CITY OF PURCELL, OKLAHOMA

APPLICATION FOR FUNDING

FOR

WATER SYSTEM IMPROVEMENTS

PURCELL LAKE IRRIGATION

GRANT APPLICATION – BOR-DO-17-F011

APRIL 2017

CITY OF PURCELL, OKLAHOMA

WATER SYSTEM IMPROVEMENTS

PURCELL LAKE IRRIGATION

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I. EXECUTIVE SUMMARY

DATE April 24, 2017
APPLICANT CITY OF PURCELL, McCLAIN COUNTY, OKLAHOMA

This report represents a partial analysis of the water system for the City of Purcell, Oklahoma. The City of Purcell currently irrigates their golf course and a little league baseball/softball complex with their potable water system. Phase 1 of the proposed project would allow irrigation of the little league complex from the City's lake. Phase 2 will consist of facilities to pump water from Walnut Creek to the lake, and would recapture seepage through the dam and return it to the lake. Phase 2 will be funded separately at a later date.

II. BACKGROUND

A. Location

The project planning area for these improvements is the area served by the Purcell Water System. The Purcell service area is shown in **Figure 1,** and the well field is shown in **Figure 2.**

B. Growth Areas and Population Trends

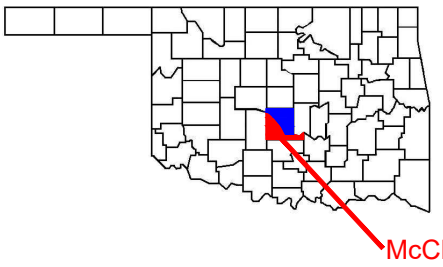
Census data from 1990 through 2010 shows that the population for the City of Purcell increased by 24%. **(See Table 1)**.

