

WaterSMART Drought Response Program:
Drought Resiliency Projects for Fiscal Year 2023
Funding Opportunity Announcement No. R23AS00005

City of Big Bear Lake

Department of Water & Power



Wolf Reservoir Boosters & Pipeline Project

Applicant Information: City of Big Bear Lake
Department of Water & Power
41972 Garstin Drive/ P.O. Box 1929
Big Bear Lake, CA 92315

Project Manager: Reginald A. Lamson
General Manager
RLamson@bbldwp.com
Phone: (909) 866-5050 x 201

Table of Contents

Table of Contents	2
List of Tables	2
List of Figures	2
TECHNICAL PROPOSAL and EVALUATION CRITERIA	3
Section 1. Executive Summary	3
Section 2. Project Location	3
Section 3. Technical Project Description	4
Section 4. Performance Measures	5
Section 5. Evaluation Criteria	6
PROJECT BUDGET	22
Section 1. Funding Plan and Letters of Commitment	22
Section 2. Budget Proposal	22
Section 3. Budget Narrative	23
ENVIRONMENTAL AND CULTURAL RESOURCES COMPLIANCE	24
REQUIRED PERMITS OR APPROVALS	25
RELEVANT SECTIONS OF THE DROUGHT PLAN	25
LETTERS OF PROJECT SUPPORT	25
OFFICIAL RESOLUTION	25
UNIQUE ENTITY IDENTIFIER AND SYSTEM FOR AWARD MANAGEMENT	25
APPENDICES	26

List of Tables

Table No. 1 Project Schedule	20
Table No. 2 Total Project Cost Table	22
Table No. 3 Summary of non-Federal and Federal Funding Sources	22
Table No. 4 Budget Proposal	22

List of Figures

Figure 1 DWP Water Service Area	4
Figure 2 Applicable Portion of DWP System Schematic	5
Figure 3 Disadvantaged Communities Map of Bear Valley	13
Figure 4 Change in Average Temperature/Increase Number of Days Over 100 Degrees	19

TECHNICAL PROPOSAL and EVALUATION CRITERIA

Section 1. Executive Summary

Date	June 15, 2022
Applicant Name	City of Big Bear Lake, Department of Water and Power (DWP)
City, County, State	Big Bear Lake, San Bernardino, California
Eligible Applicant	Category A Applicant
Project Name	Wolf Reservoir Boosters & Pipeline Project
Project Length	3 years
Estimated Completion Date	March 31, 2026

The City of Big Bear Lake, Department of Water and Power (DWP or BBLDWP) is in San Bernardino County, California. The Project will include the construction of a 0.6 MG reservoir, a booster pumping station, and 3,700 feet of pipeline. The Project will improve resiliency to drought conditions by creating additional water storage, improving fire protection capacity, and enhancing water management. According to the current Drought Monitor, the Bear Valley is in Severe Drought Conditions (D2). This Project is an effective and necessary drought mitigation measure because it's end result is the installation of a storage tank of additional water supply that will be available during drought conditions. DWP's 2020 Urban Water Management Plan (UWMP) and Drought Risk Assessment speaks to this Project specifically as being critical to address the negative effects of climate change in the Bear Valley. If the grant application is successful, the Project can begin construction as early as April 2023. The Project is not located on a Federal Facility.

Section 2. Project Location

The DWP's service area is, on average, 6,750 feet above sea level at the eastern end of the San Bernardino Mountains in San Bernardino County, California and encompasses approximately 13 square miles primarily south of Big Bear Lake. The DWP serves the City of Big Bear Lake, Sugarloaf-Erwin Lake, Lake William at the east end of the Valley, and Fawnskin north of the Lake.

The Wolf Reservoir & Boosters Replacement Project is located in the Moonridge neighborhood of Big Bear Lake, centered roughly between the east and west service areas. The Project latitude is *14'00.78"N and longitude is 116*50'51.90"W. The Project is in the Wolf-Shuff Pressure Zone at 7,420 feet above sea level. This pressure zone is the second highest pressure zone in the Big Bear system and can serve over 90% of DWP's customers via gravity supply. The strategic location of this pressure zone, coupled with the additional water storage and fire protection ability, enables the DWP to continue to provide quality drinking water to customers during exceptional drought conditions, and ensure firefighting capabilities remain during potential wildfires even amidst power outages.

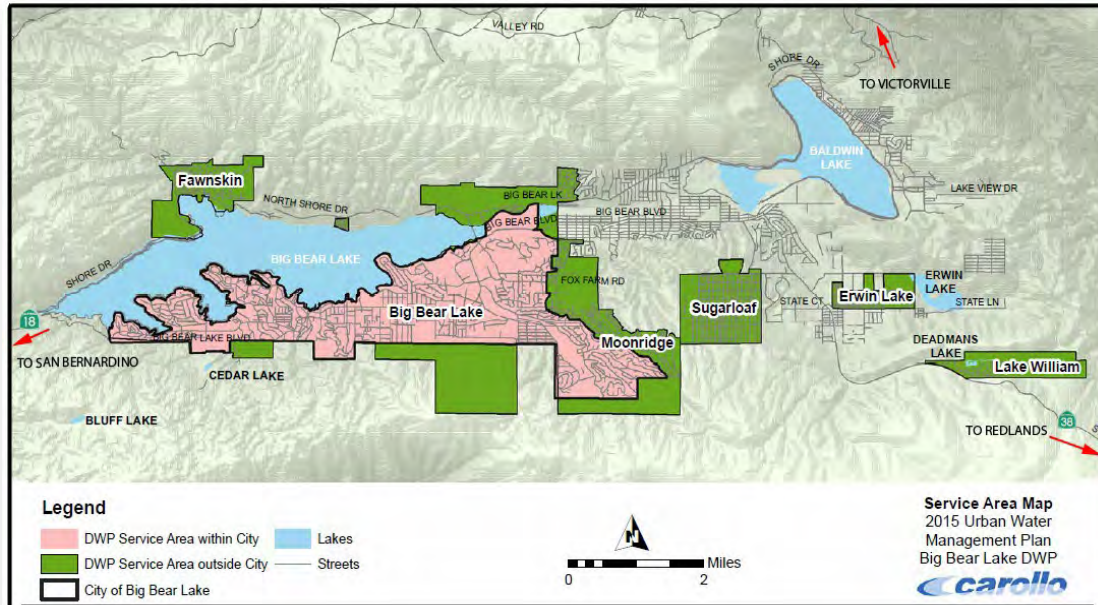


Figure 1 DWP Water Service Area

Section 3. Technical Project Description

The proposed Project includes the construction of 0.6 MG seismically engineered welded carbon steel reservoir, construction of an efficient booster pumping station with vertical turbine pumps, installation of a side outlet universal joint, and construction of 2,200 feet of 12-inch pipeline and 1,500 ft of 8-inch pipeline to efficiently connect the Wolf Reservoir to the Shuff Reservoir within the Shuff/Wolf Pressure Zone.

In August 2021, the DWP hired an engineering consultant, Water Systems Consulting (WSC), to design the Project. The objectives for the design of the reservoir and booster station are as follows: (1) reservoir capacity of 0.6 MG; (2) reservoir to be constructed of welded steel per AWWA D-100 design standards; (3) floor elevation is at approximately 7,437 feet and will be confirmed by a level survey of the Shuff and Wolf Reservoirs; (4) the desired water depth is approximately 20 feet and the reservoir diameter is approximately 72 feet; (5) the desired freeboard is 4 feet to be adjusted based on seismic data and final reservoir size; (6) booster pump, motor sizing, and number of pumps will be designed to match project elements from the Klamath Booster Station as this project represents the latest in DWP's standards and preferences; (7) masonry block building with metal roof to be constructed over the new booster station and (8) five pipeline segments to connect the Shuff and Wolf Reservoirs.

In December 2021, the DWP hired an environmental consultant, Tom Dodson & Associates (TDA), to provide an environmental review of the project. TDA will assess the project description to identify all physical changes to the environment that can result from implementing the proposed project. TDA will prepare the appropriate environmental document for the Project. Based on an initial review, TDA expects the Project will be considered for an

Initial Study/Mitigated Negative Declaration to comply with CEQA. Four technical studies will be prepared to support this documentation including (1) air quality; (2) biology; (3) cultural resources; and (4) Climate Change/Greenhouse Gases (GHG).

If the grant application is successful, the construction of the Wolf Reservoir Boosters & Pipeline Project will begin in the Spring of 2023. During the bidding phase, three bidding packages will be prepared and bid concurrently. The bid packages are the following: (1) reservoir construction; (2) booster station construction; and (3) pipeline construction. During the construction phase, contractors will be hired who specialize in each of the components for construction of the Project.

Section 4. Performance Measures

Once the Project is implemented, the DWP will achieve additional available water supply because of the storage capacity of the large reservoir. DWP staff will monitor the volume of water moving through the Wolf booster station monthly to assess the efficiency and power savings. The DWP will monitor the Wolf reservoir, the Shuff reservoir, and the Yosemite reservoir to verify water is being transferred quickly and efficiently through the water system as a result this Project. Additionally, the DWP will compare power bills associated with pumping water to the Yosemite Tank, before and after the Project, to determine the energy cost savings from the Project. It is estimated that the energy cost will be cut in half.

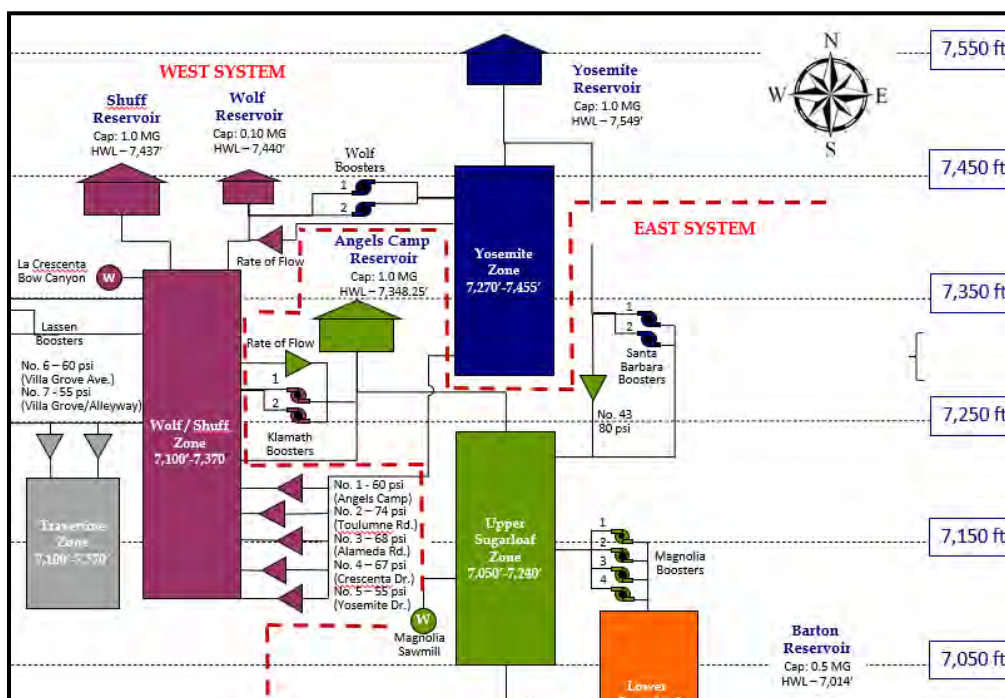


Figure 2 Applicable Portion of DWP System Schematic

Section 5. Evaluation Criteria

Evaluation Criterion A: Project Benefits

- *How will the Project build long-term resilience to drought? How many years will the Project continue to provide benefits?*

The Project builds long-term resilience to drought through the construction of 0.6 MG reservoir, an efficient booster pumping station, and 3,700 feet of pipeline, which is sized to meet current fire flow standards. This Project is an effective and necessary drought mitigation measure because it's end result is the installation of a storage tank for additional water supply that will be available during drought conditions. The Project has an expectant life span of fifty years.

