Project Title

Salt Lake City Department of Public Utilities Drought Contingency Plan Update

Bureau of Reclamation

WaterSMART: Drought Contingency Planning Grants for FY 2016

Funding Opportunity Number: R16-FOA-DO-005

Applicant

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1.1.1 Applicant Summary

Date:	April 11, 2016
Applicant:	Salt Lake City Corporation | Department of Public Utilities
City:	Salt Lake City
County:	Salt Lake County
State:	Utah

1.1.2 Project Summary

The Salt Lake City Department of Public Utilities Drought Contingency Plan Update (Plan Update) will be an expansion of the 2003 Water Shortage Contingency Plan (2003 Plan), with emphasis on monitoring processes, refinement of response actions, and an improved administrative and planning update process. The Plan Update incorporates a qualitative and quantitative vulnerability assessment, mitigation actions, and the development of a framework for communicating with the public for implementation of mitigation and response actions. The Plan Update process utilizes a planning approach that optimizes stakeholder engagement and community outreach. The goal is to develop a comprehensive drought contingency plan that guides Salt Lake City Department of Public Utilities (SLDPU) in securing the resilience of its water supply now and for the future through the implementation of a variety of approaches during times of drought, changes due to climate change, or increased demand due to population growth.

1.1.3 Project Period

- Length of time of the project: 12 months
- Estimated completion date: December 30, 2017

1.1.4 Project Geographic Location To A Reclamation Project, Facility, or Activity

A Bureau of Reclamation (Reclamation) Jordanelle/Deer Creek facility is located within the geographic area of the project.

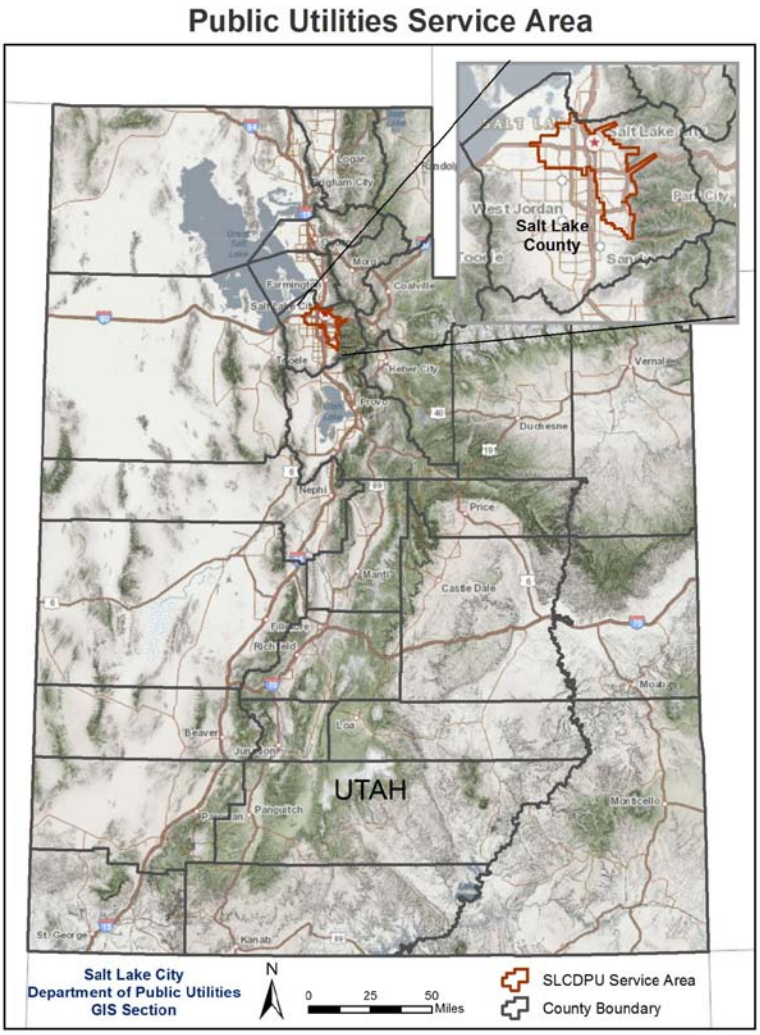
1.2 Background Data

1.2.1 Geographic Location of the Planning Area

The planning area encompasses the service district of SLCDPU—an area of approximately 135 square miles located in Salt Lake County, Utah. The nearest towns

include Salt Lake City, Cottonwood Heights, Holladay City, and Millcreek Township, all within the SLCDPU service area, as well as Murray City, North Salt Lake City, and South Salt Lake City, portions of which receive water from SLCDPU. A map of the planning area is provided as Figure 1.

