NEBRASKA NATURAL RESOURCES COMMISSION

Water Sustainability Fund

Application for Funding

Section A.

ADMINISTRATIVE

PROJECT NAME: Pine Lake Rehabilitation Project

SPONSOR'S *PRIMARY CONTACT INFORMATION* **(Not Consultant's)**

Sponsor Business Name: Pine Lake Association

Sponsor Contact's Name: Aaron Mittelstet

Sponsor Contact's Address: 7831 Dougan Drive

Sponsor Contact's Phone: 405-612-9987

Sponsor Contact's Email: aaronmittelstet@gmail.com

1. **Funding** amount requested from the Water Sustainability Fund:

   Grant amount requested. $ 495,000

   - If requesting less than 60% cost share, what %? 60%

   If a loan is requested amount requested. $ NA

   - How many years repayment period? NA
   - Supply a complete year-by-year repayment schedule. NA

2. **Neb. Rev. Stat. § 2-1507 (2)**

   Are you applying for a **combined sewer overflow project**? YES☐ NO☒

   If yes:

- Do you have a Long Term Control Plan that is currently approved by the Nebraska Department of Environmental Quality? YES☐ NO☒
- Attach a copy to your application. N/A
- What is the population served by your project? NA
- Provide a demonstration of need. NA
- **Do not complete the remainder of the application.**

3. **Permits Required/Obtained** Attach a copy of each that has been obtained. For those needed, but not yet obtained (box **"NO"** checked), 1.) State when you will apply for the permit, 2.) When you anticipate receiving the permit, and 3.) Your estimated cost to obtain the permit.

(N/A = Not applicable/not asking for cost share to obtain)
(Yes = See attached)
(No = Might need, don't have & are asking for 60% cost share to obtain)

G&P - T&E consultation (required)	N/A☐ Obtained: YES☐ NO☒
DNR Surface Water Right	N/A☐ Obtained: YES☐ NO☒
USACE (e.g., 404/other Permit)	N/A☐ Obtained: YES☐ NO☒
FEMA (CLOMR)	N/A☐ Obtained: YES☐ NO☒
Local Zoning/Construction	N/A☐ Obtained: YES☐ NO☒
Cultural Resources Evaluation	N/A☐ Obtained: YES☐ NO☒
Other (provide explanation below)	N/A☐ Obtained: YES☐ NO☒

4. **Partnerships**

List each Partner / Co-sponsor, attach documentation of agreement:
Lower Platte South NRD (LPSNRD)
University of Nebraska-Lincoln (UNL)
Environmental Protection Agency (EPA)
Platte Basin Timelapse (PBT)
Department of Environment and Energy (NDEE)

Identify the roles and responsibilities of each Partner / Co-sponsor involved in the proposed project regardless of whether each is an additional funding source.

This project resulted in partnerships with the LPSNRD, UNL, Platte Basin Timelapse (PBT), Environmental Protection Agency (EPA), Nebraska Department of Environment and Energy (NDEE), and University of Nebraska-Lincoln (UNL). The LPSNRD sees value in the Pine Lake Restoration project when it assisted in paying for the emergency repairs to the dam outlet structure and watershed assessment. They are also paying 50% or $561,000 to replace the dam outlet structure, their largest CAP grant ever awarded. UNAire, located in Biological Systems Engineering Department at UNL, is flying drones periodically to document the process of lake drainage, dam construction and refilling of the lake for educational purposes. Platte Basin Timelapse (PBT) installed a camera near the dam to document the entire restoration project and will make it available to the public in 2025. In 2025, UNL will use $28,400 from an EPA and NDEE grant to improve water quality in Pine Lake. The treatment will include the installation of floating treatment wetlands and alum injection to reduce nitrate and phosphorus.

5. **Other Sources of Funding**

The Pine Lake Association received a grant from the Nebraska Environmental Trust in 2023 for $425,000, which requires a 1:1 match. Of this total, $95,000 will be used to make watershed improvements within the watershed. Improvements include the excavation of two detention ponds located on the Pine Lake Golf Course and a third detention pond south of Pine Lake. The Flatwater Group (TFG) estimates that these structures could capture 67% of incoming sediment loads, thus significantly reducing the amount of sediment flowing into Pine Lake. Since most of the remaining sediment will settle out in Pine Lake, the water flowing into Beal Slough and Salt Creek will be of much higher quality. The northeast tributary does not contain any existing sediment capture features, but does contain an open channel that runs through the golf course. This channel is in relatively stable shape, but could be enhanced to detain storm runoff and provide water quality benefits. TFG recommends shaping the channel bank and planting native tall grass vegetation to capture leaves and grass clipping detritus that would otherwise be transported into Pine Lake. Additionally, the over

widened channel can induce sediment deposition. These three areas would not include open/standing water. Channel shaping would include widening the channel bottom to 10-30ft with gradual 4h:1v side slopes to facilitate annual mowing maintenance. We will request the additional $95,000 from the LPSNRD.

The Flatwater Group estimated that 55,000 cubic yards of sediment has flowed into Pine Lake due to the development within the watershed. During their assessment, they estimated the cost to remove the sediment will be $33 per cubic yard. The Flatwater Group recommends we remove 35,000 cubic yards of this sediment at a cost of $1,155,000. The NET grant will pay for $330,000 of this total. Of the remaining $825,000, the Pine Lake Association homeowners will contribute $330,000 and we are requesting $495,000 from the Water Sustainability Fund.

Phase	Timeline	Total Cost	Pine Lake Association (PLA)	LPSNRD	NET	Proposed WSF
0.Emergency Repairs Main Dam	Summer 2020	$102,934	$65,067	$40,528		
I. Bathymetric & Sediment Depth Survey	Fall 2021	$25,000	$25,000			
Watershed assessment and outlet structure design	Fall 2022	$64,500		$64,500		
II. Watershed Outlet Structures	Summer/Fall 2023	$1,122,000	$561,000	$561,000		
III. Watershed Improvements	Fall 2024	$190,000		$95,000	$95,000	
IV. Lake Excavation	Fall 2024-Spring 2025	$1,155,000	$330,000		$330,000	$495,000
Total	Summer 2020-Spring 2025	$2,684,434	$981,067	$761,028	$425,000	$495,000

The work and finances for Phases 0, I, II, and III are completed or have the funds secured, and as such, we are not seeking any cost-share for these phases of the project in this grant proposal.

If we don't receive funding from the WSF in 2024, we plan on requesting an extension from NET. We will then reapply for the WSF in 2025. Without the WSF, we will not be able to excavate the 35,000 cubic yards as recommended by The Flatwater Group.

6. **Overview**

In 1,000 words *or less*, provide a brief description of your project including the nature/purpose of the project and its objectives. Do not exceed one page!

The residents of Pine Lake take an integrated and holistic approach to the management of both the waters coming into our watershed from outside the neighborhood and from challenges within the neighborhood. The goal of our efforts at Pine Lake is for the water leaving the lake and flowing into the Upper Beal Slough to be cleaner than when in first entered our neighborhood and portion of the Pine Lake watershed. Most water into Pine Lake flows in from the Southeast. Intense development has occurred around PLA since the lake was dredged in 1996. The percent of the watershed classified as urban in 2001 was 26% compared to 71% in 2019 (Figures 1 and 2). This development has led to the accelerated build-up of sediment in the network of PLA-managed holding ponds and in the lake itself. According to a 2021 bathymetric and depth of sediment survey of Pine Lake, The Flatwater Group (TFG) estimates there is currently approximately 55,000 cy of sediment deposition. While open lots suitable for development in the Eastern portion of the Pine Lake watershed are available, the most intensive development is now complete. This sediment has greatly reduced the storage capacity of the lake. It is the intent of the PLA to repair the holding ponds, to install rock checks and erosion control, to assess, repair, and update critical outlet structures and water retention systems and dams, and to remove the sediment that has accumulated in the lake over the past 25 years. Working with UNL, we plan on installing floating treatment wetlands and injecting aluminum sulfate to reduce nutrients in Pine Lake and downstream waterbodies. Our goal is to improve the watershed's and lake's overall health, longevity, and structural integrity. We believe this will result in a cleaner and more healthy lake and numerous positive impacts on the water quality in both Beal Slough, Salt Creek, and Platte River, including improved sediment control, enhanced stormwater management and flood control downstream. This will improve the wildlife habitat in all downstream waterbodies and reduce any treatment costs for the cities of Lincoln and Omaha. The completion date for the entire project at Pine Lake is the summer of 2025. The dam outlet structure was replaced in 2023 and the watershed

improvements will occur in 2024. The Flatwater Group recommends we remove approximately 65% (35,000 cubic yards) of the 55,000 cubic yards of sediment from Pine Lake. Funds have been secured from the Nebraska Environmental Trust for watershed improvements and partial lake excavation ($330,000). The Pine Lake Association homeowners will contribute $330,000. Since 2020, the Pine Lake Association and homeowners have already paid $651,067 in emergency dam repairs, the bathymetric survey, and replacing the dam outlet structure. These projects depleted all of the Pine Lake Association funds and the homeowners contributed $134,000 to make up the difference. We feel confident we can obtain $330,000 in contributions from the homeowners to excavate the lake, but not the needed $825,000. The is why we are requesting $495,000 from the WSF. This work will begin in the fall of 2024 and completed in the spring of 2025. Excavation of Pine Lake will directly improve the habitat for the fish, waterfowl, macroinvertebrates and other plants and animals dependent on the lake.

7. **Project Tasks and Timeline**

Identify what activities will be conducted to complete the project, and the anticipated completion date.

Task 1: Dam outlet structure replacement
Task 2: Watershed improvements
Task 3: Lake excavation
For multiyear projects please list (using the following example):

Tasks	Year 1$	Year 2$	Year 3$	Remaining	Total $ Amt.
1	$1,122,000				$1,122,000
2		$190,000			$190,000
3		$577,500	$577,500		1,155,000
				TOTAL	$2,467,000

- What activities (Tasks) are to be completed.
- An estimate of each Tasks expenditures/cost per year.
- Activities in years 4 through project completion under a single column.

Overall this is a five-year project starting in 2020 and ending in 2025. In year 1 (2020) the emergency repairs were made to the dam. In year 2 (2021), a bathymetric survey of Pine Lake was completed. In year 3 (2022), the watershed and lake assessment were completed. The lake was drained, and the dam outlet structure was replaced in 2023. The plan is to make the golf course improvements and remove sediment from the retention ponds in the fall of 2024.

If the WSF funds this project, excavation of the Pine Lake will also start in the fall of 2024 and be completed in 2025.

8. **IMP**

Do you have an **Integrated Management Plan** in place, or have you initiated one? YES☐ NO☐ Sponsor is not an NRD☒

Section B.

DNR DIRECTOR'S FINDINGS

Prove Engineering & Technical Feasibility

(Applicant must demonstrate compliance with Title 261, CH 2 - 004)

1. Does your project include physical construction (defined as moving dirt, directing water, physically constructing something, or installing equipment)?
YES☒ NO☐

If you answered "YES" you must answer all questions in section 1.A.
If you answer "NO" you must answer all questions in section 1.B.

If "YES", it is considered mostly structural, so answer the following:

1.A.1 Insert a feasibility report to comply with Title 261, Chapter 2, including engineering and technical data; The feasibility report was conducted by The Flatwater Group (TFG) and is attached as Appendix A.

1.A.2 Describe the plan of development (004.01 A); The Pine Lake Rehabilitation Project consists of three components. First, the pipes for the main dam/water control structure for Pine Lake were 60 years old. The outlet pipe failed inspection by Nebraska Dam Safety and emergency repairs were made to the outlet pipe in 2020. This was not a permanent solution and did not address the entire structure. The dam offers protection for Nebraska Parkway and Beal Slough. The outlet structure was replaced in 2023 and has a design life of 100 years. The total cost was $1,122,000, of which 50% was paid by the Lower Platte South NRD (LPSNRD) and 50% by the Pine Lake Association (PLA). The second component of this project is to reduce runoff and erosion from the Pine Lake Golf Course. Rock checks and bank reinforcement are needed to control runoff that occurs from outside the neighborhood through the golf course area. These improvements will reduce the peak runoff, sediment and nutrients flowing into Pine Lake, Beal Slough and Salt Creek. This part of the project will cost $190,000 and will be paid by the Nebraska Environmental Trust and LPSNRD. The third component is the sedimentation of Pine Lake and three retention ponds. The retention ponds reduce peak runoff and the sediment load entering Pine Lake and Beal Slough. Pine Lake has two main tributaries entering from the northeast and southeast (Figure 3). The NE and SE tributaries drain roughly 1/3rd and 2/3rds of the watershed, respectively. The larger SE tributary drains through five existing sediment retention ponds prior to entering Pine Lake. Three of these ponds are located on the PLA and Golf Course property, while two are located further up in the watershed on neighboring properties. The smaller NE tributary drains primarily through the Golf Course property and does not contain any active sediment retention ponds. The Flatwater Group (TFG) performed a topographic and bathymetric survey of the lake and in-lake sediment basin in 2021 (Figure 4). Survey of the sedimentation basins included the ground surface (top of the soft sediments) and the elevation of the hard pan material below. 3-D surface generation

and comparison was used to estimate a total sediment volume of 55,000 cubic yards in the lake, of which 1,100 cubic yards is located in the south sediment pond. Assuming that these sediments entered the lake since the 1997 restoration project, the annual sediment loading is approximately 2,700 tons per year. From historic aerial imagery, TFG found that the watershed has urbanized over this period of time from what was once 40% agricultural (Figure 2). Soil loss associated with tillage of crop fields and urban land development account for this high annual sediment loading. TFG anticipates that future sediment loading will be substantially lower. For this component of the project, the three retention ponds and Pine Lake will be excavated. If the sediment is not removed from the retention ponds and Pine Lake, there is an increased chance of dam failure and flooding of Beal Slough. The storage capacity of the ponds and Pine Lake have been drastically reduced since 1996. We want to remove 35,000 cubic yards of sediment as recommended by The Flatwater Group or 65% of the sediment in Pine Lake. At $33 a cubic yard, the total cost will be $1,155,000. The NET will pay $330,000. Of the remaining $825,000, the Pine Lake homeowners will contribute 40% or $330,000 and we are requesting 60% or $495,000 from the WSF.

