The United States Bureau of Reclamation (BOR) owns 12,987 acres and Tinker Air Force Base has approximately 350 acres in the Lake Thunderbird watershed.

#### Background Data:

Lake Thunderbird is a Federally-owned water resource administered by the BOR and operated by Central Oklahoma Master Conservancy District (COMCD) and Oklahoma Department of Tourism and Recreation located in Cleveland and Oklahoma counties in central Oklahoma. It impounds the upper reaches of Little River and several tributaries east of Norman, Oklahoma, north of State Highway 9. The watershed drains 256 square miles in Oklahoma and Cleveland Counties including Norman, Oklahoma City and Moore, as well as small parts of unincorporated Oklahoma and Cleveland Counties. According to a report written by Wm. Joe Simonds for the BOR in 1999, the Norman Project, which includes Norman Dam, Lake Thunderbird, the Norman Pipeline, Midwest City Pipeline/Del City Pipeline system, and two pumping plants, is an example of a reclamation project constructed for non-agricultural purposes.

This area of the Little River basin first began to be investigated for possible water resource development by the United States Army Corps of Engineers in 1936. Both this study and one in 1947 concluded that development of this area was not economically justified. BOR began studying the Little River for potential reservoir sites in 1949 at the request of the City of Norman to address water supply issues. Additional investigations continued into the 1950s, and the Cities of Midwest City, Del City, and Moore as well as Tinker Air Force Base added to Norman's concerns about water supply. In 1960, President Eisenhower authorized the Norman Project, and construction of the Norman Dam began in May 1962 and was completed in April 1965. On May 2, 1966, operation and maintenance of the Norman Project was transferred to the Central Oklahoma Master Conservancy District. The Norman Project serves as a source of water for municipal and industrial uses to the Cities of Midwest City, Del City, and Norman as well as providing flood control and recreational benefits.

Over the years, many projects and studies have been done with the goal of improving water quality and quantity. For instance, in 2009, BOR and the Oklahoma Tourism and Recreation Department worked with Oklahoma State University on a Resource Management Plan for Lake Thunderbird/Norman Project dated January 2009. In 2012, COMCD applied for and received a grant from the BOR for the Title XVI (2012) Project entitled 'Central Oklahoma Master Conservancy District, Lake Thunderbird Water Reuse Feasibility Study', which identified the need for augmentation of the potable water supply in Lake Thunderbird with highly treated municipal reuse water. In 2016, the Norman Utilities Authority applied for and received a grant from the BOR for a project entitled "Hexavalent Chrome Treatment Options Norman Oklahoma". The goal of the pilot project was to test treatment technologies for the removal of naturally-occurring Hexavalent Chromium from groundwater wells used for public water supply purposes. Pilot tests for Norman included best available technologies such as strong base anion exchange and

reduction/coagulation/filtration. In 2018, a project to install floating wetlands in Lake Thunderbird was funded through COMCD with a BOR Oklahoma-Texas Area Office Water Conservation Field Services Program FY2017 grant. The specific goals of the project are to (1) develop and evaluate floating wetland prototypes for dissipating wave action and (2) install and monitor full scale floating wetland structures at Lake Thunderbird for reducing shoreline erosion, improving bank stabilization and reducing turbidity caused by erosion. Other ecological benefits of the floating wetlands are expected to be measured through biological surveys (fish abundance and plant growth).

These projects are vitally important because Lake provides drinking water for the cities of Norman, Midwest City, and Del City. It also provides a myriad of recreational opportunities for citizens of Norman and of the State of Oklahoma as a warm water aquatic community affording quality fishing for a variety of species and as a primary body contact water body providing recreational boating and water sports activities. In order to continue to provide these recreational opportunities and continue to provide quality drinking water, the Lake must meet certain Water Quality Standards. These Standards are set by the Oklahoma Water Resources Board for the purpose of maintaining the beneficial uses of water bodies in the State including lakes and streams.

Stormwater runoff to Lake Thunderbird has increased in both quantity and velocity as the populations of the nearby cities that deliver the vast majority of the stormwater runoff to the Lake have grown. Unintended consequences of strong growth include pollution in the water that runs off of the streets, buildings and lawns of the growing cities. This water flow carries sediment which clouds the water in the Lake and reduces its capacity and depth while also carrying other pollutants such as nutrients like nitrogen and phosphorus. All three of these pollutants are causing degradation to the water quality in the streams and in turn to the Lake resulting in high concentrations of chlorophyll-a, low dissolved oxygen, and high concentrations of biochemical oxygen demand. A TMDL was established in 2013 which identified stormwater runoff from urbanized areas as the primary contributors to the Lake's water quality impairment. The TMDL Report did not stipulate specific control actions (regulatory controls) or management measures (voluntary best management practices) necessary to reduce nutrients within the Lake Thunderbird watershed. Instead, it recommended that watershed-specific controls and best management practices be identified and implemented through a separate stakeholder-involved process.

On November 9, 2016, representatives from the Cities of Norman, Moore, and Oklahoma City met to discuss forming a Technical Workgroup consisting of personnel in each City's stormwater program with TMDL compliance-related duties. The goal of this workgroup was to meet quarterly, share information and leverage resources for the benefit of each city. Each city has committed to public education activities as part of its Compliance Plan. Because this is a common element to each, the workgroup discussed working together on a unified brand for the Lake

Thunderbird watershed. A Norman-based firm was selected to create a logo, theme, color scheme, website, and other related marketing items to assist in creating a cohesive branding scheme for Lake Thunderbird Watershed TMDL public education initiatives. As a result, the LTWP logo, tagline, and website were created, <https://www.thunderbirdwatershed.org/>.

The goal of LTWP is to educate the public about the Lake Thunderbird watershed and ways that they can help improve the lake's water quality through collaborative efforts, activities and events.



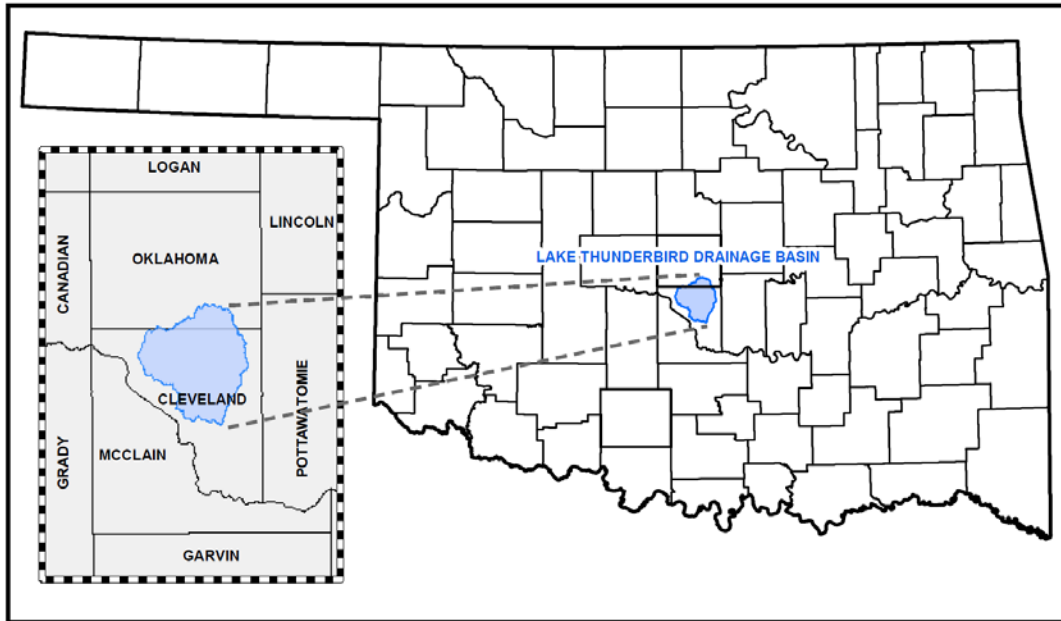
# Lake Thunderbird Watershed Partnership