Figure 1. Map/Geographic Location of SLCDPU Service Area and the Project Area



1.2.2 Source of the Water Supply

SLCDPU water supply is primarily sourced from the Provo Area of Reclamation's Upper Colorado and the Wasatch Front Mountain range. Year-to-year climatic variations and drought have increased reliance on groundwater and stored water. During normal years, increased reliance on direct stream flow is optimal. On average, 55 to 60 percent of SLCDPU's water supply come from surface water emanating from the Wasatch Canyons—City Creek, Emigration Creek, Parleys Creek, and Big and Little Cottonwood

Creeks. Another 10 to 15 percent of SLCDPU's water supply is groundwater from deep wells that operate primarily during the summer months to meet peak demand. Roughly 35 to 40 percent is derived from surface water from the Upper Colorado Basin and the Jordanelle/Deer Creek System, in part delivered through the storage systems of the Central Utah Project.

1.2.3 Water Rights

SLCDPU holds and maintains water rights to beneficially use for all water resources used to supply water within its service area. SLCDPU's portfolio of water rights is extensive and dates back to the late 1800's. SLCDPU is required by state law and city ordinance to protect and maintain its water rights and devotes significant resources to ensuring those rights are protected. Established in 1876, SLCDPU is the oldest retail water provider in the West and has a history of actively engaging in protection of it source waters, water rights, and in promotion of efficient use of all of its water supplies.

1.2.4 Current Water Uses and Water Users Served

SLCDPU provides culinary water to approximately 340,000 residents and over 12,000 Commercial/ Industrial/ Institutional (CII) water users through more than 92,000 connections. Salt Lake City experiences over 160,000 commuters every day that come for work and school, in addition to thousands who come to hospitals, restaurants, hotels, and Salt Lake International Airport. SLCDPU is the largest retail water provider in Utah and one of the largest in the Intermountain West. While growth has continued within the service area, per capita water consumption has trended downward and has remained below year 2001 levels (see Table 1).

Table 1. Salt Lake City Water Service Area Historical Water Use, 2000-2015

Year	Annual Demand (ac –ft)	Percent of Year 2000 Use	Conservation Goal as % of per capita reduction below Year 2000 Use
2000	109,804	100.00%	–
2001	109,967	100.15%	-0.15%
2002	98,263	89.49%	10.51%
2003	91,020	82.89%	17.11%
2004	91,804	83.61%	16.39%
2005	87,931	80.08%	19.92%
2006	93,260	84.93%	15.07%
2007	101,561	92.49%	7.51%
2008	96,280	87.68%	12.32%
2009	91,663	83.48%	16.52%
2010	91,766	83.57%	16.43%
2011	85,511	77.87%	22.13%

Year	Annual Demand (ac –ft)	Percent of Year 2000 Use	Conservation Goal as % of per capita reduction below Year 2000 Use
2012	97,646	88.92%	11.08%
2013	91,490	83.32%	16.68%
2014	87,983	80.12%	19.88%
2015	86,038	78.35%	21.65%

1.2.5 Current and Projected Water Demand

SLCDPU produced the 2007 Major Conveyance Study (MCS) to determine current and future demand and identify capital improvement needs to ensure the availability and delivery of that water. The tables, charts, and accompanying summaries within this section and in 1.2.6 are derived from that study. Population and employment growth projections in Salt Lake City are estimated to result in increased water demand by 34 percent in the residential sector and 18 percent within the commercial/industrial sector by year 2030. Demand projections, based on MCS data and summarized in Table 2, indicate greater levels of sustained water conservation will be necessary to meet future water demands. MCS water demand projections calculations did not foresee plans to relocate Utah State Prison within SLCDPU service area. Importantly, MCS did not account for climate change impacts; however, SLCDPU has since conducted climate vulnerability analyses, which will be utilized for the proposed project.

Table 2. Estimated Service Area Demand (With Conservation)

Year	Annual Demand (acre-ft)	Winter Day Demand (mgd)	Peak Day Demand (mgd)
2020	117,700	57.4	233.7
2030	129,700	66.6	264.0

1.2.6 Water Supply Shortfalls

Comparing water demand to supply sources shows that the existing dry year supply of 83,283 AF may be inadequate to meet current demands without additional conservation (Figure 2). Residential and industrial demand will outpace supply by 2030 in an average water year and could accelerate with frequency, duration, and severity of drought and with impacts due to climate change. Table 3 shows existing “firm yield” (dry year) supply sources and projected future source development supplies. Not included in the projections are drought mitigation measures such as potential secondary water sources, utilization of off-line wells, enhanced or accelerated leak detection and repair, aquifer storage and recovery, and other mitigation and response measures that can be identified during Plan Update process.