1.A.3 Include a description of all field investigations made to substantiate the feasibility report (004.01 B);

Here are all of the dates and the field investigations completed by TFG.
7/22/23 – sediment pond survey
7/26/23 – TFG site visit with Chad to investigate the sediment ponds and golf course
8/3/23 – TFG site visit to assess golf course channel erosion
8/4/23 – drone photos of Pine Lake
8/4/23 – site visit of outlet structure with dam engineer
1/6/2023 – site visit with TFG and dam engineer for measurements on existing outlet structure
1/6/2023 – existing dam topographic survey by dam engineer
1/18/2023 – Pine Lake dam road paving core to determine thickness and composition for replacement as part of dam replacement
8/2023 to 11/2023 – multiple visits by Hazard Engineering to replace Pine Lake outlet structure

1.A.4 Provide maps, drawings, charts, tables, etc., used as a basis for the feasibility report (004.01 C); Click here to enter text.

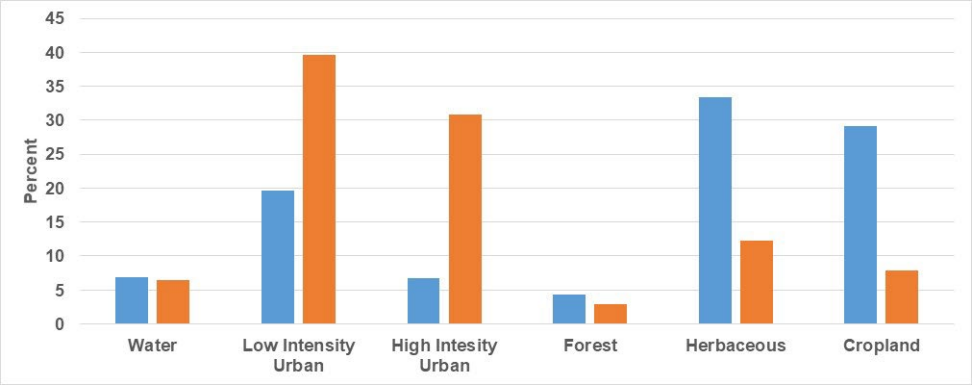


Figure 1. Percent land use in the Pine Lake watershed in 2001 (blue) compared to 2019 (orange).

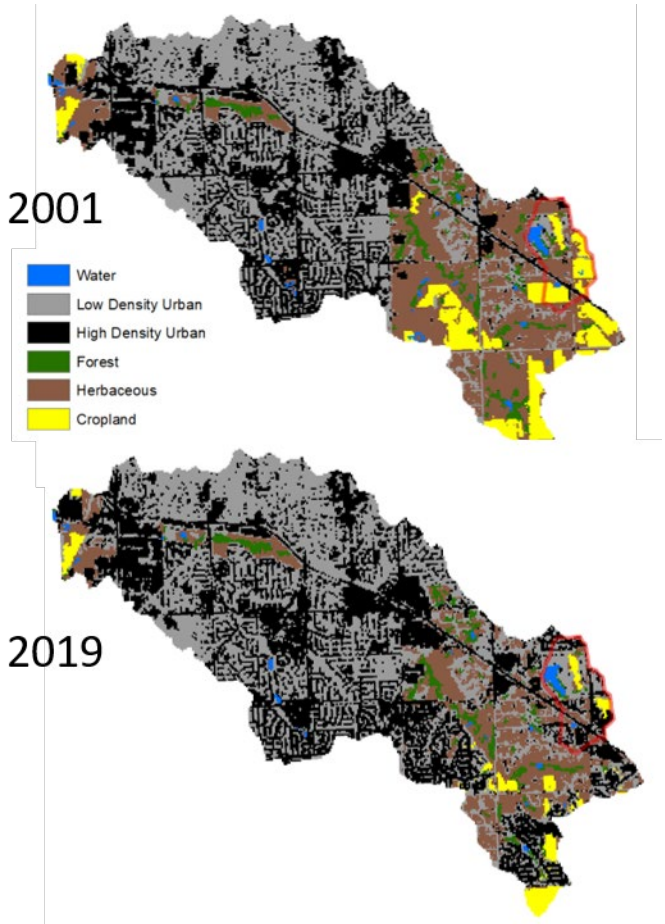


Figure 2. Land use in the Beal Slough watershed in 2001 and 2019. The Pine Lake watershed is outlined in red. Most of the development within the watershed is in the southern portion, specifically within the Pine Lake watershed.

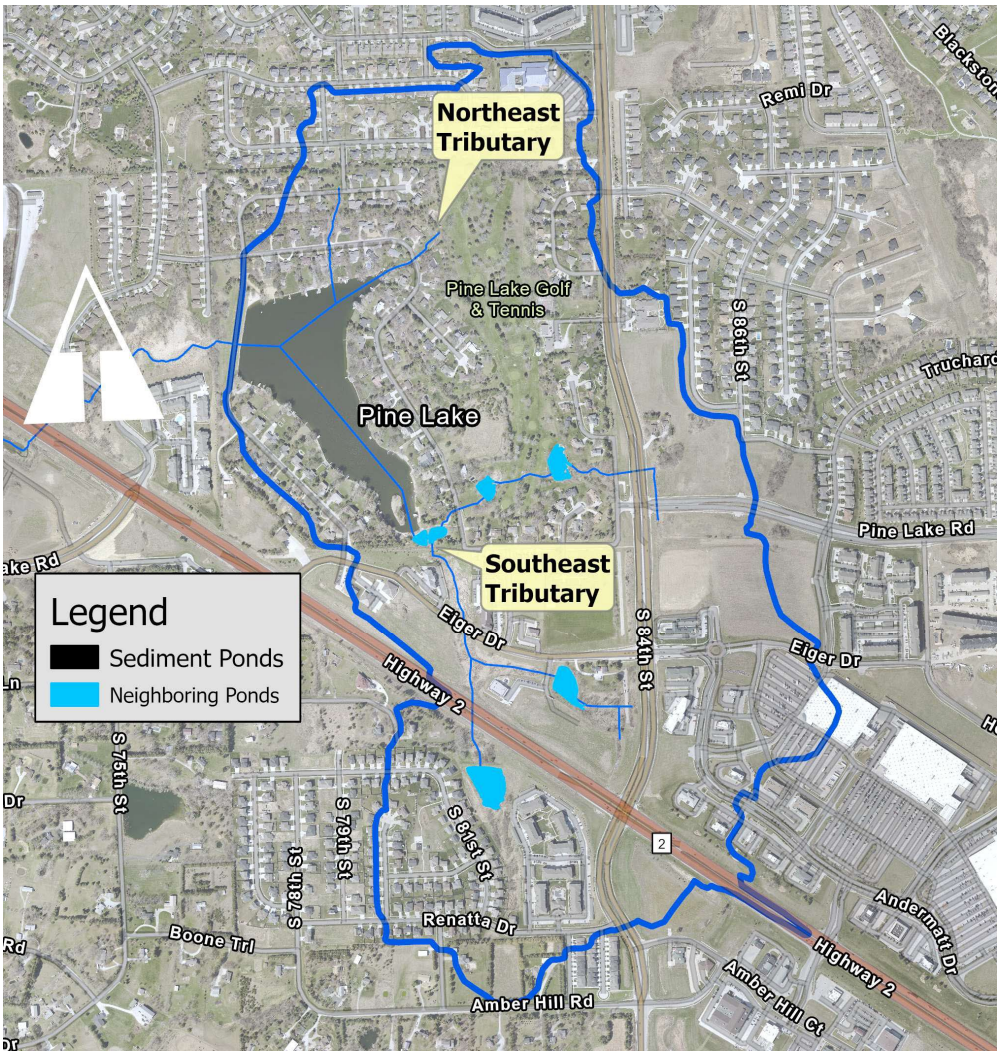


Figure 3. Location of sediment ponds within the Pine Lake watershed.

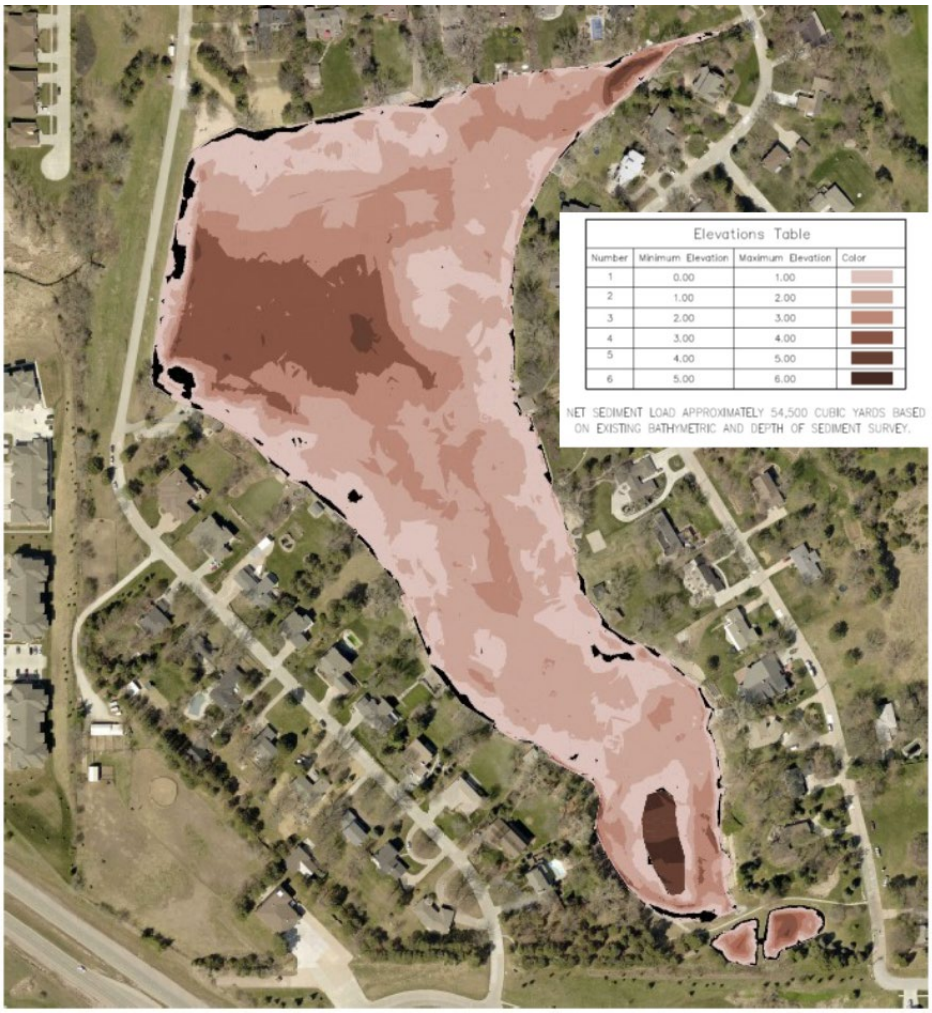


Figure 4. 2021 sediment depth survey.

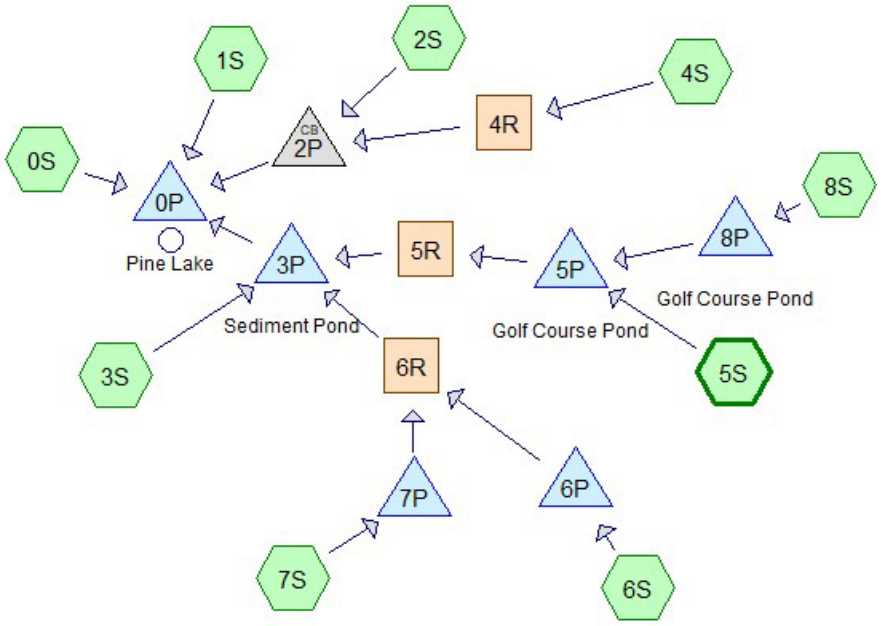


Figure 5. HydroCAD hydrological model schematic.