To ensure our water system is resilient in a drought, we need a large, seismically engineered storage tank and efficient boosters in one of the highest-pressure zones within our distribution system. Constructing the Wolf Reservoir with a capacity of 600,000 gallons of water will enable the DWP to increase its available water supply and be more prepared for crisis situations. The large capacity reservoir serves three related and primary benefits (1) long-term drought resilience, (2) fire protection, and (3) earthquake resilience, which is important because the reservoir is near a fault and will minimize lost water resulting from spillage.

At all times, but especially during drought conditions, increased water storage is critically important to fighting wildfires in our alpine environment. At an altitude of approximately 7,000 feet and surrounded by the San Bernardino National Forest, Big Bear shares many properties of the community of Paradise, California where the Camp Fire killed 86 people and destroyed 18,804 buildings in 2018. According to an in-depth analysis conducted by the USA TODAY Network in 2019, Paradise, California had a 3.81 in wildfire potential (scored out of 5), while Big Bear Lake is at 4.36, Big Bear City and Sugarloaf are at 4.20¹. The Big Bear Valley has a long history of wildfires and earthquakes. Recently, the El Dorado Fire threatened the Bear Valley. The perimeter of the fire was burning only 10 miles southeast of the eastern edge of the DWP service area. Residents were on evacuation watch and visitors were discouraged from coming to the Valley.

Additionally, the Bear Valley has experienced damage due to earthquakes. The reservoir will be equipped with a side outlet and universal joint which will allow for significant horizontal and vertical movement during an earthquake. The earthquake valve will automatically shut during an earthquake, preserving the 600,000 gallons of water storage to be put back into service once transmission pipeline repairs, if any, are completed.

Because of our mountain location, it is essential the DWP properly manage its water supply. Importing water into the Bear Valley is cost prohibitive and currently, there are no facilities to enable us to do so. The Bear Valley is not connected to the State Water Project. A connection would cost an estimated \$60 to \$100 million, which is not a viable alternative for a system with

¹ <https://www.azcentral.com/in-depth/news/local/arizona-wildfires/2019/07/22/wildfire-risks-more-than-500-spots-have-greater-hazard-than-paradise/1434502001/>

less than 16,000 connections, much of which serve disadvantaged communities. Therefore, having groundwater operational flexibility is of paramount importance to our community.

- *Will the Project make additional water supplies available?*

Yes, the Project will provide additional available water supply because it's end result is the construction of a new storage tank to hold 600,000 gallons of water.

- *If so, what is the estimated quantity of additional supply the Project will provide and how was this estimate calculated? Provide this quantity in acre-feet per year as the average annual benefit over ten years (e.g., if the Project captures flood flows in wet years, provide the average benefit over ten years including dry years).*

The estimated quantity of net additional water supply the Project will provide is 500,000 gallons or 1.5 AF per year. This estimate was calculated by the net additional available water supply stored in the proposed reservoir.

- *What percentage of the total water supply does the additional water supply represent? How was this estimated?*

The percentage of total water supply the additional water supply represents 0.7%. This estimate was calculated by dividing 1.5 AF per DWP's average water demand which is 2,150 AFY.

- *Provide a brief qualitative description of the degree/significance of the benefits associated with the additional water supplies.*

The degree and significance of the benefits associated with the additional water supplies is substantial because the DWP is a small water system servicing approximately 26,000 equivalent full-time residents and up to 100,000 visitors during peak seasons and holidays. Because of the resort and tourism-based nature of Big Bear, the demand for water fluctuates dramatically. An additional storage of water supply is critical to our community and our economy; it bolsters our ability to fight wildfires, increases our water management flexibility, and builds long-term resilience to drought.

- *Will the Project improve the management of water supplies? For example, will the Project increase efficiency, increase operational flexibility, or facility water marketing (e.g., improve the ability to deliver water during drought or access other sources of supply)?*

Yes, the Project improves DWP's ability to manage its water supplies more effectively because the proposed Wolf Reservoir and Booster station will be a vital facility at one of the uppermost pressure zones in the DWP system. The Wolf Booster will transfer water to the Yosemite Pressure Zone more efficiently. The large pipelines between the Wolf and Shuff Reservoirs and the large storage capacity of the Wolf Reservoir will increase fire protection within this portion of DWP's service area. The Project will enable the management team to make more informed operational decisions regarding the delivery of water, which subbasins to pump, which subbasins to rest, and how much to pump from each subbasin within DWP's service area.

○ *How will the Project increase efficiency or operational flexibility?*

The DWP currently pumps water up to the Yosemite Zone using the Santa Barbara Boosters located in the Sugarloaf neighborhood. The Santa Barbara boosters are efficient, but the boosters are located considerably lower in elevation than the proposed Wolf Boosters. The Santa Barbara Booster lift is 201 feet. The proposed Wolf Booster lift is 110 feet. The proposed Wolf Booster will be more efficient and will be able to supply water to the Yosemite Zone using approximately half of the energy at about half of the energy cost.

The largest producing wells within the DWP water system are located on the East end of the Bear Valley. However, when the DWP experiences peak visitation and high demand for water, the demand is typically near Big Bear Lake, which is located on the West end of the Valley. The increased efficiency of the proposed Wolf boosters, and additional available water storage enabled by the proposed reservoir, greatly improves DWP's operational flexibility throughout its entire water system, because the Shuff/Wolf pressure zone can serve over 90% of DWP's customers via gravity.

○ *What is the estimated quantity of water that will be better managed as a result of this Project? How was this estimate calculated? Provide this quantity in acre-feet per year as the average annual benefit over ten years (e.g., if the Project captures flood flows in wet years, provide the average benefit over ten years including dry years).*

The estimated quantity of water that will be better managed as of result of this project is at least 123 AF per year. This estimate was calculated by using the average annual volume of water that currently flows through the Shuff/Wolf pressure zone via the Santa Barbara and Klamath Boosters, and the Bow Canyon and La Crescenta Wells.

○ *What percentage of total water supply does the water better managed represent? How was this estimate calculated?*

The water supply that will be managed better because of the Project represent 5.7 percent of our total water supply. This estimate was calculated by taking the expected quantify of better managed water the Project will provide (123 AF per year) and dividing it by DWP's average annual water supply (2,150 AF per year).

○ *Provide a brief qualitative description of the degree/significance of anticipated water management benefits*

At 7,437 feet, the Shuff/Wolf Pressure Zone is the second highest pressure zone in DWP's water system. Only the Yosemite Pressure Zone is higher at 7,549 feet. This Project is key because it will improve water management in the two highest pressure zones, from which the DWP can deliver water to over 90% of its service area.

The DWP's water service area is approximately 6,750 feet above sea level. DWP's water supply is 100% ground water pumped from the Bear Valley Basin. As mentioned previously, it is essential the DWP properly manage its water supply because of our mountain location. Importing water into the Bear Valley is not an option due to the high cost and the Bear Valley is

not connected to the State Water Project. As such, groundwater operational flexibility is of paramount importance. Past droughts have resulted in building moratoriums and usage restrictions. Lastly, fire hydrant flow capability is incredibly important. The proposed large pipeline will improve fire flow within these areas. The large reservoir capacity significantly increases the available water for sustained hydrant flow in the event of a wildfire.

- *Will the Project make new information available to water managers? If so, what is that information and how will it improve water management?*

The Project will include the newest scientific and technological data and equipment. Therefore, water managers will have access to real-time data for water management decisions. The proposed booster station will be telemetrically connected to flow meters and pressure transducers that will monitor flow in and out of the Shuff/Wolf Pressure Zone and pressure in the Shuff/Wolf and Yosemite pressure zones.

Evaluation Criterion B: Drought Planning and Preparedness

- *Provide a link to the applicable drought plan, and only attach relevant sections of the plan that are referred in the application, as an appendix to the application.*

<https://www.bbldwp.com/ArchiveCenter/ViewFile/Item/249>

- *Explain how the applicable plan addresses drought. Proposals that reference plans clearly intended to prepare for and address drought will receive more points under this criterion.*

The 2020 Urban Water Management Plan (UWMP) meets the requirements of the Urban Water Management Planning Act, and its purpose is to maintain efficient use of urban water supplies, continue to promote conservation programs and policies, ensure that sufficient water supplies are available for future beneficial use, and provide a mechanism for response during water drought conditions. Adopted with the 2020 UWMP is a Drought Risk Assessment (DRA) (Appendix B) which requires a water supplier to assess water supply reliability over a five-year period from 2021 to 2025 and a Water Shortage Contingency Plan (WSCP) (Appendix C).

Specifically, Section 3.5.2 of the 2020 UWMP reflects the results of using the Cal-Adapt Extended Drought Scenario Tools to evaluate the impacts of climate change with DWP's service area. Section 4.6 discusses Climate Change Considerations and how "extended drought periods are expected to become both more frequent, and more severe, which could lead to reduced surface water flows, reduced snowpack, and less groundwater availability for the BBLDWP." Section 7.1.2 also discusses Climate Change and states "redundancy in source of water supply will provide operational flexibility in the event supplies are interrupted by fire, floods, earthquakes, or drought."

- *Does the drought plan contain drought focused elements including a system for drought monitoring, sector vulnerability assessments related to drought, prioritized mitigation actions, and response actions that correlate to different states of drought?*

Section 3.2 of the DRA discusses Local Water Supply and Monitoring. The DWP performs

monthly groundwater monitoring. The status, condition, and availability of DWP's groundwater supplies is reviewed and evaluated by the Technical Review Team (TRT) semi-annually. Additionally, the DWP is part of the CASGEM program and provides monitoring data to the State of California, Department of Water Resources.

Section 5.0 of the WSCP discusses Shortage Response Actions. The water shortage response actions include mandatory prohibitions for demand reduction, supply augmentation, and operational changes to address shortage levels. Additional water shortage response actions and/or changes in shortage levels may be recommended by the TRT and approved by the Board of Commissioners, whenever it determines necessary, in accordance with the annual water supply and demand assessment methodologies.