Figure 2. Salt Lake City Historical and Project Water Demand vs. Dry Year Supply

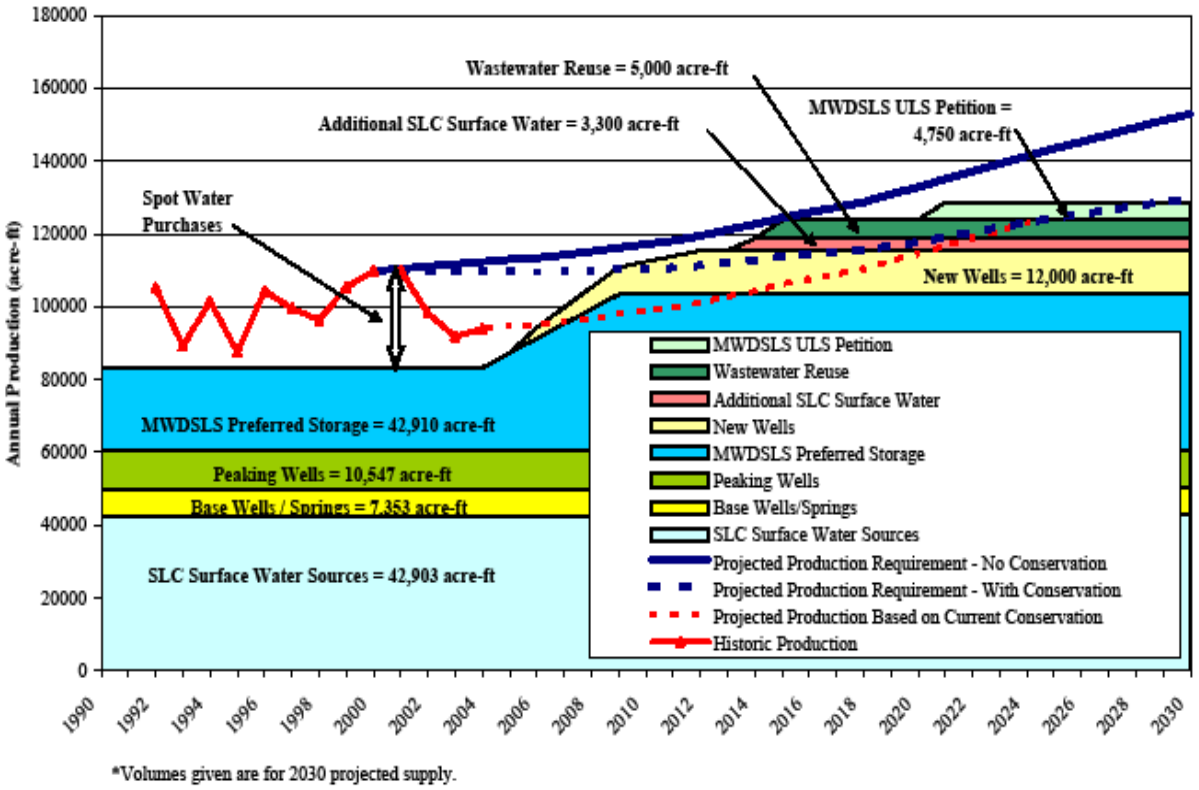


Table 3. Projected Dry Year Production - Existing and Future Sources

Supply Category	Dry Year Production 2004 (acre-ft)	Future Dry Year Production 2030 (acre-ft)
SLC Surface Water Sources	42,473	43,277
Base Wells and Springs	7,353	7,353
Peaking Wells	10,547	10,547
SLC Preferred Rights in MWDSLS	22,910	42,910
New Wells	0	12,000
Surface Water Development	0	3,300
Wastewater Reuse	0	5,000
Utah Lake System Water	0	4,750
Total	83,283	129,137

1.2.7 Past Working Relationships with Reclamation

SLCDPU works with Reclamation on issues involving Deer Creek Reservoir, Jordanelle Reservoir, Provo Reservoir Canal, and other Reclamation facilities. SLCDPU and Reclamation partnered in the development of the *Landscape Efficiencies Interactive Website* (www.slcgardenwise.com) through $25,554 from Reclamation's Water

Conservation Field Service Program (WCFSP) Fiscal Year (FY) 2010. The website features the *Water Demand Calculator* and *Weed Management On-Line Tool*, which was funded with $69,567 through Reclamation's WCFSP FY 2011 and experiences over 250,000 hits with average visitors viewing more than six pages. SLCDPU is implementing *Schools of Conservation: Developing a Water Conservation Plan for the Salt Lake City School District* with $22,828 through Reclamation's WCFSP FY 2015.

1.3 Technical Description of the Drought Contingency Plan

1.3.1 Goal and Objectives

Proposal for Task B. SLCDPU Drought Contingency (Plan Update) falls under Task B - Update Drought Contingency Plan defined by Reclamation for the WaterSMART: Drought Contingency Planning Grant for Fiscal Year 2016.

Project Goal. The goal is to update the 2003 Plan to develop a comprehensive drought contingency plan that guides SLCDPU in securing resilience of its water supply in anticipation of more frequent, prolonged, and severe droughts; impacts resulting from climate change; and increases in demand due to population and industrial growth, through the planning and implementation of a variety of drought mitigation and response strategies identified through a collaborative, stake-holder-driven process.