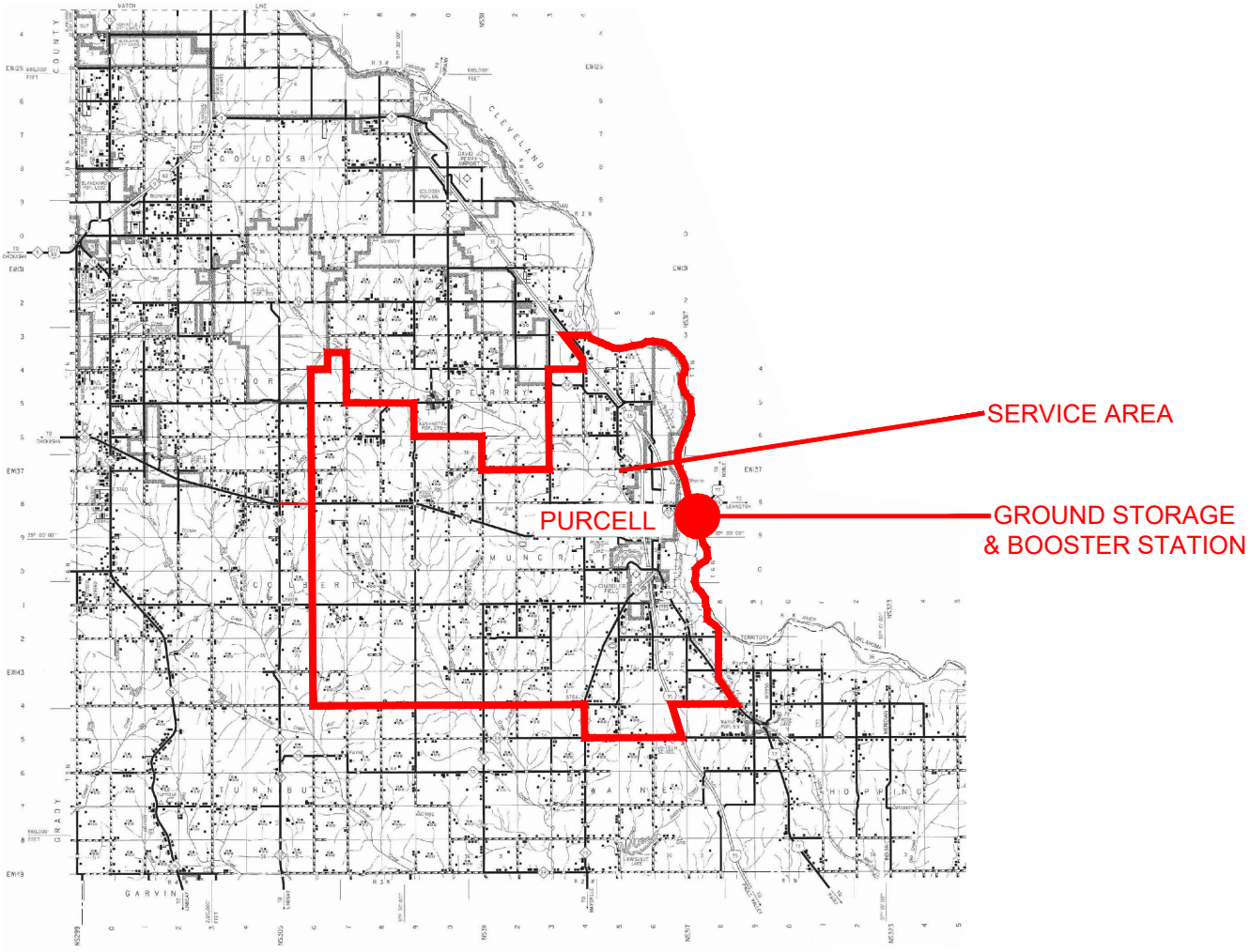
TABLE 1
POPULATION TRENDS

Year	Population
1990	4,760
2000	5,571
2010	5,884

A 2% growth was used to project the number of meters the system will have over the next 20 years. The maximum yearly average demand since 2006 was 304 gal/meter/day (2011) and the maximum monthly demand was 460 gal/meter/day (August 2011). A design value of 300 gal/meter/day was used for the yearly average, and 460 gal/meter/day was used for the maximum monthly demand. Several publications, use 180% of the average annual demand for the maximum daily demand. GSA's experience has found this number to be too low for smaller systems. 200% was chosen for the ratio of maximum daily demand to average daily demand. As a result, 600 gal/meter/day was used for the maximum daily demand.

This results in a projected **20-year average demand of 1,698,300 GPD**, a maximum monthly demand of 2,604,060 GPD, and a **maximum daily demand of 3,396,600 GPD**.





GLENN SULLIVAN & ASSOCIATES, INC.
PROFESSIONAL ENGINEERS/CONSULTANTS
103 N. Mercedes Drive
P.O. Box 720368 - Norman, OK 73070
Phone (405) 321-7232, Fax (405) 321-7205
officemgr@gsanorman.com
CA# 1691, Expiration Date: 06/30/2018

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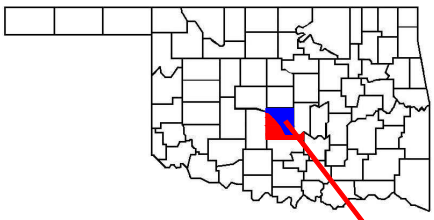
PURCELL PUBLIC WORKS AUTHORITY