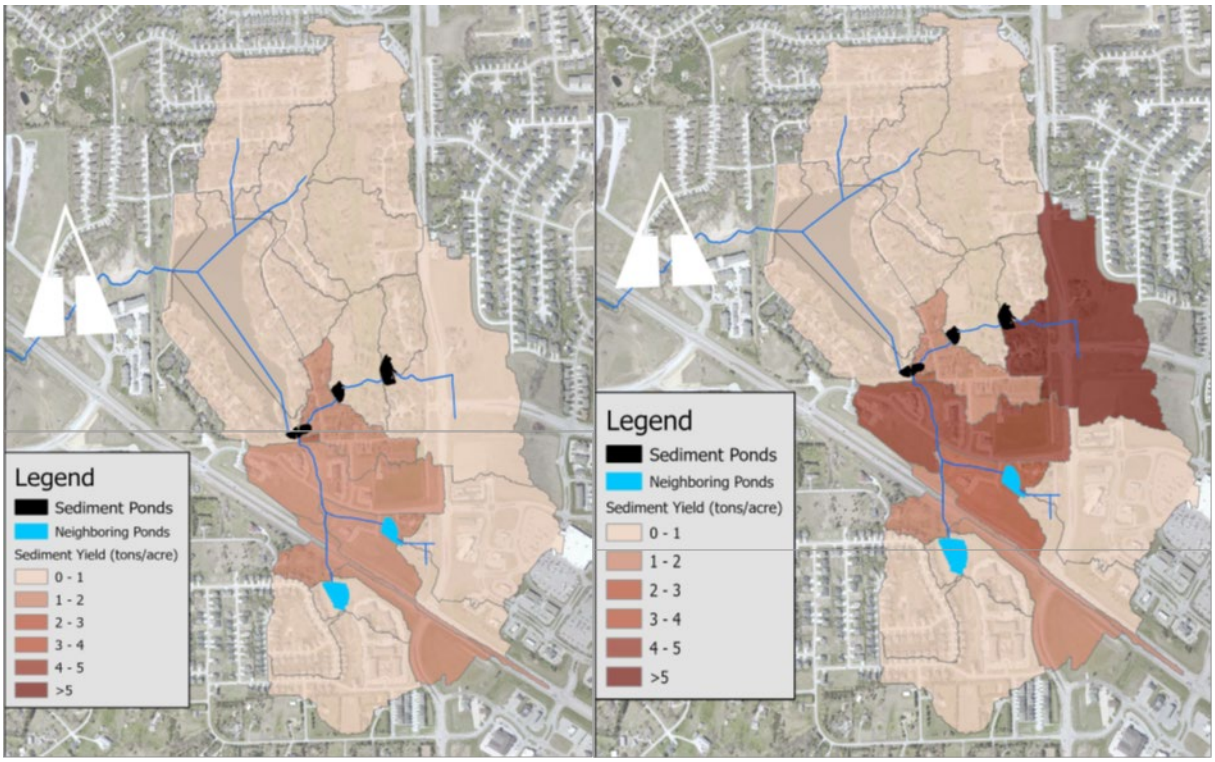


Figure 6 Sediment Yield (tons/acre) for future land use conditions (left) and the potential increase in sediment yield caused by construction activities from urban development in the watershed (right).

Figure 7. Image showing Pine Lake, the dam, and the structures downstream of the dam. Orange arrow illustrates the location of the dam.

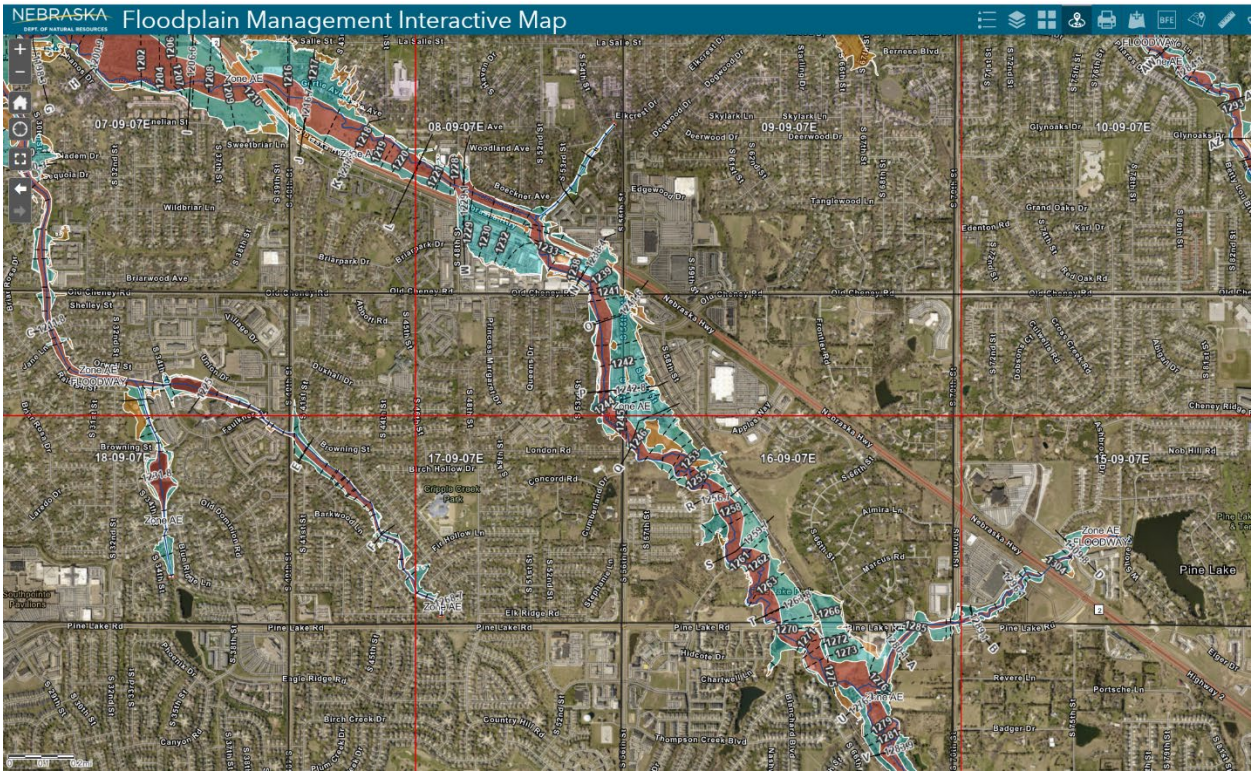


Figure 8. Floodplain downstream of Pine Lake.

1.A.5 Describe any necessary water and/or land rights including pertinent water supply and water quality information (004.01 D);

The PLA owns the land where all work will be completed so no additional and or water rights need to be obtained.

1.A.6 Discuss each component of the final plan (004.01 E);

The Flatwater Group (TFG) conducted a survey and determined that 55,000 cubic yards of sediment has flowed into Pine Lake since the dam was constructed in 1961. Based on TFG's experience with this type of project over the past 25 years, the most cost-effective approach is to let the local free market choose the sediment removal method and spoil location. In their experience, that is a drained lake with "dry" excavation and not dredging. Once the contractor hauls the material away, the destiny of the removed sediment is up to them as long as it is placed in an upland (non-wetland/non-floodplain) location.

Other methods of sediment removal, such as dredging and geotubes, require material to be moved twice and that is not cost effective. In TFG's experience for this size of lake, the dredging cost would likely be 3 times the cost of "dry" excavation.

If funded, the plan is to drain the lake after Labor Day and excavate 65% of the 55,000 cubic yards. The work will be completed by May 2025.

1.A.7 When applicable include the geologic investigation required for the project (004.01 E 1);
TFG performed a topographic and bathymetric survey of the lake and in-lake sediment basin in 2021. Survey of the sedimentation basins included the ground surface (top of the soft sediments) and the elevation of the hard pan material below. 3-D surface generation and comparison was used to estimate a total sediment volume of 55,000 cubic yards in the lake, of which 1,100 cubic yards is located in the south sediment pond (Figure 4). Assuming that these sediments entered the lake since the 1997 restoration project, the annual sediment loading is approximately 2,700 tons per year. From historic aerial imagery, TFG found that the watershed has urbanized over this period of time from what was once 40% agricultural (Figure 2). Soil loss associated with tillage of crop fields and urban land development account for this high annual sediment loading. TFG anticipates that future sediment loading will be substantially lower.

Surface texture for soils in the watershed were obtained from the Web Soil Survey. Predominant soils include Aksarben, Wymore and Colo-Nodaway Silty Clay Loams, and Pawnee Clay loam. Based on grain size analysis, Stoke's Law was used to estimate the particle settling velocity for the watershed.

SWAT is a continuous time model used to evaluate long-term watershed and sediment yield in Pine Lake's northeast and southeast tributary channels. Watershed delineation and physically based weather, soil, slope, and landuse input parameters were derived by TFG through the ArcSWAT model component. A summary of the data sources input into the model are listed below. Model parameters for subbasins (soil type, land use, slope), stream reaches, sediment ponds, and neighboring ponds were modified to reflect site observations, aerial imagery and topography data.

Hydrologic and sedimentolgical input parameters are derived by SWAT through unique hydrologic response units (HRUs) for each delineated subbain. A HRU contains a unique combination of landuse, soil type, and slope condition. SWAT was run on monthly and daily time steps over the available weather data time period with a 2-year warm up period. Average monthly and annual results were derived to predict long term sediment yields for evaluating input parameter sensitivity and calibration to observed sediment loads. Daily sediment loading and tributary outflow data was input into TFG's sediment basin capture analysis.

Results from the SWAT model were analyzed to estimate future sediment loads entering Pine Lake from the northeast tributary and southeast tributary. Average annual sediment yields are shown for model subbasins in Figure 6. Included is an estimate of the potential increase in sediment yield caused by construction activities for urban development. These construction activities were assumed to have a duration of one-year per site for a total sediment yield of 400 tons. This estimate assumes that sediment and erosion control measures will be employed in accordance with state and local regulations to reduce potential runoff to Pine Lake.

There are two existing sediment catch basin features located on the Pine Lake Golf Course, which drain to the southeast tributary. TFG estimates that these structures could capture 67% of incoming sediment loads for a total of 30 tons (26 cubic yards) on an average annual basis. An additional 240 tons (200 cubic yards) of potential sediment loading to these basins could come from construction activities related to future urban development. TFG recommends removing at least 800 cubic yards from these basins to provide 25 years of future sediment storage capacity. These features currently function to capture sediment, but are in need of maintenance to remove accumulated sediments, remove trees from the embankment, and replace deteriorated pipe outlet structures.

South of the larger lake, there is an existing sedimentation pond (Figure 6). As described above, TFG estimates 1,100 cubic of sediments have accumulated since the last cleanout in 2009 (84 cubic yards per year). TFG estimates that these structures could capture 60% of incoming sediment loads for a total of 85 tons (72 cubic yards) on an average annual basis. This capture rate closely matches the volume of sediments accumulated since 2009, which validates TFG's analysis method. An additional 400 tons (340 cubic yards) of potential sediment loading to these basins could come from construction activities related to future urban development. TFG recommends removing at least 1,300 cubic yards from this basin. This quantity, in combination with excavation in the golf course ponds, provides an estimated 25 years of future sediment storage.

1.A.8 When applicable include the hydrologic data investigation required for the project (004.01 E 2);

A rainfall-runoff response hydrologic model was developed to evaluate event based rainfall data on a subdaily time-step. Twenty-four hour duration design storms were input into the model using rainfall depths for the 1, 2, 5, 10 and 25 year flood events. Hydrologic input data was derived from HRU parameters generated through SWAT. The SCS Curve Number method was applied to generate storm runoff hydrographs. Subbasin time of concentration was calculated using the SCS lag equation, which relies on hydraulic length and average subbasin land slope. Runoff was routed through stream reaches, ponds and inline reservoirs using the storage-indication and translation method. Reach and reservoir input data was derived from TFG survey and LiDAR topography. The HydroCAD model schematic is shown in Figures 5.

The northeast tributary does not contain any existing sediment capture features, but does contain an open channel that runs through the golf course property. This channel is in relatively stable shape, but could be enhanced to detain storm runoff and provide water quality benefits. TFG recommends shaping the channel bank and planting native tall grass vegetation to capture leave and grass clipping detritus that would otherwise be transported into Pine Lake. Additionally, the overwidened channel can induce sediment deposition.These three areas would not include open/standing water. Channel shaping would include widening the channel bottom to 10ft to 30ft with gradual 4h:1v sideslopes to facilitate annual mowing maintenance. TFG recommends excavating 640 cy over an area of 0.2 acres (8,700 sq-ft) to provide 25 years of future sediment storage capacity.