Project Objectives. Three project objectives guiding project implementation are to:

1. Mobilize a Task Force of diverse stakeholders to participate in a collaborative drought contingency planning process;
2. Update 2003 Plan using the six critical planning elements from the Drought Response Framework, including clearly articulated drought vulnerabilities and mitigation strategies; and
3. Initiate the process for adoption of the Plan Update by the Salt Lake City Council.

1.3.2 Project Approach

Status of 2003 Salt Lake City Water Shortage Contingency Plan. SLCDPU developed the Salt Lake City Water Shortage Contingency Plan 2003 (2003 Plan) to address water shortages due to drought, service interruption, emergency, or other events. Given the prevailing semi-arid climate of the Wasatch Front region, the discreet and limited nature of water supply sources, coupled with expectations for population growth, the need for an expanded and updated plan is crucial to ensure a reliable and resilient supply of quality drinking water to the communities served by SLCDPU. The 2003 Plan informed the City's adoption of (i) the Water Shortage Management Ordinance, (ii) the Water Shortage Contingency Plan, and (iii) the Response Plan and supplements the Salt Lake City Water Conservation Master Plan 2014. The 2003 Plan includes incremental five stages of drought as conditions warrant, triggered by anticipated snow pack, measured supply levels, and consumer demand; defines criteria for implementation and

termination of each stage; articulates sector-based responses within each stage; and establishes an enforcement process.

Deficiencies In the 2003 Plan. The 2003 Plan no longer represents best practices in drought planning, nor projected residential and commercial/industrial growth. The need to monitor during droughts is stated, no process is articulated nor are potential expanded monitoring needs identified. Likewise, need for community engagement and plan updates is stated, but no process is articulated, and only a rudimentary operational and administrative framework and plan update process are provided. Most importantly, the crucial elements of vulnerability assessment and mitigation actions are not covered. Including these components into the Plan Update would facilitate identification and impacts due to climate change, drought, and growth; inform budget processes necessary for infrastructure improvements to ensure a resilient water supply; and engage the community and other stakeholders in the planning process.

Plan Update Alignment with Climate Action Champion Efforts. Salt Lake City was designated as Climate Action Champion by the White House in December 2014. The Sustainable City Dashboard [https://dotnet.slcgov.com/PublicServices/Sustainability] is the City's on-line tool to track progress of key metrics and milestones for the City's climate response initiatives and promotes public engagement and feedback. The Plan Update can be added to the Sustainable City Dashboard as a milestone for Water.

Benefits Of WaterSMART Funding Of the Plan Update. The investment of WaterSMART funding to the Plan Update provides the opportunity to incorporate new, critical elements to the planning process; provides necessary financial support to enlist the services of an experienced water resource planning firm; and mobilize the leadership, focus, and ability of SLCDPU and its service area stakeholders to define a shared vision and coordinate actions to support a drought-ready community. Through participation in the WaterSMART program, SLCDPU and its service area benefit from direct involvement of staff from Reclamation, which brings expertise in these critical planning areas.

1.3.3 Project Design / Structure of Tasks and Activities

Overview of Project Design. The project design relies on proven approaches and best practices used in drought contingency planning to increase drought-readiness capacities of SLCDPU and communities served. The framework for project implementation, task completion, and milestone achievement aligns with Reclamation's Drought Response Program Framework and procedural steps.

Drought Response Program Framework Tasks And Activities. The major tasks and activities to update the 2003 Plan follow the six planning elements (Tasks A – F) of the Drought Response Program Framework.

Task A. Development of a Drought Monitoring Process - Establish a process for monitoring near and long-term water availability for SLCDPU service area. Monitoring

process will define types and sources of data, and methods of collection and analysis, including precipitation quantities and timing, temperature, snow pack, streamflow levels, well capacity, and other quantified indicators to assess drought conditions. The Plan Update will establish framework necessary to effectively predict the probability of drought or to characterize severity of an existing drought, and identify and integrate use of indices, indicators, and triggers to define drought stages, utilizing the guidance provided by Reclamation. Key activities under Task A are:

A.1. Identify appropriate indicators to assess drought probability and severity.
A.2. Define/quantify triggers as an indicator threshold, to: (i) define drought stages, (ii) trigger specific mitigation action, or (iii) trigger specific response action.
A.3. Evaluate and select appropriate indices for use in drought monitoring.
A.4. Define drought stages and classifications.