GENERAL LAYOUT SERVICE AREA

FIGURE 1



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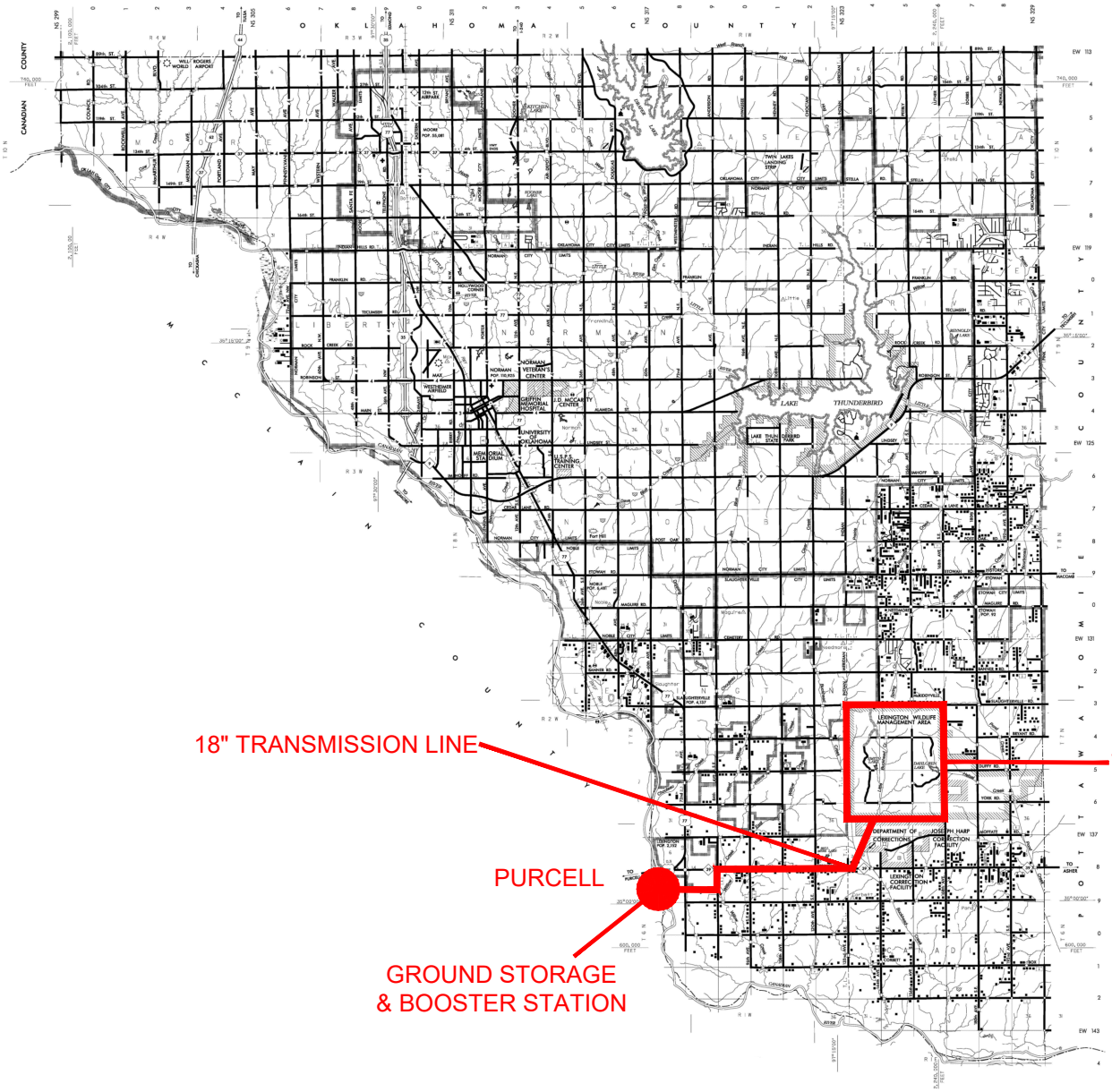

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GENERAL LAYOUT WELL FIELD

FIGURE 2

III. EXISTING FACILITIES

A. Supply

The City of Purcell operates fourteen (14) wells in Sections 20, 28, 29, and 30 of Township 7 N, Range 1E, I.M. The capacity of the existing wells is 2,370 gpm or 3.4 mgd.

B. Distribution System

Water from the well field is pumped to a ground storage facility in Lexington. The high service pumps at the Lexington ground storage facility pump water to the Golf Course, Red Hill, and Lincoln & Green Storage Facilities, as needed. A booster station on Grant Street fills the I-35 Standpipe from this core area. Likewise, a booster station at I-35 and SH 39 fills the District 7 Standpipe. A booster station at the golf course pumps water from the golf course storage facility directly to customers in the rural area south of town. A fire pump has been added to this station to provide fire flow to a portion of this area. A hydraulic model was prepared in 2006 for the existing facilities and demands. This model has been used to upgrade and expand the system as needed.