- *Explain whether the drought plan was developed with input from multiple stakeholders. Was the drought plan developed through a collaborative process?*

The drought planning documents were developed by an outside consultant and input was formally invited from the County of San Bernardino, the City of Big Bear Lake, local water agencies, and other interested stakeholders. Input and public comment on the plan was solicited through the DWP's social media, on its website, in newsletters, in press releases, and through announcements and email newsletters from the local Chamber of Commerce. The Plan was made available in person at our offices and could be downloaded, mailed, or emailed.

- *Does the drought plan include consideration of climate change impacts to water resources or drought?*

Yes, the drought planning documents include consideration of climate change impacts to DWP's water resources in several areas including: Section 3.5 on Climate Change and use of the Cal-Adapt Extended Drought Scenarios Tools, and Chapter 7 on Water System Reliability and Drought Risk Assessment and the Five-Consecutive Year Drought analysis.

- *Describe how your proposed drought resiliency Project is supported by and existing drought plan.*

The Project is specifically mentioned as "increasing important" in Section 4.6 on Climate Change Considerations in relation to water storage Projects. The Project is also mentioned in Section 6.8 on Future Water Projects as providing additional water storage capacity to the Moonridge area.

- *Does the drought plan identify the proposed Project as a potential mitigation or response action?*

Yes, in Section 4.6 on Climate Change Considerations, the Project is specifically mentioned as a potential mitigation action because the proposed reservoir will be designed to be "appropriately sized, placed, and resistant to damage from natural disasters or tampering, which will be of the utmost importance in future planning."

- *Does the proposed Project implement a goal or need identified in the drought plan?*

Yes, the Project provides a mechanism for response during water drought conditions which is a goal of

the 2020 UWMP.

- *Describe how the proposed Project is prioritized in the referenced drought plan?*

The Project is prioritized in the drought planning documents as one of the most important Projects for the DWP because it increases available water storage and the efficient movement of water between pressure zones.

Evaluation Criterion C: Sustainability and Supplemental Benefits

1. *Climate Change: E.O. 14008 emphasizes the need to prioritize and take robust actions to reduce climate pollution, increase resilience to the impacts of climate change, protect public health, and conserve our lands, waters, oceans, and biodiversity. Examples in which proposed Projects may contribute to climate change adaptation and resiliency, may include but are not limited to the following:*

- *In addition to drought resiliency measures, does the proposed Project include other natural hazard risk reductions for hazards such as wildfires or floods?*

Yes, the proposed Project includes hazard risk reductions for wildfire. The U.S. Forest Service designates the Bear Valley as being a “High” to “Very High” fire threat. A wildfire risk exists at all times due to the surrounding San Bernardino National Forest and the risk is exacerbated by the drought. The large storage capacity provided by the Project enhances DWP’s ability to continue to provide water to its customers and sustain firefighting operations in the event of a wildfire in the DWP service area.

- *Does the proposed Project include green or sustainable infrastructure to improve community climate resilience such as, but not limited to, reducing the urban heat island effect, lowering building energy demands, or reducing the energy needed to manage water? Does this infrastructure complement other green solutions being implemented throughout the region or watershed?*

The Project will reduce the energy needed to manage water. DWP currently provides supply to the Yosemite Tank zone by pumping from the Angels Camp reservoir to the Yosemite reservoir via the Santa Barbara Booster, a lift of 201 feet. The proposed Project will allow DWP to supply the Yosemite Tank zone by pumping from the Wolf reservoir to the Yosemite reservoir via the Wolf Booster, a lift of 110 feet. This will enable the DWP to provide the same amount of water to the Yosemite Pressure Zone while using 45% less energy than the current operation because of the 91-foot reduction in elevation lift. This will result in a savings of 7,550 kW-hr of energy each year.

- *Will the proposed Project establish and use a renewable energy source?*

If economically feasible, solar panels will be placed on the Wolf Reservoir to offset power used by the Wolf Booster.

- *Does the proposed Project seek to reduce or mitigate climate pollutions such as air or water pollution?*

Yes, the Project will reduce energy needed to manage water, which has an associated reduction

in greenhouse gas (GHG) emissions and air pollution emitted from power plants. Using the EPA's Pollution Prevention Program GHG Calculator Tool, it is estimated that the energy and water savings produced by the Project will result in the reduction of 2.9 metric tons of carbon dioxide equivalent.

In particular, the Project may also contribute to a reduction in the use of a diesel generator that is occasionally used during a power outage or during peak usage in Big Bear.

- *Will the proposed Project reduce greenhouse gas emissions by sequestering carbon in soils, grasses, trees, and other vegetation?*

The Project will include the planting of new screening trees between the reservoir and the neighboring properties that will support the reduction of GHGs through carbon sequestration.

- *Does the proposed Project have a conservation or management component that will promote healthy lands and soils or serve to protect water supplies and its associated uses?*

Because the proposed reservoir will be constructed with seismically engineered welded carbon steel, the Project enables the DWP's to protect its water supplies, ranging from minor spills to extensive losses resulting from future earthquakes.

- *Does the proposed Project contribute to climate change resiliency in other ways not described above?*

No.

2. *Disadvantaged or Underserved Communities: E.O. 14008: Tackling the Climate Crisis at Home and Abroad directs Federal Agencies to assess potential benefits to disadvantaged communities as part of funding allocation processes. E.O. 13985: Advancing Racial Equity and Support for Underserved Communities Through the Federal Government also includes consideration of investment in underserved communities, consistent with other program requirements. E.O. 13985 defines an underserved community to include populations sharing a particular characteristic, as well as geographic communities, that have been systematically denied a full opportunity to participate in aspects of economic, social, and civic life, and provides examples of such communities.*

Please describe in detail how the community is disadvantaged or underserved based on a combination of variables that may include the following:

- *Low Income, high and/or persistent poverty*

The statewide median household income (MHI) provided by the most recent Census American Community Survey (ACS) 2014-2018 dataset is \$71,228. Using the California Department of Water Resources (DWR's) DAC Mapping Tool, a DAC is 80% of the statewide MHI and a SDAC is 60% of the statewide MHI. Therefore, a community where the MHI is less than \$56,982 meets the DAC threshold and less than \$42,737 meets the SDAC threshold. In addition, Section 1015 of the Cooperative Watershed Act (CWA) defines a DAC as a community with an annual MHI

that is less than 100% of the statewide annual MHI. Using the criteria noted above, most of the DWP service area qualifies as a DAC (DWR criteria), 8% qualifies as a SDAC (DWR criteria) and 100% qualifies as a DAC (CWA criteria) as shown in Figure 3 below.

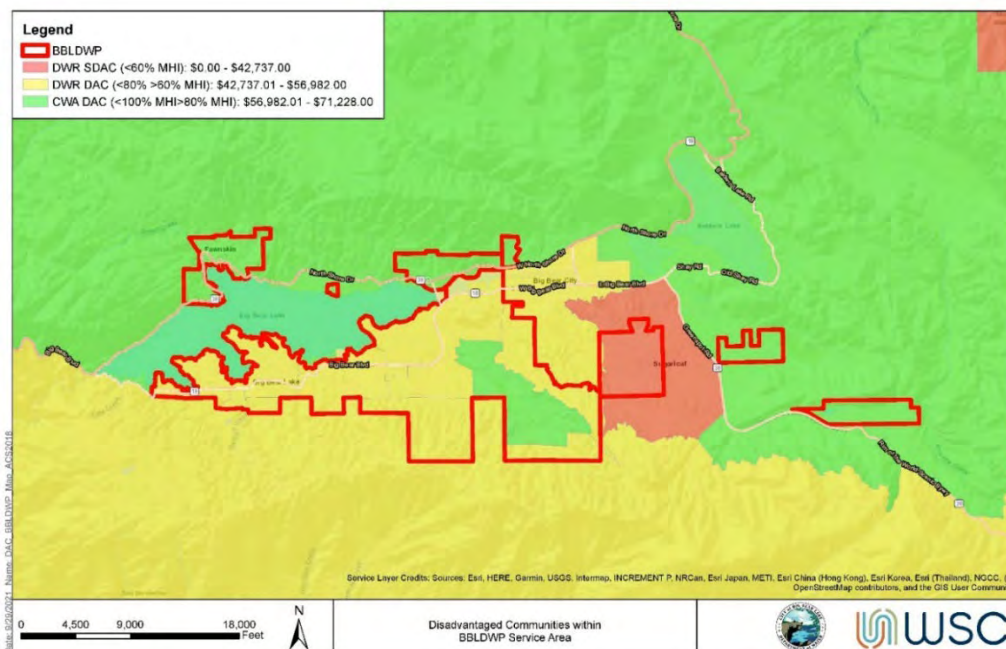


Figure 3 Disadvantaged Communities Map of Bear Valley

3. Tribal Benefits: The Department of the Interior is committed to strengthening tribal sovereignty and the fulfillment of Federal tribal trust responsibilities. The President's memorandum, "Tribal Consultation and Strengthening Nation-to-Nation Relationships," asserts the importance of honoring the Federal government's commitments to Tribal Nations.

1. Does the proposed Project support tribal resilience to climate change and drought impacts or provide other tribal benefits such as improved public health and safety through water quality improvements, new water supplies, or economic growth opportunities?

DWP regularly consults with and proactively engages Tribal representatives in the region and will continue to do so for this Project. Tribal members provide valuable feedback to eliminate or reduce impacts to cultural resources and Tribal members are fairly compensated for their time spent performing monitoring on DWP Projects. The Project benefits of water protection and resiliency as well as protection against wildfires will benefit members of the tribal community.

2. Does the proposed Project support Reclamation's tribal trust responsibilities or a Reclamation activity with a Tribe?

No benefits claimed.

4. *Environmental Benefits:* Drought resiliency Projects often provide environmental benefits in addition to water supply reliability benefits for other users. Ecological resiliency is crucial to sustain ecosystems that can respond to and recover from external stressors resulting from climate change and drought.

- *Does the Project seek to improve ecological climate change resiliency of a wetland, river, or stream to benefit to wildlife, fisheries, or habitats? Do these benefits support an endangered or threatened species?*

Yes, the Project ensures there is available water to support the endangered Unarmored Threespine Stickleback fish. The Unarmored Threespine Stickleback fish pond is maintained by the potable Bear Valley water supply. Prolonged droughts impact the quantity of water that is available to maintain this endangered species' pond.

- *What are the types and quantities of environmental benefits provided, such as the types of species and the numbers benefited, acreage of habitat improved, restored, or protected, or the amount of additional stream flow added? How were these benefits calculated?*

Historically, 40 AFY is required to maintain the Unarmored Threespine Stickleback fish pond.

- *Will the proposed Project reduce the likelihood of a species listing or otherwise improve the species status?*

Yes, the Project improves the species status in the Bear Valley by ensuring there is available water supply to maintain the Unarmored Threespine Stickleback fish pond.