1.A.9 When applicable include the criteria for final design including, but not limited to, soil mechanics, hydraulic, hydrologic, structural, embankments and foundation criteria (004.01 E 3). Click here to enter text.

If "NO", it is considered mostly non-structural, so answer the following:

1.B.1 Insert data necessary to establish technical feasibility (004.02); Click here to enter text.

1.B.2 Discuss the plan of development (004.02 A); Click here to enter text.

1.B.3 Describe field or research investigations utilized to substantiate the project conception (004.02 B); Click here to enter text.

1.B.4 Describe any necessary water and/or land rights (004.02 C); Click here to enter text.

1.B.5 Discuss the anticipated effects, if any, of the project upon the development and/or operation of existing or envisioned structural measures including a brief description of any such measure (004.02 D). Click here to enter text.

Prove Economic Feasibility

(Applicant must demonstrate compliance with Title 261, CH 2 - 005)

2. Provide evidence that there are no known means of accomplishing the same purpose or purposes more economically, by describing the next best alternative.

Instead of removing the entire 55,000 cubic yards of sediment, The Flatwater Group recommends removing 35,000 cubic yards and focus on the shallower areas which will have the greatest impact.

To remove sediment from a reservoir, there are three methods that can be used. The reservoir can be dredged, excavated or geotubes can be used. Dredging consists of removing sediment slurry and pumping it to a nearby location. Once the soil dries out, it then must be hauled away. In The Flatwater Group's experience, dredging would cost 3 times the cost of "dry excavation since the soil has to be transported twice.

The geotubes only hold 1750 cubic yards of sediment so 20 would be needed for our project. There is not enough space around Pine Lake for this many tubes. Also, they are only used once and then must be destroyed once they are hauled away.

Excavation requires the lake to be drained. The “dry” soil is then hauled away on an upland location determined by the contractor. With our new outlet structure, it is no problem to drain the lake. This is the method The Flatwater Group recommended to us that would be the most cost effective.

3. Document all sources and report all **costs** and **benefit data** using current data, (commodity prices, recreation benefit prices, and wildlife prices as prescribed by the Director) using both dollar values and other units of measurement when appropriate (environmental, social, cultural, data improvement, etc.). The period of analysis for economic feasibility studies is the project life. (Title 261, CH 2 - 005). TFG did not do a CBA for our project.

3.A Describe any relevant cost information including, but not limited to the engineering and inspection costs, capital construction costs, annual operation and maintenance costs, and replacement costs. Cost information shall also include the estimated construction period as well as the estimated project life (005.01).The Pine Lake Association paid The Flatwater Group $200,000 for the engineering and planning of the outlet structure, watershed assessment and lake excavation. The Flatwater Group (TFG) conducted a survey and determined that 55,000 cubic yards of sediment has flowed into Pine Lake since the dam was constructed in 1961. Based on TFG’s experience with this type of project over the past 25 years, the most cost-effective approach is to let the local free market choose the sediment removal method and spoil location. In their experience, that is a drained lake with “dry” excavation and not dredging. Once the contractor hauls the material away, the destiny of the removed sediment is up to them as long as it is placed in an upland (non-wetland/non-floodplain) location.

3.B Only primary tangible benefits may be counted in providing the monetary benefit information and shall be displayed by year for the project life. In a multi-purpose project, estimate benefits for each purpose, by year, for the life of the project. Describe intangible or secondary benefits (if any) separately. In a case where there is no generally accepted method for calculation of primary tangible benefits describe how the project will increase water sustainability, in a way that justifies economic feasibility of the project such that the finding can be approved by the Director and the Commission (005.02). Benefits include flood damage reduction, recreational benefits, water quality improvements to the watershed and downstream waterbodies such as Salt Creek and Platte River. The project will maintain the bird, fish and other animal habitats.

3.C Present all cost and benefit data in a table to indicate the annual cash flow for the life of the project (005.03). N/A

3.D In the case of projects for which there is no generally accepted method for calculation of primary tangible benefits and if the project will increase water sustainability, demonstrate the economic feasibility of such proposal by such

method as the Director and the Commission deem appropriate (005.04). (For example, show costs of and describe the next best alternative.)

The Pine Lake watershed is a subwatershed within the Beal Slough, Salt Creek and Platte River watersheds. Though the watershed is small compared to the Platte River watershed, the only way to improve water quality in the Platte River is the culmination of small projects such as this one. Any reduction in sediment and nutrient loads from the Pine Lake watershed will ultimately improve the water quality in the Platte River. The Platte River provides drinking water for the cities of Lincoln and Omaha. The three retention ponds and Pine Lake capture and retain a large portion of the sediment and nutrients within the Pine Lake watershed. Any reduction in sediment and nutrients will lead to better water quality in downstream waterbodies.

There are two existing sediment basin features located on the Pine Lake Golf Course, which drain to the southeast tributary. The Flatwater Group (TFG) estimates that these structures could capture 67% of incoming sediment loads for a total of 30 tons (26 cubic yards) on an average annual basis. An additional 240 tons (200 cubic yards) of potential sediment loading to these basins could come from construction activities related to future urban development. TFG recommends removing at least 800 cubic yards from these basins to provide 25 years of future sediment storage capacity. These features currently function to capture sediment, but are in need of maintenance to remove accumulated sediments, remove trees from the embankment, and replace deteriorated pipe outlet structures.

South of the larger lake, there is an existing sedimentation pond. As described above, TFG estimates 1,100 cubic yards of sediments have accumulated since the last cleanout in 2009 (84 cubic yards per year). TFG estimates that these structures could capture 60% of incoming sediment loads for a total of 85 tons (72 cubic yards) on an average annual basis. This capture rate closely matches the volume of sediments accumulated since 2009, which validates TFG's analysis method. An additional 400 tons (340 cubic yards) of potential sediment loading to these basins could come from construction activities related to future urban development. TFG recommends removing at least 1,300 (cubic yards) from this basin. This quantity, in combination with excavation in the Golf Course Ponds, provides an estimated 25 years of future sediment storage.

It is also estimated that Pine Lake will retain approximately 60% of all sediment and much of the nutrients that flows into the lake. Overall, nearly 1 million people will be impacted by the water quality improvements within the Pine Lake watershed. The population of Omaha is approaching 500,000 people. The majority of their water comes from the Platte and Missouri Rivers. The City of Lincoln, with a population of 268,000, receives its water from the Platte River alluvial aquifer near Ashland.

If Pine Lake is not excavated, the lake will be more apt to flood during a large storm event. This flooding could compromise the integrity of the dam. A breaching of the dam would send a large pulse of flood waters and sediment downstream to Beal Slough and Salt Creek. All of this water would cause streambank erosion and damage the channel in both Beal Slough and Salt Creek.

Prove Financial Feasibility

(Applicant must demonstrate compliance with Title 261, CH 2 - 006)

4. Provide evidence that sufficient funds are available to complete the proposal.

   This project has five phases totaling $2,684,434. Phase 0 (emergency dam repairs), phase I (bathymetric survey), and phase II (replacement of dam outlet structure) are complete and cost a total of $1,314,434. Approximately 50% has been paid by the Pine Lake Association and 50% by the Lower Platte South NRD.

   Phase III includes watershed improvements to reduce soil erosion within the Pine Lake watershed. The total cost will be $190,000. The Nebraska Environmental Trust (NET) will pay for 50% and we expect the LPSNRD to pay the remaining 50%. This phase will be completed in fall 2024.

   The final phase is the excavation of Pine Lake. $330,000 has been secured from the NET grant. To remove 65% of the sediment, we will need a total of $1,155,000 for sediment excavation. Of the remaining $825,000, $495,000 (60%) will come from the WSF and homeowners will contribute 40% ($330,000).

   This project has been an excellent collaboration between the Pine Lake Association, LPSNRD, NET and potentially the WSF.

5. Provide evidence that sufficient annual revenue is available to repay the reimbursable costs and to cover OM&R (operate, maintain, and replace).

   The total annual revenue of the PLA is $135,000 to cover any maintenance costs associated with this project. The PLA receives $ 29,000 annually from homeowner dues and almost $100,000 in cell tower rental income.

6. If a loan is involved, provide sufficient documentation to prove that the loan can be repaid during the repayment life of the proposal. NA

7. Describe how the plan of development minimizes impacts on the natural environment (i.e. timing vs nesting/migration, etc.).

Since we just replaced the outlet structure, now is the time to complete the lake excavation. With the lake drained, the fish and most of the wildlife are gone. The lake must eventually be excavated, and the cost will only increase. If this grant is not obtained, the lake will have to be drained and excavated at a future date. This will be detrimental to the fish and other wildlife populations.

8. Explain how you are qualified, responsible and legally capable of carrying out the project for which you are seeking funds.

   The PLA has a Board consisting of seven members whom were elected by the PLA homeowners. The Board has the right to make any changes to the dam and lake and the power to spend funds for any repairs and maintenance. The Board meets the third Monday of each month and votes on each of the proposed changes and decisions.

9. Explain how your project considers plans and programs of the state and resources development plans of the political subdivisions of the state. This project is being implemented as part of the LPSNRD's efforts to meet the regulatory purpose of flood prevention and control. This project also meets other regulatory purposes such as pollution control and wildlife habitat. The project will assist the LPSNRD in meeting the goals of their long-term management plan.

10. Are land rights necessary to complete your project? YES☐ NO☒

If yes:

10.A Provide a complete listing of all lands involved in the project. N/A

10.B Attach proof of ownership for each easements, rights-of-way and fee title currently held. N/A

10.C Provide assurance that you can hold or can acquire title to all lands not currently held. N/A

11. Identify how you possess all necessary authority to undertake or participate in the project.

    The PLA has a Board consisting of seven members whom were elected by the PLA homeowners. The Board has the right to make any changes to the dam and lake and the power to spend funds for any repairs and maintenance. The Board meets the third Monday of each month and votes on each of the proposed changes and decisions.

12. Identify the probable consequences (environmental and ecological) that may result if the project is or is not completed.

If Pine Lake is not excavated, the lake will be more apt to flood during a large storm event. With 55,000 cubic yards of sediment, the flood capacity of the lake has been greatly reduced. This is not the fault of the Pine Lake Association, but due to urbanization within the watershed. This flooding could compromise the integrity of the dam. A breaching of the dam would send a large pulse of flood waters and sediment downstream to Beal Slough and Salt Creek. A large flood would be devasting to Beal Slough and Salt Creek. This would cause a lot of streambank erosion and potential infrastructure damage.

Section C.

NRC SCORING

In the NRC's scoring process, points will be given to each project in ranking the projects, with the total number of points determining the final project ranking list.

The following 15 criteria constitute the items for which points will be assigned. Point assignments will be 0, 2, 4, or 6 for items 1 through 8; and 0, 1, 2, or 3 for items 9 through 15. Two additional points will be awarded to projects which address issues determined by the NRC to be the result of a federal mandate.

Notes:

- The responses to one criterion ***will not*** be considered in the scoring of other criteria. Repeat references as needed to support documentation in each criterion as appropriate. The 15 categories are specified by statute and will be used to create scoring matrixes which will ultimately determine which projects receive funding.

- There is a total of 69 possible points, plus two bonus points. The potential number of points awarded for each criteria are noted above. Once points are assigned, they will be added to determine a final score. The scores will determine ranking.

- The Commission recommends providing the requested information and the requests are not intended to limit the information an applicant may provide. An applicant should include additional information that is believed will assist the Commission in understanding a proposal so that it can be awarded the points to which it is entitled.

Complete any of the following (15) criteria which apply to your project. Your response will be reviewed and scored by the NRC. Place an N/A (not applicable) in any that do not apply, an N/A will automatically be placed in any response fields left blank.