C. Golf Course

The City owns and operates an 18-hole golf course in the southwest portion of town. Water from the City's Lake is used for irrigation. The City has a pump station below the dam that supplies water and pressure to the irrigation system. In average or drier years, the lake gets too low to be used for irrigation in the summer months and the City is forced to use potable water from the distribution system for irrigation. This amounts to 100,000 gpd.

D. Ball Fields

A little league baseball/softball complex was built in 2016. This facility is currently irrigated with potable water from the distribution system. Peak demand from this facility amounts to 60,000 gpd.

E. Purcell Lake

Purcell Lake was constructed in 1953 and was used as the City's water supply until wells were drilled in the late 1960's. It is still used for recreation and wildlife habitat. In June 2013, a subsurface investigation and monitoring program was initiated to investigate concerns about possible excessive seepage and stability problems at the dam. Results of seepage analysis suggest that the total seepage loss through the entire dam could be 85,000 gpd or more.

F. Walnut Creek

Walnut Creek is located approximately one (1) mile north of the lake and OWRB records indicate that there are no active surface water permits east of Washington on Walnut Creek.

IV. PROJECT DESCRIPTION

As stated previously, irrigating the golf course and little league complex results in an additional demand of approximately 160,000 gpd on the City's potable water system. Installing equipment and new lines to use lake water to irrigate these facilities will conserve potable water for Purcell's residents. A toe drain at the downstream slope of the dam would capture a significant portion of water lost due to seepage. Water from Walnut Creek could be pumped into the lake to help supplement this supply during summer months.

A. Description

Proposed improvements include the following:

Phase 1

1. Install a floating pump in the lake and construct a 6" line to supply water to the little league complex.

   The proposed phase 1 improvements are shown in **Figure 3**.

Phase 2 – To Be Constructed at a Later Date

1. Construct a pump station on existing City property along Walnut Creek.
2. Construct a 16" line from the pump station, along an existing easement to the west end of the lake.
3. Install a toe drain at the dam.

   The proposed phase 2 improvements are shown in **Figure 4**.

B. Environmental Impacts

This project is not expected to cause any significant long-term environmental impacts. All improvements will be made within the confines of the existing easements and City property.

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PROPOSED IMPROVEMENTS PHASE 1

FIGURE 3

GLENN SULLIVAN & ASSOCIATES, INC.
PROFESSIONAL ENGINEERS/CONSULTANTS
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PROPOSED IMPROVEMENTS PHASE 2

FIGURE 4

C. Land Requirements

All phase 1 work will be performed within the confines of existing right-of-way. Additional land will not be required.

D. Construction Problems

Constructing the toe drain will be difficult due to the high groundwater that is present.

E. Cost Estimates

1. Construction Costs

Pump Station and Supply Line

ITEM NO.	ITEM		UNIT	UNIT PRICE	AMOUNT
1	FLOATING PUMP COMPLETE	EA.	1	$ 40,000.00	$ 40,000.00
2	6" HDPE PIPE, DR 11	L.F.	320	$ 50.00	$ 16,000.00
3	6" PVC, ASTM D2241, CL. 200	L.F.	1,200	$ 17.00	$ 20,400.00
4	14" STEEL CASING	L.F.	80	$ 140.00	$ 11,200.00
5	FITTINGS	EA.	12	$ 500.00	$ 6,000.00
	TOTAL CONSTRUCTION				**$ 93,600.00**

Total Construction Costs **$ 93,600.00**

2. Non-Construction Costs

Engineering	$11,000.00	
Inspection	$ 5,000.00	
Contingency	$ 9,360.00	
Total Non-Construction Costs		**$ 25,360.00**

3. Total Estimated Project Costs **$118,960.00**

V. EVALUATION CRITERIA

A. Describe how your project is supported by an existing planning effort. (35 POINTS)

1. Does the proposed project implement a goal or address a need or problem identified in the existing planning effort? The City is in the process of expanding the well field to meet peak demands. Irrigating the ball fields from the Lake instead of the public water system will help reduce the peak demand on the system.

