WEBER BASIN WATER CONSERVANCY DISTRICT Drought Contingency Plan

FOA # R16-FOA-DO-005

WaterSMART: Drought Contingency Planning for Fiscal Year 2016

<image>

APPLICANT

Weber Basin Water Conservancy District 2837 East Highway 193 Layton, Utah 84040

PROJECT MANAGER

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Technical Proposal and Evaluation Criteria

Executive Summary

Applicant Info Date: April 11, 2016 Applicant Name: Weber Basin Water Conservancy District (WBWCD) City, County, State: Layton, Davis, Utah Project Manager: Name: Darren Hess, P.E., Assistant General Manager, Weber Basin Water Conservancy District

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Project Funding Request: Total Project Cost \$350,000. Funding Request \$170,000. Provided by WBWCD \$180,000 (\$88,400 Cash and \$91,600 in-kind).

Project Summary

A one paragraph summary of the proposal

Weber Basin Water Conservancy District (WBWCD) will prepare a Drought Contingency Plan for all the facilities and water users within its service area. This will include water and facilities within the Weber Basin Project, Ogden River Project, and Weber River Project. Other areas encompassed by the planning project are those lying between the west slope of the Wasatch Mountains and the east shore of the Great Salt Lake. The District and its service area is no stranger to drought. Having been in a drought for six of the past ten years WBWCD has had to be proactive in their response to water shortages and the effect it has had on its users. The development of this important drought plan will allow a wide-ranging assessment of mitigation and response actions. It will help to prepare for and reduce the water shortages and provide better drought resiliency for the District and its water users. WBWCD expert staff and its team of consultants will work closely with an extensive stakeholder group using a proven approach to stakeholder engagement. The planning process includes two levels of stakeholder involvement. Level one includes a larger group called the "Advisory Group". This group will include a wideranging group of stakeholders from all aspects of the service area and state and federal agencies. Level two will be a smaller group of stakeholders who have been invited to be part of the "Task Force". These two groups will include agriculture users, decision-makers, community residents, local businesses, environmental group, and other stakeholders. This extensive stakeholder involvement will help provide an excellent foundation for the more in-depth work required to formulate an all-inclusive drought plan.

Schedule

State the length of time and estimated completion date for the proposed Drought Contingency Plan

This project is ready to move forward. At the time of award (June – September 2016) WBWCD will hire a consultant team and initiate the Task Force so as to be prepared to develop the detail scope of work in conjunction with Reclamation. The planning process will be completed within the required two-year time frame with a completion time of July – August 2018 and will allow for the 30-day review by Reclamation before the final approval of the Plan. A more in-depth schedule will be developed with the detail scope. The following is an estimated schedule based on the planning tasks:

| ESTIMATED PROJECT SCHEDULE September 2016 September 2018 | 2016 | 2016 | 2017 | 2017 | a) . | 2017 | 2017 | 2017 | 2018 | _ | ~ | 2018 | | |
|--|---------|---------|--------------------|-----------|---------------------|----------|----------|---------|---------|-----------|----------|----------|------------|----------|
| Milestone/Task | Sep Oct | Sep Oct | Sep Oct Oct Dec | Jan Feb 2 | Jan Febz Mar Apr | May June | July Aug | Sep Oct | Nov Dec | Jan Feb 2 | Mar Apri | April Ma | Jun July 2 | Aug Sept |
| Contract, Develop Detailed Scope, and Task Force | | | | | | | | | | | | | | |
| Public Involvement Meetings, Media, and other printed materials | | | | | | | | | | | | | | |
| Inventory and Assemble Existing Data | | | | | | | | | | | | | | |
| Conduct Vulnerability Assessment | | | | | | | | | | | | | | |
| Evaluate the Existing Operations and Water Supplies | | | | | | | | | | | | | | |
| Identify Potential Mitigation Actions | | | | | | | | | | | | | | |
| Develop Operational and Administrative Framework | | | | | | | | | | | | | | |
| Prepare Draft | | | | | | | | | | | | | | |
| Reclamation Review of Draft Plan | | | | | | | | | | | | | | |
| Final Report Approval and Project | | | | | | | | | | | | | | |

Federal Facility

Indicate whether or not a Reclamation project, facility, or activity is located within the geographic area to be addressed in the proposed Drought Contingency Plan

Weber Basin Water Conservancy District is the operating agency for the Weber Basin Project (Project) which includes a number of Reclamation facilities. The Weber Basin Project is responsible for the sale and delivery of Project water, operation and maintenance of project facilities and is contracted with the Reclamation for repayment of reimbursable costs of the Project. All of the facilities that WBWCD operates and maintains are within the service area and will be part of the Drought Contingency Plan.

Background Data

The United States Bureau of Reclamation began planning for the Weber Basin Project in 1942, and Congressional authorization of the Project was received in 1949. The Weber Basin Water

Conservancy District (WBWCD) was created on June 26,1950. The District was formed to act as the local sponsor of the federal project and to further supply water resources to the population within its boundaries.

The original project, including reservoirs, canals, irrigation and drainage systems and power plants were constructed by the Bureau of Reclamation from 1952 through 1969. The District entered into a repayment contract with the United States in 1952, which will be completed in approximately 2034, to repay all of the original Project costs and interest related to water supply. Funding for this repayment and the development of other water sources is from water sales and the original one mil property tax placed on the District at its inception.

The Weber Basin Water Conservancy District

Photo 1 Historical Photo from WBWCD



covers over 2,500 square miles within five counties: Davis, Weber, Morgan, Summit and a part Photo 2 Historical Photo From WBWCD of Box Elder. Water resources of WBWCD service



of Box Elder. Water resources of WBWCD service area were extensively developed before initiation of the Weber Basin Project and numerous private water developments preceded the construction of Federal projects. Prior Reclamation developments include the Echo Reservoir (part of the Weber River Project) on the main stem of the Weber River and Pineview Reservoir (part of the Ogden River Project) on the Ogden River. Also included in the planning process is water from the Weber River and Provo River Projects that is diverted from the high reaches of the Weber River for multiple uses on the Provo River.

Map

Provide a map of the planning area showing the geographic location (include the State, county, and direction from nearest town).

Weber Basin Water Conservancy District provides many categories of water including drinking water, urban secondary water, agricultural irrigation water, replacement water (water exchange contracts) and industrial water. WBWCD service areas includes cities, districts, irrigation companies, and others in five counties in Utah along the Wasatch Front and Wasatch Back. See Attachment A "WBWCD Service Area Map" for a understanding of WBWCD service area.

Water Supply

Provide a general description of the area to be addressed in the Drought Contingency Plan

WBWCD will plan for all the facilities and water users within their service area. This will include water and facilities within the Weber River Basin which include the Weber Basin Project, Ogden River Project, and the Weber River Project. Other areas encompassed by the planning project are those lying between the west slope of the Wasatch Mountains and the east shore of the Great Salt Lake within WBWCD's existing boundary.

Description of the source(s) of water supply and the water rights involved:

Water sources and supply come from seven reservoirs. Four of the reservoirs were constructed new with the Weber Basin Project and two were enlarged. The District constructed Smith and Morehouse Reservoir after the Project was completed. Three of the seven Project reservoirs: Wanship (Rockport Reservoir), Lost Creek, and East Canyon along with the Weber River Project's Echo Reservoir and the District's Smith and Morehouse Reservoir, regulate the flow of the Weber River before it emerges from its mountain watershed to the Wasatch Front area where the principal water utilization occurs.

Two Project reservoirs, Causey and Pineview (enlarged), regulate the flow of the Ogden River before it emerges from the mountains to join the Weber River in the Wasatch Front area. Willard Bay is the lowest reservoir of the system and receives water from the Weber River, diverted at Slaterville Diversion Dam, below the mouth of the Ogden River, and conveyed through the Willard Canal. Water is returned to the Photo 3 Causey Reservoir



Weber River from the Willard Reservoir, as needed, over the same route facilitated by the two Willard pumping plants.

The three Project reservoirs (Wanship/Rockport Reservoir, Lost Creek, and East Canyon) along with Smith and Morehouse Reservoir on the Weber River and its tributary creeks are operated to supply water for irrigation, municipal, and industrial purposes in the Wasatch Front area and for power production at Gateway and Wanship hydroelectric facilities. The Causey Reservoir on the Ogden River side has been upgraded by the District to produce power. The reservoirs are operated to provide supplemental irrigation water and replacement water for residential purposes in mountain valleys along the Weber River and its upper tributaries. The reservoirs are also used to provide flood control and for the maintenance of stream flows to support aquatic life.

WBWCD also works with and facilitates other dams, diversions and aqueducts within their service area. The Stoddard Diversion Dam, on the Weber River, about 4 miles downstream from Morgan, Utah, diverts water into the Gateway Canal, which extends 8.5 miles westward on the south side of Weber Canyon. The canal has a capacity of 700 cubic feet per second (cfs) and

delivers water to the Gateway Power plant, which requires about 250 cfs. The remaining water is conveyed through the 3.3-mile-long Gateway Tunnel to the west face of the Wasatch Mountains. From there, water is directed north via the Weber Aqueduct and south via the Davis Aqueduct.

Photo 4 Willard Canal



The Weber Aqueduct is 5 miles long, with a capacity of 80 cfs conveying irrigation water to lands on the Uintah Bench, and municipal and industrial water to Ogden and adjacent communities in Weber County. Part of the irrigation water is pumped to lands above the aqueduct and the remainder is delivered by a high pressure distribution system. At the terminal of the Weber Aqueduct, water is delivered to the District's Weber South Water Treatment Plant and then distributed to Ogden City and surrounding communities.