**Communities United for Water Quality Improvement**

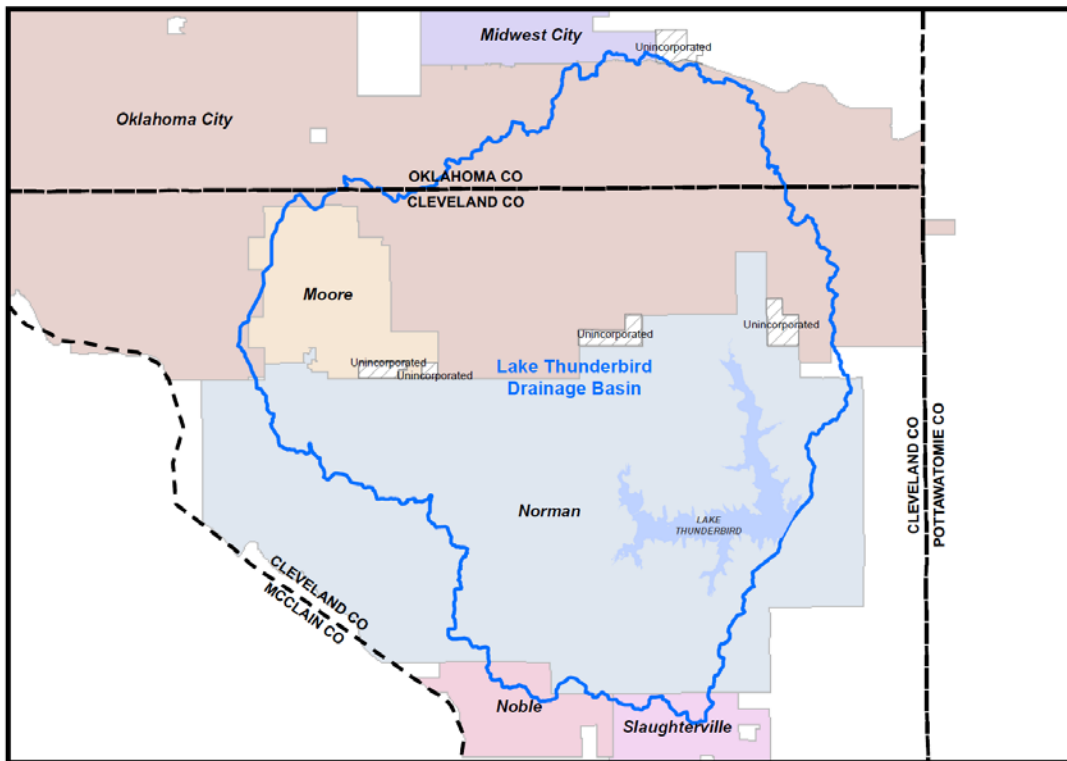
## Project Location:

The Lake Thunderbird watershed (HUC 11090203) is located in central Oklahoma and drains 256 square miles in Oklahoma and Cleveland Counties including Norman, Oklahoma City and Moore, as well as small parts of unincorporated Oklahoma and Cleveland Counties.

Map #1 shows the location of the Lake Thunderbird watershed within the state of Oklahoma.



Map #2 shows the Lake Thunderbird watershed boundary.



### Project Description:

As previously stated, Lake Thunderbird was constructed by the BOR in 1965 to impound the upper reaches of Little River and several tributaries east of Norman, Oklahoma, north of State Highway 9. The watershed drains 256 square miles in Oklahoma and Cleveland Counties including Norman, Oklahoma City and Moore, as well as small parts of unincorporated Oklahoma and Cleveland Counties. The Lake is operated by the Central Oklahoma Master Conservancy District (COMCD) on behalf of the BOR. In addition, the U.S. Army Corps of Engineers manages the flood control elements of Lake Thunderbird. Finally, the Oklahoma Department of Tourism and Recreation manages the parks and recreation services at the Lake. Lake Thunderbird currently serves as the source of approximately 70% of the City of Norman's drinking water.

**Applicant Category:** The City of Norman was incorporated on May 13, 1891. The City Charter was adopted on June 28, 1919. This document has been the guiding force in how the city government operates, who makes up the city government, and what the City of Norman does as an organization.

The City of Norman has eleven departments which perform unique functions within the city government. These departments oversee and implement the services and programs of City Hall. The City of Norman employs over 850 people who staff these eleven departments. The City of Norman Stormwater Division is in the Public Works Department and is responsible for the protection of the health, safety, and welfare of the people of Norman through the regulation of non-stormwater discharges to the City's municipal separate storm sewer system (MS4) as well as the management, maintenance, and improvement of this system.

The City of Norman has a dense urban area, located mostly along the old Highway 77 corridor and I-35. Norman is located in two watersheds. The south and west parts of Norman are located mainly in the Canadian River watershed while the north and east parts of Norman are located mainly in the Lake Thunderbird watershed.

As the City continues to grow, new sources of pollutants are added to those already existing. This has resulted in the establishment of several TMDLs which affect the City of Norman. One of these is the Lake Thunderbird TMDL. The City of Norman has developed Compliance and Monitoring Plans, which spell out how the City will meet the requirements of the Lake Thunderbird Watershed TMDL. These plans were adopted by Norman City Council on October 25, 2016, via Resolution No. R-1617-41. As part of the Lake Thunderbird Watershed TMDL, the City of Norman is working with the Cities of Moore and Oklahoma City through the LTWP.

**Eligibility of Applicant:** The City of Norman, Oklahoma, is a local government entity, that per eligibility requirements in Section C.I, is 1) significantly affected by the quality of water in the watershed as Lake Thunderbird is the primary drinking water source and as



indicated by its listing on the Oklahoma Department of Environmental Quality's 303(d) List of Impaired Waterbodies for its beneficial uses due to high concentration of chlorophyll-a, low concentration of dissolved oxygen, and a high concentration of biochemical oxygen demand and the establishment of the Lake Thunderbird Watershed TMDL in 2013; 2) is capable of promoting the sustainable use of water resources through its partnership with the Cities of Oklahoma City and Moore, the city and LTWP websites, and various other public outreach methods undertaken as part of its Municipal Separate Storm Sewer System (MS4) General Permit; 3) is located in the western United States, in the State of Oklahoma.

**Goals:** The preliminary goal of this project is to establish a new formalized watershed group for the Lake Thunderbird watershed. The objectives to meet this goal include: 1) establishing the LTWP as a legal entity with the State of Oklahoma and the U.S. Internal Revenue Service; 2) enhancing and expanding the public outreach materials and strategies available for use by LTWP members by engaging stakeholders through a Unified Public Education and Outreach Plan; and 3) conducting pre-planning activities necessary to develop an outline of an Integrated Watershed Management Program.

**Approach and Milestones:**

*Objective 1: Establishing the Lake Thunderbird Watershed Partnership as a Legal Entity*

**Estimated Start and End Dates:** May 2020 – November 2020

**Estimated Cost: \$17,000**

The LTWP is currently acting as an ad hoc partnership working collaboratively with the Cities of Oklahoma City, Moore and Norman. The current organizational structure has worked due to the consistency of the member representatives. Formalizing the organization will bring together the various stakeholders within the watershed, enable the continuation of the LTWP into the future, and foster the development of an integrated water planning program.

Recognizing the current and active leadership of the LTWP, a Technical Advisory Group (TAG) will be developed to oversee the formal visioning and organizational development for the LTWP. The TAG will help identify a comprehensive list of possible watershed stakeholders and will recruit the initial board members. The TAG in conjunction with the board members (the Board) will develop the initial business plan and bylaws, apply for Tax ID Number, and hold the first formal board meeting.