5. *Other Benefits:* Will the Project address water sustainability in other ways not described above? For example:

- *Will the Project assist States and water users in complying with interstate compacts?*

No benefits claimed.

- *Will the Project benefit multiple sectors and/or users (e.g., agriculture, municipal and industrial, environmental, recreation, or others)?*

Yes, the Project constructs additional water storage which benefits the local environment and recreation sectors in the Valley. Visitors come to the Bear Valley for the ski resorts, the lake, to hike the trails, and other recreation activities in the area. The Project will enhance fire protection for full-time residents and visitors within DWP's service area. The Project will also reduce operational costs which benefits all water users in the DWP service area.

- *Will the Project benefit a larger initiative to address sustainability of water supplies?*

Yes, the Project benefits a larger initiative to build long-term resilience to drought within the Bear Valley by constructing an additional available water storage. The Bear Valley Basin Groundwater Sustainability Agency is a joint powers agency tasked with ensuring the sustainability of groundwater in the Bear Valley. This Project supports their water supply

objectives.

Evaluation Criterion D: Severity of Actual or Potential Drought Impacts to be addressed by the Project

- *What are the ongoing or potential drought impacts to specific sectors in the Project area if no action is taken (e.g., impacts to agriculture, environment, hydropower, recreation, and tourism, forestry), and how severe are those impacts? Impacts should be quantified and documented to the extent possible. For example, impacts could include, but are not limited to:*
 - *Whether there are public health concerns or social concerns associated with current or potential drought conditions (e.g., water quality concerns including past or potential violations of drinking water standards, increased risk of wildfire, or past or potential shortages of drinking water supplies? Does the community have another water source available to them if their water service is interrupted?).*

Yes, there are public health concerns associated with the current drought conditions including potential shortage of drinking water supplies, increased tree mortality, and increased risk of wildfires. The DWP's water supply is 100% ground water from the Bear Valley Basin. The community the DWP serves does not have another water source available to them and a connection to the State Water Project is cost prohibitive. The U.S. Forest Service Designates the Bear Valley as being a "High" to "Very High" fire threat. According to an in-depth analysis conducted by the USA TODAY Network, in 2019 Big Bear Lake scores a 4.36 out of five in wildfire potential.

There are also social concerns associated with the current drought conditions including reduction in lake levels, which impacts recreation and tourism. In the winter, local ski resorts pull water from the lake to make snow for the skiers and snowboarders. In the summer, the marinas rent boats to visitors for use on the lake.

The most recent local Multi-Jurisdiction Hazard Mitigation Plan lists drought as the number one natural hazard in our area, followed by earthquake. In its description of drought, it states: "Seven years of drought (commencing in the 1999/2000 winter season) and exacerbated by the driest and warmest period in recorded history (January 2003) dramatically impacted large stands of trees in and around the City of Big Bear Lake. Drought is the predominant stressor, weakening trees and allowing Bark Beetles, root rot, and mistletoe to kill not only young trees, but old growth trees as well. Additionally, brush and chaparral have lower moisture content, contributing to a higher dead to live fuel ratios and mortality...".

For Water Year 20/21, precipitation was less than half of normal. Annual precipitation levels have only been above normal once over the past five winter seasons. The severity and duration of the conditions in the previous drought has resulted in lingering effects to trees and vegetation, which continues to cause below normal fuel moisture in live fuels from spring through fall, increasing the fire hazard in this area. Approximately 350,000 acres in and around

the San Bernardino National Forest have experienced significant mortality in timber and brush.²

The EPA has also been exploring the interconnection between wildfire and water quality, concluding that “Water supplies can be adversely affected during the active burning of a wildfire and for years afterwards. During active burning, ash and contaminants associated with ash settle on streams, lakes, and water reservoirs. Vegetation that holds soil in place and retains water is burned away. In the aftermath of a large wildfire, rainstorms flush vast quantities of ash, sediment, nutrients and contaminants into streams, rivers, and downstream reservoirs. The absence of vegetation in the watershed can create conditions conducive to erosion and even flooding, and naturally occurring and anthropogenic substances can impact drinking water quality, discolor recreational waters, and may potentially contribute to harmful algal blooms.³”

- *Whether there are ongoing or potential environmental impacts (e.g., impacts to endangered, threatened or candidate species or habitat).*

There are ongoing environmental impacts from two of the most recent extreme droughts including 2000-2007 and 2012-2018. Approximately 350,000 acres in and around the San Bernardino National Forest have experienced significant mortality in timber and brush. Trees suffering from drought have fallen to bark beetle. Just halfway through the most recent drought, the U.S. Forest Service conducted an aerial tree mortality survey in the national forest in 2014 that located 4,000 acres of dead trees.

According to a study by the University of California Riverside and submitted to the USDA Research, Education & Economics Information System, “The conifer forests of the San Bernardino Mountains and San Jacinto Mountains have experienced unprecedented tree mortality from drought and insect attack. More trees had perished in 2002-2003 than in the past 100 years together and represent one of the great ecological catastrophes since the beginning of European settlement of southern California since the late 18th century.⁴”

The Big Bear Fire Department designates the Moonridge area in which the proposed Project will be located as an extremely high fire hazard severity zone. The increased available water and additional fire flow capacity is important for sustained hydrant flow, which is a critical need during firefighting operations.

Also, the endangered Unarmored Threespine Stickleback pond is maintained by the potable Bear Valley water supply. Prolonged droughts impact the quantity of water that is needed to maintain this endangered species’ pond.

² https://www.citybigbearlake.com/images/DOWNLOADS/PLANS/2020/2020_MJHMP.pdf

³ <https://www.epa.gov/sciencematters/wildfires-how-do-they-affect-our-water-supplies>

⁴ <https://reeis.usda.gov/web/crisProjectpages/0199295-pandemic-conifer-forest-mortality-under-extreme-drought-in-the-mountains-of-southern-california-and-baja-california.html>

- *Whether there are local or economic losses associated with current drought conditions that are ongoing, occurred in the past, or could occur in the future (e.g., business, agriculture, reduced real estate values).*

The DWP is in San Bernardino County and is currently in D2 severe drought conditions. The DWP has experienced D3 - extreme drought conditions in the past and has the high potential to experience D4- exceptional drought conditions in the future. The DWP's service area is primarily residential. Big Bear Lake is considered southern California's "Four Season Resort Community." As such, recreation is an important economic factor in the Valley and has been for more than a century.

Past droughts have a significant impact on the both the environment and the local economy. As of late September, 2021, the lake is down 16 feet from full. Multiple news articles and broadcasts in the summer of 2021 cited the dropping lake levels including NBC4, "California's Drought Takes Large Toll on Big Bear Lake"⁵, The San Francisco Times, "Severe Drought Slowly Dries Up California Lake"⁶ the Redlands Daily Facts, "Big Bear Lake levels down 15 feet; \$56 million Project could help,"⁷ and the Big Bear Grizzly, "Elements of evaporation Big Bear Lake level continues to drop"⁸. An ARCGIS Story map laments, "Woe to the Trout Fishers of Big Bear Lake!"⁹ Through history and GIS mapping of lake levels, precipitation, evapotranspiration, and algal blooms, the author lays out the case for why it is so hard to fish in Big Bear Lake anymore. Trip Advisor reviews express a common public sentiment:

- "Uh...where's the lake? What is there to do in summer?"
- "The boats and dock are sitting in mud. News outlets weren't exaggerating. The drought has really affected the lake"
- "Drought has wreaked havoc on poor Big Bear Lake."
- "Be warned before you set out for Big Bear Lake. The water level is extremely low, the first 50 to 100 feet of water that there is full of green algae."
- "First time to Big Bear Lake, was somewhat disappointed at the water level of the lake, I guess the drought is affecting all of California."
- "The lake has experienced severe recession due to the drought and climate change. I was most excited to spend the hot summer days swimming, but the beaches we visited were unswimmable due to dead fish and the smell of rotting plant life that has been left exposed. It was disgusting."

In the winter season, a lack of seasonal snowfall has a negative impact on the local ski resorts, Bear Mountain, and Snow Summit. This in turn has a domino effect on restaurants, lodges, and retailers. Tourism to other nearby attractions also affects occupancy rates in the hospitality sector. In the summer season, summer wildfires also have an impact on mountaintop

⁵ <https://www.nbclosangeles.com/news/local/california-drought-big-bear-lake-water/2606597/>

⁶ <https://sftimes.com/severe-drought-slowly-dries-up-california-lake/>

⁷ <https://www.redlandsdailyfacts.com/2021/09/23/big-bear-lake-levels-down-15-feet-56-million-Project-could-help/>

⁸ <https://bigbeargrizzly.net/news/5458/elements-of-evaporation-big-bear-lake-level-continues-to-drop/>

⁹ <https://storymaps.arcgis.com/stories/b64a38c8410344f3850126c1eb2b860a>

recreation. One of the most dramatic and recent events was the Lake Fire in June of 2015 that burned 31,284 acres. Reported on a Southern California Public Radio station, “Whether it’s due to fear of smoke or flames, the Lake Fire has dealt another blow to a tourism industry already faltering in 2015. The drought left this year’s winter slopes parched, temperatures often climbed too high even for making snow, and an unseasonable May storm forced a pro-cycling tour to relocate to Santa Clarita.” Resort managers reported an up to 80% loss of reservations due to the Lake Fire.

- *Whether there are other drought-related impacts not identified above (e.g., tensions over water that could result in a water-related crisis or conflict).*

None.

- *Describe existing or potential drought conditions in the Project area.*
 - *Is the Project in an area that is currently suffering from drought, or which has recently suffered from drought? Please describe existing or recent drought conditions, including when and the period of time that the area has experienced drought conditions (please provide supporting documentation, [e.g., Drought Monitor, droughtmonitor.unl.edu]).*

Based on data from Drought.gov for San Bernardino County, we experienced the 17th driest April on record and third driest year to date over the past one hundred and twenty-eight years. As a high altitude, inland community, Big Bear has experienced drought even more often and to a larger extent than the rest of the County. The most recent drought lasted from 2012-2018. During this period, the portion of DWP’s service area that receives the most rainfall received an average 24.12 inches per year, eleven inches below average and more than the rest of the Valley which is more arid. This data was gathered from a weather station located by the Big Bear Lake Dam at the west end of the valley.

For historical purposes, from 2000 to 2002 the DWP experienced three extremely dry years, with average precipitation of only 20.84 inches per year (in comparison to a 130-year average of 35.83 annual inches). In 2002 the DWP declared a Water Shortage Emergency. While conservation regulations existed before this time, that year was a “watershed” moment in DWP conservation. The Water Shortage Emergency lasted more than a decade, resulting in a building moratorium for one of DWP water systems and vastly expanded rules and regulations related to conservation.