The Davis Aqueduct extends to the south along the base of the Wasatch Mountains approximately 23 miles to North Salt Lake and has an initial capacity of 355 cfs. Part of the water is pumped for irrigation of lands above the aqueduct; the remainder of the water is sold by the District to irrigation companies, improvement districts, subconservancy districts and individual landowners. The remaining water is processed through the District's Davis North water treatment plant for distribution to communities in northern Davis County, and through the Davis South Water Treatment

Plant for communities in the south end of Davis County. A large block of treated and untreated industrial water is also delivered to the Chevron Oil Figure 1 Facilities and Capacities

Company in the southernmost end of Davis County.

Figure 1 indicates all of the WBWCD facilities and capacities (for a large version See Attachment B "WBWCD Facilities and Capacities")

Culinary System Highlights:

The District provides wholesale potable water to 50 Customer Agencies throughout the District's Wasatch Front area. These contracts are primarily to municipal water suppliers but also include contracts to industrial and other customers. The District's potable water infrastructure in the Wasatch Front area includes three water treatment plants:



- » Weber South Water Treatment Plant (WSWTP) the WSWTP is located on the south side of Ogden and provides water to Customer Agencies in the Weber County area. The Weber South Water Treatment Plant has a rated capacity of 32 MGD,
- » Davis North Water Treatment Plant (DNWTP) the DNWTP is located at the District's headquarters on Highway 193 in Layton, Utah. The DNWTP provides culinary water to Customer Agencies primarily in northern Davis County. The facility is currently rated at 46 MGD.
- » Davis South Water Treatment Plant (DSWTP) the DSWTP provides culinary water to Customer Agencies in south Davis County. The DWSTP is rated at 16 MGD.

The WSWTP and the DNWTP are tied into a common network of water transmission lines, while Davis South Water Treatment Plant services a network of water transmission lines that is independent of the potable water facilities in northern Davis and southern Weber counties. In addition to the water treatment facilities described above, the District operates potable water wells that supplement the District's potable water production capacity.

The current water uses and number of water users served

As stated previously, WBWCD provides wholesale treated M&I water to over 50 Customer Agencies in the Wasatch Front area who in turn serve a population of nearly 600,000 people. Current water contracts total 224,195 acre-feet, with 85,126 acre-feet categorized as M&I water, and the remaining 139,069 acre-feet categorized as irrigation. WBWCD serves a geographic area of more than 2,500 square miles, with five principal water uses:

- 1. Wholesale Irrigation: wholesale water is supplied to a number of irrigation suppliers along the Wasatch Front. These organizations then retail water to customers in their respective service areas. This use accounts for approximately 35% of the District's water contracts.
- 2. **Groundwater Replacement**: various drinking water purveyors and individuals (either residential or agricultural) with a water contract, which is then used in an exchange application to obtain approval from the State Engineer to drill a groundwater well to meet water supply needs. This use accounts for nearly 12% of WBWCD contracts currently.
- 3. **Retail Secondary Irrigation**: WBWCD provides residential customers with irrigation water in Davis and Weber counties via 211 miles of pipelines. This use accounts for roughly 26% of water contracts. They also deliver irrigation water to many irrigators and farmers in Box Elder, Davis, Morgan, Summit and Weber Counties.
- 4. **Treated Municipal Water**: The District wholesales culinary water to cities and water improvement districts in Davis and Weber Counties via 69 miles of transmission lines. This use accounts for approximately 22% of the District's contracts.
- 5. Untreated Industrial Water: This use accounts for about 5% of the District's Contracts.

Current and projected water demand.

As of 2015, existing contracts obligated 83% of the District's reliable yield supply. Current population projections for the District's service area show the population nearly doubling between 2010 and 2060 (from 600,000 to 1,100,000). As this growth takes place, additional

water supply will be necessary to meet anticipated demands. There may be shortages despite WBWCD's conservation goal set in 2000 of 25% reduction in per capita use by 2025 and 35% conservation by 2050. Maintaining the District's water supplies during times of drought is critical to prevent shortages to citizens, institutions, businesses and industries served by WBWCD's Customer Agencies.

Relationship with Reclamation

Identify any past working relationships with Reclamation. This should include the date(s), description of prior relationships with Reclamation, and a description of the project(s), facility(s), or activity(s).

WBWCD has collaborated with Reclamation on a number of recently completed and ongoing cooperative projects, including:

- » Phase 3 Upper Willard Canal Lining and Water Marketing Project: Partially funded through the 2013 WaterSMART program; completed.
- » Phase 2 Upper Willard Canal Lining and Water Marketing Project: Partially funded through the 2012 WaterSMART program; completed.
- » Phase 1 Upper Willard Canal Lining and Water Marketing Project: Partially funded through the 2011 WaterSMART program: completed.
- » The Layton Canal Lining and Water Marketing Project: Partially funded through the 2010 WaterSMART program; completed.
- » The first Secondary Water Meter Project: Partially funded through the 2010 WaterSMART program; completed.
- » System Trunk-line Meter Project: Completed in 2009, this project involved installation of large meters and provides information for the water deliveries through the many of the large lines that service portions of the District's retail secondary water system.
- » System Optimization Review (SOR): Completed in 2008, this project evaluated the efficiencies of the District's entire water storage and distribution system.
- » Weber River Basin Aquifer Recharge Water Bank: Partially funded through the 2007 Water 2025 program; completed in 2009.
- » Gateway Canal Landslide Stabilization Projects: This is an ongoing collaboration.

Technical Project Description

The following sections describe the technical proposal for the development of a Drought Contingency Plan under Task "A" Planning.

Six Elements for Drought Contingency Planning

The following technical description describes how the six elements will be incorporated and addressed in WBWCD drought planning process:

1. Drought Monitoring

"The plan must establish a process for monitoring near and long-term water availability, and a framework for predicting the probability of future droughts or confirming an existing drought."

WBWCD must actively monitor runoff forecasts in order to accomplish the responsibilities of storing water in seven reservoirs, delivering water for municipal, industrial and agricultural demands, the primary flood control responsibilities on the Weber and Ogden rivers, and maintaining instream flows downstream of the District's reservoirs. The runoff forecasts used by WBWCD are provided by the Natural Resources Conservation Service (NRCS), the Colorado Basin River Forecast Center (CBRFC), and the Palmer Drought Severity Index through the National Oceanic and Atmospheric Administration (NOAA). Beginning in January, the NRCS and CBRFC provide volumetric projections on the potential runoff during the April through July period at key locations along the river drainages. Those projections are updated at least every month through June to communicate potential runoff to the Snow Water Equivalent (SWE) of the snowpack and related historical and modeling data. These projections are analyzed by WBWCD along with the current reservoir levels and associated storage space available, historical storage, inflow, and release data at each reservoir, as well as the estimation of water available to store after satisfaction of prior water rights on the drainage. In wetter years, routing of flood waters to minimize downstream flooding significantly impacts operation and fill time of each of the reservoirs.

As part of the proposed Drought Contingency Plan, WBWCD and its selected consultants will review and update WBWCD's existing processes for monitoring drought for both near and longterm water availability. WBWCD proposes to establish a process and purchase data visualization software that would be paired with a database to better integrate the expertise of local climatologists, hydrologists, hydrogeologists, state water resources, river commissioners and other experts to confirm and understand the severity of existing droughts and the impact it will have and continue to have as the severity of the drought continues from year to year. This process and team will help WBWCD and associated stakeholders in the watershed understand the probability of future droughts and to what the potential duration, magnitude and intensity these droughts will be.

WBWCD proposes to implement a Historical Data Management System Database. This database will compile and analyze historic data such as:

- » reservoir levels
- » annual reservoir yield
- » Weber River Commission's water delivery records
- » weather
- » climate
- » evapotranspiration

The collected data will be compiled into the database which will be coupled with an interactive data visualization software such as Tableau or similar to develop and manage the data. This database and software will allow the District to better analyze, compare, and understand conditions prior to previous droughts and how the reservoirs and infrastructure in the basin were operated in those dry years. In addition, the task force team will work to establish and identify

metrics and triggers based on reservoir levels and drought indices that can be used to define drought stages. As the District observes drought indices and receives snowpack data and forecasts throughout the year, this information can be compared to historical data and the drought identifying metrics established in the Drought Contingency Plan. This will allow the District and other stakeholders to more quickly identify a drought and trigger mitigation and response actions if necessary.

2. Vulnerability Assessment

"The plan must include a vulnerability assessment evaluating the risks and impacts of drought." **Risks:**

Water resources of the area were extensively developed before initiation of the Weber Basin Project therefore the District's water rights are **"junior"** on the Weber River. Because WBWCD's rights are junior, the District's water resources are vulnerable to shortages during droughts. This puts the District and over 50 Customer Agencies in the District's Wasatch Front area, who together serve a population of nearly 600,000 people at risk of water shortages. Maintaining the water supplies during times of drought is critical to prevent shortages. WBWCD's Wasatch Front service area population is anticipated to grow to nearly 1,000,000 people by 2060. This puts even more pressure on WBWCD to better understand the vulnerabilities, ways to build long-term resiliency, and response activities that can be implemented quickly during a drought.