**To achieve this goal, LTWP is requesting funding to:**

1. Provide visioning and formal organization development for the LTWP.
  - Considerable visioning has already been completed by the LTWP. The Cooperative Watershed Management Program (CWMP) will allow this visioning to be

expanded by defining high level goals and objectives for the watershed program. The Board will develop the mission statement, vision, and goals of the organization, which will be reflective of an integrated water planning approach. The integrated water planning approach will consider multiple elements impacting the watershed such as land cover change, land management, water quality, stormwater, surface water, water reuse, floodplain management and infrastructure concerns.

2. Develop goals, objectives and bylaws for the LTWP.
  - After developing the overall goals and objectives, the next step will be to incorporate those into bylaws and develop a Watershed Program Plan along with other critical information. These documents will include an executive summary that not only states the overall goals and objectives are, but also clearly outlines the importance of watershed planning, and why it is being executed now. The document will include a high-level scope, schedule and budget along with a list of key milestones and deliverables. It will also contain any other high-level information that is critical to the understanding, execution or success of the program.
3. Develop Watershed Program Management Plan
  - The Watershed Program Management Plan will be a guidance document for those that need high-level answers or an overview of the watershed program. It will be a critical document for community decision makers to reference and understand as the Program progresses. Once finalized, the Program Management Plan and applicable tools will need to be developed. This document will be developed in coordination with the Board and TAG.

*Objective 2: Engaging Stakeholders through a Unified Public Education and Outreach Plan*

**Estimated Start and End Dates:** November 2020 – April 2021

**Estimated Cost: \$42,000**

The LTWP has conducted various events within the watershed to increase the visibility of the LTWP and educate the public on what can be done to improve the water quality of Lake Thunderbird. Continued stakeholder engagement during the organizational process will continue to be key. Innovative techniques and processes will be used to develop a robust community involvement plan that is tailored to the citizens and stakeholders in the Lake Thunderbird Watershed. Public engagement techniques and processes may include online survey, visual character survey (VCS) using instant polling devices; “Meetings 2 Go”, a set of tools that empower local citizens to facilitate input-gathering meetings.

**To achieve this goal, LTWP is requesting funding to:**

1. Expand and diversify stakeholders
  - The LTWP will further engage current stakeholders and will identify potential new partners. Possible partners include fishing and sporting groups, student organizations, and reclamation facilities within the watershed.
2. Conduct Stakeholder meetings.
  - Stakeholder meetings will be critical to identifying key water quality concerns. To expand the reach of the meetings innovative tools and techniques will be used including Meetings-2-Go Toolkit including maps, project information, PowerPoint presentation, instructions. These innovative tools will empower local citizens as well as provide greater opportunities for inclusion. Targeted stakeholder meetings will take place throughout the watershed.
3. Compile and analyze information from stakeholder meetings.
  - Stakeholder meetings will help guide the development of the Integrated Watershed Management Plan. Feedback and survey results will be used to guide and refine the messages and strategies that will be used during the future educational outreach efforts.
4. Develop Public Education and Outreach Plan and Templates
  - Information gathered from stakeholder meetings and materials currently in use by the LTWP members will be compiled to develop a unified Public Education and Outreach Plan which will include templates for outreach materials to be used by partners across the watershed. The goal is to enhance ongoing efforts and increase LTWP's recognition throughout the watershed.

*Objective 3: Outline of an Integrated Watershed Management Program*

**Estimated Start and End Dates:** March 2021 – September 2021

**Estimated Cost: \$26,500**

The LTWP has identified a desire to move from a reactive watershed program, to one that connects stormwater with asset management, stormwater and floodplain management, surface water quality, and infrastructure concerns. This is a paradigm shift, as it recognizes that stream water quality, ecological health and watershed concerns are fundamentally connected to all other assets, hazards and infrastructure within a community. The CWMP will allow the LTWP member communities to understand the connections of their assets, including stream channels and watersheds, together in a way that can provide operational efficiency, effectiveness and overall community benefit. A consultant will work with the Board to identify areas where the management of erosion hazards, flooding and water quality and infrastructure can be linked with current asset

management systems. Desktop analyses of currently available data will be used to understand the current watershed conditions related to water quality, stream health and ecology, flood management, and historical, existing and future erosion processes in the watersheds.

**To achieve this goal, LTWP is requesting funding to:**

1. Complete a desktop assessment of current watershed health including potential high-risk impact areas.
  - A thorough review of existing watershed studies combined with information gathered through the stakeholder engagement process will be used as the foundation of the Integrated Watershed Management Plan. The review will identify potential deficiencies or high-risk impact areas as well as areas of opportunities for water quality improvement. The compilation of the effort will be mapping of identified areas which will be used in the development of a future Integrated Watershed Management Program.

Evaluation Criteria:

E.1.1. Evaluation Criterion A— Watershed Group Diversity and Geographic Scope (30 points)

*Sub-criterion No. A1. Watershed Group Diversity*

*Points shall be awarded to proposals based on the extent to which they encourage collaboration with a diverse array of stakeholders across the watershed.*

*Please describe the efforts that you will undertake to ensure that the watershed group will include a diverse array of stakeholders, including outreach to stakeholders or collaborating with other groups or partners. If the watershed itself does not include a diverse set of interests and sectors, please provide an explanation of this also (e.g., some watersheds may not include affected stakeholders in all the sectors identified in the definition of a “watershed group” provided in Section A.2. Objective of this Funding Opportunity Announcement). In responding to this sub-criterion, please include:*

- *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”).*
- *For New Watershed Groups, a description of the affected stakeholders within the watershed that support the formation of watershed group. To the extent possible, please identify the specific stakeholders or groups that support the formation of the watershed group, describe their interest in the watershed, and reference any letters of support or*

*pledges/donations from affected stakeholders.*

- *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.*
- *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).*
- *Any other support demonstrating that the watershed group will include a diverse membership.*

The LTWP currently includes the Stormwater Divisions for the Cities of Moore, Norman, and Oklahoma City. Other groups and agencies that are active within the watershed or would have involvement with the watershed group once it is developed due to their involvement with water quality and/or quantity issues will include the following: individual landowners, Bureau of Reclamation, Oklahoma State Parks, Central Oklahoma Master Conservancy District (COMCD), ODEQ, Oklahoma Water Resources Board (OWRB), Blue Thumb, Oklahoma Water Survey (OWS), other departments and divisions within the Cities of Moore, Norman, and Oklahoma City, the Thunderbird Sailing Club, Builders Association of South Central Oklahoma, and local developers.

Lake Thunderbird is a Federally-owned water resource administered by the Bureau of Reclamation and operated by COMCD and Oklahoma Department of Tourism and Recreation. In addition, the U.S. Army Corps of Engineers manages the flood control elements of Lake Thunderbird. OWRB is responsible for managing and improving the state's water resources to ensure clean and reliable water supplies, a strong economy, and a safe and healthy environment. ODEQ is responsible for managing the quality of the state's water resources by administering the Oklahoma Pollutant Discharge Elimination System (OPDES) and TMDL programs. Blue Thumb is a statewide citizen science program that trains volunteers to monitor creeks and streams and share their knowledge of water quality with others. The goal of Blue Thumb is to empower people to protect water in their region from nonpoint source pollution. OWS is a part of the University of Oklahoma, and its goal is to study the state's water resources and to collect,

analyze, interpret and disseminate research-based information to industry professionals, researchers, students, teachers, citizens, governments and other organizations. The Thunderbird Sailing Club is a nonprofit corporation established in 1969 and is affiliated with the United States Sailing Association and Central States Sailing Association whose purpose is to promote water safety; to encourage the pursuit of sailing as a recreational activity and as a competitive sport; to teach the rules of sailing; to engender a spirit of sportsmanship among its members, their families and within the community; to promote the teaching of the methods, techniques and sciences of sailing to young people. All of these groups have an interest in improving the water quality and quantity of the Lake Thunderbird watershed. Letters of support from COMCD, ODEQ, OWRB, Oklahoma Conservation Commission, Blue Thumb, OWS, and the Thunderbird Sailing Club are included with this application.