Task B. Conduct a Vulnerability Assessment - Plan Update will include a vulnerability assessment of risks to critical resources within SLCDPU service area factors contributing to risks, and an evaluation of potential supply and quality impacts. Included with this analysis will be frequency of occurrence, magnitude, severity, and consequences. A baseline assessment of risk will be established to inform the development of mitigation actions and updating of existing response actions. The latest data-driven climate change indicators will be included. Key activities under Task B are:

B.1. Catalog assets and resources, and intersection of assets and resources across agriculture, energy, environment, municipal, industrial, recreational, and socio-economic sectors.
B.2. Identify critical resources that are highly important to protect.
B.3. Prioritize critical resources identified for protection using a ranked order in terms of consequences, magnitude, and severity.
B.4. Assess qualitatively and quantitatively potential future drought conditions and associated risks to critical resources based on a historical perspective of climate, water supply, and water use trends coupled with potential future changes to the trends.
B.5. Review climate change studies, analyze potential impacts of climate change on hydrology and critical resources, and justify use of qualitative climate change data in vulnerability assessment.
B.6. Undertake quantitative analysis, utilizing common practices articulated in Reclamation's Guidance for Incorporating Climate Change Information into Drought Contingency Planning.
B.7. Assess underlying cause(s) of critical resource vulnerabilities by analyzing impacts and synergies of drought duration and severity, seasonal characteristics, changes to temperature and snow pack, and social, economic, and environmental conditions, as appropriate.

Task C. Development of Mitigation Actions - Plan Update will identify, evaluate, and prioritize mitigation actions, programs, and/or strategies for implementation before

drought to mitigate risk and build long-term resiliency. Mitigation actions called out in Plan Update will fall outside of regular water management activities and build adaptive capacity within planning area to address potential drought-related risks and impacts. Key activities under Task C are:

C.1. Inventory existing mitigation programs, policies, operational criteria.
C.2. Assess projected capacity of existing mitigation strategies to reduce risk to critical resources.
C.3. Define mitigation goals and priorities and identify associated actions.
C.4. Develop a strategy to prioritize measures for implementation based on technical feasibility, costs, benefits, or third party impacts.

Task D. Update of Response Actions - 2003 Plan has a robust strategy of response actions for specific community sectors at each stage of drought. Gaps in response actions will be identified and response actions added as appropriate. Plan Update will establish goals and associated response action outcomes for each drought stage. Finally, Plan Update will add response actions by SLCDPU identified in planning process. Key activities under Task D are:

D.1. Develop water use reduction/drought response goals for each drought stage.
D.2. Associate goals and response actions with quantified drought monitoring trigger points for each drought stage.
D.2. Identify gaps in existing recommended and/or mandatory actions and add response actions to address risks identified in vulnerability assessment.
D.3. Review incentives for compliance, monitoring, and enforcement of response actions and amend as appropriate.
D.4. Review guidelines and protocols for implementing response actions.
D.5. Identify response actions to be implemented during each drought stage.

Task E. Development of an Operational and Administrative Framework - An operational and administrative framework will be a component of Plan Update to increase responsiveness and effectiveness. The framework serves as a stand-alone section of Plan Update identifying responsibilities, roles, procedures, available resources, and communicating mitigation or response actions to water users, stakeholders, regulators, and adjacent water districts. Key activities under Task E are:

E.1. Identify types of responsibilities for implementation of each element.
E.2. Assignment of listed responsibilities to appropriate entity, agency, utility representative, or stakeholder.
E.3. Document processes and procedures to conduct drought monitoring, declare a drought, initiate response actions (including emergency response actions), initiate mitigation actions, mobilize communication tools, and update Plan.
E.4. List available federal, state, and local drought relief and mitigation programs and drought resources.
E.5. Identify tools to aide and support drought actions and decisions by local communities, citizens, businesses, and other water users.

Task F. Development of Plan Update Process – Plan Update will add detailed set of procedures for periodic monitoring, evaluation, and updates. The Plan Update process will include ongoing evaluation of Plan and "a post-drought evaluation" of Plan effectiveness based on best-practices developed by the National Drought Mitigation Center (NDMC) 10 Step Drought Planning Process. An objective approach to measure effectiveness of drought plan based on a documented set of criteria will be outlined in Plan Update. Schedule and timing of future plan updates will be identified in Plan Update. Key activities under Task F are:

F.1. Create detailed procedures for testing Plan effectiveness under simulated drought conditions prior to implementation and periodically thereafter.
F.2. Create detailed procedures for post-drought evaluation measuring effectiveness of Plan.
F.3. Define objective approach and criteria measuring Plan's effectiveness.
F.4. Identify regular intervals for Plan evaluations and subsequent updates.

Procedural Steps. SLCDPU, acting as planning lead, is prepared to complete the Drought Contingency Planning steps before substantive work on the update to the Plan begins. Reclamation-required procedural steps that SLCDPU commits to include:

Step 1. Establishment of Drought Planning Task Force - The SLCDPU will establish a Drought Planning Task Force (Task Force) made up of diverse interested stakeholders within planning area, who are prepared to commit to actively participate in Plan Update. SLCDPU will also reach out to those stakeholders involved in developing the 2003 Plan.