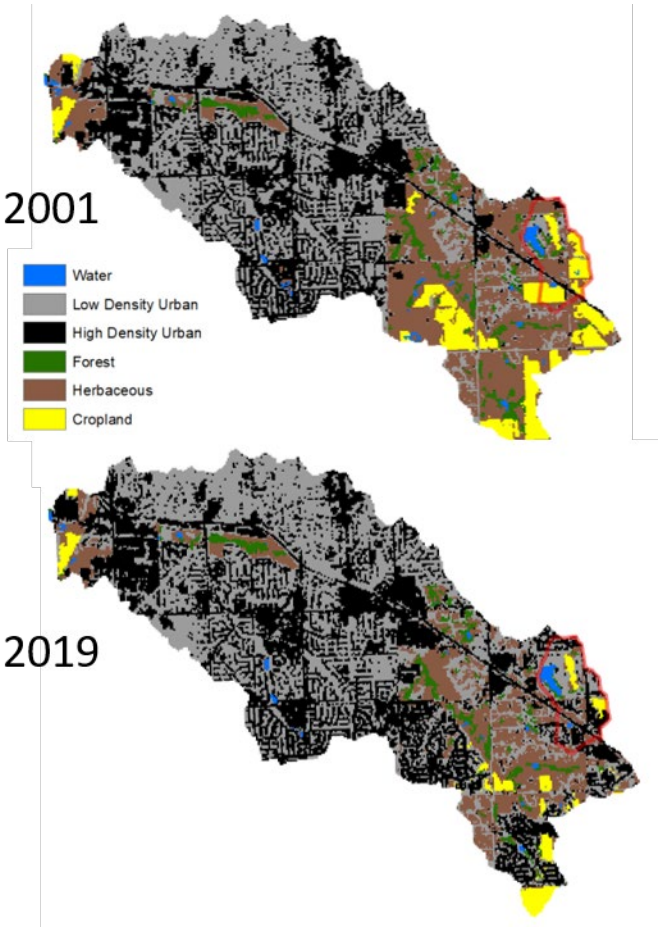
1. Remediates or mitigates threats to drinking water;

    - Describe the specific threats to drinking water the project will address.
      The Pine Lake watershed is a subwatershed within the Beal Slough, Salt Creek and Platte River watersheds. Though the watershed is small compared to the Platte River watershed, the only way to improve water quality in the Platte River is the culmination of small projects such as this one. Any reduction in sediment and nutrient loads from the Pine Lake watershed will ultimately improve the water quality in the Platte River. The Platte River provides drinking water for the cities of Lincoln and Omaha. The three retention ponds and Pine Lake capture and retain a large portion of the

sediment and nutrients within the Pine Lake watershed. Any reduction in sediment and nutrients will lead to better water quality in downstream waterbodies. The 55,000 cubic yards of sediment that has been retained within Pine Lake is 55,000 cubic yards that didn't flow downstream to Beal Slough, Salt Creek and ultimately the Platte and Missouri Rivers.

- Identify whose drinking water, how many people are affected, how will project remediate or mitigate.
  Overall, nearly 1 million people will be impacted by the water quality improvements within the Pine Lake watershed. The population of Omaha is approaching 500,000 people. The majority of their water comes from the Platte and Missouri Rivers. The City of Lincoln, with a population of 268,000, receives its water from the Platte River alluvial aquifer near Ashland.

- Provide a history of issues and tried solutions.
  Pine Lake was developed in 1961. Due to all of the urbanization within the watershed (see map below comparing 2001to 2019), The Flatwater Group estimates that 55,000 cubic yards of sediment has flowed into the lake since its inception. In the early 1990's, partial excavation took place but the total amount of sediment removed was minimal. The current Pine Lake Association (PLA) Board has worked with the Lower Platte South NRD (LPSNRD) to replace the dam outlet structure and assist with watershed improvements. They provided the PLA the largest CAP grant in their history. Together the PLA and LPSNRD have paid $1,314,434 in emergency dam repairs, bathymetric survey of the lake, watershed assessment and replacement of the dam outlet structure. Excavating the lake is the next step but will cost $1,155,000. The PLA funds were depleted to complete the replacement of the dam outlet structure. The PLA Board applied for a Nebraska Environmental Trust grant and were awarded a total of $425,000 for watershed improvements ($90,000) and lake excavation ($330,000). This would remove a small percent of the sediment in the lake and The Flatwater Group recommends we remove 35,000 cubic yards and focus on the shallow areas. We need an additional $825,000. Homeowners within the Pine Lake Association will contribute 40% or $330,000 and we are requesting 60% or $495,000 from the WSF. Since most of the watershed has been urbanized, future sediment flowing into the lake will be minimal. Since the lake was drained in 2023, now is the time to excavate the lake before fish and other wildlife return to the lake.

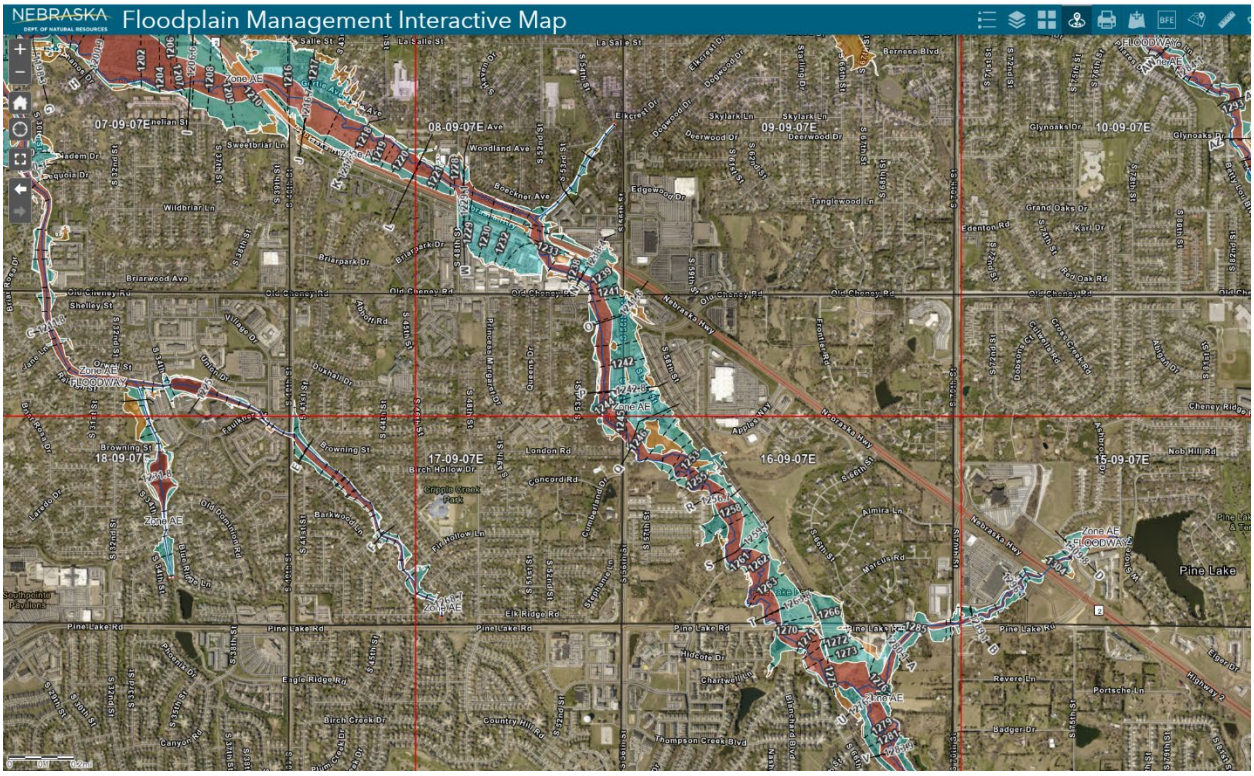


- Provide detail regarding long-range impacts if issues are not resolved.

If the lake is not excavated, the dam may breach due to floodwater. The Flatwater Group estimated that the sediment volume that has runoff into Pine Lake to be 55,000 cubic yards. This has reduced the normal storage capacity (106 acre-ft) by 25% and the flood storage capacity (306 acre-ft) by 11%. This reduced storage has increased the chance of floodwaters overtopping the dam, thus causing the dam to breach. This would cause significant flooding downstream and cause damage to the Nebraska Parkway and several houses and businesses (see image below). This would release all of the lake water and much of the sediment downstream to Beal Slough and eventually Salt Creek. This would have a negative impact on the ecosystem at and around Pine Lake and downstream in Beal Slough and Salt Creek.

Currently the lake is not very deep due to all of the sediment. This contributed to the low dissolved oxygen and massive fish kill a few years ago. If the lake is not excavated, fish kills will occur again in the future.

The University of Nebraska-Lincoln (UNL) received a grant from the EPA to treat ten waterbodies in Lincoln to reduce nitrate and phosphorus. They will use floating treatment wetlands and aluminum sulfate. Pine Lake was selected as one of the ten, but currently the lake is too shallow for the floating treatment wetlands. The current plan is to install the floating treatment wetlands and aluminum sulfate injection system in the summer of 2025 after the lake excavation. This treatment will reduce nitrogen and phosphorus concentrations in Beal Slough, Salt Creek and ultimately the Platte River. If the lake is not excavated, UNL will not be able to treat the lake.



2. Meets the goals and objectives of an approved integrated management plan or ground water management plan;

   - Identify the specific plan that is being referenced including date, who issued it and whether it is an IMP or GW management plan.

   This project addresses the goals of the Lower Platte South NRD. With limited surface water sources, highly erodible ground water supplies and the geographic reality of the downstream location in the river basin, the IMP includes the anticipated need to look outside District boundaries to collaborate and cooperate on future water supply expansion. The LPSNRD IMP was approved in 2014 and was jointly developed with the Nebraska Department of Natural Resources.

   - Provide the history of work completed to achieve the goals of this plan.

   The LPSNRD sees value in the Pine Lake Restoration project when it assisted in paying for the emergency repairs to the dam outlet structure and watershed assessment. They are also paying 50% or $561,000 to replace the dam outlet structure, their largest CAP grant ever awarded.

   - List which goals and objectives of the management plan the project provides benefits for and how the project provides those benefits.

   The three goals in their Integrated Management Plan are to achieve a sustainable water supply, to manage the supply and make it available whenever and wherever needed, and to support water use and conservation that optimizes benefits. LPSNRD IMP goals our project addresses include the following: a) Manage the hydrologically connected waters in the District; b) Preserve and enhance instream flows and other water-based natural ecosystems that provide benefits supporting the health and safety of our citizens and the quality of their lives; c) Collaborate and work cooperatively with the citizens and communities in the District.

   Water originating from the Pine Lake watershed is important for Beal Slough and downstream waters. The quantity and quality of water flowing from the lake will be compromised if actions are not taken in the near future. The goal of the Pine Lake Association (PLA) is similar to those of the LPSNRD. The residents of Pine Lake take an integrated and holistic approach to the management of both the waters coming into our watershed from outside the neighborhood and from challenges within the neighborhood. The goal of our efforts at Pine Lake is for the water leaving the lake and flowing into the Upper Beal Slough to be cleaner than when in first entered our neighborhood and portion of the Pine Lake watershed. Most water flowing into Pine Lake is from the Southeast. Intense development has occurred around PLA since the lake was dredged in 1996. The percent of the watershed classified as urban in 2001 was 26% compared to 71% in 2019. This development has led to the accelerated build-up of sediment in the network of

PLA-managed holding ponds and in the lake itself. According to a 2021 bathymetric and depth of sediment survey of Pine Lake, The Flatwater Group (TFG) estimates there is currently approximately 55,000 cy of sediment deposition. While open lots suitable for development in the Eastern portion of the Pine Lake watershed are available, the most intensive development is now complete. This sediment has greatly reduced the storage capacity of the lake. It is the intent of the PLA to repair the holding ponds, to install rock checks and erosion control, and to remove the sediment that has accumulated in the lake over the past 60 years. Our goal is to improve the watershed's and lake's overall health, longevity, and structural integrity. We believe this will result in a cleaner and more healthy lake and numerous positive impacts on the water quality in both Beal Slough and Salt Creek, including improved sediment control, enhanced stormwater management and flood control downstream.

3. Contributes to water sustainability goals by increasing aquifer recharge, reducing aquifer depletion, or increasing streamflow;

   List the following information that is applicable:

   - The location, area and amount of recharge;
   - The location, area and amount that aquifer depletion will be reduced;
   - The reach, amount and timing of increased streamflow. Describe how the project will meet these objectives and what the source of the water is;
   - Provide a detailed listing of cross basin benefits, if any.

   The area underlying the Pine Lake watershed is the Dakota Aquifer. Pine Lake and the retention ponds within the watershed reduce peak flow and thus reduces downstream flooding. The water retained in the lake and the retention ponds provides recharge to the Dakota Aquifer. With 70% of the watershed now urban, the amount of runoff is significantly greater than it was historically. Instead of recharging the aquifer across the watershed, the recharge zones are now concentrated at the lake and retention ponds. This retained water reduced the peak flows to Beal Slough and Salt Creek. If the ponds and lake are not dredged, the holding capacity of the lake and ponds will be compromised. This will lead to more flooding downstream.

   With the new dam outlet structure, the Pine Lake Association now has the ability to easily control the flow of water in Beal Slough and Salt Creek. If this grant is funded, the capacity of the lake will be increased significantly. We will have more water available to provide water to downstream waters if the flows in Beal Slough and Salt Creek become to low during drought years. We will be happy to work with the NRD to increase downstream streamflow if needed.

4. Contributes to multiple water supply goals, including, but not limited to, flood control, agricultural use, municipal and industrial uses, recreational benefits, wildlife habitat, conservation of water resources, and preservation of water resources;

- List the goals the project provides benefits.

  This project contributes to multiple goals including flood control, recreational benefits, wildlife habitat, conservation of water resources, and preservation of water resources.

- Describe how the project will provide these benefits

  This project will help reduce flooding in downstream waters, specifically Beal Slough and Salt Creek. With Pine Lake watershed predominantly urban with much of the watershed now paved, the amount of infiltration is minimal. This leads to more runoff and sediment loss across the watershed. Pine Lake and the retention ponds reduce the peak runoff and reduce the downstream flooding.