There are no hydroelectric producers or timber producers active within the Lake Thunderbird watershed.

Outreach efforts funded through this project will help identify additional stakeholders and methods for reaching these diverse groups to encourage their involvement. On-going collaborations with OWS, ODEQ, OWRB, and the Cities of Moore, Norman, and Oklahoma City are already occurring as part of current public education and outreach efforts of the municipalities. These efforts will be strengthened and enhanced as part of this project.

*Sub-criterion No. A2. Geographic Scope*

*Under this sub-criterion, higher priority will be given to proposed or Existing Watershed Groups representing the full geographic extent of the watershed.*

*Applicants will receive points based on the extent to which they intend to do work across the entire extent of the watershed.*

*In addition, proposals that target small to medium sub-basin sized watersheds, for example an approximate 8-digit HUC as defined by the USGS, [water.usgs.gov/GIS/huc.html](http://water.usgs.gov/GIS/huc.html), will be given priority over large or very small watersheds.*

*Please provide the following information in response to this sub-criterion:*

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

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

The LTWP will work across the entire watershed (see Map #1 on Page 7 above). All of the stakeholders identified above will be asked to participate in the watershed group. Any new stakeholders identified after the formation of the watershed group will be invited to participate as they are identified. The goal of the watershed group is to include the entire watershed and as many partnering groups and agencies as possible.

#### E.1.2. Evaluation Criterion B — Addressing Critical Watershed Needs (35 points)

##### *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 Administration's National Marine Fisheries Service (NOAA-NMFS) or U.S. Fish and Wildlife Service (USFWS), and appropriate state natural resource agencies.*

Applicants should consider contacting Federal, state, and local agencies; non-governmental organizations; and other affected stakeholders to discuss what critical issues are affecting the watershed.

The critical issues occurring within the Lake Thunderbird watershed involve water quality and quantity issues. Lake Thunderbird serves as a drinking water source for the Cities of Norman, Del City, and Midwest City. In August 2010, Lake Thunderbird was placed on ODEQ's 303(d) List of Impaired Waterbodies. This led



to the establishment of a TMDL by ODEQ in November of 2013. The Lake is considered to be impaired for its beneficial uses due to high concentration of chlorophyll-a, low concentration of dissolved oxygen, and a high concentration of biochemical oxygen demand. The pollutants of concern for monitoring purposes are Total Nitrogen, Total Phosphorus, and Total Suspended Solids.

In 2012, COMCD applied for and received a grant from the BOR for the Title XVI (2012) Project - 'Central Oklahoma Master Conservancy District, Lake Thunderbird Water Reuse Feasibility Study', which identified the need for augmentation of the potable water supply in Lake Thunderbird with highly treated municipal reuse water.

In 2014, the Norman City Council acting as the Norman Utility Authority (NUA) adopted the 2014 Norman Strategic Water Supply Plan (SWSP). The goal of the SWSP is to provide a long-term sustainable water supply for the City of Norman that has the potential to meet water demands for the next 50 years. After much research, numerous public meetings and community input, "indirect potable water" reuse was chosen as a viable long-term water supply, by discharging highly treated reuse water through tributaries to Lake Thunderbird. This is an on-going project to address the water quantity issues.

*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. Only address those Task Areas that you propose to complete with this grant funding. Please address the following when responding to this sub-criterion:*

**Task A - Water Group Development:** *Describe the stakeholder outreach and partnership building that will be conducted and explain how it will contribute to the management of the critical watershed issues and needs?*

- *If the watershed group will build on previous partnership building efforts, describe these efforts and how the watershed group will expand upon them through this grant.*
- *Will the group establish relationships with conservation organizations advocating for balanced stewardship and use of public lands, or advocating for increased access to the Department lands for hunting, fishing, and other recreation? If so, how?*

The LTWP will address critical watershed issues by further developing partnerships with stakeholders in the Lake Thunderbird Watershed and incorporating



stakeholder input into the development of watershed group and the Integrated Watershed Management Plan. LTWP will develop these partnerships and gather input from stakeholders on critical watershed issues by establishing a Technical Advisory Group and Board; holding stakeholder meetings and workshops; expanding upon the ongoing outreach and branding efforts developed by the Cities of Moore, Norman, and Oklahoma City for use by other members of the LTWP; developing and delivering outreach and information materials; and developing an outline of an Integrated Watershed Management Plan.

E.1.3. Evaluation Criterion C— Implementation and Results (25 points)

*Sub-criterion No. C1—Understanding of and Ability to Meet Program Requirements*

*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. Applicants may refer to their Technical Proposal if this information is provided there and do not need to provide duplicate information in addressing this sub-criterion if it exists elsewhere in the applicant’s proposal. 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*

See Project Description, Approach and Milestones, on pages 8-12 above for more details on project implementation.

*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. Reclamation suggests that groups contact Federal, state, or local agencies in your area to identify existing goals and plans relevant to the watershed group. Please reference any relevant plans, but do not include these plans as part of this application.*

This project aligns with the goals and objectives of the following relevant federal, state, and regional planning efforts:

**BOR Lake Thunderbird/Norman Project Resource Management Plan**

BOR and the Oklahoma Tourism and Recreation Department worked with Oklahoma State University on a Resource Management Plan for Lake Thunderbird/Norman Project dated January 2009.

**BOR Title XVI Program - Lake Thunderbird Water Reuse Feasibility Study:**

In 2012, COMCD applied for and received a grant from the BOR for the Title XVI (2012) Project entitled ‘Central Oklahoma Master Conservancy District, Lake Thunderbird Water Reuse Feasibility Study’, which identified the need for augmentation of the potable water supply in Lake Thunderbird with highly treated municipal reuse water.

**BOR Water Conservation Field Services Program FY2017 Grant –Lake Thunderbird Floating Wetlands**

In 2018, a project to install floating wetlands in Lake Thunderbird was funded through the Central Oklahoma Master Conservancy District with a BOR Oklahoma-Texas Area Office Water Conservation Field Services Program FY2017 grant. The specific goals of the project are to (1) develop and evaluate floating wetland prototypes for dissipating wave action and (2) install and monitor full scale floating wetland structures at Lake Thunderbird for reducing shoreline erosion, improving bank stabilization and reducing turbidity caused by erosion. Other ecological benefits of the floating wetlands are expected to be measured through biological surveys (fish abundance and plant growth). This project and the proposed project both work together to address the long-term water quality issues associated with Lake Thunderbird.

**BOR Naturally-Occurring Hexavalent Chromium Removal from Groundwater Pilot Project**

In 2016, the Norman Utilities Authority applied for and received a grant from the BOR for a project entitled “Hexavalent Chrome Treatment Options Norman

Oklahoma”. The goal of the pilot project was to test treatment technologies for the removal of naturally-occurring Hexavalent Chromium from groundwater wells used for public water supply purposes. Pilot tests for Norman included best available technologies such as strong base anion exchange and reduction/coagulation/filtration. All pilot testing plans finalized after completion of the literature review involving additional brine handling techniques, such as bio-stabilization of hazardous brine. This project and the proposed project both work together to address the long-term water quantity issues associated with Lake Thunderbird.

**Oklahoma Comprehensive Water Plan:**

In 2012, the OWRB published the Oklahoma Comprehensive Water Plan. It recommended a statewide goal of consuming no more fresh water in 2060 than was consumed in 2010. This was codified into state law with the passage of the Water for 2060 Act in 2012. Water for 2060 emphasizes the use of education and incentives to achieve this goal without interfering with potential future growth and prosperity.