2. Explain how the proposed project has been determined as a priority in the existing planning effort as opposed to other potential projects/measures. The project was determined to be a priority due to the fact that it saves the most water compared to the cost of the project.

B. Describe the expected benefits and outcomes of implementing the proposed project. (35 POINTS)

1. What are the benefits to the applicant's water supply delivery system? This project will save the system 60,000 gpd in water during summer months. This is the equivalent of 200 houses.

2. If other benefits are expected explain those as well. Consider the following:

a. Extent to which the proposed project improves overall water supply reliability The ball fields are located on the edge of the distribution system. At an irrigation rate of 100 gpm, customers in the area will have more consistent pressure and there will be less stress put on the system.

b. The expected scope of positive impact from the proposed project (e.g., local, sub-basin, basin) The water savings will allow more growth in the area because more water will be available. Developers will not have to construct additional lines.

c. Extent to which the proposed project will increase collaboration and information sharing among water managers in the region Increase collaboration and information sharing is not expected.

d. Any anticipated positive impacts/benefits to local sectors and economies (e.g., agriculture, environment, recreation, tourism) The little league baseball/softball fields have the potential to bring in thousands of people to the area every year. Without the worry of water rationing, the fields will remain in good condition throughout the season and the fields will be an attractive option for the region.

C. Project Implementation (15 POINTS)

1. Describe the implementation plan for the proposed project. Please include an estimated project schedule that shows the stages and duration of the proposed work, including major tasks, milestones, and dates. The following schedule is proposed:

a.	Choose Engineer and Begin Design	October 1, 2017
b.	Complete Design	December 1, 2017
c.	Begin Advertising for Construction Bids	January 1, 2018
d.	Award Construction Contract	February 1, 2018
e.	Begin Construction	March 1, 2018
f.	Complete Construction	May 1, 2018

2. **Describe any permits that will be required, along with the process for obtaining such permits.** No permits are required for this project. City staff and the City Engineer will oversee disconnecting the irrigation system from the public water supply.

3. **Identify and describe any engineering or design work performed specifically in support of the proposed project.** The pump will float in the lake. Anchor points for the pump and the supply line to the ball fields will be designed by an Engineer.

4. **Describe any new policies or administrative actions required to implement the project.** The ball fields are managed by the local little league association. City staff will work with them to develop a policy regarding routine maintenance of the pump and flushing of the supply line and filter.

D. Describe the nexus between the proposed project and a Reclamation project or activity, including:
(15 POINTS)

1. **How is the proposed project connected to a Reclamation project or activity?** The project is located on a tributary of the Canadian River and is not connected to a Reclamation project.

2. **Will the project help Reclamation meet trust responsibilities to any tribe(s)?** The project will help save water, but will not directly help Reclamation meet trust responsibilities to a tribe.

3. **Does the applicant receive Reclamation project water?** No.

4. **Is the project on Reclamation project lands or involving Reclamation facilities?** No.

5. **Is the project in the same basin as a Reclamation project or activity?** No.

6. **Will the proposed work contribute water to a basin where a Reclamation project is located?** No.

ENVIRONMENTAL AND CULTURAL RESOURCES COMPLIANCE

1. **Will the proposed project impact the surrounding environment (e.g., soil [dust], air, water [quality and quantity], animal habitat)?** Construction of the pipeline will result in temporary dust and sediment to the lake. Erosion and sediment control measures will be implemented to reduce this.

2. **Are you aware of any species listed or proposed to be listed as a Federal threatened or endangered species, or designated critical habitat in the project area? If so, would they be affected by any activities associated with the proposed project?** Whooping Crane, Piping Plover, Least Tern, Red Knot, and the Arkansas River Shiner are species that are known to or are believed to occur in this area. The project area is not critical habitat for any of these species.

3. **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 affect "Waters of the United States."

4. **When was the water delivery system constructed?** 1970's.

5. **Will the proposed project result in any modification of or effects to, individual features of an irrigation system (e.g., headgates, canals, or flumes)?** No.