- *Describe any Projected increases to the severity or duration of drought in the Project area resulting from changes to water supply availability and climate change. Provide support for your response (e.g., reference a recent climate informed analysis, if available).*

As shown in Figure 4 below, according to the Environmental Protection Agency CREATE Climate Scenarios Projection Map, the Big Bear Valley is likely to experience a higher average temperature and more days over 100 degrees in the coming years.

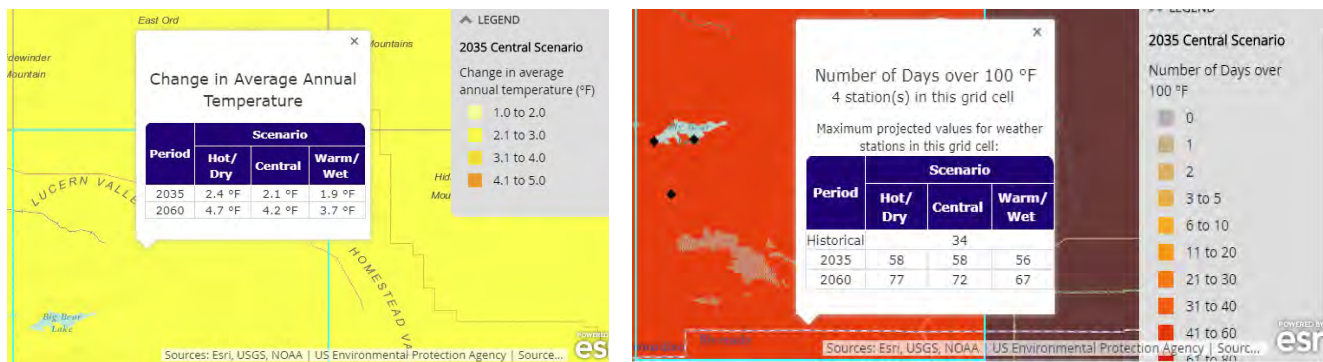


Figure 4 Change in Average Temperature/ increased Number of Days Over 100 Degrees

In April of 2020, the Weather Channel reported that meteorologists and climatologists recently conducted an analysis that found “the period 2000-2018 [was] among the driest in 1,200 years for southwestern North America” and “they add, this region could already be in the type of megadrought that can last for decades. We now have enough observations of current drought and tree-ring records of past drought to say that we’re on the same trajectory as the worst prehistoric droughts,” said lead author Park Williams, a bioclimatologist at Columbia University’s Lamont-Doherty Earth Observatory, in an LDEO news release. The team behind the study includes scientists from NOAA, NASA and four universities.¹⁰

Evaluation Criterion E: Project Implementation

- Describe the implementation plan of the proposed Project. Please include an estimated Project schedule that shows the stages and duration of the proposed work, including major tasks, milestones, and dates. Milestones may include, but are not limited to, the following: design, environmental and cultural resources compliance, permitting, construction/installation.

¹⁰ <https://weather.com/news/climate/news/2020-04-16-climate-change-stoking-long-term-megadrought-western-us>

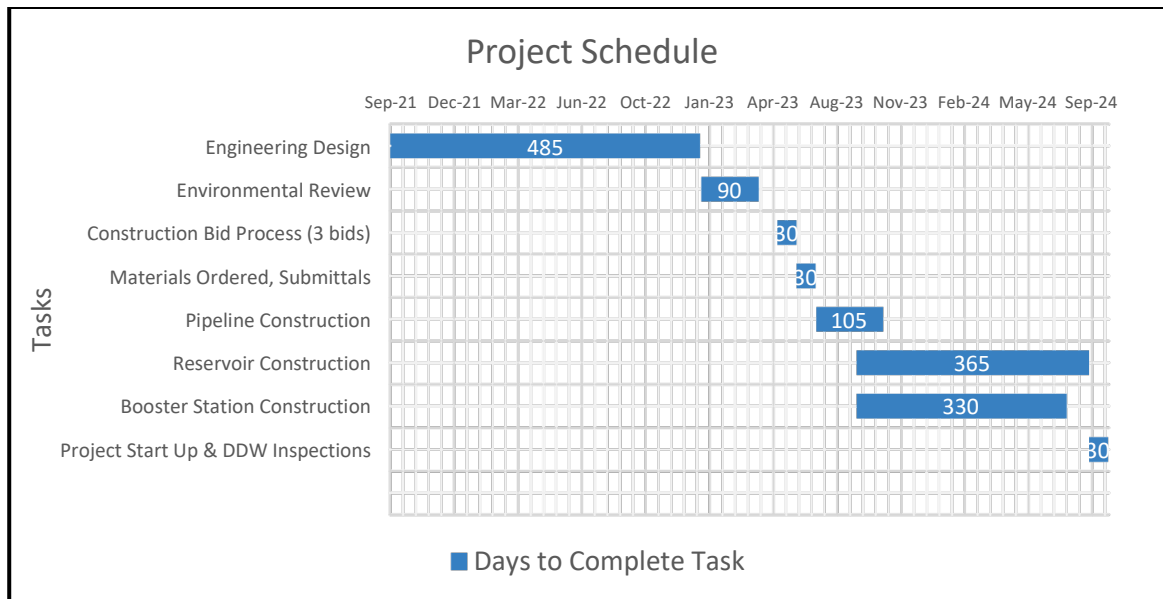


Table 1 Project Schedule- Days to Complete Task

In August 2021, the DWP hired WSC for design and construction management services for the Project. WSC is designing a 0.6 MG welded steel reservoir, a booster station similar to the Klamath Booster Station, a masonry block building, and five pipeline segment between the Shuff and Wolf reservoirs in the Shuff/Wolf pressure zone. WSC expects to complete design of the Project during the Summer of 2022.

In December 2021, the DWP hired an environmental consultant, TDA, to provide an environmental review of the project. Beginning January 2023, four technical studies will be prepared to support the environmental documentation including (1) air quality; (2) biology; (3) cultural resources; and (4) Climate Change/Greenhouse Gases (GHG).

After the Project is fully designed and environmental impacts assessed, the DWP will issue three separate Request for Bids Packages (Bid Packages) for the construction of the Project. One bid package will be for the pipeline construction, another for the construction of the reservoir, and another for the construction of the booster station. The Bid Packages will be reviewed and presented to the DWP Board for their approval of construction contracts for the Project. The DWP is estimating the bid process will occur between April and May 2023.

The pipeline contractor will order materials and begin construction in July 2023. The proposed 12" and 8" piping will be installed between the Shuff and Wolf reservoirs to ensure the two reservoirs work efficiently together, storing additional water within the Shuff/Wolf Pressure Zone and provide enhanced fire protection. Pipeline construction is estimated to occur between July and October 2023.

During the snow season, construction must cease. The contractors can order materials and get ready to resume construction in Spring 2024.

During the Fall of 2023, the property will be properly graded and compacted to prepare for a large capacity reservoir and efficient booster pumping station. Beginning around November 2023, the reservoir will be constructed. A SCADA system will be installed to monitor the reservoir levels, monitor booster station elements, and act as a relay site for most of DWP's telemetry radios. Construction of the reservoir is expected to be completed by August 2024.

During the Fall of 2023, the booster station construction will begin. The booster station is expected to be constructed from September 2023 until July 2024.

After all construction is completed, the reservoir and boosters will be disinfected according to state standards and the Project will be inspected by the California Department of Drinking Water (DDW). Upon a successful inspection, the DWP will receive an operating permitting allowing the Project to be put into service.

- *Describe any permits that will be required, along with the process for obtaining such permits.* The DWP is required to obtain a permit from DDW prior to placing the Project into service. The DDW inspection and subsequent permitting process ensures the water is safe and in compliance with California's standards.

- *Identify and describe any engineering or design work performed specifically in support of the proposed Project.*

WSC provided a proposal to the DWP Board of Commissioners for the engineering design and construction management services for the Project. WSC began the engineering design for the Project in September 2021.

- *Describe any new policies or administrative actions required to implement the Project.* The DWP Board of Commissioners has approved the grant application and the use of DWP funds. No additional policies are required. The Board will review and approve all related Project contracts.

Evaluation Criterion F: Nexus to Reclamation

- *Does the applicant have a water service, repayment, or O&M contract with Reclamation?*

No.

- *If the applicant is not a Reclamation contractor, does the applicant receive Reclamation water through a Reclamation contractor or by any other contractual means?*

No.

- *Will the proposed work benefit a Reclamation Project area or activity?*

No.

- *Is the applicant a Tribe?*

No.

PROJECT BUDGET

Section 1. Funding Plan and Letters of Commitment

The DWP will be funding any costs for the Project above and beyond the amount funded by the federal government with revenue from water rates and/or capital improvement reserves.

No Project costs shown below have been incurred prior to March 1, 2022.

Section 2. Budget Proposal

Table No. 2 Total Project Cost Summary

SOURCE	AMOUNT
Costs to be reimbursed with the requested Federal funding	\$1,600,000
Costs to be paid by the applicant	\$1,994,782
Value of third-party contributions	-
TOTAL PROJECT COST	\$3,594,782

Table No. 3 Non-Federal and Federal Funding Sources Summary

FUNDING SOURCES	AMOUNT
Non-Federal Entities	
DWP	\$1,994,782
Non-Federal Subtotal	\$1,994,782
REQUESTED RECLAMATION FUNDING	\$1,600,000

Table No. 4 Budget Proposal

BUDGET ITEM DESCRIPTION	COMPUTATION		Quantity Type	TOTAL COST
	\$/Unit	Quantity		
Contractual/Construction				
Engineering Bid Phase Support	\$24,220	1		\$24,220
Engineering Construction Phase Support	\$237,532	1		\$237,532
Engineering Subtotal				\$261,752
Site Work	\$200,000	1		\$200,000
Construction Contract Reservoir	\$900,000	1		\$900,000
Construction Contract Booster Station	\$900,000	1		\$900,000
Construction Contract Pipeline	\$1,300,000	1		\$1,300,000
Construction Subtotal				\$3,300,000

Environmental and Regulatory Compliance Cost	\$33,030	1		\$33,030
TOTAL DIRECT COSTS				\$3,594,782
Indirect cost				-
TOTAL ESTIMATED PROJECT COSTS				\$3,594,782

Section 3. Budget Narrative

Salaries and Wages

The DWP is not including salaries or wages in the budget proposal.

Fringe Benefits

The DWP is not including fringe benefits in the budget proposal.

Travel

DWP is not requesting reimbursement for travel costs for this Project.

Equipment

Equipment will be included in the construction cost of the Project.

Materials and Supplies

Materials and supplies will be included in the construction cost of the Project.

Contractual

WSC is designing the 0.6 reservoir, booster station, and pipelines. The estimated cost for design engineering services is \$400,000 and these costs are not included in the above estimate. WSC also will provide Bid Phase and Construction Phase Engineering Services and these costs are included in the above cost estimate. After the design has been reviewed and approved, the DWP will work with three different contractors with the skills to construct the pipeline, a new reservoir, and a booster pumping station.