**Oklahoma Conservation Commission’s (OCC) Lake Thunderbird Watershed Based Plan:**

In FY 2010, OCC developed a Watershed Based Plan (WBP) for Lake Thunderbird prior to the establishment of the TMDL. The WBP identified increased runoff from urban impervious areas as the primary contributor to the impairment of water quality in Lake Thunderbird. Its goal was to reduce the nutrients, sediment, and pathogen loading in the tributaries to the Lake through the implementation of green infrastructure/low impact development. It also recommended the establishment of a Watershed Advisory Group composed of local stakeholders such as COMCD, local developers, ODEQ, municipalities, and lake users.

**OCC’s Neighborhood LID Demonstration Project:**

In 2011, OCC worked with the University of Oklahoma and Ideal Homes to test three types of green infrastructure’ rain gardens, rain barrels, and downspout diversion, in a residential neighborhood with in the City of Norman. The project was designed to measure runoff water quantity and quality from a horseshoe shaped neighborhood, which was divided so that the east side was conventionally developed and the west was developed using low impact development practices.

**OCC’s Watershed Implementation Project Wetland Treatment Study:**

In 2011, OCC also worked with the University of Oklahoma to examine the feasibility of wetlands to treat stormwater runoff. This study found that both

large-scale created wetlands and small-scale treatment wetlands were feasible and appropriate best stormwater treatment practices that could be implemented to improve water quality and provide other environmental benefits as part of a watershed management or restoration plan.

**City of Norman's Water Conservation Plan:**

During periods of water conservation, the Water Conservation Plan, which was adopted by Norman's City Council in 2011 and amended in 2016, enables the City Manager to implement conservation stages when certain criteria are met. The City is in Stage 1, Everyday Conservation at all times unless a subsequent conservation stage is implemented. With the implementation of each subsequent conservation stage, the City Manager will sign a proclamation and publish notice of the implementation of such conservation stage in the local newspaper. City ordinances allow for the police enforcement of the limits set by each conservation stage (City of Norman Code of Ordinances; Section 21-501) should efforts to educate the public be ineffective to ensure the City maintains necessary water supplies to its citizens.

**2014 Norman Strategic Water Supply Plan:**

The goal of the SWSP is to provide a long-term sustainable water supply for the City of Norman that has the potential to meet water demands for the next 50 years. After much research, numerous public meetings and community input, "indirect potable water" reuse was chosen as a viable long-term water supply, by discharging highly treated reuse water through tributaries to Lake Thunderbird. This is an on-going project to address the water quantity issues.

**City of Norman Lake Thunderbird TMDL Compliance and Monitoring Plans:**

In August 2010, Lake Thunderbird was placed on ODEQ's 303(d) List of Impaired Waterbodies. This led to the establishment of a TMDL by ODEQ in November of 2013. The Lake is considered to be impaired for its beneficial uses due to high concentration of chlorophyll-a, low concentration of dissolved oxygen, and a high concentration of biochemical oxygen demand. The pollutants of concern for monitoring purposes are Total Nitrogen, Total Phosphorus, and Total Suspended Solids. The City of Norman has developed Compliance and Monitoring Plans, which spell out how the City will meet the requirements of the Lake Thunderbird Watershed TMDL. These plans were adopted by Norman City Council on October 25, 2016, via Resolution No. R-1617-41. This project and the proposed project both work together to address the long-term water quality issues associated with Lake Thunderbird watershed.

#### E.1.4. Evaluation Criterion D— Department of the Interior Priorities (10 points)

*Please address those priorities that are applicable to your project. You may address only the parts of a priority that are applicable. It is not necessary to address priorities, or parts of priorities, that are not applicable to your project. A project will not necessarily receive more points simply because multiple priorities are addressed. The points available under this criterion will not be divided among the priorities, and projects will not be penalized if some of the priorities are not applicable. Points will be allocated based on the degree to which the project supports one or more of the Priorities listed, and whether the connection to the priority(ies) is well supported in the proposal.*

##### Utilize science to identify best practices to manage land and water resources and adapt to changes in the environment:

The activities outlined in this proposal will utilize science to identify best practices to manage land and water resources and adapt to changes in the environment through the identification of areas where the management of erosion hazards, flooding and water quality and infrastructure can be linked with current asset management systems. Desktop analyses of currently available scientific data will be used to understand the current watershed conditions related to water quality, stream health and ecology, flood management, and historical, existing and future erosion processes in the watersheds and develop an integrated watershed management plan that will help the LTWP stakeholders plan for future changes and address critical areas to enhance resiliency.

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

The activities outlined in this proposal will expand the lines of communication with individual landowners, Bureau of Reclamation, Oklahoma State Parks, COMCD, ODEQ, OWRB, Blue Thumb, OWS, other departments and divisions within the Cities of Moore, Norman, and Oklahoma City, the Thunderbird Sailing Club, Builders Association of South Central Oklahoma, and local developers by providing these agencies with a forum to discuss watershed-related issues and activities, plan watershed improvement projects, and enhance ongoing public education and outreach efforts. The goal of the watershed group is to include the entire watershed and as many partnering groups and agencies as possible.

Project Budget:

Budget Proposal:

**Table 1.—Total Project Cost**

| SOURCE  | AMOUNT             |
|---|--------------------|
| Costs to be reimbursed with the requested Federal funding | \$85,500.00        |
| Costs to be paid by the applicant                         | \$0.00             |
| Value of third-party contributions                        | \$0.00             |
| <b>TOTAL PROJECT COST</b>                                 | <b>\$85,500.00</b> |

**Table 2.— Budget Proposal**

| BUDGET ITEM DESCRIPTION              | COMPUTATION |          | Quantity Type | TOTAL COST      |
|--------------------------------------|-------------|----------|---------------|-----------------|
|                                      | \$/Unit     | Quantity |               |                 |
| <b>Salaries and Wages</b>            |             |          |               |                 |
|                                      | n/a         |          |               |                 |
| <b>Fringe Benefits</b>               |             |          |               |                 |
|                                      | n/a         |          |               |                 |
| <b>Travel</b>                        |             |          |               |                 |
|                                      | n/a         |          |               |                 |
| <b>Equipment</b>                     |             |          |               |                 |
|                                      | n/a         |          |               |                 |
| <b>Supplies and Materials</b>        |             |          |               |                 |
|                                      | n/a         |          |               |                 |
| <b>Contractual</b>                   |             |          |               |                 |
| <b>Objective 1</b>                   |             |          |               |                 |
| Consultant                           | \$17,000    | 1        | EACH          | \$17,000        |
| <b>Objective 2</b>                   |             |          |               |                 |
| Consultant                           | \$22,000    | 1        | EACH          | \$22,000        |
| Graphic Designer                     | \$20,000    | 1        | EACH          | \$20,000        |
| <b>Objective 3</b>                   |             |          |               |                 |
| Consultant                           | \$26,500    | 1        | EACH          | \$26,500        |
| <b>Other</b>                         |             |          |               |                 |
| Other                                | n/a         |          |               |                 |
| <b>TOTAL DIRECT COSTS</b>            |             |          |               | <b>\$85,500</b> |
| Indirect Costs                       | n/a         |          |               |                 |
| <b>TOTAL ESTIMATED PROJECT COSTS</b> |             |          |               | <b>\$85,500</b> |

Budget Narrative:

*Contractual*

The City of Norman expects to complete this project using contracted services. The City of Norman expects to retain a team of water resources experts and marketing specialists to execute this project.

*Total Costs*

Total cost for the 2-year funding cycle is \$85,500, as shown in Tables 1 and 2.

Environmental and Cultural Resources Compliance:

None of the project activities included in this application require monitoring, measurement, or other field work; therefore, no environmental or cultural resources compliance is required.

Required Permits or Approvals:

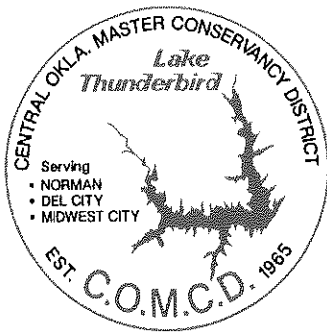
No permits or other approvals are required for the project scope included in this proposal.