Step 2. Development of Detailed Work Plan - A detailed work plan will establish methods and activities to accomplish the various tasks for Plan Update. This includes a detailed project schedule that defines responsibilities of Reclamation, SLCDPU, Task Force, contracted engineering firm, and other stakeholders, establishing a timeline of milestones to track progress toward completion of each task.

Step 3. Development of Communication and Outreach Plan - A communication and outreach plan will establish methods and schedule to involve stakeholders and public in planning process, including provisions for feedback to Task Force. Likely methods include press releases issued from the Salt Lake City Office of the Mayor and partnering Mayors' Offices and a variety of social media sites hosted by SLCDPU and partnering stakeholders. Anticipated public participation and engagement methods include public meetings, the City's online forum for civic engagement Open City Hall [www.slcgov.com/opencityhall], paper/electronic feedback surveys, and other methods identified in the planning process.

1.4 Evaluation Criteria

1.4.1 Evaluation Criteria A: Need For A Drought Contingency Plan or Plan Update

Subcriterion No. A. 1. – Severity of Risks To Water Supplies To Be Addressed

(1) Overview of Risks To Water Supplies. Primary risks to SLCDPU water supplies are climate change, recurring drought, and population growth. The Utah Governor's Office of Management and Budget projects population growth in the Salt Lake Valley will significantly increase by 2060, placing even more pressure for water supplies on Salt Lake City. While SLCDPU's long range water supply planning takes this population growth into consideration, cumulative impact of climate change, drought intensification, and population growth require updated drought and water shortage contingency planning. Cumulative impacts from these risks may affect supply, demand, and quality of water available in Jordanelle-Deer Creek Reservoir System, Salt Lake City, and along Wasatch Front. In addition to surface water resources, SLCDPU relies on groundwater resources to augment current water supply and demand. Groundwater resources will be affected by climate change as data has shown declines in groundwater elevations as a result of drought. As surface water supplies decline due to climate change or drought, reliance on groundwater supplies may increase. Additionally, many other communities across the Salt Lake Valley rely on groundwater to some extent. As groundwater pumping increases across the valley, groundwater aquifers and resources across the valley may become negatively impacted. In summary, specific risks to water supply include:

- Changes in water supply resulting from climate change, including changes in the timing and volume of precipitation, and runoff timing, and associated sub-categories and impacts related to those changes;
- Projected increases in frequency, duration, and severity of drought;
- Increases in residential population growth and commercial/industrial sector growth with accompanying increases in worker populations; and
- Potential risk in both surface water and groundwater quality and quantity.

(a) Risks to Water Supplies Addressed In the Plan Update. Plan Update will address sustained drought conditions and water supply utilizing recent climate science. The 2013 Colorado River Basin Study (CRBS) identified risk of periodic shortages to water supply throughout Upper Basin and adjacent areas. CRBS identifies droughts lasting five years or more projected to occur 50 percent of the time over the next fifty years. New modeling conducted by Robert Gilles, Utah Climate Center at Utah State University, further substantiates that water levels will continue to decline in the Colorado River Basin due to changes in climate. Climate data provided through the National Oceanic and Atmospheric Administration (NOAA) show temperatures in Utah and Intermountain West have increased faster in recent decades compared to continental U.S.; from 1895

to 2012, average annual temperature across Utah increased 0.21ºF decade^{-1} (http://www.ncdc.noaa.gov/cag/).[1] Recently, NOAA identified Utah's March as one of the warmest March's in recorded history. Model results for area indicate significant temperature increases range 1º-6ºF by 2035-64.[2] Climate model trends through 2100 for Wasatch Region indicate an increase in precipitation variability, snowpack declines due to warming, and amplified precipitation seasonality with wetter and warmer winter seasons and drier monsoon months. Increased energy in climate system is predicted to intensify storms and droughts.

(b) Severity of The Risks. Climate change presents a significant risk to snowpack-derived hydrology of Wasatch Front region. SLCDPU's water resources are highly dependent on current snowpack regime as roughly 90 percent of SLCDPU current water supply is derived from surface water sources dependant on snowpack. SLCDPU collaborates with scientific and policy experts across the United States to quantitatively and qualitatively identify risks to water resources. A recent sensitivity analysis, published in the journal *Earth Interactions* (http://dx.doi.org/10.1175/2012EI000501.1) and based on climate and hydrologic models specific to SLCDPU's culinary watersheds in the Wasatch Mountains, identifies significant sensitivity to changes in temperature and precipitation. Analysis shows that for every degree Fahrenheit increase, annual flow from these watersheds decrease by 3.8 percent in volume, with the largest flow reductions occurring during high demand water months in summer. Runoff timing is also impacted —about three days earlier for every degree Fahrenheit increase for SLCDPU's most significant watershed. Other variables and potential feedback loops not included in hydrologic and climate models could intensify modeled conditions such as vegetation changes and increased risk of wildfire, affecting both water quantity and quality. Carbon emissions play a role in risk severity with higher emission scenarios predicting much greater uncertainty for future water supplies as impacts to hydrologic systems become more intensified.