Environmental and Regulatory Compliance Costs

DWP received a proposal and budgeted \$33,030 for environmental review and study costs.

Other Expenses

No other expenses are being requested for this Project.

Indirect Costs

No indirect cost reimbursement is being requested for this Project.

Total Costs

The total estimated Project cost is \$3,594,782. The requested Federal share is \$1,600,000; the total non-Federal share is \$1,994,782. The total estimated costs shown above do not include

the estimated \$400,000 in design engineering cost because a portion of these costs were incurred prior to March 1, 2022.

ENVIRONMENTAL AND CULTURAL RESOURCES COMPLIANCE

- *Will the proposed Project impact the surrounding environment (e.g., soil [dust], air, water [quality and quantity], animal habitat)? Please briefly describe all earth-disturbing work and any work that will affect the air, water, or animal habitat in the Project area. Please also explain the impacts of such work on the surrounding environment and any steps that could be taken to minimize impacts.*

The Project will require trenching along some streets to install new pipeline. Additionally, the Project will require grading and compaction to ensure a level surface for the placement of the new reservoir. The Project may require the removing of a limited number of trees on the Project site. Additional screening trees will be planted at the end of construction. The site work will be performed as required and all dust and noise mitigation requirements will be done in compliance with the Project CEQA documents.

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

No

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

No

- *When was the water delivery system constructed?*

The majority of the DWP's water system was constructed during the Forty's, Fifty's, and Sixty's. The City of Big Bear Lake acquired the water system from Southern California Water Company in 1989 and has made more than \$65,000,000 in improvements since that time.

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

No

- *Are any buildings, structures, or features in the irrigation district listed or eligible for listing on the National Register of Historic Places? A cultural resources specialist at your local Reclamation office or the State Historic Preservation Office can assist in answering this question.*

No

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

No

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

No

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

No

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

No

REQUIRED PERMITS OR APPROVALS

The California Division of Drinking Water will inspect the new reservoir and new booster station to ensure they are in compliance with California State standards. An operating permit will be issued to allow the equipment to be utilized within DWP's water system.

RELEVANT SECTIONS OF THE DROUGHT PLAN

See Appendices A through E.

LETTERS OF PROJECT SUPPORT

See Appendix F.

OFFICIAL RESOLUTION

See Appendix G.

UNIQUE ENTITY IDENTIFIER AND SYSTEM FOR AWARD MANAGEMENT

The DWP is registered with SAM, ASAP and Grants.gov. The BBLDWP unique entity identifier has been provided in the SF-424. SAM registration will be maintained throughout the grant period.

APPENDICES

Appendix A. Section 3.5.2 of the DWP 2020 UWMP

Appendix B. Section 4.6 of the DWP 2020 UWMP

Appendix C. Section 7.1.2 of the DWP 2020 UWMP

Appendix D. Section 3.2 of the DWP 2020 DRA

Appendix E. Section 5.0 of the DWP 2020 WSCP

Appendix F. Letters of Support

The DWP received letters of support for the Project from the following interested parties:

- Ellen Clark, Executive Director, Big Bear Chamber of Commerce
- Dave Emig, Administrator, Big Bear Moose Lodge #2085
- Jay Obernolte, US Congressional District (CA 8th)
- Rosilicie Ocho Bogh, Senator, 23rd State Senate District
- David Lawrence, General Manager, Big Bear Area Regional Wastewater Agency
- Mary Reeves, General Manager, Big Bear City Community Services District
- Dawn Rowe, Third District Supervisor, San Bernardino County
- Jeff Mathieu, Interim City Manager, City of Big Bear Lake
- Thurston “Smitty” Smith, Assemblymember, Thirty-Third District, California Legislature
- Michael Stephenson, General Manager, Big Bear Municipal Water District
- Jeff Willis, Fire Chief, Big Bear Fire Department

Appendix G. Official Resolution

The DWP Board of Commissioners approved Resolution No. DWP 2022-10 at the May 24, 2022 Regular Board meeting.



May 26, 2022

Bureau of Reclamation
Financial Assistance Operations
Attn: NOFO Team
P.O. Box 25007, MS 84-27133
Denver, CO 80225

RE: WaterSMART, Drought Response Program: Drought Resiliency Projects for Fiscal Year 2023 City of Big Bear Lake, Department of Water and Power – Wolf Reservoir & Booster Replacement Project

Dear NOFO Team,

On behalf of the Big Bear Chamber of Commerce Board of Directors, it is my pleasure to write this letter in support of the City of Big Bear Lake, Department of Water and Power (DWP) Wolf Reservoir & Booster Replacement Project (Project).

The grant funds will be used to construct a significantly larger reservoir from the current one hundred thousand gallons to a proposed six hundred thousand gallons. The Project also includes the construction of a greater capacity booster pumping station to deliver water more effectively from the Wolf Pressure Zone to the Yosemite Pressure Zone. The Yosemite Pressure Zone is DWP's highest pressure zone. Increasing capacity to this pressure zone enhances DWP's drought resiliency throughout its entire service area.

The proposed Project will be located in the Moonridge area of the mountain community of Big Bear Lake, a four-season resort town that attracts more than 100,000 people on holiday weekends. The proposed larger reservoir enables the storage of additional water supplies that will be critical during severe drought conditions.

The severity of California's current drought and the projected long-term impacts of climate change underscore the need for this Project in building long-term resilience to drought in the Bear Valley.

The Big Bear Chamber of Commerce fully supports the efforts of the DWP in seeking Bureau of Reclamation funding for the Wolf Reservoir & Boosters Replacement Project.

Sincerely,

Ellen B. Clarke

Ellen Clarke
Executive Director
Big Bear Chamber of Commerce
(909) 866-4607
execdir@bigbearchamber.com



**Big Bear Moose Lodge #2085
39247 North Shore Drive
P.O. Box 308
Fawnskin, California 92333
909-878-0750**

Bureau of Reclamation
Financial Assistance Operations
Attn: NOFO Team
P.O. Box 25007, MS 84-27133
Denver, CO 80225

RE: WaterSMART, Drought Response Program: Drought Resiliency Projects for Fiscal Year 2023 City of Big Bear Lake, Department of Water and Power – Wolf Reservoir & Booster Replacement Project

Dear NOFO Team,

It is my pleasure to write this letter in support of the City of Big Bear Lake, Department of Water and Power (DWP) Wolf Reservoir & Booster Replacement Project (Project).

The grant funds will be used to construct a significantly larger reservoir from the current one hundred thousand gallons to a proposed six hundred thousand gallons. The Project also includes the construction of a greater capacity booster pumping station to deliver water more effectively from the Wolf Pressure Zone to the Yosemite Pressure Zone. The Yosemite Pressure Zone is DWP's highest pressure zone. Increasing capacity to this pressure zone enhances DWP's drought resiliency throughout its entire service area.

The proposed Project will be located in the Moonridge area of the mountain community of Big Bear Lake, a four-season resort town that attracts more than a 100,000 people on holiday weekends. The proposed larger reservoir enables the storage of additional water supplies that will be critical during severe drought conditions.

The severity of California's current drought and the projected long-term impacts of climate change underscore the need for this Project in building long-term resilience to drought in the Bear Valley.

I fully support the efforts of the DWP in seeking Bureau of Reclamation funding for the Wolf Reservoir & Boosters Replacement Project.

Sincerely,

A handwritten signature in black ink, consisting of a large, stylized 'D' followed by a horizontal line that ends in a small upward curve.

Dave Emig
Administrator

JAY OBERNOLTE
EIGHTH DISTRICT, CALIFORNIA

**COMMITTEE ON SCIENCE, SPACE,
AND TECHNOLOGY**
INVESTIGATIONS AND OVERSIGHT, RANKING
MEMBER

**COMMITTEE ON NATURAL
RESOURCES**
INDIGENOUS PEOPLES OF THE UNITED STATES
NATIONAL PARKS, FORESTS, AND PUBLIC LANDS

COMMITTEE ON THE BUDGET



Congress of the United States
House of Representatives

WASHINGTON, D.C. OFFICE:
1029 LONGWORTH HOUSE OFFICE BUILDING
WASHINGTON, DC 20515
TELEPHONE: (202) 225-5861

DISTRICT OFFICE:
9700 SEVENTH AVE., SUITE 201
HESPERIA, CA 92345
TELEPHONE: (760) 247-1815

E-MAIL VIA WEBSITE:
<http://obernolte.house.gov>

Bureau of Reclamation
Financial Assistance Operations
Attn: NOFO Team
P.O. Box 25007, MS 84-27133
Denver, CO 80225

RE: WaterSMART, Drought Response Program: Drought Resiliency Projects for Fiscal Year 2023 City of Big Bear Lake, Department of Water and Power – Wolf Reservoir & Booster Replacement Project

Dear NOFO Team,

It is my pleasure to write this letter in support of the City of Big Bear Lake, Department of Water and Power (DWP) Wolf Reservoir & Booster Replacement Project (Project).

The grant funds will be used to construct a significantly larger reservoir from the current one hundred thousand gallons to a proposed six hundred thousand gallons. The Project also includes the construction of a greater capacity booster pumping station to deliver water more effectively from the Wolf Pressure Zone to the Yosemite Pressure Zone. The Yosemite Pressure Zone is DWP's highest pressure zone. Increasing capacity to this pressure zone enhances DWP's drought resiliency throughout its entire service area.

The proposed Project will be located in the Moonridge area of the mountain community of Big Bear Lake, a four-season resort town that attracts more than a 100,000 people on holiday weekends. The proposed larger reservoir enables the storage of additional water supplies that will be critical during severe drought conditions.

The severity of California's current drought and the projected long-term impacts of climate change underscore the need for this Project in building long-term resilience to drought in the Bear Valley.

I ask that you give full and fair consideration to the efforts of the DWP in seeking Bureau of Reclamation funding for the Wolf Reservoir & Boosters Replacement Project.

Sincerely,

JAY OBERNOLTE
Congressman, California's 8th District

CAPITOL OFFICE
1021 O STREET
SUITE 7220
SACRAMENTO, CA 95814
(916) 651-4023

DISTRICT OFFICE
1758 ORANGE TREE LANE
SUITE B
REDLANDS, CA 92374
(909) 335-0271

SENATOR.OCHOABOGH@SENATE.CA.GOV

WWW.SEN.CA.GOV/OCHOABOGH

California State Senate

SENATOR
ROSILICIE OCHOA BOGH
TWENTY-THIRD SENATE DISTRICT



COMMITTEES
BANKING & FINANCIAL INSTITUTIONS
VICE CHAIR
BUDGET
BUSINESS, PROFESSIONS
& ECONOMIC DEVELOPMENT
EDUCATION
VICE CHAIR
HOUSING
LABOR, PUBLIC EMPLOYMENT
& RETIREMENT
VICE CHAIR
PUBLIC SAFETY
VICE CHAIR

May 27, 2022

Bureau of Reclamation
Financial Assistance Operations
Attn: NOFO Team
P.O. Box 25007, MS 84-27133
Denver, Colorado 80225

RE: WaterSMART, Drought Response Program: Drought Resiliency Projects for Fiscal Year 2023 City of Big Bear Lake, Department of Water and Power – Wolf Reservoir & Booster Replacement Project

Dear NOFO Team:

I write this letter in strong support of the City of Big Bear Lake, Department of Water and Power (DWP) Wolf Reservoir & Booster Replacement Project (Project).