Unique Entity Identifier:

The City of Norman is registered on Grants.gov under DUNS No. 101501240 and maintains an active SAM registration.

Letters of Support:





12500 ALAMEDA NORMAN, OKLAHOMA 73026  
(405) 329-5228 FAX 321-6944

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November 13, 2019

Bureau of Reclamation  
Financial Assistance Support Section  
Attn: Ms. Alisha James  
Mail Code: 84-27814  
P.O. Box 25007  
Denver, CO 80225

**Re: Bureau of Reclamation WaterSMART Cooperative Watershed Management Program Phase I Grant  
Application from the City of Norman, Oklahoma (FOA No. BOR-DO-19-F010)**

To Whom It May Concern:

The Central Oklahoma Master Conservancy District (COMCD) would like to go on record supporting the City of Norman's Bureau of Reclamation WaterSMART Cooperative Watershed Management Program Phase I grant application for the development of a watershed group for Lake Thunderbird, to be known as the Lake Thunderbird Watershed Partnership, and enhancement of its public outreach efforts to improve water quality and quantity within the watershed.

Lake Thunderbird serves as a drinking water source for the Cities of Norman, Del City, and Midwest City and was constructed by the U.S. Bureau of Reclamation in 1965 to impound the upper reaches of Little River and several tributaries east of Norman, Oklahoma north of State Highway 9. The watershed drains 256 square miles in Oklahoma and Cleveland Counties including Norman, Oklahoma City and Moore, as well as small parts of unincorporated Oklahoma and Cleveland Counties. In August 2010, the Environmental Protection Agency placed Lake Thunderbird on its 303(d) List of Impaired Waterbodies. This led to the establishment of a Total Maximum Daily Load by the Oklahoma Department of Environmental Quality in November of 2013. The Lake is considered to be impaired for its beneficial uses due to high concentration of chlorophyll-a, low concentration of dissolved oxygen, and a high concentration of biochemical oxygen demand.

Because the Lake Thunderbird watershed is such a vital resource to not only the municipalities within the watershed but to numerous other agencies, organizations, and community groups within this region, it is important to make the Lake Thunderbird Watershed Partnership a formal watershed group that can bring together those who rely on this watershed to improve the water quality and quantity of Lake Thunderbird. This effort is crucial to improving raw water that is delivered to our three member cities as their primary drinking water source. We are committed to support and assist this effort for the long term use of Lake Thunderbird. Therefore, COMCD is in full support and will actively participate in this effort to improve the water quality and quantity in Lake Thunderbird for all water users.

We look forward to working with the City of Norman on this vital watershed management project.

Sincerely,

Roger Frech  
President, Board of Directors  
Central Oklahoma Master Conservancy District



SCOTT A. THOMPSON  
Executive Director

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY

KEVIN STITT  
Governor

November 13, 2019

Bureau of Reclamation  
Financial Assistance Support Section  
Attn: Ms. Alisha James  
Mail Code: 84-27814  
P.O. Box 25007  
Denver, CO 80225

**Re: Bureau of Reclamation WaterSMART Cooperative Watershed Management Program Phase I Grant Application from the City of Norman, Oklahoma (FOA No. BOR-DO-19-F010)**

To Whom It May Concern:

The Oklahoma Department of Environmental Quality (DEQ) supports the City of Norman's Bureau of Reclamation WaterSMART Cooperative Watershed Management Program Phase I grant application for the development of a watershed group for Lake Thunderbird, to be known as the Lake Thunderbird Watershed Partnership. This project would enhance Norman's public outreach efforts to improve water quality and quantity within the watershed.

Lake Thunderbird serves as a drinking water source for the Cities of Norman, Del City, and Midwest City and was constructed by the U.S. Bureau of Reclamation in 1965 to impound the upper reaches of Little River and several tributaries east of Norman, Oklahoma north of State Highway 9. The watershed drains 256 square miles in Oklahoma and Cleveland Counties including Norman, Oklahoma City and Moore, as well as small parts of unincorporated Oklahoma and Cleveland Counties. In August 2010, Lake Thunderbird was listed on the 303(d) List of Impaired Waterbodies. This led to the establishment of a Total Maximum Daily Load by the DEQ in November of 2013. The Lake is considered to be impaired for its beneficial uses due to high concentration of chlorophyll-a, low concentration of dissolved oxygen, and a high concentration of biochemical oxygen demand. In November 2016, representatives from the Cities of Norman, Moore, and Oklahoma City began discussing the formation of a Technical Workgroup consisting of personnel in each City's stormwater program with TMDL compliance-related duties. This ultimately led to the creation of the Lake Thunderbird Watershed Partnership, whose goal is to share information and leverage resources for the benefit of each city.

Because the Lake Thunderbird watershed is such a vital resource to not only the municipalities within the watershed but to numerous other agencies, organizations, and community groups within this region, it is important to make the Lake Thunderbird Watershed Partnership a formal watershed group that can bring together stakeholders to improve the water quality and quantity of Lake Thunderbird. Regulatory programs can only provide a limited amount of protection of the watershed. Working together with interested parties, Lake Thunderbird can continue to be a critical part of the economic growth in central Oklahoma. Additionally, as watershed protection activities expand, it is hoped that treatment costs needed to produce potable water will decrease further in providing and protecting public health and the environment.



Bureau of Reclamation  
Financial Assistance Support Section  
Attn: Ms. Alisha James  
Page 2 of 2  
November 13, 2019

The DEQ is fully supportive of these efforts and will actively participate to improve the water quality and quantity in Lake Thunderbird for all water users. If you have any questions or need additional information please contact me at the letterhead address, by telephone at 405.702.8157 or email at [shellie.chard@deq.ok.gov](mailto:shellie.chard@deq.ok.gov).

Sincerely,



Shellie R. Chard, Director  
Water Quality Division



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

November 12, 2019

Bureau of Reclamation  
Financial Assistance Support Section  
Attn: Ms. Alisha James  
Mail Code: 84-27814  
P.O. Box 25007  
Denver, CO 80225

**Re: Bureau of Reclamation WaterSMART Cooperative Watershed Management Program  
Phase I Grant Application from the City of Norman, Oklahoma (FOA No. BOR-DO-19-  
F010)**

To Whom It May Concern:

The Oklahoma Water Resources Board (OWRB) fully supports the above referenced proposal for development of a watershed partnership for Lake Thunderbird and the project's public outreach efforts to improve water quality and quantity within the watershed. The proposed partnership directly serves several goals and objectives of the both the State's Comprehensive Water Plan and Oklahoma's Water for 2060 Act, where regional partnerships, collective planning, and sharing of resources will ultimately increase the accessibility of clean water to Oklahomans while potentially saving money and water for future generations.

We look forward to working with the City of Norman on this vital watershed management project.

Sincerely,

Julie Cunningham

Executive Director,  
Oklahoma Water Resources Board



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 • Suzanne Landess • Robert L. Melton • Matt Muller • Robert Stallings





J. KEVIN STITT  
GOVERNOR

MATT PINNELL  
LIEUTENANT GOVERNOR



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TREY LAM  
EXECUTIVE DIRECTOR

LISA KNAUF OWEN  
ASSISTANT DIRECTOR

November 13, 2019

Bureau of Reclamation  
Financial Assistance Support Section  
Attn: Ms. Alisha James  
Mail Code: 84-27814  
P.O. Box 25007  
Denver, CO 80225

**Re: Bureau of Reclamation WaterSMART Cooperative Watershed Management Program Phase I Grant Application from the City of Norman, Oklahoma (FOA No. BOR-DO-19-F010)**

To Whom It May Concern:

The Oklahoma Conservation Commission (OCC) is pleased to support the City of Norman's Bureau of Reclamation WaterSMART Cooperative Watershed Management Program Phase I grant application for the development of a watershed group for Lake Thunderbird, to be known as the Lake Thunderbird Watershed Partnership, and enhancement of its public outreach efforts to improve water quality and quantity within the watershed.