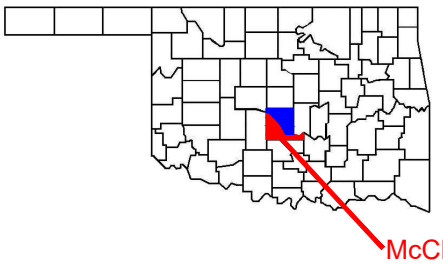
6. **Are any buildings, structures, or features in the irrigation district listed or eligible for listing on the National Register of Historic Places?** No.

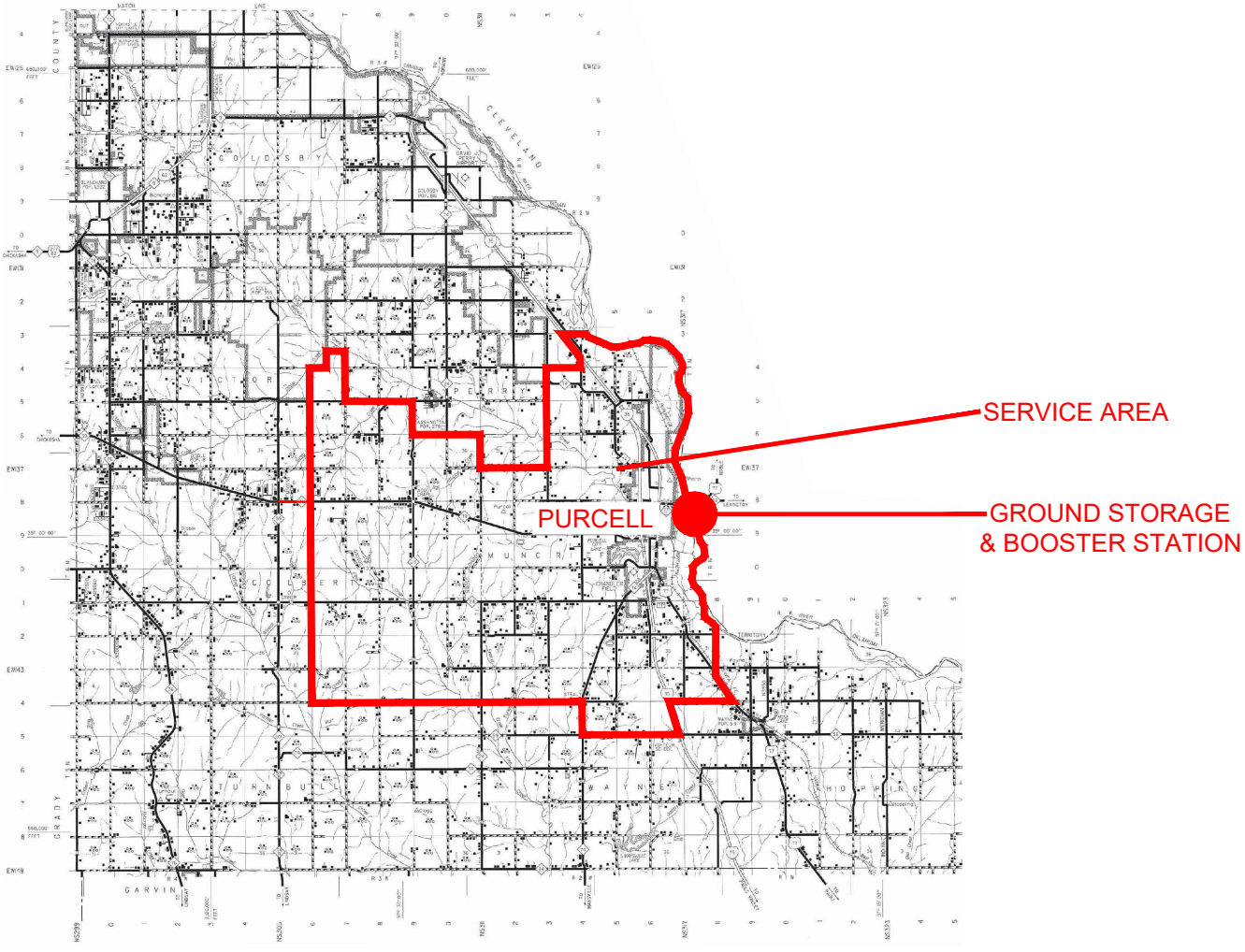
7. **Are there any known archeological sites in the proposed project area?** No.