The following table indicates the reservoirs WBWCD operates the total capacity of the reservoirs and the amount of capacity that WBWCD may use:

| | Total | Active | Usable District | | |
|---------------------------|-----------|-----------|-----------------|--|--|
| Name | Capacity* | Capacity* | Capacity* | | |
| Causey | 7,870 | 6,870 | 6,870 | | |
| East Canyon | 51,200 | 48,110 | 20,110 | | |
| Lost Creek | 22,500 | 20,010 | 20,010 | | |
| Pineview | 110,150 | 110,150 | 66,228 | | |
| Smith & Morehouse | 8,350 | 7,600 | 6,560 | | |
| Wanship | 62,120 | 60,860 | 60,860 | | |
| Willard | 227,189 | 202,160 | 202,160 | | |
| Totals | 489,389 | 454,900 | 381,938 | | |
| *capacity is in acre-feet | | | | | |

 Table 1 WBWCD Capacity of Reservoirs

Of particular importance to the District is to better understand historic climate variability and how climate change may amplify historic variations in climate. In 2014, a research paper published in the Journal of American Water Resources Association used dendrochronology (tree ring studies) to reconstruct streamflow for the Weber River Basin (See Attachment F "Tree Ring Study"). This paper provides valuable insight on the intensity, duration, and frequency of

droughts and wet periods over the past 576 years in the Weber River Basin. Key observations concerning the reconstructed stream flow and its application to WBWCD water supply include:

- » Historical stream flow records available for the past century appear insufficient at predicting potential droughts as "droughts in previous centuries have often exceeded those of the past 100 years in duration and magnitude."
- » During the past century, the intensity of some yearly droughts such as in 2002 has been similar to the intensity of the extreme years in the previous 400 years. However, what was not recorded in the "instrumental period" of streamflow data collection was the prolonged years of drought that was observed in the years of streamflow reconstruction.
- » Droughts that are less intense and longer duration, such as one that occurred between 1703 and 1718, if it were to occur today could result in low water storage after 4 years with an additional 12 years of drought thereafter.

The information provided by Becker et al. gives the District the ability to conduct reservoir modeling by "pairing historical extreme events with comparable events during the instrumental record." As a side note, Becker and others at the Wasatch Dendroclimatology Research (WaDR) Group are currently looking to extend the Weber River flow reconstruction back to approximately 1,200 years. This work will provide additional valuable data that if completed in time will be incorporated into this Drought Contingency Plan effort.

The District has been working with the Utah Division of Water Resources and Western Water Assessment (a university-based applied research program) to update a model of the Weber River to simulate these historical extreme events and provide streamflow projections through 2050 and 2085 that incorporate potential effects of climate change. This model will be used by the District and its consultant as part of the Drought Contingency Plan to better understand the range of future conditions that the District and area stakeholders may encounter. In addition, the effort will include an examination of the effects climate change may have on snowpack and potential earlier runoff periods.

Impacts:

The District will work with its consultants to quantify what negative impacts can be expected from these extreme events including:

- » Potential cuts in M&I wholesale water deliveries by the District and the corresponding effect on Customer Agencies
- » Decreases in crop production as a result of cuts in WBWCD water deliveries to irrigators during drought years
- » Potential impacts to aquatic species
- » Decreases in revenues at industrial facilities due to water shortages
- » Decreased recreational opportunities at District reservoirs
- » Increased pumping costs due to low elevations in Willard Bay
- » Increased health concerns on public with extended drought cycles

These negative impacts will be examined to determine how they can be mitigated with proper planning and/or infrastructure improvements.

3. Mitigation Actions

"The plan must identify, evaluate, and prioritize mitigation actions and activities that will build longterm resiliency to drought and that will mitigate the risks posed by drought."

The District is continually working to increase the drought resiliency of its water supply. As mentioned previously, the Weber Basin Project is junior on the Weber River and is therefore relatively vulnerable to shortages during drought years. To increase the resiliency of its water supply, the District has:

- » Constructed additional wells in the Wasatch Front area
- » Constructed an additional reservoir, Smith and Morehouse Reservoir
- » Acquired higher-priority irrigation company stock
- » Attained decreed river water rights
- » Obtained senior storage rights in the basin
- » In 2015, the District in cooperation with the USBR completed a two-foot raise to Willard Bay Reservoir which added 20,000 acre-feet of storage capacity that will be used to store water during wet years for use during dry years

The District will use the modeling information and vulnerability assessment in the Drought Resiliency Plan to identify, evaluate and prioritize structural and non-structural mitigation actions that will increase the resiliency of the District's water supply.

Structural Actions-

The District and its consultant will analyze what capital improvement projects can be implemented to increase drought resiliency. Examples include increased storage to capture earlier runoff caused by climate change, or expansion of the District's Aquifer Storage and Recovery (ASR) project to allow for groundwater storage of direct flow rights from the Weber River for use in peak demand months. These capital improvement projects are structural mitigation actions that require many years for planning, permitting and construction. The proposed Drought Resiliency Plan will analyze and prioritize these structural actions to help the District address the most critical areas of need and provide the highest level of drought mitigation while minimizing cost, time and environmental impacts.

Non-Structural Actions-

The plan will also identify non-structural actions and goals such as educational programs, conservation programs, exchange programs and strategies that can be implemented to educate, conserve, and program for increased drought resiliency. The District's consultants will identify potential programs and determine the feasibility of these programs. Examples of potential programs and strategies are fallowing agreements that would allow irrigation water to be leased

for M&I use during extreme droughts and the purchase of more senior water rights that are less susceptible to shortages during drought years.

4. <u>Response Actions</u>

"The plan must identify, evaluate, and prioritize response actions and activities that can be implemented quickly during a drought."

Within the WBWCD's existing Emergency Water Supply Management and Response Plan (EWSMRP) the District outlines current protocol for evaluating water supply and drought conditions and response actions that will be taken in the case of drought or water supply shortages. The current response levels are:

- » Level I Normal Water Supply Conditions
- » Level II Moderate Water Supply Conditions
- » Level III Severe Water Supply Conditions
- » Level IV Extreme Water Supply Conditions

For each response level, triggers have been identified that will initiate each level as well as an associated target reduction in water demand. It is proposed that as part of the Drought Contingency Plan that the District's existing response levels, triggers and response actions be reviewed and updated. The proposed plan will be a much more detailed look at drought planning than has been performed previously and will provide more specific actions than the current EWSMRP. Potential response actions that will be evaluated include:

- » Reduction of allocation for secondary water users
- » Enforcement of reduced allocations for metered secondary connections
- » Reduction of delivery for wholesale and retail irrigation users

The response actions found in the Drought Contingency Plan will be prioritized and assigned to the appropriate response levels. (See Attachment C "WBWCD's Emergency Water Supply Management and Response Plan")

5. Operational and Administrative Framework

"An operational and administrative framework must be developed to identify who is responsible for undertaking the actions necessary to implement each element of the plan, including communicating with the public about those actions."

WBWCD will collaborate with stakeholders to develop an operational and administrative framework as outlined in the FOA. This framework will tabulate who is responsible for implementing the Drought Contingency Plan elements as well as communicate with the public concerning the proposed actions. WBWCD will work with stakeholders to assign:

- » Specific person or team to be responsible to conduct drought monitoring and report results to an identified group of stakeholders
- » Person or team to evaluate drought monitoring results and make recommendations to the District's General Manager and Board of Trustees to initiate response actions and emergency response actions

- » Person or team who is responsible to initiate mitigation actions found in the Drought Contingency Plan
- » Person or team responsible to review the plan update process and be in charge of updating the Drought Contingency Plan

6. Plan Update Process

"The plan must describe a process and schedule for monitoring, evaluating, and updating the plan."

As previously stated the Drought Contingency Plan includes the development of a database of historical information. The database will be continually updated and evaluated each year in order to better compare current trends to historical trends.

Plan Evaluation Process -

A detailed set of procedures will be developed for an ongoing evaluation and update of the Drought Contingency Plan in order to keep the plan responsive to the needs of the District and its stakeholders. An operational assessment of risks and the effects of new technology, laws, and political leadership.

Effectiveness of the Plan -

The Plan will be evaluated periodically to determine the extent to which pre-drought planning was useful in mitigating impacts from an existing or past drought and in facilitating relief or assistance to drought stricken areas.

Timing of Plan Updates -

The Plan will include a process and schedule for substantial changes and updates. It is anticipated that the plan will need to be updated every 5 years at a minimum. Because of recent droughts and the amount of growth expected in northern Utah, efforts to better understand past climate variability and future climate change are continuously progressing. It is expected that the Drought Contingency Plan will be monitored and evaluated periodically so that it can be updated as new data is available.

Required Drought Planning Steps

The following three Drought Contingency Planning Steps indicate how WBWCD will work with Reclamation to ensure stakeholders and others are represented during the development of the Drought Contingency Plan.

Establishment of a Drought Planning Task Force -

WBWCD will be the planning lead and establish a two level planning group. The first level will be a group that will be considered the Task Force made up of 11 to 12 stakeholders who represent varied interests (i.e. municipal, agricultural, business, state and federal agencies, etc.) The second level will be considered an Advisory Group which is a much larger group of 20 to 30 stakeholders. This group will be a diverse group of agencies, entities, individuals and organizations who are interested in the Plan. This group will be organized to meet together, collect data and research, learn different approaches, and acquire collaboration with many different stakeholders. The information, ideas and opinions will be considered by the Task Force as they evaluate and study the issues and develop the Plan.

Under the leadership of the WBWCD a consultant or group of consultants will be hired to organize and facilitate the collaboration between all the stakeholders, Advisory Group, and the Task Force. Stakeholder input will be sought continuously throughout the process, sometimes from the entire group and sometimes from subsets of the groups for specific issues. The stakeholder process will be conducted to attempt to balance a number of various interests in development of the Drought Contingency Plan and the Plan's actions.