Lake Thunderbird serves as a drinking water source for the Cities of Norman, Del City, and Midwest City and was constructed by the U.S. Bureau of Reclamation in 1965. The watershed drains 256 square miles in Oklahoma and Cleveland Counties including Norman, Oklahoma City and Moore, as well as small parts of unincorporated Oklahoma and Cleveland Counties. Oklahoma listed Lake Thunderbird on its EPA Clean Water Act Section 303(d) list of impaired waterbodies as early as 2002. This led the OCC and partners to develop an EPA-approved watershed based plan to address watershed impairments in 2010. This plan included water quality monitoring, education programs, and the development of a low-impact development demonstration neighborhood to explore some of the local challenges with low-impact development.

The 303(d)-listing also led to the establishment of a Total Maximum Daily Load by the Oklahoma Department of Environmental Quality in November of 2013. The Lake is impaired from supporting its beneficial uses by high concentration of chlorophyll-a, low concentration of dissolved oxygen, and a high concentration of biochemical oxygen demand. In November 2016, representatives from the Cities of Norman, Moore, and Oklahoma City began discussing the formation of a Technical Workgroup consisting of personnel in each City's stormwater program with TMDL compliance-related duties. This ultimately led to the creation of the Lake Thunderbird Watershed Partnership, whose goal is to share information and leverage resources for the benefit of each city.

Because the Lake Thunderbird watershed is such a vital resource to not only the municipalities within the watershed but to numerous other agencies, organizations, and community groups within this region, it is important to make the Lake Thunderbird Watershed Partnership a formal watershed group that can bring together those who rely on this watershed to improve the water quality and quantity of Lake Thunderbird. The OCC believes that the goal of this project will work toward the goals established in the watershed based plan and move beyond the demonstration projects that OCC implemented from 2010 – 2016. This group can, in effect, update the watershed plan and work toward its goals. Therefore, the OCC is in full support and will actively participate in this effort to improve the water quality and quantity in Lake Thunderbird for all water users.

We look forward to working with the City of Norman on this vital watershed management project.

Sincerely,

A handwritten signature in blue ink that reads "Shanon Phillips".

Shanon Phillips  
OCC Water Quality Division Director

STATE OF OKLAHOMA • OKLAHOMA CONSERVATION COMMISSION

2800 NORTH LINCOLN BOULEVARD, SUITE 200 • OKLAHOMA CITY, OKLAHOMA 73105-4210 • (405) 521-2384 • FAX (405) 521-6686 • WWW.CONSERVATION.OK.GOV

KEVIN STITT  
GOVERNOR

MATT PINNELL  
LIEUTENANT GOVERNOR



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TREY LAM  
EXECUTIVE DIRECTOR

LISA KNAUF OWEN  
ASSISTANT DIRECTOR

October 28, 2019

Bureau of Reclamation  
Financial Assistance Support Section  
Attn: Ms. Alisha James  
Mail Code: 84-27814  
P.O. Box 25007  
Denver, CO 80225

**Re: Bureau of Reclamation WaterSMART Cooperative Watershed Management Program Phase I Grant Application from the City of Norman, Oklahoma (FOA No. BOR-DO-19-F010)**

To Whom It May Concern:

The Blue Thumb Program would like to go on record supporting the City of Norman's Bureau of Reclamation WaterSMART Cooperative Watershed Management Program Phase I grant application for the development of a watershed group for Lake Thunderbird, to be known as the Lake Thunderbird Watershed Partnership, and enhancement of its public outreach efforts to improve water quality and quantity within the watershed.

Lake Thunderbird serves as a drinking water source for the Cities of Norman, Del City, and Midwest City and was constructed by the U.S. Bureau of Reclamation in 1965 to impound the upper reaches of Little River and several tributaries east of Norman, Oklahoma north of State Highway 9. The watershed drains 256 square miles in Oklahoma and Cleveland Counties including Norman, Oklahoma City and Moore, as well as small parts of unincorporated Oklahoma and Cleveland Counties. In August 2010, the Environmental Protection Agency placed Lake Thunderbird on its 303(d) List of Impaired Waterbodies. This led to the establishment of a Total Maximum Daily Load by the Oklahoma Department of Environmental Quality in November of 2013. The Lake is considered to be impaired for its beneficial uses due to high concentration of chlorophyll-a, low concentration of dissolved oxygen, and a high concentration of biochemical oxygen demand. In November 2016, representatives from the Cities of Norman, Moore, and Oklahoma City began discussing the formation of a Technical Workgroup consisting of personnel in each City's stormwater program with TMDL compliance-related duties. This ultimately led to the creation of the Lake Thunderbird Watershed Partnership, whose goal is to share information and leverage resources for the benefit of each city.

Because the Lake Thunderbird watershed is such a vital resource to not only the municipalities within the watershed but to numerous other agencies, organizations, and community groups within this region, it is important to make the Lake Thunderbird Watershed Partnership a formal watershed group that can bring together those who rely on this watershed to improve the water quality and quantity of Lake Thunderbird. Blue Thumb is the primary education program of the Oklahoma Conservation Program. Our mission is to improve stream health (and by extension, the health of reservoirs) by teaching Oklahomans about the impacts of nonpoint source pollution and specific actions they can take to reduce nonpoint source pollution. Therefore, Blue Thumb is in full support and will actively participate in this effort to improve the water quality and quantity in Lake Thunderbird for all water users.

We look forward to working with the City of Norman on this vital watershed management project.

Sincerely,

A handwritten signature in black ink, appearing to read "Rebecca Bond".

Rebecca Bond, PhD  
Blue Thumb Director  
Oklahoma Conservation Commission

November 7, 2019

Bureau of Reclamation  
Financial Assistance Support Section  
Attn: Ms. Alisha James  
Mail Code: 84-27814  
P.O. Box 25007  
Denver, CO 80225

**Re: Bureau of Reclamation WaterSMART Cooperative Watershed Management Program Phase I Grant Application from the City of Norman, Oklahoma (FOA No. BOR-DO-19-F010)**

To Whom It May Concern:


The Thunderbird Sailing Club would like to go on record supporting the City of Norman's Bureau of Reclamation WaterSMART Cooperative Watershed Management Program Phase I grant application for the development of a watershed group for Lake Thunderbird, to be known as the Lake Thunderbird Watershed Partnership, and enhancement of its public outreach efforts to improve water quality and quantity within the watershed.

Lake Thunderbird serves as a drinking water source for the Cities of Norman, Del City, and Midwest City and was constructed by the U.S. Bureau of Reclamation in 1965 to impound the upper reaches of Little River and several tributaries east of Norman, Oklahoma north of State Highway 9. The watershed drains 256 square miles in Oklahoma and Cleveland Counties including Norman, Oklahoma City and Moore, as well as small parts of unincorporated Oklahoma and Cleveland Counties. In August 2010, the Environmental Protection Agency placed Lake Thunderbird on its 303(d) List of Impaired Waterbodies. This led to the establishment of a Total Maximum Daily Load by the Oklahoma Department of Environmental Quality in November of 2013. The Lake is considered to be impaired for its beneficial uses due to high concentration of chlorophyll-a, low concentration of dissolved oxygen, and a high concentration of biochemical oxygen demand. In November 2016, representatives from the Cities of Norman, Moore, and Oklahoma City began discussing the formation of a Technical Workgroup consisting of personnel in each City's stormwater program with TMDL compliance-related duties. This ultimately led to the creation of the Lake Thunderbird Watershed Partnership, whose goal is to share information and leverage resources for the benefit of each city.