8. **Will the proposed project have a disproportionately high and adverse effect on low income or minority populations?** No.

9. **Will the proposed project limit access to and ceremonial use of Indian sacred sites or result in other impacts on tribal lands?** No.

10. **Will the proposed project contribute to the introduction, continued existence, or spread of noxious weeds or non-native invasive species known to occur in the area?** No.





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PURCELL PUBLIC WORKS AUTHORITY

GENERAL LAYOUT SERVICE AREA

FIGURE 1

CITY OF PURCELL RESOLUTION NO. 2017-C01

A RESOLUTION OF THE PURCELL CITY COUNCIL DESIGNATING THE IDENTITY OF THE OFFICIAL WITH LEGAL AUTHORITY TO ENTER INTO AN AGREEMENT WITH THE BUREAU OF RECLAMATION OR ANY OTHER ENTITY, WHETHER GOVERNMENTAL OR NON-GOVERNMENTAL, ASSOCIATED WITH RECEIPT OF A FINANCIAL ASSISTANCE AWARD UNDER A FUNDING OPPORTUNITY ANNOUNCEMENT; PROVIDING THAT THE PURCELL CITY COUNCIL HAS REVIEWED AND SUPPORTS THE APPLICATION SUBMITTED; FURTHER PROVIDING THAT THE CITY OF PURCELL IS CAPABLE OF PROVIDING THE FUNDING AND/OR IN-KIND CONTRIBUTIONS SPECIFIED IN THE FUNDING PLAN; THAT THE CITY OF PURCELL WILL WORK WITH THE BUREAU OF RECLAMATION AND OTHER ASSOCIATED/DESIGNATED ENTITIES TO MEET ESTABLISHED DEADLINES FOR ENTERING INTO THE COOPERATIVE AGREEMENT; AND REPEALING ALL RESOLUTIONS AND PARTS OF RESOLUTIONS IN CONFLICT HEREWITH .

WHEREAS, the City of Purcell ("Purcell") is a municipal corporation organized and existing under and by virtue of the laws of the State of Oklahoma; and

WHEREAS, one of the duties, responsibilities and obligations of Purcell to the citizens and residents of Purcell is to make certain that it has adequate supplies of water for drinking and for other uses as well; and

WHEREAS, Purcell has determined that it is in the best interests of the citizens and residents of Purcell to construct a pump station and water line to irrigate the ball fields at the City Lake rather than use its drinking water; and

WHEREAS, Purcell has further determined that it is in the best interest of the citizens and residents of Purcell to apply for and accept (if approved) a BOR-DO-17-F11 Grant for a Water System Improvement Purcell Lake Irrigation Supply Project ("Project").

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

1. **The identity of the official of the City of Purcell that has authority to enter into any agreement with any entity, whether governmental or non-governmental, concerning this Project and the grant associated therewith, is its City Manager: Dale Bunn, 230 West Main, Purcell, Oklahoma 73080; (405) 527-6561; e-mail - dale.bunn@purcell.ok.gov.**

2. **The Purcell City Council has reviewed and supports the application submitted as evidenced by the passage and execution of this Resolution.**

3. **The City of Purcell has the capability to provide the amount of funding required of it and/or in-kind contributions specified in the funding plan as and when necessary.**

4. **The City of Purcell will work with the Bureau of Reclamation and any other governmental or non-governmental entity associated with the Project and grant to meet established deadlines necessary for completion of the grant and Project.**

PASSED AND APPROVED THIS 18th DAY OF APRIL, 2017.

CITY OF PURCELL

ATTEST:

Dorothy Kennedy
Clerk/Secretary Date
(SEAL)

By: Ted W
Mayor 4-18-17
Date

APPROVED:

By: _____
Ted W. Haxel, counsel Date

THE CITY OF PURCELL CORPORATE SEAL OKLAHOMA