Development of a Detailed Work Plan -

Once the contract between WBWCD and Reclamation is completed, the first task will be development of a detailed work plan. WBWCD will coordinate with Reclamation to develop a detailed work plan. The work plan will include the sections described in the FOA: introduction, planning approach, documentation and reporting, schedules, and communication and outreach plan. The work plan will have tasks and subtasks identified to address each of the sections. Each task and subtask will have an estimated completion time and be linked to the other tasks to form a schedule of tasks to be completed within two years. The work plan schedule will indicate that the draft Plan be submitted to Reclamation for review and approval at least 30 days prior to the end of the two-year period. The Planning Task Force will review the final draft and provide the ultimate approval of the Plan for implementation.

Development of a Communication and Outreach Plan -

The detailed work plan will include a communication and outreach plan for the stakeholders and the public. Participation will occur on specific topics and the overall Plan through various methods including public meetings, newsletters, forums, conference calls, webinars, etc. The involvement will utilize appropriate technology to best involve the maximum number of stakeholders.

Evaluation Criteria

Evaluation Criterion A – Need for a Drought Contingency Plan or Plan Update

Describe the severity of the risks to water supplies that will be addressed in the Drought Contingency Plan.

What are the risks to water supplies within the applicable geographic area that will be addressed in the plan or plan update, and how severe are those risks?

In 2015, the state suffered its warmest and driest winter since the late 1800s, when Utah was still a territory. The lowest-elevation snowpack had melted by May 1st, and most of the higher altitudes quickly followed. Drought has continued to impact the water supply and will continue to have an effect on how WBWCD plans for the future. Utah's state water report characterized 2015 as "a dead skunk" and one of Utah's water strategists warns, that the ongoing, dry conditions are "the new normal". In 2015 federal officials declared that eight counties in Utah has suffered enough losses from drought to request emergency loans.

Utah has had six drought years out of the past ten years. The severity of sustained drought is what is having a real impact on Utah and on WBWCD's service area. WBWCD has had to reduce allocations to all of its users both retail and wholesale because of drought. Scientists have said that droughts in Utah are not random; "there is a natural periodicity to them — distinct, multi-year wet and dry cycles of various durations." Climate cycles happen slowly in scale of a human lifetime, and an impending wet period doesn't mean Utah is in the clear when it comes to drought. Climate models show that with human activities leading to a warmer planet, the West is going to continue to become drier overall.

U.S. Drought Monitor March 29, 2016 d Thursday, Mar. 31, 2016) Valid 8 a.m. EDT Utah 65.81 30.09 12.79 0.00 Last Week 65.78 30.09 12.79 0.00 Months Ago 77.32 53.37 22.34 0.00 Start of lend ar Yes 77.32 53.37 22.34 0.00 0.00 22.68 Start of Water Year 88.08 63.03 26.82 0.00 00.00 99.05 51.83 9.32 Intensity: D0 Abri D4 Exceptional Droug D1 Moderate Drought D2 Severe Drought Author: Brad Rippey U.S. Department of Agriculture USDA SP 👔 m http://droughtmonitor.unl.edu/

As indicated previously WBWCD's rights are junior rights. This puts the District's water resources and all of its customers in jeopardy because they are more vulnerable to shortages during droughts. With the District providing wholesale treated M&I water to so many customers along the Wasatch Front, and serving a population of nearly 600,000 people, maintaining the water supplies during times of drought is critical to prevent shortages to residents, institutions, businesses, and industries. WBWCD's Wasatch Front service area population is anticipated to grow to nearly 1,000,000 people by 2060.

» Describe the existing or potential drought risks to specific sectors in the project area (e.g., impacts to agriculture, environment, hydropower, recreation and tourism, forestry). Whether there are local economic losses (past, ongoing, or potential) associated with drought conditions (e.g., business, agriculture, reduced real estate values)

Agricultural impacts and risks: An extended drought can have debilitating effects on both rural and urban populations. As the moisture content of the soil diminishes, agriculture is quickly affected. The primary effects for the WBWCD area is loss of crops, livestock, and water used for consumption. The most significant risk is to the agriculture and secondary water users. They are

Figure 2 Utah Drought Information from U.S. Drought Portal www.drought.gov the first on the list to have their water shares reduced and/or cut all together based on the availability of water.

Over the past five years, as WBWCD has been experiencing drought conditions, the irrigation water has been turned off up to three weeks early in the season. Agricultural users are impacted by reduced watering time. WBWCD has had a number of complaints from large food producing

farms, that have seen an impact on their crop yields because of the reduced watering time. Many of the food crops rely on water later in the irrigation season in order to get the crop to ripen (e.g. melons, pumpkins, squash). Farmers who rely on the late water have had to leave the crops in the fields because they will not ripen without water. The risk from drought is exacerbated in that reduced income on farms means less employment for laborers which in turn has an impact on the local economy.

Photo 5 East Canyon Reservoir



Recreational and Tourism Impact and Risks:

Pineview, East Canyon, Willard Bay, Echo, and Rockport Reservoirs are all sources of recreation as well as the Weber and Ogden Rivers. Drought impacts these recreation facilities as well as the many ski resorts which depend upon the water from the reservoirs and rivers for recreation activities. Several assessments performed by the Utah Governor's Office of Management and Budget have identified the ski industry, a significant component of the Wasatch Front regional economy, as particularly vulnerable to drought and climate change. A recent study by the National Ski Association examined the economic impacts of low snowfall years, similar to what might be expected under drought and climate change, on the U.S. winter tourism economy. Based on observed declines in skier visits from high to low snowfall years Utah saw a 14% decline, the study estimated losses in ski resort revenues ranging from \$11 million to \$154 million, with corresponding losses of jobs and declines in other economic value. Many of these recreational options are diminished during a drought and/or discourage tourists from visiting a drought-impacted area.

Economic Impacts and Risks: The impact to the Great Salt Lake shoreline extractive industries is just one of many economic impacts. Industries withdraw water that they are entitled to take under secured water rights. As the drought cycles continue, companies who depend on the lake for water are having to dredge canals to connect their intake pumps with the Lake, which is moving farther and farther away from their operations. Morton Salt, for example, has applied to dig a 10-foot-deep trench from its south shore plant an additional 1.8 miles to the water. Brine shrimpers are dredging their harbors to maintain access for the boats. Five companies extract

salt, magnesium, potash and other minerals in massive evaporation ponds, producing 4.4 million tons a year valued at \$685 million and supporting almost 2,000 jobs. All told, the lake supports \$1.3 billion in annual economic activity — on par with the ski industry. The lake economy includes recreation, such as boating, birding and hunting, and the winter harvest of brine shrimp eggs, worth about \$34 million a year.

» Whether there are public health concerns or social concerns associated with existing or potential drought conditions.

The Weber River Drainage area is listed as an impaired water due to high phosphorus and nutrients pollutant and sediment which are within the rivers and reservoirs within the drainage. Many sections of the River are under Total Maximum Daily Load (TMDL) restrictions for various nutrients. Drought conditions continue to exacerbate and contribute to poor water quality and impact the health of many water bodies. In a study by Centers for Disease Control and Prevention (CDC) entitled "*When every drop counts: protecting public health during drought conditions – a guide for public health professional*" the CDC indicated that "drought-related increases in dust deposits in aquatic ecosystems can lead to algal blooms, which have been associated with human illness among persons exposed to these blooms during recreational activity." Recreational waters – rivers and reservoirs – during drought are at a greater risk for waterborne disease caused by bacteria, protozoa, and other contaminants (e.g., chemicals and heavy metals). As the levels of surface waters used for boating, swimming, and fishing drop, the likelihood of injury increases.

Other areas of public health impacted by drought include at-risk individuals who have special health needs, lung issues, or special needs in the event of a public health emergency. With the Great Salt Lake dropping to near-record lows Air Quality forecasters are seeing more dust events blowing from the Great Salt Lake in the winter and spring seasons. As winds blow in from the south, across Farmington Bay towards Antelope Island, dust blown form the exposed beds of the Great Salt Lake become problematic in that the dust blows only a few miles before it reaches Wasatch Front cities. Experts say that this dust is made up of finer particulates that can enter the respiratory tract and embed in the lungs. These fine particulate pollutions contribute to breathing problems during winter inversions.

Another area of public health concern includes people who depend on water from private wells and small or poorly maintained municipal and private systems as they are at risk of adverse drought-related health effects because these systems are more susceptible to environmental changes. As drought conditions continue the water levels in these wells continue to drop below the levels of the existing pumps. It then becomes costly for these individuals or municipalities to lower these pumps in order to pump water from these wells. The individuals who have private pumps are then forced to connect to municipal systems if that option is available. In many cases, that option is not available to connect to municipal systems.

» Whether there are environmental concerns, such as existing or potential impacts to endangered, threatened or candidate species.

The environment in the Weber River Basin and habitats of sensitive and listed species are impacted by drought conditions as many of them rely on the water availability within the Weber River and Ogden River Watershed. The Great Salt Lake and Bear River Bird Refuge both rely on the water that comes from the upper reservoirs within the WBWCD service area. The water coming downstream contributes to the wetlands and water bodies that attract thousands of species of birds, fish, animals, and aquatic plants. For the past decade, the Great Salt Lake's water has hovered at chronically low levels after a prolonged dry spell and Utahns' unrestrained use of water. During the nearly 160 years that records have been kept, the lake level has fluctuated about 20 feet — from a high of 4,211.6 feet above sea level in 1986 to the record low of 4,191.3 feet set in 1963. Today the lake level sits at 4,193.8 feet. "With all the diversions upstream and increased usage by mineral extraction, which is new, the lake levels could hit a new historic low", according to Craig Miller, an engineer with the Utah Division of Water Resources.