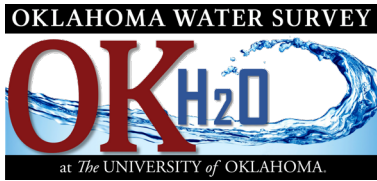
Because the Lake Thunderbird watershed is such a vital resource to not only the municipalities within the watershed but to numerous other agencies, organizations, and community groups within this region, it is important to make the Lake Thunderbird Watershed Partnership a formal watershed group that can bring together those who rely on this watershed to improve the water quality and quantity of Lake Thunderbird. This effort directly impact the educational and community activities in which the Thunderbird Sailing Club participates, and offers to our community. We annually provide youth and adult "learn to sail" programs, which require students to be in the water. We host activities for individuals with disabilities (children, adults, veterans) on the lake multiple times throughout the year (Catch a Special Thrill, CAST; Oklahoma Adapted Sports Association, OKASA; Veterans activities to name a few). In addition, our members regularly sail, and provide other educational events through the BoatHouse such as family water fun days, and activities to benefit other community groups like the Leukemia and Lymphoma Society. All of these activities can't be accomplished if our water quality at Lake Thunderbird is suspicious, or worse. Therefore, Thunderbird Sailing Club is in full support and will actively participate in this effort to improve the water quality and quantity in Lake Thunderbird for all water users.

We look forward to working with the City of Norman on this vital watershed management project. I can be reached at the contact below for more information.

Sincerely,

  
Lorrie Sylvester, PT, PhD; [Lorraine-sylvester@ouhsc.edu](mailto:Lorraine-sylvester@ouhsc.edu)  
2019 – Commodore  
Thunderbird Sailing Club





## OKLAHOMA WATER SURVEY

201 STEPHENSON PARKWAY  
FIVE PARTNERS PLACE, SUITE 1101  
NORMAN, OK 73019  
(405) 325-2531  
OUTREACH@OKH2O.ORG

November 13, 2019

Bureau of Reclamation  
Financial Assistance Support Section  
Attn: Ms. Alisha James  
Mail Code: 84-27814  
P.O. Box 25007  
Denver, CO 80225

**Re: Bureau of Reclamation WaterSMART Cooperative Watershed Management Program Phase I Grant Application from the City of Norman, Oklahoma (FOA No. BOR-DO-19-F010)**

To Whom It May Concern:

The Oklahoma Water Survey at the University of Oklahoma supports the City of Norman's Bureau of Reclamation WaterSMART Cooperative Watershed Management Program Phase I grant application for the development of a watershed group for Lake Thunderbird, to be known as the Lake Thunderbird Watershed Partnership, and enhancement of its public outreach efforts to improve water quality and quantity within the watershed.

Lake Thunderbird serves as a drinking water source for the Cities of Norman, Del City, and Midwest City and was constructed by the U.S. Bureau of Reclamation in 1965 to impound the upper reaches of Little River and several tributaries east of Norman, Oklahoma north of State Highway 9. The watershed drains 256 square miles in Oklahoma and Cleveland Counties including Norman, Oklahoma City and Moore, as well as small parts of unincorporated Oklahoma and Cleveland Counties. In August 2010, the Environmental Protection Agency placed Lake Thunderbird on its 303(d) List of Impaired Waterbodies. This led to the establishment of a Total Maximum Daily Load by the Oklahoma Department of Environmental Quality in November of 2013. The Lake is considered to be impaired for its beneficial uses due to high concentration of chlorophyll-a, low concentration of dissolved oxygen, and a high concentration of biochemical oxygen demand. In November 2016, representatives from the Cities of Norman, Moore, and Oklahoma City began discussing the formation of a Technical Workgroup consisting of personnel in each City's stormwater program with TMDL compliance-related duties. This ultimately led to the creation of the Lake Thunderbird Watershed Partnership, whose goal is to share information and leverage resources for the benefit of each city.

Because the Lake Thunderbird watershed is such a vital resource to not only the municipalities within the watershed but to numerous other agencies, organizations, and community groups within this region, it is important to make the Lake Thunderbird Watershed Partnership a formal watershed group that can bring together those who rely on this watershed to improve the water quality and quantity of Lake Thunderbird. The Oklahoma Water Survey believes strongly in the power of education and stewardship to make a difference in improving the sustainability of our water resources. Therefore, the Oklahoma Water Survey is in full support and will actively participate in this effort to improve the water quality and quantity in Lake Thunderbird for all water users.

We look forward to working with the City of Norman on this vital watershed management project.

Sincerely,

A handwritten signature in blue ink that reads 'Jason R. Vogel'.

Jason R. Vogel, Ph.D., P.E.  
Director, Oklahoma Water Survey  
Professor, Civil Engineering and Environmental Science  
University of Oklahoma



Official Resolution:

A RESOLUTION OF THE COUNCIL OF THE CITY OF NORMAN,  
OKLAHOMA, AUTHORIZING THE CHAIRMAN TO SUBMIT A  
WATERSMART COOPERATIVE WATERSHED MANAGEMENT  
PROGRAM PHASE I GRANT APPLICATION TO THE BUREAU OF  
RECLAMATION

- § 1. WHEREAS, the United States Bureau of Reclamation (BOR) has a funding program entitled "WaterSMART Cooperative Watershed Management Program which provides funding to watershed groups to encourage diverse stakeholders to form local solutions to address their water management needs; and
- § 2. WHEREAS, Lake Thunderbird was constructed by the U.S. Bureau of Reclamation in 1965 to impound the upper reaches of Little River and several tributaries east of Norman, Oklahoma north of State Highway 9; and
- § 3. WHEREAS, the Lake provides drinking water for the cities of Norman, Midwest City, and Del City and also provides a myriad of recreational opportunities for citizens of Norman and of the State of Oklahoma as a warm water aquatic community affording quality fishing for a variety of species and as a primary body contact water body providing recreational boating and water sports activities; and
- § 4. WHEREAS, in August 2010, the Environmental Protection Agency placed Lake Thunderbird on its 303(d) List of Impaired Waterbodies, which led to the establishment of a Total Maximum Daily Load (TMDL) by ODEQ in November of 2013; and
- § 5. WHEREAS, the City of Norman and other groups are significantly affected by the water quality within the Lake Thunderbird watershed; and
- § 6. WHEREAS, the City of Norman wishes to apply for Cooperative Watershed Management Program Phase I funds to cover the costs of establishing a new watershed group by the deadline of November 13, 2019; and
- § 7. WHEREAS, the BOR has directed applicants to include in the application an official resolution adopted by the applicant's board of directors or governing body verifying 1) the identity of the official with legal authority to enter into an agreement; 2) the board of directors, governing body, or appropriate official who has reviewed and supports the application submitted; 3) the capability of the applicant to provide the amount of funding and/or in-kind contributions specified in the funding plan; and 4) that the applicant will work with the BOR to meet established deadlines for entering into a grant or cooperative agreement.



NOW, THEREFORE, BE IT RESOLVED BY COUNCIL OF THE CITY OF NORMAN, OKLAHOMA:

- § 8. That, the City of Norman hereby finds that it is in the City of Norman's and public's interest in health, safety and welfare of the community to file the Financial Assistance Application with the BOR to seek funds made available under Cooperative Watershed Management Program.
  
- § 9. That, the City of Norman understands and supports the application that will be submitted and finds:
  - (a) The City of Norman has legal authority to enter into an agreement with BOR to receive a grant; and
  - (b) The City of Norman will provide in-kind contributions as specified in the funding plan; and
  - (b) The City of Norman is willing to work with BOR to meet established deadlines for entering into a grant or cooperative agreement.

PASSED AND ADOPTED this 12<sup>th</sup> day of November, 2019.

  
\_\_\_\_\_  
Mayor

ATTEST:

  
\_\_\_\_\_  
City Clerk