  Excavating the lake will increase the capacity of the lake to hold floodwaters. There is a lot more water flowing into the lake than there was sixty years ago due to urbanization and the increase in impervious surfaces. Without the lake to hold this water, there would be increased flooding and streambank erosion in Beal Slough. If the lake is not excavated, we can expect the lake to be breached if we have a large enough storm event. The capacity of the lake has been greatly impacted by all the sediment. This is not the fault of the Pine Lake Association, but of the urbanization within the watershed.

  Pine Lake is a beautiful area enjoyed not only by members of the PLA, but people from much of Lincoln. While only members can use the lake and horse trail, the streets around the lake are open to the public and used by many walkers and runners. The golf course at PLA is open to anyone who pays its daily or annual fee. Every year the PLA puts on a large firework display open to the public. The event takes place on the Pine Lake Dam and provides entertainment for approximately 2000 people. The lake provides the PLA members a place to fish, boat, ice skate and swim as well as contributing to a non-urban ambience.

  This project will also provide wildlife habitat and the conservation and preservation of water resources. Pine Lake and the retention ponds provide habitat for several species of fish, reptiles, amphibians, mammals and macroinvertebrates. Many migratory birds such as ducks and geese spend time on the lake each winter. To replace the dam outlet structure, Pine Lake was drained in July 2023. This was detrimental to wildlife. To minimize the number of times we need to drain the lake, we would like to excavate the lake

before the lake is restocked and the wildlife returns. Completing both tasks in 2023 and 2024 will minimize the long-term impact.

The third component of this project is to reduce runoff and erosion from the Pine Lake Golf Course. Rock checks and bank reinforcement is needed to control runoff that occurs from outside the neighborhood through the golf course area. These improvements will reduce the peak runoff, sediment and nutrients flowing into Pine Lake, Beal Slough and Salt Creek. Pine Lake retains much of the sediment, nutrients, and pollutants within the watershed. This increases the water quality in the downstream waterbodies (Beal Slough, Salt Creek and the Platte River). This work will be completed in the fall of 2024.

- Provide a long range forecast of the expected benefits this project could have versus continuing on current path.

The University of Nebraska-Lincoln (UNL) received a grant from the EPA to treat ten waterbodies in Lincoln to reduce nitrate and phosphorus. They will use floating treatment wetlands and aluminum sulfate. Pine Lake was selected as one of the ten, but currently the lake is too shallow for the floating treatment wetlands. The current plan is to install the floating treatment wetlands and aluminum sulfate injection system in the summer of 2025 after the lake excavation. This treatment will reduce nitrogen and phosphorus concentrations in Beal Slough, Salt Creek and ultimately the Platte River. If the lake is not excavated, UNL will not be able to treat the lake.

If the lake is not excavated, the retention time for polluted floodwaters in the lake will be greatly reduced. The amount and duration of water retained in the lake is a function of it's storage capacity. The storage capacity has been significantly reduced in the last 60 years. The reduced capacity leads to a reduction in water retention time. As the retention time in the lake is reduced, the amount of sediment, nutrients and pollutants removed by the lake is reduced.

5. Maximizes the beneficial use of Nebraska's water resources for the benefit of the state's residents;

   - Describe how the project will maximize the increased beneficial use of Nebraska's water resources.
   - Describe the beneficial uses that will be reduced, if any.
   - Describe how the project provides a beneficial impact to the state's residents.

   This Project will improve water quality in downstream waterbodies by reducing the influx of sediment and nutrients. The excavation of the three retention ponds and Pine Lake will increase their storage capacity for peak flows and eroded soil. Retaining peak flows, sediment and the nutrients in the ponds and Pine Lake will improve the water quality in Beal Slough, Salt Creek and the Platte River. The ponds and Pine Lake provide habitat for countless birds, fish, reptiles and amphibians. With the lake excavation, UNL will be able to treat the lake water using floating treatment wetlands and aluminum sulfate. This treatment will remove nitrate from the lake and precipitate out the phosphorus. This will ensure that the water flowing out of Pine Lake will have less sediment, nitrogen and phosphorus. This will improve the water quality in all downstream waterbodies from Beal Slough down to the Platte River.

   If the lake is not excavated, the capacity to hold flood waters will continue to be diminished. During large storm events, large flows will be released from the lake, thus increasing the sediment and nutrients in downstream waterbodies. This will lead to increased erosion in Beal Slough and increase the cost to stabilize the streambanks. Several locations have already needed to be stabilized on Beal Slough and this can be expected to increase.

   The Lower Platte South NRD is paying for 50% for the dam rehab project. The total project cost is $1,057,731.41 with the Pine Lake Association paying for the remaining 50%. The City of Lincoln Watershed reviewed the project and agrees that it is an important community benefit for both flood protection and water quality. The Pine Lake Dam is included in the city's floodplain models for Beal Slough to take into account flood reduction benefits. Pine Lake is by far the largest reservoir in the Beal Slough watershed. Other directors noted the history of Pine Lake and how the dam is more important now since the area is more developed. It is clear that the LPSNRD sees value in Pine Lake for flood control and water quality improvements. However, many of these benefits are diminished if the lake is not excavated.

   Both the Nebraska Environmental Trust and the Platte Basin Timelapse see value in our project. The Nebraska Environmental Trust is providing $330,000 for partial excavation of Pine Lake and an additional $95,000 for watershed improvements to reduce erosion within the watershed.

Platte Basin Timelapse is interested in our project and installed a camera in July 2023 to document the draining of the lake and the replacement of the dam outlet structure. They plan to continue monitoring the project until the lake is excavated, and the lake is full of water once again. Below are two images illustrating Pine Lake before and after the lake was drained. From the second picture, you can see how shallow the lake currently is and that all of the fish habitat has been buried in sediment.

6. Is cost-effective;

   - List the estimated construction costs, O/M costs, land and water acquisition costs, alternative options, value of benefits gained.

   The total cost of this project is $2,684,434, but we are only requesting $495,000. The only cost associated with the lake excavation is the cost to excavate and haul the soil away. The costs for the watershed assessment, bathymetric survey, watershed improvements and replacement of the dam outlet structure have been paid or secured. It will cost an estimated $33 a cubic yard to have the lake excavated. The Flatwater Group estimated that 55,000 cubic yards of sediment has flowed into Pine Lake due to the development within the watershed. They recommend excavating 35,000 cubic yards, focusing on the shallow areas. During their assessment, they estimated the cost to remove the sediment will be $33 per cubic yard. Our goal is to remove 65% of this sediment at a cost of $1,155,000. The NET grant will pay for $330,000 of this total. Of the remaining $825,000, homeowners of the Pine Lake Association will contribute $330,000 or 40%. We are requesting 60% or $495,000 from the WSF. Lake excavation will increase the flood capacity of the lake and reduce sediment and nutrient loadings in downstream waterbodies.

   - Compare these costs to other methods of achieving the same benefits.

To remove sediment from a reservoir, there are three methods that can be used. The reservoir can be dredged, excavated or geotubes can be used. Dredging consists of removing sediment slurry and pumping it to a nearby location. Once the soil dries out, it then must be hauled away. In The Flatwater Group's experience, dredging would cost 3 times the cost of "dry excavation since the soil has to be transported twice.

The geotubes only hold 1750 cubic yards of sediment so 20 would be needed for our project. There is not enough space around Pine Lake for this many tubes. Also, they are only used once and then must be destroyed once they are hauled away.

Excavation requires the lake to be drained. The "dry" soil is then hauled away on an upland location determined by the contractor. With our new outlet structure, it is no problem to drain the lake. This is the method The Flatwater Group recommended to us that would be the most cost effective.

- List the costs of the project.

The total cost of this project is $2,684,434, but we are only requesting $495,000 from the Water Sustainability Fund. The Pine Lake Association and Lower Platte South NRD have been working on this project since 2020. The last phase of this project is the lake excavation. The Flatwater Group recommends we remove approximately 65% (35,000 cubic yards) of the 55,000 cubic yards of sediment from Pine Lake at a cost of $1,155,000. Funds have been secured from the Nebraska Environmental Trust for watershed improvements ($95,000) and partial lake excavation ($330,000). Of the remaining $825,000, we are requesting 60% or $495,000 from the WSF and the Pine Lake Association homeowners will contribute $330,000. Since 2020, the Pine Lake Association and homeowners have already paid $651,067 in emergency dam repairs, the bathymetric survey, and replacing the dam outlet structure. These projects depleted all the Pine Lake Association funds and the homeowners contributed $134,000 to make up the difference. We feel confident we can obtain $330,000 in contributions from the homeowners to excavate the lake, but not the needed $825,000. The is why we are requesting $495,000 from the WSF. This work will begin in the fall of 2024 and completed in the spring of 2025

Phase	Timeline	Total Cost	Pine Lake Association (PLA)	LPSNRD	NET	Proposed WSF
0.Emergency Repairs Main Dam	Summer 2020	$102,934	$65,067	$40,528		

I. Bathymetric & Sediment Depth Survey	Fall 2021	$25,000	$25,000			
Watershed assessment and outlet structure design	Fall 2022	$64,500		$64,500		
II. Watershed Outlet Structures	Summer/Fall 2023	$1,122,000	$561,000	$561,000		
III. Watershed Improvements	Fall 2024	$190,000		$95,000	$95,000	
IV. Lake Excavation	Fall 2024-Spring 2025	$1,155,000	$330,000		$330,000	$495,000
Total	Summer 2020-Spring 2025	$2,684,434	$981,067	$761,028	$425,000	$495,000

- Describe how it is a cost effective project or alternative.

The benefits far outweigh the costs. With funds from the NET, this is the time to excavate the lake especially since the lake is already drained. It will be challenging for the Pine Lake Association to come up with the funds to excavate the lake in the next 20 years. If the lake is not excavated, the peak flows in Beal Slough will increase thus causing more streambank erosion. Bank stabilization projects are expensive and typically riprap is used, which is not natural or aesthetically pleasing. With lake excavation, UNL will be able to install their floating treatment wetlands and thus reduce the nitrogen and phosphorus flowing into downstream waterbodies.

7. Helps the state meet its obligations under interstate compacts, decrees, or other state contracts or agreements or federal law;

- Identify the interstate compact, decree, state contract or agreement or federal law.
- Describe how the project will help the state meet its obligations under compacts, decrees, state contracts or agreements or federal law.
- Describe current deficiencies and document how the project will reduce deficiencies.

This project will help the state meet two obligations: Section 303(d) of the Environmental Protection Agency's Clean Water Act and the Endangered Species Act. Section 303(d) of EPA's Clean Water Act is required to maintain the integrity of the Nation's waters and requires states to establish a list of impaired waterbodies. Currently Beal Slough and Salt Creek are only impaired by E coli. Without excavating Pine Lake, the quantity of nutrients flowing downstream will increase due to the reduced retention time in the lake. This may lead to future impairments. Increasing the volume of water in the lake will also lead to less E Coli in Beal Slough and Salt Creek. This is achieved by increasing the detention time of the water and allow for bacteria to die off prior to discharge to Beal Slough. The Salt Creek tiger beetle is only found in a few saline marches near Lincoln, Nebraska. It received Endangered Species protection on October 6, 2005. The small population of beetles is threatened by increased freshwater and sediment from urban areas. Excavation of Pine Lake will assist with both of these threats. Excavating the lake will increase the storage capacity of Pine Lake, one of the largest reservoirs in the Salt Creek watershed. Pine Lake will also continue to reduce the sediment flowing into Beal Slough and Salt Creek. If the lake is not excavated, both the quantity of water and sediment retained will be compromised.