The Great Salt Lake, with properties of an inland sea, provides more than a third of the world's supply of the cysts, which aquaculture industries hatch into tiny shrimp and feed to fish and prawns. At the same time, the lake sustains one of the West's crucial stopovers for migratory birds. Up to 5 million phalarope, avocet, grebe, gull, ibis and other water birds — more than 200 species in all — visit the lake to nest, rest and feed during their seasonal journeys that take them as far as Argentina. Near-surface salt concentrations in the lake's south arm have increased to around 17 percent

Photo 6 Great Salt Lake Antelope Island

Salt and mineral deposits build up in small pools off the former shore of Antelope Island State Park as the water becomes more highly concentrated with minerals. Photo from: www.standard.net



— four to five times saltier than the ocean. Drought has an impact on water that is available to fill the lake and the lack of it effects all who rely on the lake to provide food, recreation, jobs, and industry.

The risk to the environment is also significant in regards to air quality. Changes in soil moisture can change the energy balance in the atmosphere, and influence the height to which air pollutants mix in the atmosphere. Utah and the Wasatch Front specifically have increasing issues with air pollution. Drought affects air quality in many ways: there's more dust, a greater chance of smoke-belching wildfires, and no rain to wash pollutants out of the air. Storms not only clean the air; they also bring in fresh air which dilutes the smog. The past year alone the Wasatch Front has endured over three weeks of health alerts triggered by the concentration of particulates in the air.

Secondary effects of drought may include fires, flash flooding, landslides, and desertification, the last of which results from fertile land increasingly becoming a desert as a result of drought and wind erosion of soils. Wind-blown ash and dust can also compromise the air quality of fardistant areas. In these ways, even localized droughts can have global consequences.

» Whether there are other drought-related risks not identified above (for example, tensions over water that could result in a water-related crisis or conflict, or risks to tribes).

As mentioned previously, Utah has had six drought years out of the past ten years. The severity of the extended drought is having a real impact on the agricultural and secondary water users. WBWCD has had to reduce allocations to all of its users both retail and wholesale because of drought. The water shortages have caused significant tension between water users in different basins. The Provo River Project diverts water from the high reaches of the Weber River for multiple uses on the Provo River and has been a source of contention and conflict especially during drought years. The Provo River Water Users Association historically has drawn between 30,000 to 40,000 acre feet of water per year out the Weber River which is then delivered to Utah County and Salt Lake County. It is the overall feeling that if the Weber River Water Users Association should not be allowed to take their full shares of water. The Drought Contingency Plan is anticipated to help educate and evaluate the real impacts of drought in order to alleviate water-related conflicts such as this.

Describe existing or potential drought conditions to be addressed in the Drought Contingency Plan.

» Will the proposed plan or plan update address a geographic area that is currently suffering from drought or which has recently suffered from drought? Please describe existing or recent drought conditions, including when and how long the area has experienced drought conditions (please provide supporting documentation, [e.g., Drought Monitor, <u>http://droughtmonitor.unl.edu</u>]).

The Wasatch Front area of the District is still experiencing "Moderate Drought" according to the U.S. Drought Monitor (http://droughtmonitor.unl.edu]). As mentioned previously the 2015 snowpack was the driest winter since the late 1800's – and ongoing dry conditions may be "the new normal". Fortunately, the water supply outlook for the Weber River Basin has improved significantly in the past year. An abnormally wet summer and a near average 2015-2016 winter snowpack has helped the drought situation significantly.

» Describe any projected increases to the frequency, severity, or duration of drought in the geographic area resulting from climate change. Please provide support for this response (e.g., reference a recent climate change analysis, if available).

A technical paper titled "Planning for an Uncertain Future: Climate Change Sensitivity Assessment Toward Adaptation Planning for Public Water Supply", written by Tim Bardsley et al, describes how water supplies in the Northern Utah area could be impacted by the future climate-driven hydrologic changes. Their findings indicate that the most significant water management impacts due to climate change will be the shift to an earlier runoff and possibly a reduced runoff volume, which threaten a water supplier's ability to maintain adequate stream flow and storage to meet late-summer water demands. See Attachment D "Bardsley Technical Paper" for more information.

Describe the status of any existing planning efforts.

» Please explain how this drought contingency plan or plan update relates to other planning efforts ongoing or recently completed in the planning area and how this effort will complement, not duplicate ongoing or completed planning efforts. For plan updates, please explain how the update builds on and adds value to the existing plan.

The District is completing an update to its Supply and Demand Study which is periodically updated to project future water demands within the District's service area and to determine if existing and future supplies are adequate to meet those needs. The proposed Drought Contingency Plan will provide much better insight than has been available in the past to the District and other water managers in the area as to the reliability of their supplies in drought situations. The drought responses in the District's existing Emergency Management Plan are addressed with other emergency situations such as loss of infrastructure. The proposed plan will complement the existing emergency actions by providing specific drought monitoring procedures and will set in place specific mitigation actions and response actions. This plan will greatly benefit the District and stakeholders in the District's service area.

Evaluation Criterion B – Inclusion of Stakeholders

Describe the stakeholders to be involved in the planning process. Please address the following:

» Identify stakeholders in the Planning area who have committed to be involved in the Planning process and describe their commitment. Do these stakeholders represent diverse interests (e.g., agricultural, municipal, environmental, tribal)? Support could include letters from stakeholders committing to be involved in the Planning process.

The WBWCD service area includes Summit, Morgan, Weber and Davis Counties in northern Utah covering an area of over 2,500 square miles. Within the District's service are there are a diverse range of interests. The majority of the surface water use in the Weber River Basin is used for agricultural purposes, however rapid population growth is converting some of the agricultural water use to M&I uses including secondary uses (untreated water used for residential landscapes). The area includes densely populated cities along the Wasatch Front, large industrial facilities, as well as small communities and rural areas along the Wasatch Back. The District has reached out to a diverse group of stakeholders who have committed to be involved in the planning process.

» Describe stakeholders in the Planning area who have expressed their support for the Planning process, whether or not they have committed to participate. Support can include letters of support from stakeholders expressing support for the Planning process.

The District provides wholesale water to over 50 M&I customers. The District meets with these Customer Agencies annually to discuss issues affecting water supply in the area. During the

preparation of this application, the District held its annual Customer Agency meeting and discussed its intention to prepare a Drought Contingency Plan and to include and update the Customer Agency stakeholders in the planning process. Many of the Customer Agencies expressed interest in participating. The District will communicate the status of the Drought Contingency Plan in its regular correspondence and at annual meetings to continue garnering commitment from all the interested stakeholders.

The District will also reach out to additional parties if successful in obtaining grant funds. The following table provides a summary of some of the anticipated stakeholders:

| Stakeholder | Letter of Commitment | Commitment | Interest |
|-------------------------------------|-------------------------|-------------------|---|
| WBWCD Planning Lead, | ✓ | Task Force Member | M&I, Secondary & Agricultural |
| Ogden City | ~ | Task Force Member | M&I Water Supply |
| Layton City | \checkmark | Task Force Member | M&I Water Supply |
| Davis & Weber Counties Canal Comp | \checkmark | Task Force Member | Secondary & Agricultural Supply |
| Utah Division of Wildlife Resources | ✓ | Task Force Member | Environmental – Aquatic Species |
| Utah Division of Water Resources | \checkmark | Task Force Member | Statewide Water Supply Planning |
| Great Salt Lake Minerals | | Task Force Member | Industrial Water User |
| Trout Unlimited | \checkmark | Task Force Member | Environmental |
| Western Water Assessment | \checkmark | Task Force Member | University Based Applied Research Program |
| COG/ Elected Officials | | Task Force Member | Represent the average resident |
| Weber River Water Users Association | ✓ | Task Force Member | Represent all types of users |
| Chamber of Commerce | | Task Force Member | Represents the Businesses |
| Morgan County | | Advisory Member | County in District |
| Summit County | | Advisory Member | County in District |
| Davis County | | Advisory Member | County in District |
| Weber County | | Advisory Member | County in District |
| Utah State Parks | | Advisory Member | Recreation |
| Park City | | Advisory Member | M&I Water Supply |
| Bountiful City | | Advisory Member | M&I Water Supply |
| Pacificorp | | Advisory Member | Hydroelectric Facilities in Weber River Drainage |

 Table 2 Stakeholder List

» Describe what efforts that you will undertake to ensure participation by a diverse array of stakeholders in the development of a plan or plan update. If specific stakeholders have not yet been identified, or if some sectors are not yet represented, explain how you will accomplish this in the first few months after an award. Support could include a description of key stakeholder interests in the planning area and what efforts that you will undertake to engage them in the planning process, including outreach to stakeholders or collaborating with other groups or partners

The entities listed as Task Force members in the table above have been contacted and are interested in participating as Task Force members in the Drought Contingency Plan. The anticipated Task Force includes agricultural water suppliers, municipal suppliers, state resource agencies, environmental groups, as well as business and industries. One of the first efforts of this Task Force will be to identify any other sectors that are not represented in the group and seek their input either in the Task Force or as Advisory members.

WBWCD and their consultant team's approach is to engage stakeholders in a manner that is interest-based, objective-driven and problem-solving oriented. By engaging stakeholders as an impartial neutral party, the District can develop a partnership and project support. By working with stakeholders in a continuous and meaningful way WBWCD will have the ability to reduce uncertainty, and effectively capture and identify stakeholder goals and objectives. One of the goals of engaging stakeholders includes promoting participation in the process and building community consensus. This will allow WBWCD to improve communication and understanding among decision-makers, community residents, local businesses and other stakeholders.