The grant funds will be used to construct a significantly larger reservoir from the current one hundred thousand gallons to a proposed six hundred thousand gallons. The Project also includes the construction of a greater capacity booster pumping station to deliver water more effectively from the Wolf Pressure Zone to the Yosemite Pressure Zone. The Yosemite Pressure Zone is DWP's highest pressure zone. Increasing capacity to this pressure zone enhances DWP's drought resiliency throughout its entire service area. The proposed Project will be located in the Moonridge area of the mountain community of Big Bear Lake, a four-season resort town that attracts more than 100,000 people on holiday weekends. The proposed larger reservoir enables the storage of additional water supplies that will be critical during severe drought conditions. The severity of California's current drought and the projected long-term impacts of climate change underscore the need for this Project in building long-term resilience to drought in the Bear Valley.

I fully support the efforts of the DWP in seeking Bureau of Reclamation funding for the Wolf Reservoir & Boosters Replacement Project. If you have any questions or concerns, please do not hesitate to contact my Capitol Office at (916) 651-4023.

Sincerely,

A handwritten signature in black ink, appearing to be "RO", with a long horizontal line extending to the right.

ROSILICIE OCHOA BOGH
Senator, 23rd District



BIG BEAR AREA REGIONAL WASTEWATER AGENCY

P.O. Box 517, 121 Palomino Drive, Big Bear City, CA 92314-0517
(909) 584-4018 • FAX (909) 585-4340

May 19, 2022

Bureau of Reclamation
Financial Assistance Operations
Attn: NOFO Team
P.O. Box 25007, MS 84-27133
Denver, CO 80225

Subject: WaterSMART, Drought Response Program: Drought Resiliency Projects for Fiscal Year 2023
City of Big Bear Lake, Department of Water and Power – Wolf Reservoir & Booster Replacement Project

Dear NOFO Team,

It is my pleasure to write this letter in support of the City of Big Bear Lake, Department of Water and Power (DWP) Wolf Reservoir & Booster Replacement Project (Project).

The grant funds will be used to construct a significantly larger reservoir from the current one hundred thousand gallons to a proposed six hundred thousand gallons. The Project also includes the construction of a greater capacity booster pumping station to deliver water more effectively from the Wolf Pressure Zone to the Yosemite Pressure Zone. The Yosemite Pressure Zone is DWP's highest pressure zone. Increasing capacity to this pressure zone enhances DWP's drought resiliency throughout its entire service area.

The proposed Project will be located in the Moonridge area of the mountain community of Big Bear Lake, a four-season resort town that attracts more than a 100,000 people on holiday weekends. The proposed larger reservoir enables the storage of additional water supplies that will be critical during severe drought conditions.

The severity of California's current drought and the projected long-term impacts of climate change underscore the need for this Project in building long-term resilience to drought in the Bear Valley.

I fully support the efforts of the DWP in seeking Bureau of Reclamation funding for the Wolf Reservoir & Boosters Replacement Project.

Sincerely,

David Lawrence, P.E.
General Manager
dlawrence@bbarwa.org

Bureau of Reclamation
Financial Assistance Operations
Attn: NOFO Team
P.O. Box 25007, MS 84-27133
Denver, CO 80225

RE: WaterSMART, Drought Response Program: Drought Resiliency Projects for Fiscal Year 2023
City of Big Bear Lake, Department of Water and Power – Wolf Reservoir & Booster Replacement Project

Dear NOFO Team,

It is my pleasure to write this letter in support of the City of Big Bear Lake, Department of Water and Power (DWP) Wolf Reservoir & Booster Replacement Project (Project).

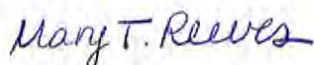
The grant funds will be used to construct a significantly larger reservoir from the current one hundred thousand gallons to a proposed six hundred thousand gallons. The Project also includes the construction of a greater capacity booster pumping station to deliver water more effectively from the Wolf Pressure Zone to the Yosemite Pressure Zone. The Yosemite Pressure Zone is DWP's highest pressure zone. Increasing capacity to this pressure zone enhances DWP's drought resiliency throughout its entire service area.

The proposed Project will be located in the Moonridge area of the mountain community of Big Bear Lake, a four-season resort town that attracts more than a 100,000 people on holiday weekends. The proposed larger reservoir enables the storage of additional water supplies that will be critical during severe drought conditions.

The severity of California's current drought and the projected long-term impacts of climate change underscore the need for this Project in building long-term resilience to drought in the Bear Valley.

I fully support the efforts of the DWP in seeking Bureau of Reclamation funding for the Wolf Reservoir & Boosters Replacement Project.

Sincerely,



Mary T. Reeves
General Manager, Big Bear City Community Services District



County of San Bernardino

May 18, 2022

Bureau of Reclamation
Financial Assistance Operations
Attn: NOFO Team
P.O. Box 25007, MS 84-27133
Denver, CO 80225

Re: WaterSMART, Drought Response Program: Drought Resiliency Projects for Fiscal Year 2023
City of Big Bear Lake, Department of Water and Power – Wolf Reservoir & Booster Replacement Project

Dear NOFO Team,

As the Third District Supervisor for the County of San Bernardino, I am writing in support of the City of Big Bear Lake, Department of Water and Power (DWP) Wolf Reservoir & Booster Replacement Project (Project).

The Project seeks to construct a larger reservoir with a 600,000-gallon capacity compared to the current reservoir with a capacity of 100,000 gallons. The Project also includes the construction of a greater capacity booster pumping station to deliver water more effectively from the Wolf Pressure Zone to DWP's highest pressure zone, the Yosemite Pressure Zone. An increase capacity to this pressure zone will enhance DWP's drought mitigation and resiliency throughout its entire service area.

Big Bear Lake is a beautiful mountain community that attracts thousands of visitors across the region and nation. Due to the high volume of tourism in the community, there is an increased need for additional water storage capabilities. The statewide drought has had negative impacts on this highly visited mountain community, and the Project will ensure that adequate mitigation measures are being taken to prepare for severe drought conditions.

I fully support the efforts of the DWP in seeking Bureau of Reclamation funding for the Wolf Reservoir & Boosters Replacement Project. I believe this Project will provide much needed water reservoir capacity and resiliency to the community of Big Bear Lake. Should you have any questions, please do not hesitate to contact me at (909) 387-4855.

Sincerely,

Dawn Rowe
Third District Supervisor
San Bernardino County



CITY OF

BIG BEAR LAKE *California*

June 1, 2022

Bureau of Reclamation
Financial Assistance Operations
Attn: NOFO Team
P.O. Box 25007, MS 84-27133
Denver, CO 80225

RE: WaterSMART, Drought Response Program: Drought Resiliency Projects for Fiscal Year 2023 City of Big Bear Lake, Department of Water and Power – Wolf Reservoir & Booster Replacement Project

Dear NOFO Team,

It is my pleasure to write this letter in support of the City of Big Bear Lake, Department of Water and Power (DWP) Wolf Reservoir & Booster Replacement Project (Project).


The grant funds will be used to construct a significantly larger reservoir from the current one hundred thousand gallons to a proposed six hundred thousand gallons. The Project also includes the construction of a greater capacity booster pumping station to deliver water more effectively from the Wolf Pressure Zone to the Yosemite Pressure Zone. The Yosemite Pressure Zone is DWP's highest pressure zone. Increasing capacity to this pressure zone enhances DWP's drought resiliency throughout its entire service area.

The proposed Project will be located in the Moonridge area of the mountain community of Big Bear Lake, a four-season resort town that attracts more than a 100,000 people on holiday weekends. The proposed larger reservoir enables the storage of additional water supplies that will be critical during severe drought conditions.

The severity of California's current drought and the projected long-term impacts of climate change underscore the need for this Project in building long-term resilience to drought in the Bear Valley.

I fully support the efforts of the DWP in seeking Bureau of Reclamation funding for the Wolf Reservoir & Boosters Replacement Project.

Sincerely,


Jeff Mathieu
Interim City Manager

STATE CAPITOL
P.O. BOX 942849
SACRAMENTO, CA 94249-0033
(916) 319-2033
FAX (916) 319-2133
DISTRICT OFFICE
9700 7TH AVENUE, SUITE 227
HESPERIA, CA 92345
(760) 244-5277
FAX (760) 244-5447



COMMITTEES
VICE CHAIR: ENVIRONMENTAL SAFETY
AND TOXIC MATERIALS
BUDGET
BUDGET SUBCOMMITTEE NO. 3 ON
CLIMATE CRISIS, RESOURCES,
ENERGY, AND TRANSPORTATION
BUDGET SUBCOMMITTEE NO. 6 ON
BUDGET PROCESS, OVERSIGHT,
AND PROGRAM EVALUATION
GOVERNMENTAL ORGANIZATION
JOBS, ECONOMIC DEVELOPMENT, AND
THE ECONOMY
MILITARY AND VETERANS AFFAIRS
WATER, PARKS, AND WILDLIFE

Bureau of Reclamation
Financial Assistance Operations
Attn: NOFO Team
P.O. Box 25007, MS 84-27133
Denver, CO 80225

RE: WaterSMART, Drought Response Program: Drought Resiliency Projects for Fiscal Year 2023 City of Big Bear Lake, Department of Water and Power – Wolf Reservoir & Booster Replacement Project

Dear NOFO Team,

It is my pleasure to write this letter in support of the City of Big Bear Lake, Department of Water and Power (DWP) Wolf Reservoir & Booster Replacement Project (Project).

The grant funds will be used to construct a significantly larger reservoir from the current one hundred thousand gallons to a proposed six hundred thousand gallons. The Project also includes the construction of a greater capacity booster pumping station to deliver water more effectively from the Wolf Pressure Zone to the Yosemite Pressure Zone. The Yosemite Pressure Zone is DWP's highest pressure zone. Increasing capacity to this pressure zone enhances DWP's drought resiliency throughout its entire service area.

The proposed Project will be located in the Moonridge area of the mountain community of Big Bear Lake, a four-season resort town that attracts more than a 100,000 people on holiday weekends. The proposed larger reservoir enables the storage of additional water supplies that will be critical during severe drought conditions.

The severity of California's current drought and the projected long-term impacts of climate change underscore the need for this Project in building long-term resilience to drought in the Bear Valley.

I fully support the efforts of the DWP in seeking Bureau of Reclamation funding for the Wolf Reservoir & Boosters Replacement Project.