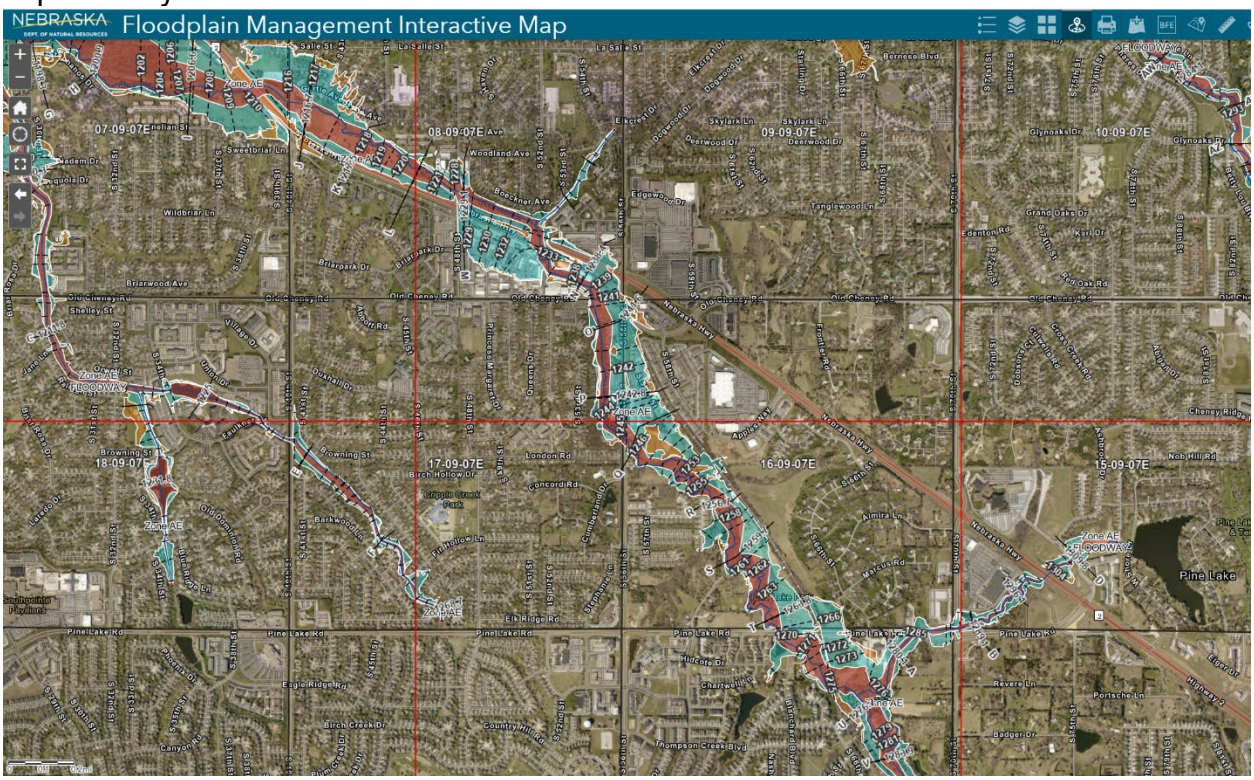
8. Reduces threats to property damage or protects critical infrastructure that consists of the physical assets, systems, and networks vital to the state or the United States such that their incapacitation would have a debilitating effect on public security or public health and safety;

- Identify the property that the project is intended to reduce threats to.
- Describe and quantify reductions in threats to critical infrastructure provided by the project and how the infrastructure is vital to Nebraska or the United States.
- Identify the potential value of cost savings resulting from completion of the project.
- Describe the benefits for public security, public health and safety.

The inlet pipe, riser, and outlet pipe of the Pine Lake dam structure was 60 years old and failed inspection by Nebraska Dam Safety and an emergency repair had to be made in 2020. The Federal ID of the dam is NE00529. The dam is earthen and was constructed in 1961 by Fulton and Cramer. The normal storage is 141 acre-ft and max storage 306 acre-ft. Pine Lake has an area of 16 acres (Figure 7) and drains 0.6 square miles. The dam height is 29 ft and the dam length is 851 ft. The hazard potential classification is Significant.

The maximum discharge from the lake is 2,347 cubic ft/second. To put that value in perspective, Salt Creek at 27th street has only exceeded this discharge 1.2% of

the time from 1950 to 2023. Dam failure would cause significant damage to any of the infrastructure immediately downstream of the dam. This large pulse of water would cause significant damage to Beal Slough and release a lot of sediment and nutrients into both Beal Slough and Salt Creek. Floodwaters may also cause damage to the Nebraska Parkway, an important highway in south Lincoln. A flood map shows the area and number of structures that could be impacted by the dam failure.



The percent of dam failures in the U.S. due to structural damage is 1.8% compared to 70.9% from floods or overtopping. The Pine Lake Dam is no longer at risk of failing since the Lower Platte South NRD and Pine Lake Association paid $1,122,000 to replace the outlet structure in 2023. The Flatwater Group performed a topographic and bathymetric survey of the lake and in-lake sediment basin in 2021. Survey of the sedimentation basins included the ground surface (top of the soft sediments) and the elevation of the hard pan material below. 3-D surface generation and comparison was used to estimate a total sediment volume of 55,000 cubic yards in the lake. This sediment has reduced the flood capacity of Pine Lake thus increasing the chance of the water overtopping the dam during a large storm event.

9. Improves water quality;

   - Describe what quality issue(s) is/are to be improved.

- Describe and quantify how the project improves water quality, what is the target area, what is the population or acreage receiving benefits, what is the usage of the water: residential, industrial, agriculture or recreational.
- Describe other possible solutions to remedy this issue.
- Describe the history of the water quality issue including previous attempts to remedy the problem and the results obtained.

Water quality will be improved by three different components of this project. The first component is excavating Pine Lake and the retention ponds. The Flatwater Group (TFG) performed a topographic and bathymetric survey of the lake and in-lake sediment basin in 2021. Survey of the sedimentation basins included the ground surface (top of the soft sediments) and the elevation of the hard pan material below. 3-D surface generation and comparison was used to estimate a total sediment volume of 55,000 cubic yards in the lake (Figure 4). Based on the study conducted by TFG, the lake and retention ponds will capture 60-70% of all sediment. The lake and ponds will also retain a large portion of the nutrients from Pine Lake watershed. This will improve the quality of water in Beal Slough, Salt Creek and the Platte River. While a Nebraska Environmental Trust will pay for $330,000 of lake excavation, an additional $825,000 is needed so that 65% of the sediment can be excavated. Of this $825,000, the Pine Lake Association homeowners will contribute 40% or $330,00 and we are requesting 60% or $495,000 from the WSF.

The second component includes improvements to the 355-acre Pine Lake watershed to reduce runoff and sediment loads flowing into Pine Lake and Beal Slough. Based on TFG visit observations, the 355-acre Pine Lake watershed channel has isolated areas of instability. Solutions for channel stabilization include rock riprap at pipe outlets and channel regrading/shaping. The channel will be reshaped with a bioswale concept to capture sediment runoff and vegetation debris. This native vegetation will provide sediment capture and water quality improvements of lake inflows across the 355-acre Pine Lake watershed. These Pine Lake watershed improvements will cost $190,000 of which the PLA will ask LPSNRD to pay for 50%. The remaining 50% will be paid by a Nebraska Environmental Trust grant. The watershed improvements will take place in the fall of 2024.

The third water quality component is a project that the Pinie Lake Association (PLA) has with the University of Nebraska-Lincoln (UNL). PLA is also working with the UNL to install two floating treatment wetlands (FTW) in Pine Lake once the lake is excavated and refilled. The FTWs are floating mats with 1000 plants. The plants remove nitrate from the water column and releases much of it as N_2 gas. Aluminum sulfate will also be injected into Pine Lake to precipitate the phosphorus. This will remove the phosphorus from the water column. Eutrophication is caused from excess phosphorus and nitrogen, predominantly nitrate. The retention ponds and lake will help reduce the phosphorous while the

FTWs will reduce the nitrate. This will help minimize algal blooms and eutrophication in Pine Lake and downstream waterbodies.

The Pine Lake watershed is a subwatershed within the Beal Slough, Salt Creek and Platte River watersheds. Though the watershed is small compared to the Platte River watershed, the only way to improve water quality in the Platte River is the culmination of small projects such as this one. Any reduction in sediment and nutrient loads from the Pine Lake watershed will ultimately improve the water quality in the Platte River. The Platte River provides drinking water for the cities of Lincoln and Omaha. The three retention ponds and Pine Lake capture and retain a large portion of the sediment and nutrients within the Pine Lake watershed. Any reduction in sediment and nutrients will lead to better water quality in downstream waterbodies.

10. Has utilized all available funding resources of the local jurisdiction to support the program, project, or activity;

- Identify the local jurisdiction that supports the project.
- List current property tax levy, valuations, or other sources of revenue for the sponsoring entity.
- List other funding sources for the project.

This project resulted in partnerships with the LPSNRD, Platte Basin Timelapse (PBT), Environmental Protection Agency (EPA), Nebraska Department of Environment and Energy (NDEE), and University of Nebraska-Lincoln (UNL). The LPSNRD sees value in the Pine Lake Restoration project when it assisted in paying for the emergency repairs to the dam outlet structure and watershed assessment. They are also paying 50% or $561,000 to replace the dam outlet structure, their largest CAP grant ever awarded. UNAire, located in Biological Systems Engineering Department at UNL, is flying drones periodically to document the process of lake drainage, dam construction and refilling of the lake for educational purposes. Platte Basin Timelapse (PBT) installed a camera near the dam to document the entire restoration project and will make it available to the public in 2025. In 2025, UNL will use $28,400 from an EPA and NDEE grant to improve water quality in Pine Lake. The treatment will include the installation of floating treatment wetlands and alum injection to reduce nitrate and phosphorus.

The Pine Lake Association received a grant from the Nebraska Environmental Trust in 2023 for $425,000, which requires a 1:1 match. Of this total, $95,000 will be used to make watershed improvements within the watershed. Improvements include the excavation of two detention ponds located on the Pine Lake Golf Course and a third detention pond south of Pine Lake. The Flatwater Group (TFG) estimates that these structures could capture 67% of incoming sediment loads, thus significantly reducing the amount of sediment flowing into Pine Lake.

Since most of the remaining sediment will settle out in Pine Lake, the water flowing into Beal Slough and Salt Creek will be of much higher quality. The northeast tributary does not contain any existing sediment capture features, but does contain an open channel that runs through the golf course. This channel is in relatively stable shape, but could be enhanced to detain storm runoff and provide water quality benefits. TFG recommends shaping the channel bank and planting native tall grass vegetation to capture leaves and grass clipping detritus that would otherwise be transported into Pine Lake. Additionally, the over widened channel can induce sediment deposition. These three areas would not include open/standing water. Channel shaping would include widening the channel bottom to 10-30ft with gradual 4h:1v side slopes to facilitate annual mowing maintenance. We will request the additional $95,000 from the LPSNRD.

The Flatwater Group estimated that 55,000 cubic yards of sediment has flowed into Pine Lake due to the development within the watershed. During their assessment, they estimated the cost to remove the sediment will be $33 per cubic yard. Our goal is to remove 65% of this sediment, per recommendation from The Flatwater Group, at a cost of $1,155,000. The NET grant will pay for $330,000 of this total. Of the remaining $825,000, we are requesting the 60% ($495,000) from the WSF and the Pine Lake homeowners will contribute 40% ($330,000).

11. Has a local jurisdiction with plans in place that support sustainable water use;

    - List the local jurisdiction and identify specific plans being referenced that are in place to support sustainable water use.

    The Lower Platte Sout NRD (LPSNRD) has been directly involved with the Pine Lake Rehabilitation Project since 2020. LPSNRD goals our project addresses include the following: a) Manage the hydrologically connected waters in the District; b) Preserve and enhance instream flows and other water-based natural ecosystems that provide benefits supporting the health and safety of our citizens and the quality of their lives; c) Collaborate and work cooperatively with the citizens and communities in the District.

    Water originating from the Pine Lake watershed is important for Beal Slough and downstream waters. The quantity and quality of water flowing from the lake will be compromised if actions are not taken in the near future. The goal of the Pine Lake Association (PLA) is similar to those of the LPSNRD. The residents of Pine Lake take an integrated and holistic approach to the management of both the waters coming into our watershed from outside the neighborhood and from challenges within the neighborhood. The goal of our efforts at Pine Lake is for the water leaving the lake and flowing into the Upper Beal Slough to be cleaner than when in first entered our neighborhood and portion of the Pine Lake watershed.

- Provide the history of work completed to achieve the goals of these plans.

Phase	Timeline	Total Cost	Pine Lake Association (PLA)	LPSNRD	NET	Proposed WSF
0.Emergency Repairs Main Dam	Summer 2020	$102,934	$65,067	$40,528		
I. Bathymetric & Sediment Depth Survey	Fall 2021	$25,000	$25,000			
Watershed assessment and outlet structure design	Fall 2022	$64,500		$64,500		
II. Watershed Outlet Structures	Summer/Fall 2023	$1,122,000	$561,000	$561,000		
III. Watershed Improvements	Fall 2024	$190,000		$95,000	$95,000	
IV. Lake Excavation	Fall 2024-Spring 2025	$1,155,000	$330,000		$330,000	$495,000
Total	Summer 2020-Spring 2025	$2,684,434	$981,067	$761,028	$425,000	$495,000

- List which goals and objectives this project will provide benefits for and how this project supports or contributes to those plans.

The Pine Lake Rehabilitation Project consists of three components. First, the pipes for the main dam/water control structure for Pine Lake were 60 years old. The outlet pipe failed inspection by Nebraska Dam Safety and emergency repairs were made to the outlet pipe in 2020. This was not a permanent solution and did not address the entire structure. The dam offers protection for Nebraska Parkway and Beal Slough. The outlet structure was replaced in 2023 at a cost of $1,122,000. 50% was paid by the LPSNRD and 50% by the Pine Lake Association. Replacement of the outlet structure will reduce the chance of the dam failing and causing massive flooding and sedimentation to downstream waterbodies.

The second component of this project is to reduce runoff and erosion from the Pine Lake watershed. Rock checks and bank reinforcement are needed to control runoff that occurs from outside the neighborhood. These improvements will reduce the peak runoff, sediment and nutrients flowing into Pine Lake, Beal Slough, and Salt Creek. This will cost an estimated $190,000. The Nebraska Environmental Trust grant has been secured to pay for $95,000 of this work. We are going to request the remaining amount to be paid by the LPSNRD. This component will reduce the quantity of sediment and nutrients flowing into Pine Lake from the watershed, thus improving water quality in Pine Lake and downstream waterbodies.