The communication methods for this planning process will range from one-on-one interaction to visual communication in online media. WBWCD and its consultant team has graphic specialists on-hand to aid in all forms of visual, online, video and print communication that will be used throughout the planning process.

Evaluation Criterion C – Project Implementation

Describe the approach for addressing the six required elements of a Drought Contingency Plan within the two-year timeframe.

» Describe how each of the six required elements of a Drought Contingency Plan, as applicable, will be addressed within the two-year timeframe.

The six elements are described previously under Six Elements for Drought Contingency Planning under the Technical Project Description section.

» Please include an estimated project schedule that shows the stages and duration of the proposed work including major tasks, milestones, and dates.

The major tasks, milestones and estimated dates are described below:

1. Contract Develop – enter into a contract between WBWCD and Reclamation (*September – October 2016*)

- Contract with Consultants Prepare RFQ to hire and contract with a team of consultants to work with WBWCD to engage stakeholders, facilitate the task force and stake holder meetings, develop planning documents, and initiate the development of the Historical Data Management System Database. (*August – September 2016*)
- 3. Develop Detailed Work Plan development of a detail work plan in conjunction with Reclamation, WBWCD, and the consultants contracted to help facilitate the planning process. Development of tasks and subtasks to be used to guide the Plan over the two-year schedule. (*September October 2016*)
- Authorize the Task Force, Advisory Committee, and Involve Additional Stakeholders

 Receive commitment from those who were identified as being part of the Task
 Force. Identify additional stakeholders and describe the opportunity for them to be involved as part of the advisory Committee and participant in the planning effort.
 (September October 2016)
- 5. Inventory and Assemble Existing Data Inventory available information regarding existing drought planning in the District and compile available data that will be used in the Historical Data Management System. (*October 2016 April 2017*)
- Conduct Vulnerability Assessment Work with consultants, Utah Division of Water Resources, Utah State University, and Western Water Assessment to conduct vulnerability assessment to evaluate the risks and impacts of drought to the Weber Basin. (*January –August 2017*)
- Evaluate the Existing Operations and Water Supplies The types of evaluations and tools to be used are described in the "Mitigation Actions" and "Response Actions" listed in the Six Elements for Drought Contingency Planning section. Additional evaluations and tools used will continue to be developed throughout the planning process. (*January – August 2017*)
- 8. Identify Potential "Mitigation Actions" These actions will be listed and described under this task based on work conducted in Task 6 and 7. Under this task WBWCD and their team will prepare cost estimates, schedules, implementation requirements, permitting, environmental compliance, responsible parties, stakeholder involvement and prioritization of actions. As these actions are to be implemented prior to a drought, there may be structural actions as well as non-structural which will require long lead times and increased funding. (*August November 2017*)
- 9. Identify Potential "Response Actions" these actions will be listed and described under this task based on work conducted in Task 7. Under this major task will be subtasks to prepare cost estimates, schedules, implementation requirements,

responsible parties, challenges to implementation, stakeholder involvement and prioritization of actions. As these actions are to be implemented during a drought these are most likely to be non-structural actions that can be implemented immediately with little or no permitting or environmental issues. (*November 2017 – March 2018*)

- 10. Prepare a Draft Report of the Vulnerabilities and Actions After the above tasks are completed a draft interim report will be prepared documenting and describing the work that was conducted in Tasks 3 through 9 as a mid-study milestone so that stakeholders can assess and comment on how the Plan is being developed and the content. The Advisory Committee will be involved and have the chance to address concerns and give comments in preparation of the final draft report. (*February June 2018*)
- 11. Develop Operational and Administrative Framework Once the draft report is completed, the operational and administrative framework to implement the Plan will be developed. (*May 2018*)
- 12. Describe Plan Update Process The process to be conducted and trigger(s) to initiate an update to the Plan will be described within the plan. (*May 2018*)
- 13. Draft Final Plan Report A draft final report will be prepared for the 30-day review simultaneously by Reclamation and by the stakeholders. (*July August 2018*)
- 14. Finalize the Plan Report The last task will be to finalize the Plan report obtain approvals by the Task Force and submit to Reclamation. (*July September 2018*)
- » Describe the availability and quality of existing data and modal applicable to the proposed plan or plan update. Your response to this sub- criterion should demonstrate your understanding of the tasks required to address the required elements of a Drought Contingency Plan under this program.

The District has available reservoir records, aqueduct flows, well pumping, and other critical data in its SCADA system for the past 7 to 10 years. Electronic records (mostly in excel) are available for the past 15 to 20 years and before that period records are available in written form. The District has a high level of confidence in this information and in the Weber River model which will be used in streamflow modeling to simulate "pre instrumental" period flows and climate change conditions. This model and information was developed by the Utah Division of Water Resources (UDWR). UDWR will assist WBWCD in performing model scenarios for the Plan and this data will be collected and included in the Historical Data Management System Database.

» Identify staff with appropriate technical expertise and describe their qualifications. Describe any plans to request additional technical assistance from Reclamation, or by contract.

Development of the Plan will be conducted under the direction of WBWCD staff along with a team of contracted consultants who will do the following:

- » Facilitate the development of the database
- » Conduct the task force and advisory meetings
- » evaluate and provide scientific and other types of assessments along with other required in formation and data
- » Develop and populate the database
- » Develop educational information packets, website, flyers, etc.
- » Prepare the draft for review and facilitate the comments and changes that will be requested
- » Prepare and print the final plan for approval

WBWCD staff who will participate in the development of the Plan will included the General Manager, two of the Assistant General Managers, Chief of Engineering and construction, technical staff and administrative staff. These individuals have institutional knowledge and have been on the forefront of the operations of the District. They also understand the detail data of water supply and usages and impacts of drought to those that they serve and the facilities that they manage. WBWCD will provide baseline data from which the plan elements will be addressing.

WBWCD staff is expected to be supported by a multi-discipline team of water resources planners, hydrologists, climate change experts, environmental scientists, and public involvement specialists. It should be noted that the consulting team members described below have worked closely with WBWCD in the preparation of this grant proposal. However, if this grant is awarded, there may be a competitive process to select the consulting team that will support WBWCD with the preparation of the Drought Contingency Plan.

Possible participants with in WBWCD Staff and Consultant Team:

Seth Arens (Western Water Association) is a Utah Research Integration Specialist for WWA and has a diverse background in science, including research experience in ecosystem and plant physiological ecology, snow hydrology and atmospheric science. He worked as an environmental scientist for the Utah Division of Air Quality, where he developed research program to assess the extent and causes of ozone pollution in Utah and maintained Utah's air quality monitoring network from 2010-2015. Prior to working in Utah, Seth studied impacts of climate change on ecosystem structure and carbon balance of Arctic ecosystems in Alaska and Greenland. Seth has a BA in Biology and Environmental Policy from Colby College in Waterville, ME, an MS in Biological Science from the University of Alaska-Anchorage and an MS in Biology from the University of Utah.

- » Dan Adams (The Langdon Group) Daniel R. Adams, M.O.B., is a mediator/facilitator, public relations specialist, and organizational development consultant. His practice is shared between private industry and agency work. Mr. Adams is known for his ability to look at problems from a holistic approach that incorporates his expertise in business, conflict resolution, organizational behavior, and environmental public policy. His background and experience help to build trust in communities and help parties create holistic solutions that address needs and interests. Mr. Adams has mediated over 100 cases across the United States. Dan has a BS in Business Management from Linfield College and a MA in Organizational Behavior from Brigham Young University.
- » Josh King (The Langdon Group) Joshua King is a collaborative professional with a strong understanding of the theory and practice of communication, negotiation, mediation and dispute systems design, particularly in the context of relational and organizational management and administration. Josh has consulted and worked with universities, the Utah State Legislature, Utah Attorney General's Office and many organizations and individuals on effective dispute system design and conflict management. He has extensive experience facilitating dialogue with stakeholders, brokering agreements, and drafting proposed legislation. Josh has mediated over one-thousand conflicts and regularly presents at conferences and workshops around the state and country. He has a proven ability to constructively engage with others to build meaningful and valuable relationships and manage conflict and negotiations creatively, efficiently and effectively.
- » David E. Rosenberg (Utah State University) David Rosenberg is an Associate Professor for the Dept. of Civil & Env. Engineering and Utah Water Research Laboratory at Utah State University. His work uses systems analysis – simulation and optimization modeling and hydro informatics – to improve the planning, design, and operation of water systems. His experience in systems analysis, optimization and simulation modeling and data management for water and resources management, infrastructure expansions, demand management, and conflict resolution at scales ranging from individual users to regional water systems leads to his success in his field. He has expertise in River Basin Management, Water Quantity, Water Resources Engineering, and Wetlands/Stormwater planning. His work spans spatial scales from individual users (such as households) to transboundary river basins and integrates hydrological, engineering, economic, environmental, and institutional system aspects and uncertainties to mathematically model and inform water management. Research projects include areas in the Middle East, California, and Utah.
- » Database Expertise (WBWCD Staff) WBWCD in-house IT Departments operates and manages databases similar to those proposed for use with the Historical Data Management System. This work will be completed in house.