Sincerely,

Thurston "Smitty" Smith
Assemblyman, 33rd District



Big Bear Municipal Water District

Lake Management

Board of Directors
Bob Ludecke – Division 1
Bob Rehfsuss – Division 2
Charlie Brewster – Division 3
John Eminger – Division 4
Tom Bradford – Division 5

Bureau of Reclamation
Financial Assistance Operations
Attn: NOFO Team
P.O. Box 25007, MS 84-27133
Denver, CO 80225

RE: WaterSMART, Drought Response Program: Drought Resiliency Projects for Fiscal Year 2023
City of Big Bear Lake, Department of Water and Power – Wolf Reservoir & Booster Replacement Project

Dear NOFO Team,

It is my pleasure to write this letter in support of the City of Big Bear Lake, Department of Water and Power (DWP) Wolf Reservoir & Booster Replacement Project (Project).

The grant funds will be used to construct a significantly larger reservoir from the current one hundred thousand gallons to a proposed six hundred thousand gallons. The Project also includes the construction of a greater capacity booster pumping station to deliver water more effectively from the Wolf Pressure Zone to the Yosemite Pressure Zone. The Yosemite Pressure Zone is DWP's highest pressure zone. Increasing capacity to this pressure zone enhances DWP's drought resiliency throughout its entire service area.

The proposed Project will be located in the Moonridge area of the mountain community of Big Bear Lake, a four-season resort town that attracts more than a 100,000 people on holiday weekends. The proposed larger reservoir enables the storage of additional water supplies that will be critical during severe drought conditions.

The severity of California's current drought and the projected long-term impacts of climate change underscore the need for this Project in building long-term resilience to drought in the Bear Valley.

I fully support the efforts of the DWP in seeking Bureau of Reclamation funding for the Wolf Reservoir & Boosters Replacement Project.

Sincerely,

Mike Stephenson, General Manager



BIG BEAR FIRE DEPARTMENT

Jeff Willis, Fire Chief

Administration – P. O. Box 2830, 41090 Big Bear Boulevard
Big Bear Lake, CA 92315-2830
Business 909/866-7566 • Fax 909/866-8288

05/18/2022

Bureau of Reclamation
Financial Assistance Operations
Attn: NOFO Team
P.O. Box 25007, MS 84-27133
Denver, CO 80225

RE: WaterSMART, Drought Response Program: Drought Resiliency Projects for Fiscal Year 2023 City of Big Bear Lake, Department of Water and Power – Wolf Reservoir & Booster Replacement Project

Dear NOFO Team,

I write this letter of support for the City of Big Bear Lake, Department of Water and Power (DWP) Wolf Reservoir & Booster Replacement Project (Project).

The grant funds will be used to construct a significantly larger reservoir from the current one hundred thousand gallons to a proposed six hundred thousand gallons. The Project also includes the construction of a greater capacity booster pumping station to deliver water more effectively from the Wolf Pressure Zone to the Yosemite Pressure Zone. The Yosemite Pressure Zone is DWP's highest pressure zone. Increasing capacity to this pressure zone enhances DWP's drought resiliency throughout its entire service area.

The proposed Project will be located in the Moonridge area of the mountain community of Big Bear Lake, a four-season resort town that attracts more than a 100,000 people on holiday weekends. The proposed larger reservoir enables the storage of additional water supplies that will be critical during severe drought conditions.

The severity of California's current drought and the projected long-term impacts of climate change underscore the need for this Project in building long-term resilience to drought in the Bear Valley.

I fully support the efforts of the DWP in seeking Bureau of Reclamation funding for the Wolf Reservoir & Boosters Replacement Project.

Sincerely,

Jeff Willis
Fire Chief

RESOLUTION NO. DWP 2022-10

**A RESOLUTION OF THE BOARD OF WATER AND POWER COMMISSIONERS OF
THE CITY OF BIG BEAR LAKE, DEPARTMENT OF WATER AND POWER,
COUNTY OF SAN BERNARDINO, STATE OF CALIFORNIA,
REGARDING PARTICIPATION IN FUNDING FOR THE BUREAU OF
RECLAMATION WaterSMART DROUGHT RESPONSE PROGRAM
FUNDING OPPORTUNITY ANNOUNCEMENT NO. R23AS00005**

WHEREAS, the City of Big Bear Lake was incorporated on November 28, 1980, and

WHEREAS, the electors of the City of Big Bear Lake did in 1985 adopt an Amendment to the City of Big Bear Lake Charter which created a Department of Water and Power; and

WHEREAS, the United States Department of Interior, Bureau of Reclamation, under its WaterSMART Grant Program, has made available to qualifying applicants grant funding on a matching fund basis, funds for Drought Resiliency Projects for Fiscal Year 2023; and

WHEREAS, the City of Big Bear Lake, Department of Water and Power has identified a project that exemplify the objectives of the WaterSMART Drought Response Program in its Wolf Reservoir & Boosters Replacement Project;

NOW, THEREFORE, BE IT RESOLVED that the Board of Water and Power Commissioners of the City of Big Bear Lake, Department of Water and Power does hereby adopt Resolution No. DWP 2022-10 confirming the following:

1. The Board of Water and Power Commissioners of the City of Big Bear Lake, Department of Water and Power verify that the General Manager, Reginald A. Lamson has legal authority to enter into an agreement with Bureau of Reclamation.
2. The Board of Water and Power Commissioners of the City of Big Bear Lake, Department of Water and Power have reviewed and support the attached grant application.
3. The City of Big Bear Lake, Department of Water and Power is capable of providing the amount of funding and/or in-kind contributions specified in the funding plan.
4. That if selected for a WaterSMART Grant under the Bureau of Reclamation's Drought Response Program for Fiscal Year 2023, the City of Big Bear Lake, Department of Water and Power will negotiate and execute a Cooperative Agreement with the Bureau of Reclamation on/or prior to the established deadline, to fund a minimum of 50% of the project costs and will provide documentation showing the 50% matching funds are not funded by a Federal Agency.

PASSED, APPROVED, and ADOPTED this 24th day of May 2022.

AYES: Cylwik, Hjorth, Smith, Tarras, Willey
NOES:
ABSTAIN:
ABSENT:

A handwritten signature in blue ink, appearing to read "Robert Tarras", written over a horizontal line.

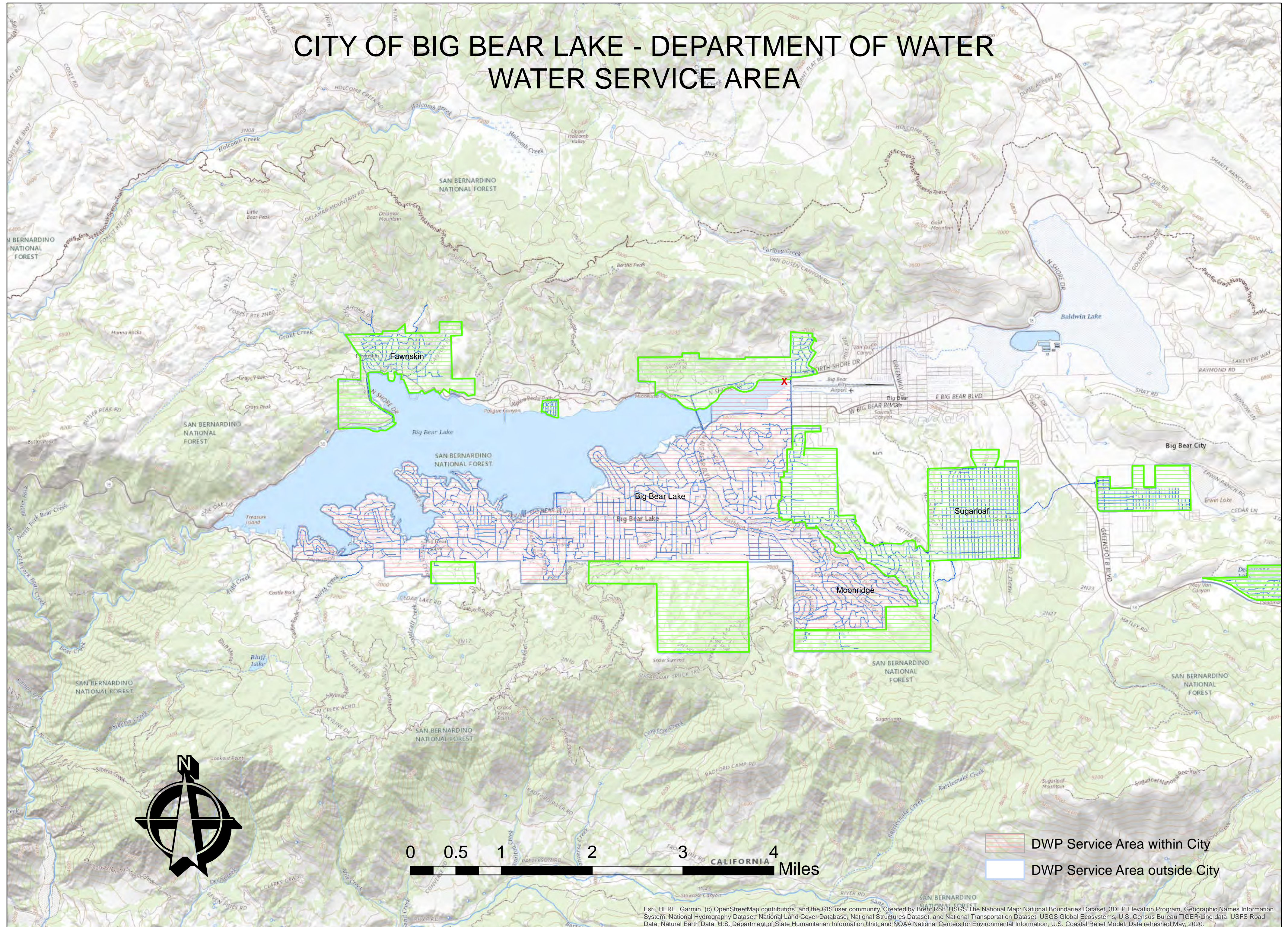
Robert Tarras, Chairman
DWP Board of Commissioners

ATTEST:

A handwritten signature in blue ink, appearing to read "Leeanne Eagleson", written over a horizontal line.

Leeanne Eagleson, Secretary
DWP Board of Commissioners

CITY OF BIG BEAR LAKE - DEPARTMENT OF WATER WATER SERVICE AREA



Esri, HERE, Garmin, (c) OpenStreetMap contributors, and the GIS user community. Created by Brent Rolf, USGS The National Map: National Boundaries Dataset, 3DEP Elevation Program, Geographic Names Information System, National Hydrography Dataset, National Land Cover Database, National Structures Dataset, and National Transportation Dataset. USGS Global Ecosystems; U.S. Census Bureau TIGER/Line data; USFS Road Data; Natural Earth Data; U.S. Department of State Humanitarian Information Unit, and NOAA National Centers for Environmental Information, U.S. Coastal Relief Model. Data refreshed May, 2020.