The third component is the excavation of Pine Lake and three retention ponds. The retention ponds reduce peak runoff and the sediment load entering Pine Lake and Beal Slough. The Flatwater Group estimated that 55,000 cubic yards of sediment has flowed into Pine Lake in the last 60 years. This has significantly reduced the storage capacity of the lake. Lake excavation will increase the flood capacity of the lake, improve habitat for fish and other wildlife and reduce sediment and nutrients in downstream waterbodies.

- Describe and quantify how the project supports sustainable water use, what is the target area, what is the population or acreage receiving benefits, what is the usage of the water: residential, industrial, agriculture or recreational.

The target area is Pine Lake, Beal Slough, Salt Creek and ultimately the Platte River. Pine Lake is a beautiful area enjoyed not only by members of the PLA, but people from much of Lincoln. While only members can use the lake and horse trail, the streets around the lake are open to the public and used by many walkers and runners. The golf course at PLA is open to anyone that pays its daily or annual fee. Every year the PLA puts on a large firework display open to the public. The event takes place on the Pine Lake Dam and provides entertainment for hundreds of people. The lake provides the PLA members a place to fish, boat, ice skate and swim as well as adding to a non-urban ambience. The residents of Pine Lake take an integrated and holistic approach to the management of both the waters coming into our watershed from outside the neighborhood and from challenges within the neighborhood. The goal of our efforts at Pine Lake is for the water leaving the lake and flowing into the Upper Beal Slough to be cleaner than when in first entered our neighborhood and portion of the Pine Lake watershed. This ultimately will improve the water quality in all downstream waterbodies.

- List all stakeholders involved in project.

This project resulted in partnerships with the LPSNRD, UNL, Platte Basin Timelapse (PBT), Environmental Protection Agency (EPA), Nebraska Department of Environment and Energy (NDEE), and University of Nebraska-

Lincoln (UNL). The LPSNRD sees value in the Pine Lake Restoration project when it assisted in paying for the emergency repairs to the dam outlet structure and watershed assessment. They are also paying 50% or $561,000 to replace the dam outlet structure, their largest CAP grant ever awarded. UNAire, located in Biological Systems Engineering Department at UNL, is flying drones periodically to document the process of lake drainage, dam construction and refilling of the lake for educational purposes. Platte Basin Timelapse (PBT) installed a camera near the dam to document the entire restoration project and will make it available to the public in 2025. In 2025, UNL will use $28,400 from an EPA and NDEE grant to improve water quality in Pine Lake. The treatment will include the installation of floating treatment wetlands and alum injection to reduce nitrate and phosphorus.

- Identify who benefits from this project.

The residents within and around the Pine Lake neighborhood benefit directly from any lake improvements. The city of Lincoln benefits since an excavated Pine Lake will reduce downstream flooding and streambank erosion in Beal Slough. The citizens of Lincoln and Omaha also benefit from the improved water quality in Salt Creek and the Platte River.

12. Addresses a statewide problem or issue;

- List the issues or problems addressed by the project and why they should be considered statewide.
- Describe how the project will address each issue and/or problem.
- Describe the total number of people and/or total number of acres that would receive benefits.
- Identify the benefit, to the state, this project would provide.

This project addresses threats to infrastructure, water quality, flood risk reduction, and reservoir sedimentation. The outlet pipe at the Pine Lake Dam failed inspection by Nebraska Dam Safety and an emergency repair had to be made to the outlet pipe in 2020. The outlet structure was replaced in 2023 at a cost of $1,122,000. This reduces the risk of dam failure and the threat of infrastructure downstream of Pine Lake.

Improvements will be made within the watershed and three retention ponds and Pine Lake will be excavated. The excavations will increase the storage capacity for future sedimentation and nutrients. The Flatwater Group (TFG) estimates that the retention ponds will reduce the sediment loading to the lake by 60-70%. This will improve the water quality in the lake and the downstream waterbodies: Beal Slough, Salt Creek and Platte River.

The people that live around and visit Pine Lake will benefit greatly from this project. With the improvement in water quality, the lake will continue to be a popular place to fish, swim, boat and ice skate. The improvements will also improve the ecosystem and the number and diversity of aquatic species, mammals, birds, reptiles and amphibians. The people and businesses downstream of the Pine Lake Dam will benefit with the replacement of the outlet structure and lake excavation. This will reduce the risk of flooding and dam breaching. This project will also benefit the cities of Lincoln and Omaha whom use the Platte River as their drinking water. Though the Pine Lake watershed is small, projects such as this one throughout the Platte River watershed have a cumulative positive impact on water quality in the Platte River.

13. Contributes to the state's ability to leverage state dollars with local or federal government partners or other partners to maximize the use of its resources;

- List other funding sources or other partners, and the amount each will contribute, in a funding matrix.
- Describe how each source of funding is made available if the project is funded.
- Provide a copy or evidence of each commitment, for each separate source, of match dollars and funding partners.
- Describe how you will proceed if other funding sources do not come through.

This project resulted in partnerships with the LPSNRD, UNL, Platte Basin Timelapse (PBT), Environmental Protection Agency (EPA), Nebraska Department of Environment and Energy (NDEE), and University of Nebraska-Lincoln (UNL). The LPSNRD sees value in the Pine Lake Restoration project when it assisted in paying for the emergency repairs to the dam outlet structure and watershed assessment. They are also paying 50% or $561,000 to replace the dam outlet structure, their largest CAP grant ever awarded. UNAire, located in Biological Systems Engineering Department at UNL, is flying drones periodically to document the process of lake drainage, dam construction and refilling of the lake for educational purposes. Platte Basin Timelapse (PBT) installed a camera near the dam to document the entire restoration project and will make it available to the public in 2025. In 2025, UNL will use $28,400 from an EPA and NDEE grant to improve water quality in Pine Lake. The treatment will include the installation of floating treatment wetlands and alum injection to reduce nitrate and phosphorus.

The Pine Lake Association received a grant from the Nebraska Environmental Trust in 2023 for $425,000, which requires a 1:1 match. Of this total, $95,000 will be used to make watershed improvements within the watershed. Improvements include the excavation of two detention ponds located on the Pine Lake Golf

Course and a third detention pond south of Pine Lake. The Flatwater Group (TFG) estimates that these structures could capture 67% of incoming sediment loads, thus significantly reducing the amount of sediment flowing into Pine Lake. Since most of the remaining sediment will settle out in Pine Lake, the water flowing into Beal Slough and Salt Creek will be of much higher quality. We will request the additional $95,000 from the LPSNRD.

The Flatwater Group estimated that 55,000 cubic yards of sediment has flowed into Pine Lake due to the development within the watershed. During their assessment, they estimated the cost to remove the sediment will be $33 per cubic yard. Our goal is to remove 65%, as recommended by The Flatwater Group, of this sediment at a cost of $1,155,000. The NET grant will pay for $330,000 of this total. Of the remaining $825,000, the Pine Lake homeowners will contribute 40% ($330,000) and the WSF will pay 60% ($495,000).

Phase	Timeline	Total Cost	Pine Lake Association (PLA)	LPSNRD	NET	Proposed WSF
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Total	Summer 2020-Spring 2025	$2,684,434	$981,067	$761,028	$425,000	$495,000

The work and finances for Phases 0, I, II, and III are completed or have the funds secured, and as such, we are not seeking any cost-share for these phases of the project in this grant proposal.

If we don't receive funding from the WSF in 2024, we plan on requesting an extension from NET. We will then reapply for the WSF in 2025.

Here is a link to the approval from the LPSNRD. A copy of the notice is pasted below with the Pine Lake portion in bold.
https://www.nrdnet.org/news/05-18-2023/lower-platte-south-nrd-approves-three-community-assistance-applications

Lower Platte South NRD Approves Three Community Assistance Applications

05/18/2023

LINCOLN, Nebraska – The Lower Platte South Natural Resources District (LPSNRD) board of directors approved three applications for the Community at their monthly meeting Wednesday.

The approvals provide assistance to Rolling Hills Park Association for streambank stabilization ($8,250), **Pine Lake Association for dam rehabilitation ($561,115)**, and the Village of Ceresco for streambank stabilization ($17,700). The three applications total up to $587,065 in funds provided.

The Pine Lake Dam is privately owned infrastructure that provides public flood control and water quality benefits downstream. The dam provides 20.8 million gallons in flood storage. In 100-year flood events, the dam reduces peak discharge by 90%.

LPSNRD's Community Assistance Program is a cost-share program to provide financial support to cities, villages and homeowners' associations (HOA) with NRD eligible projects. Eligible applications typically include of stream stability, streambank stabilization, flood control or stormwater quality projects.

Previous communities that have received assistance through the Community Assistance Program include Hickman, Louisville, Malcolm, Valparaiso, Dakota Springs HOA, Foreman Ridge HOA (rural), and Edenton North Neighborhood.

The notice from the Nebraka Environmental Trust has been uploaded with this application. Below is a summary of the document for your convenience.

January 22, 2024
Pine Lake Association RE: 24-140 - Pine Lake Rehabilitation Project

Chad,
This is a Notice of Approval (NOA) of your grant application to the Nebraska Environmental Trust (NET). The NET Board took action at their meeting on January 4, 2024. The NOA is $425,000 for one year. If you received funding from NET in the past, there are changes in our process and documents. The award may not be expended on items not identified in your grant application and contract budget summary, or items such as past debt or unforeseen organizational expenses. Congratulations on your award.
Sincerely,
Jim Hellbusch Board Chair
Karl L. Elmshaeuser Executive Director

14. Contributes to watershed health and function;

    - Describe how the project will contribute to watershed health and function in detail and list all of the watersheds affected.

    Primarily, this project will improve the water quality in the Pine Lake watershed. The improvements made to the golf course and the excavation of the three retention ponds will reduce the quantity of runoff, sediment and nutrients entering Pine Lake. This reduction of sediment and nutrients entering Pine Lake will also improve the water quality within the Beal Slough, Salt Creek and Platte River watersheds.

    Excavation of Pine Lake and repairing the Pine Lake Dam outlet structure will reduce the risk of flooding downstream. If these improvements are not made, there will be an increased risk of floodwaters overtopping the dam. This will cause the dam to fail and send a large amount of water, sediment and nutrients into Beal Slough causing significant damage to the channel and streambanks.

15. Uses objectives described in the annual report and plan of work for the state water planning and review process issued by the department.

    - Identify the date of the Annual Report utilized.
    - List any and all objectives of the Annual Report intended to be met by the project
    - Explain how the project meets each objective.

    The date of the Annual Report to the Legislature and Plan of Work is 2021-2022. The second goal is to provide high quality products and services through the performance of our duties in the areas of floodplain management, flood mitigation planning, dam safety and survey to promote the safety of all Nebraskans. This

project meets this goal. Just as Holmes Lake reduces the flooding of Antelope Creek, Pine Lake reduces the flooding of Beal Slough and Salt Creek. Even though Pine Lake is not as large as Holmes Lake, it is by far the largest reservoir within the Beal Slough watershed. The storage capacity of the reservoir has been reduced due to sedimentation. This lost storage increases the risk of flooding downstream in Beal Slough and Salt Creek. The goal states that dam safety is important. The outlet pipe at the Pine Lake Dam failed inspection by Nebraska Dam Safety and an emergency repair had to be made to the outlet pipe in 2020. The repairs are only temporary and the issue must be addressed soon or there is a risk of dam failure, which will cause significant damage to infrastructure downstream of the dam.

The Annual Report states that they want collaborations statewide to keep citizens safe. This project is a collaboration between the WSF, LPSNRD, University of Nebraska-Lincoln, Environmental Protection Agency (EPA) and the Pine Lake Association. We are all working together to ensure the safety of the Pine Lake Dam and improve water quality of our state's waterbodies.

Goal three of the Annual Report is to develop and implement customized and decentralized water management plans established through collaboration with local Natural Resource Districts and stakeholders that provide for long-term sustainability of the state's water resources. In this project the Pine Lake Association is collaborating directly with the LPSNRD to improve the water quality of Pine Lake and the waterbodies downstream of the dam (Beal Slough, Salt Creek and the Platte River).

16. Federal Mandate Bonus. If you believe that your project is designed to meet the requirements of a federal mandate which furthers the goals of the WSF, then:

- Describe the federal mandate.
- Provide documentary evidence of the federal mandate.
- Describe how the project meets the requirements of the federal mandate.
- Describe the relationship between the federal mandate and how the project furthers the goals of water sustainability.

This project will help meet two federal mandates: Clean Water Act and the Endangered Species Act. The Clean Water Act (CWA) is the primary Federal statute regulating the protection of the nation's water. The CWA aims to prevent, reduce, and eliminate pollution in the nation's water in order to "restore and maintain the chemical, physical, and biological integrity of the Nation's waters", as described in CWA section 101(a). This project will improve water quality of Pine Lake and downstream waterbodies. The Salt Creek tiger beetle is only found in a few saline marches near Lincoln, Nebraska. It received Endangered Species protection on October 6, 2005. The small population of beetles is threatened by increased freshwater and

sediment from urban areas. Excavation of Pine Lake will assist with both of these threats. Excavating the lake will increase the storage capacity of Pine Lake, one of the largest reservoirs in the Salt Creek watershed. Pine Lake will also continue to reduce the sediment flowing into Beal Slough and Salt Creek. If the lake is not excavated, both the quantity of water and sediment retained will be compromised.