» WBWCD Staff include Darren Hess, PE, Assistant General Manager, Derek Johnson, PE Water Resources Analyst, Chris C. Hogge, PE, Power & Irrigation Manager, and Brad Nelson, PE, Municipal & Industrial Water Manager, Mike Alverson, IT Specialist, Mark D. Anderson, PE, Assistant General Manager, and Scott W. Paxman, PE, Assistant General Manager

Evaluation Criterion D - Nexus to Reclamation

Please provide the following information regarding the connection to a Reclamation project, facility, or activity, or Department of the Interior Initiative: » Is there a Reclamation project, facility, or activity within the planning area?

Yes. The Plan is being prepared for water users from the Weber Basin Project which is responsible for the sale and delivery of Project water, operation and maintenance of Project facilities and is contracted with the U.S. Government for repayment of reimbursable costs of the Project. Task Force Members will also include members of the water user's associations that operate the Weber River Project and the Ogden River Project

» Is the planning area in the same basin as a Reclamation project, facility, or activity?

Yes. The planning area is within the Weber Basin Water District boundaries which contains the Weber River Project, Weber Basin Project and the Ogden River Projects which are Reclamation project. See Attachment A "WBWCD Service Area Map" for boundaries and facilities.

» In what way will the proposed plan or plan update benefit a basin where a Reclamation project, facility, or activity is located?

The proposed plan will benefit the entire Weber River Basin which contains the three projects described above and also delivers water to the Provo River Project which is primarily located outside of the Weber River Basin. The proposed plan will allow the District and other stakeholders in the basin to "build resilience" to drought by understanding the risks and putting in place a framework that will allow better monitoring and prediction of droughts, and put in place mitigation and response actions.

» Does the proposed plan or plan update support implementation of a relevant Department of the Interior initiative?

Yes, the planning process will work to address the Department of Interior's "Open Government Initiative". As WBWCD initiates the planned public involvement process for the Drought Contingency Plan it will help create better relationships between government and citizens and be more responsive to their needs. The stakeholder collaboration process is designed to leverage more effective and efficient transparency by engaging the public in decision making.

Existing Drought Contingency Plan

» If there is an existing drought contingency plan addressing the relevant geographic area, please attach a copy (or relevant sections) of the existing plan. (Note, this will not count against the application page limit).

WBWCD has an Emergency Water Supply Management and Response Plan (EWSMRP). This plan provides for several levels and types of water shortage and the associated response of increasing severity as the water supply conditions warrant. EWSMRP is very limited in helping WBWCD understanding drought monitoring or in defining the stages and duration of drought.

The Emergency Water Supply Management and Response Plan allows for the General Manager and Board of Trustees of WBWCD to determine the severity of drought or water shortage and make the appropriate judgment pertaining to the actions. However, this Plan does not really allow them the type of information that would give them the ability to really understand the severity of the drought or the historical data to understand the future impacts of the drought. The development of the Drought Contingency Plan would do that for them.

Required Permits or Approvals

No Permits or Approvals will be required.

Letters of Support

Task Force Member Commitment (See Attachment E "Letters of Support" for copy of the letters):

- Weber River Water Users' Association, Ivan Ray, General Manager
- Utah Division of Wildlife Resources, Paul Thompson, Northern Region Aquatics Manger
- Ogden City, Utah, Kenton Moffett, P.E., Public Utilities Manger
- Layton City, Utah, James Woodruff, P.E., City Engineer
- Davis and Weber Counties Canal Company, Ivan Ray, General Manager
- Western Water Assessment, Seth Arens, Research Integration Specialist
- Utah Department of Natural Resources, Eric Mills, P.E., Director
- Trout Unlimited, Paul Burnett

Official Resolution

Weber Basin Water Conservancy District will submit the official resolution within 30 days from the required due date.

Funding Plan and Letters of Commitment

Funding Plan

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

The District will fund all non-Federal contributions entirely with Weber Basin Water Conservancy District operating revenue and in-kind services from the District's staff time.

2. Describe any in-kind costs incurred before the anticipated project start date that you seek to include as project costs. Include:

WBWCD will not have any pre-application costs included in the budget.

What project expenses have been incurred

a) How they benefitted the project

N/A

b) The amount of the expense

N/A

c) The date of cost incurrence

N/A

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

No letters of commitment will be necessary as all cost sharing will come from Weber Basin Conservancy District operation expense account and WBWCD in-kind labor

4. Describe any funding requested or received from other Federal partners. Note: other sources of Federal funding may not be counted towards your 50 percent cost share unless otherwise allowed by statute.

N/A

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

No other funding requests have been made. WBWCD already has the funds for their cost-sharing portion for this project.

Attachment E



Davis and Weber Counties Canal Company

138 West 1300 North ▲ Sunset, Utah 84015-2918 ▲ Office: (801)774-6373 ▲ Toll-Free: (877)257-3209 ▲ Fax: (801)774-5424

March 23, 2016

Tage I. Flint, General Manager/CEO Weber Basin Water Conservancy District 2837 East Hwy 193 Layton, UT 84040

Dear Tage,

The Davis and Weber Counties Canal Company is pleased to write this letter in support of your grant application that is being submitted to the WaterSMART program of the Bureau of Reclamation to develop a Drought Contingency Plan under the Drought Response Program. We applaud your efforts to increase the efficiency of your system and to enable your system to become more drought resilient. We are also looking forward to being a stakeholder in this process and to participate on Weber Basin's Drought Planning Task Force. We feel like being involved on this task force will be a good opportunity to collaborate on this important issue of drought response planning. As population growth continues and agricultural needs remain constant, there is the necessity for conservation and maximization for best water use practices due to less water availability resulting from climate change impacts.

The Davis and Weber Counties Canal Company recognizes the importance of a drought contingency plan in our often water-short basin, particularly when this basin has had several years of sustained drought. We are also reassured that planning for drought, in advance of a crisis, is far more cost effective than emergency response. The Davis and Weber Counties Canal Company has senior water rights on the Weber River distribution system, but works closely with Weber Basin Water Conservancy District for culinary and agriculture needs due to the changing dynamics as land conversions take place in order to accommodate municipal and industrial needs. The "Company" recognizes Weber Basin as an important water provider for all un-appropriated water in the five counties that they serve.

We strongly support your grant application and appreciate the advancements it will make in drought resiliency and improving water efficiencies in the District boundary of Weber Basin Water Conservancy District within the Weber River Basin drainage.

Sincerely,

Ivan J. Ray General Manager

Davis and Weber Counties Canal Company 138 West 1300 North Sunset, Utah 84015



April 4, 2016

Tage I. Flint, General Manager/CEO Weber Basin Water Conservancy District 2837 East Hwy 193 Layton, UT 84040

Dear Mr. Flint,

Western Water Assessment (WWA) is pleased to support your grant application submitted to the WaterSMART program of the Bureau of Reclamation to develop a Drought Contingency Plan under the Drought Response Program. WWA has worked with the Weber Basin Water Conservancy District since 2014 as a scientific partner to help the District better understand drought through paleo-climate reconstructions of historic stream flows and through projections of future water availability in the Weber Basin.

WWA recognizes the importance of a drought contingency plan in the Weber Basin and that it must consider the most current climate science of both future and past conditions within the Basin. WWA can contribute to the successful completion of a Drought Contingency Plan in at least two substantive ways. One, WWA will assist the District in modeling future water availability within the Basin using scenario-based predictions of future climate and modeled projections of future stream flows of the Weber River using NOAA Colorado Basin River Forecasting Center models. And two, WWA will help the District incorporate information on paleo-drought obtained from tree-ring-based reconstructions of Weber River stream flow into future planning. WWA will strive to support the District in preparing their Drought Contingency Plan in other requested manners that pertain to our expertise in research related to climate variability, water resources and its application to water resource management

We strongly support your grant application and appreciate the advancements it will make in drought resiliency and improving water efficiencies in the District boundary of Weber Basin Water Conservancy District.

Sincerely,

Seth Arens Research Integration Specialist Western Water Assessment



Conserve

March 23, 2016

Tage I. Flint, General Manager/CEO Weber Basin Water Conservancy District 2837 East Hwy 193 Layton, UT 84040

Dear Tage,

The Weber River Water Users' Association is pleased to write this letter in support of your grant application that is being submitted to the WaterSMART program of the Bureau of Reclamation to develop a Drought Contingency Plan under the Drought Response Program. We applaud your efforts to increase the efficiency of your system and to enable your system to become more drought resilient. We are also looking forward to being a stakeholder in this process and to participate on Weber Basin's Drought Planning Task Force. We feel like being involved on this task force will be a good opportunity to collaborate on this important issue of drought response planning. As population growth continues and agricultural needs remain constant, there is the necessity for conservation and maximization for best water use practices due to less water availability resulting from climate change impacts.

The Weber River Water Users' Association recognizes the importance of a drought contingency plan in our often water-short basin, particularly when this basin has had several years of sustained drought. We are also reassured that planning for drought, in advance of a crisis, is far more cost effective than emergency response. The Weber River Water Users' Association has senior water rights on the Weber River distribution system, but works closely with Weber Basin Water Conservancy District for culinary and agriculture needs due to the changing dynamics as land conversions take place in order to accommodate municipal and industrial needs. The "Association" recognizes Weber Basin as an important water provider for all un-appropriated water in the five counties that they serve.

We strongly support your grant application and appreciate the advancements it will make in drought resiliency and improving water efficiencies in the District boundary of Weber Basin Water Conservancy District within the Weber River Basin drainage.