(c) Existing/Potential Drought Risks To Sectors In The Project Area.

Urban Forestry. Positive ecosystem services of the City's urban forest are at risk due to drought and/or climate change, including: mitigation of heat-island affect; filtration of stormwater runoff; protection of water quality for down-stream users and aquatics; improvement to air quality thru release of oxygen and

[1] Bardsley, Tim and Briefer, L. (2013). *Planning for an Uncertain Future: Climate Change Sensitivity Assessment Toward Adaptation Planning for Public Water Supply*. Salt Lake City, UT: Western Water Assessment, August 23, 2013. Retrieved from http://cires.colorado.edu/news/press/2013/watersupply.html

[2] Ibid.

capture of airborne particles; absorption of greenhouse gases; maintenance of property values; and support to migrating and local bird populations.

Recreation and Tourism. The Wasatch Mountains are among the most heavily recreated natural lands in the country. Increased water demand in the face of drought or changes in the climate regimen could have a detrimental impact on canyon stream flows and forest health, which in turn could decrease tourism and have a negative impact on the local recreation sector experience and economy.

Wildfire and Water Quality. Changes in snowpack and water supply as a result of drought and climate change may increase risk of wildfire critical watershed lands, negatively impacting water quality and exacerbating water supply issues as ash- and sediment-laden runoff following wildfires would increase water turbidity to untreatable levels.

Water Conservation Achievement. Drought conditions could negatively impact current water conservation achievements, should property owners increase water use due. Plan Update will include communication components to ensure community is well informed and actively supports efforts to protect water supplies during times of drought or changes in supply due to climate change.

(d) *Quantification And Documentation of Risks To Project Area.*

i. *Potential Drought Risks To Public Health and Safety.* According to the Salt Lake County Department of Health, drought conditions may increase environmental exposure for humans to a broad set of health hazards including wildfires, dust storms, extreme heat events, flash flooding, degraded water quality, and reduced water quantity. Wildfire season has extended both in Spring and Fall in the western United States in response to drought and increased average temperatures. Dust storm frequency and severity are exacerbated by extended dry periods. Dust storms associated with drought conditions are contributing to degraded air quality due to particulates and have been associated with increased incidence of *Coccidioidomycosis* (Valley fever), a fungal pathogen, in Arizona and California. More particulates are being blown into the atmosphere due to the drying out of bodies of water such as the Great Salt Lake. Extreme heat events combined with drought periods increase demand for water usage for hydration, cooling, and irrigation. Flooding event impacts may be more severe during droughts due to the rapid runoff from dry, compacted soils. Reduced water quantities allow for increased threats for contamination due to concentrated water reserves.

ii. *Availability Of Another Water Source If Water Service Interrupted.* SLCDPU service area has only two water sources–80 to 90 percent from snow pack and 10 to 20 percent from ground water, which makes the area particularly

vulnerable. Should water service be interrupted, SLCDPU water storage and water shares in adjacent systems are the only other water source available to the community; however, all redundant sources could be equally affected by drought and climate change, including storage capacity in Jordanelle/Deer Creek System and shares in Utah Lake System. SLCDPU owns and operates two reservoirs that help sustain supplies during drought; however, both reservoirs depend on stream-flow from snowmelt. Surface water impacts may lead to increased reliance on groundwater. SLCDPU has 26 wells, many of which date back to the 1930's when they were drilled to provide drought relief; some are affected by localized groundwater contamination and have been removed from service pending remediation or treatment; however, data suggests groundwater elevations will be negatively impacted by prolonged drought and climate change.

iii. *Potential Impacts to Threatened Or Endangered Species.* Endangered and threatened fish and mammal species that rely on critical riparian habitat within service area are June Sucker (*Chasmistes liorus*) and Canada Lynx (*Lynx canadensis*). The June Sucker was federally listed as an endangered species with critical habitat on April 30, 1986 and is still listed as endangered. Threatened flowering plant species are Ute Ladies'-tresses (*Spiranthes diluvialis*). Candidate bird and fish species found in SLCDPU service area are yellow-billed cuckoo (Coccyzus americanus) and least chub (Lotichthys phlegethontis). As the second driest state in the nation, Utah's riparian habitat plays a critical ecological role that is disproportionate to its small size. Riparian areas occupy 0.2 percent of the state's and 1.2 percent of Salt Lake City's land area.[3, 4] In Utah, approximately 75 percent of the state's bird species rely on riparian habitat. The Great Salt Lake is an ecosystem of hemispheric significance providing resting, staging, and nesting habitat for millions of migrating neo-tropical birds. Drought conditions have potential to heighten critical habitat issues already directly threatening to a number of species of neo-tropical migratory song birds identified in Partners in Flight North American Landbird Conservation Plan and 17 species of shorebirds under Great Salt Lake Shorebird Conservation Plan and U.S. Shorebird Conservation Plan.