Sincerely,

Ivan J. Ray General Manager

Weber River Water Users' Association 138 West 1300 North Sunset, Utah 84015



State of Utah

DEPARTMENT OF NATURAL RESOURCES

MICHAEL R. STYLER Executive Director

Division of Water Resources ERIC L. MILLIS Division Director

March 28, 2016

Tage I. Flint, General Manager/CEO Weber Basin Water Conservancy District 2837 East Highway 193 Layton, UT 84040

Tage:

The Utah Division of Water Resources is pleased to support the grant application you are submitting to the WaterSMART program of the Bureau of Reclamation to develop a Drought Contingency Plan. We applaud your efforts to become more drought resilient. We look forward to being a stakeholder in this process and hope to be a valuable member of Weber Basin's Drought Planning Task Force. We look forward to sharing our expertise with the Weber River Simulation Model to help make important drought-related decisions and vulnerability assessments.

The division recognizes the benefits of drought contingency planning to the state. We are especially pleased to see drought planning take place within the Weber River watershed, and are confident that planning for drought, in advance of a crisis, is more effective than emergency response.

We strongly support your grant application and appreciate the advancements it will make in drought resiliency within the boundary of Weber Basin Water Conservancy District.

Eric L. Millis, P.E. Director





Trout Unlimited 1777 N Kent Street, Suite 100 Arlington, VA 22209 (703) 522-0200

March 23, 2016

Tage I. Flint, General Manager/CEO Weber Basin Water Conservancy District 2837 East Hwy 193 Layton, UT 84040

Dear Tage,

Trout Unlimited is pleased to support your effort to develop a Drought Contingency Plan under the Bureau of Reclamation's WaterSMART Drought Response Program. We appreciate the importance of improving the efficiency of your system and becoming more resilient to drought in our water-limited basin. We are also looking forward to being a stakeholder in this process and to participate with Weber Basin as part of the Drought Planning Task Force. This task force will be a good opportunity to collaborate on the vital issue of drought response planning. This type of planning is important as it will permit all stakeholders to better understanding how drought can affect the future of the economy, agricultural and residential use, and the environment.

Trout Unlimited staff have worked closely with the Weber Basin Water Conservancy District on a number of projects in Utah, including the development of the state water strategy, the Weber River Partnership and several on-the-ground projects that have improved watershed conditions and habitat for native fish.

As a conservation organization with an emphasis on wild and native trout and their watersheds, Trout Unlimited has a keen interest in developing strategies to cope with drought. Drought planning is one step that we can take to ensure the resiliency of the Weber River System and its fisheries. Not only is the Weber River an important water source for population centers in northern Utah, but also the fisheries in the Weber River are important to northern Utah's economy, they provide important recreational opportunities and they represent a unique ecological history.

We strongly support your grant application and appreciate the advancements it will make in drought resiliency and improving water efficiencies for the Weber Basin Water Conservancy District and the Weber River Basin.

Sincerely,

Paul Burnett Utah Water Project Director and Weber River Restoration Coordinator 801-436-4062

Conserving, protecting, and restoring North America's coldwater fisheries



State of Utah

DEPARTMENT OF NATURAL RESOURCES

MICHAEL R. STYLER Executive Director

Division of Wildlife Resources GREGORY J. SHEEHAN Division Director

March 29, 2016

Tage I. Flint, General Manager/CEO Weber Basin Water Conservancy District 2837 East Hwy 193 Layton, UT 84040

Dear Tage:

As the Aquatics Manager in Northern Utah for the Utah Division of Wildlife Resources (UDWR), I am pleased to write in support of the grant application you are submitting to the U.S. Bureau of Reclamation to develop a Drought Contingency Plan under the Drought Response Program. I applaud your efforts to increase the efficiency of your system to conserve valuable water and to enable your system to become more drought resilient. The UDWR is looking forward to becoming a stakeholder in this process and to participate on Weber Basin's Drought Planning Task Force. The UDWR would like to be involved as this will be a good opportunity to collaborate on this important issue of drought response planning. All water savings in the Weber River are valuable and developing a Drought Contingency Plan will ensure that we have adequate water and the resources that are supported by water for future generations. The Weber River often is water short and we have realized this through the past several years of drought the basin has experienced. Planning for a drought, in advance of a crisis, if far more cost effective than emergency responses.

The Bonneville cutthroat trout and bluehead sucker are native fish species found in portions of the Weber River. Both species are covered by conservation agreements the State of Utah has entered into with the U.S. Fish and Wildlife Service and other parties. The population status of these two sensitive species warrants additional conservation effort to diminish the likelihood of future listings under the Endangered Species Act. UDWR's approach to aquatic species conservation and management in the Weber River, in part, focuses on reconnecting and maintaining connectivity of priority habitats by removing unnecessary barriers to fish migration, or by modifying existing barriers to allow upstream movement of these species, particularly for Bonneville cutthroat trout and bluehead sucker. Naturally of course, stable and connecting flows between those habitats are a fundamental requirement for those conservation actions to be successful. Within that context, most any project that enhances the continuity and maintenance of flows within the Weber River is a step in the right direction, as we work cooperatively to protect and conserve these native species.

The Weber Basin Water Conservancy District has been a great partner and contributed to a graduate student project that is currently studying bluehead sucker in the Weber River. The outcome from this study will be to determine important spawning locations (including spawning habitat requirements) and the type of low velocity/backwater habitats needed for juvenile bluehead sucker survival and recruitment. The results from this study will



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guide future management of bluehead sucker in the Weber River including habitat restoration projects.

The population of Bonneville cutthroat trout in the lower Weber River is quite unique in that they travel significant distances in the mainstem Weber River and ultimately up into tributary streams to spawn. This life history attribute has been lost from almost all Bonneville cutthroat trout populations, but still persists in the Weber River! The UDWR and Trout Unlimited are excited to be working with the Weber Basin Water Conservancy District on a project that will modify a culvert in Jacobs Creek to better allow access for adult spawning Bonneville cutthroat trout. Our data demonstrates that Jacobs Creek is the single most utilized stream for this spawning cutthroat trout population. The UDWR and Trout Unlimited have worked with Questar and replaced a culvert lower in Jacobs Creek and the modification of this culvert would remove the last barrier to movement and allow access to all cutthroat trout. Both the UDWR and Trout Unlimited are fully committed to partner with the Weber Basin Water Conservancy District to ensure that the work in Jacobs Creek is completed, thus allowing spawning access to this stream. This project will help ensure that Bonneville cutthroat trout do not become a federally listed species under the Endangered Species Act in the future.

We strongly support your grant application and appreciate the advancements a Drought Contingency Plan would have in drought resiliency and improving water efficiencies in the District boundary of the Weber Basin Water Conservancy District. The UDWR is a committed partner with the Weber Basin Water Conservancy District.

Parl Horm

Paul Thompson Northern Region Aquatics Manager Utah Division of Wildlife Resources



Department of Public Services Public Utilities Division Kenton Moffett, P.E. Manager

March 29, 2016

Tage I. Flint, General Manager/CEO Weber Basin Water Conservancy District 2837 East Hwy 193 Layton, UT 84040

Dear Tage,

Ogden City is pleased to write in support of your grant application being submitted to the WaterSMART program of the Bureau of Reclamation to develop a Drought Contingency Plan under the Drought Response Program. We applaud your efforts to increase the efficiency of your system and to enable your system to become more drought resilient.

We are also looking forward to being a stakeholder in this process and to participate on Weber Basin's Drought Planning Task Force. We feel like being involved on this task force will be a good opportunity to collaborate on this important issue of drought response planning. The more local entities are involved in mitigating drought, the better our community will be at responding to it.

Ogden City recognizes the importance of a drought contingency plan in our often water-short basin, particularly when this basin has had several years of sustained drought. We are also reassured that planning for drought, in advance of a crisis, is far more cost effective than emergency response. Ogden City is in the business of treating surface water from sources related to this grant application. As such we have a vested interest in protecting water sources and mitigating drought.

We strongly support your grant application and appreciate the advancements it will make in drought resiliency and improving water efficiencies in the District boundary of Weber Basin Water Conservancy District.

Kenton Moffett Public Utilities Manager Ogden City Public Utilities Division



Mayor • Bob J Stevenson City Manager • Alex R. Jensen Asst. City Manager • James S. Mason • Public Works – Engineering • Terry R. Coburn • Director James Woodruff • City Engineer Telephone: (801) 336-3700 Fax: (801) 336-3713

March 23, 2016

Tage I. Flint, General Manager/CEO Weber Basin Water Conservancy District 2837 East Hwy 193 Layton, UT 84040

Dear Tage,

Layton City is pleased to write in support of your grant application being submitted to the WaterSMART program of the Bureau of Reclamation to develop a Drought Contingency Plan under the Drought Response Program. We applaud your efforts to increase the efficiency of your system and to enable your system to become more drought resilient. We are also looking forward to being a stakeholder in this process and to participate on Weber Basin's Drought Planning Task Force. We feel like being involved on this task force will be a good opportunity to collaborate on this important issue of drought response planning. Layton City will benefit from the efforts of Weber Basin through participation in the task force and implementation of plan components at the City level.

Layton City recognizes the importance of a drought contingency plan in our often water-short basin, particularly when this basin has had several years of sustained drought. We are also reassured that planning for drought, in advance of a crisis, is far more cost effective than emergency response. As a customer receiving wholesale drinking water from Weber Basin, Layton City appreciates and encourages the work Weber Basin is instigating with regards to drought response planning.

We strongly support your grant application and appreciate the advancements it will make in drought resiliency and improving water efficiencies in the District boundary of Weber Basin Water Conservancy District.

James "Woody" Woodruff, P.E. OC City Engineer Layton City, Public Works Department – Engineering Division