iv. *Local Economic Losses Associated With Drought Conditions*. While SLCDPU does not have quantifiable data regarding economic losses associated with drought conditions, it is expected that severe drought could result in loss of confidence in the community with discrete impacts to certain industries. The

[3] State of Utah Natural Resources Division of Wildlife Resources. 2005. Utah Comprehensive Wildlife Conservation Strategy. Pg K-2.
[4] Salt Lake City Corp. 2010. Salt Lake City Riparian Corridor Study: Final Red Butte Creek Management Plan. Pg 1-4.

Salt Lake Chamber of Commerce 2016 Public Policy Guide identifies water supply as a critical component to retain and attract new businesses.

Subcriterion No. A.2 – Existing Or Potential Drought Conditions To Be Addressed

(1) *Existing Drought Condition of Geographic Area Addressed By Plan Update.* Plan Update addresses drought conditions facing service area. Since 2011, the region has experienced decreased mountain snowpack and stream flows due to drought conditions; this drought has reduced storage in Jordanelle/Deer Creek System and reduced streamflow into Mountain Dell and Little Dell Reservoirs. Ongoing drought conditions led to implementation of Stage 1:Advisory of 2003 Plan in Spring 2015.

(2) *Description* of Existing Drought Conditions. The Wasatch Front Region experiences three-to-seven year drought cycles, and a recently published dendrochronology study for the Wasatch Front indicates cyclical drought conditions during last century have been mild relative to droughts over last 1,000 years, which lasted longer than ten years in some instances.[5] The Drought Monitor (http://droughtmonitor.unl.edu) indicates a lessening of drought conditions in the Central/Northern Intermountain West, Utah is indicated as abnormally dry.

(3) *Projected Drought Conditions Due to Climate Change.* Climate change prediction models forecast a local climate regimen that will affect duration of historic winter season, average temperatures, overall water quality, and timing of runoff. Figure 3 illustrates potential impacts to water supply caused by climate change. The solid blue and red lines represent 30 year mean of SLCDPU's water resources emanating from four Wasatch streams, and total water demand, respectively. Dashed blue line shows change in water supply from Wasatch streams if temperatures increase 5° F, and dashed red line is a hypothetical future demand scenario.

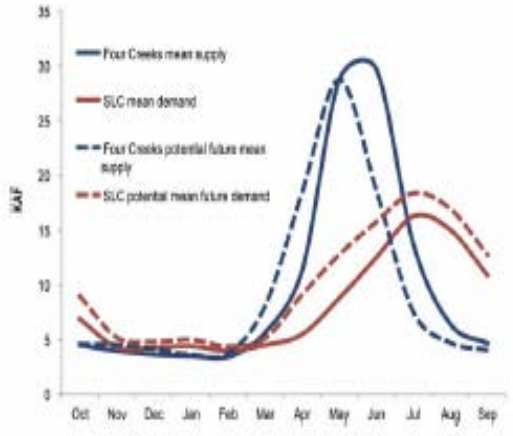
Subcriterion No. A.3 – Status of Existing Planning Efforts

(1) *Relation of Plan Update To Other Planning Efforts.* The Plan Update will compliments, rather than duplicate other current and future planning processes by informing those projects, enhancing the outcomes, and helping to improve resiliency and sustainability best-practices through increase knowledge and understanding of risks and vulnerabilities to SLCDPU water sources. Following is a list of relevant recent, current, and future planning and study processes:

[5] Bekker, Matthew F., R. Justin DeRose, Brendan M. Buckley, Roger K. Kjelgren, and Nathan S. Gill, 2014. A 576-Year Weber River Streamflow Reconstruction from Tree Rings for Water Resource Risk Assessment in the Wasatch.

- 2014 Water Conservation Master Plan: SLCDPU completed a state-required fourth update of the Water Conservation Master Plan in 2014, but was unable to update drought contingency components due to staff and financial limitations

Figure 3. Schematic of Potential Climate Impacts to SLCDPU Service Area Water Supply and Demand



- Secondary Water Study: SLCDPU is working to complete a secondary water use study for all City-owned parks and golf courses, with an anticipated completion date before the Plan Update process commences. The study results will provide a feasibility analysis on secondary water sources within select segments of the service area, which will inform the mitigation actions the Plan Update.
- 2007 Major Conveyance Study (MCS): SLCDPU is planning an update of the 2007 MCS. The update of the 2003 Plan will provide valuable technical information and insight for the update to the 2007 MCS as the existing MCS was written prior to the publication of most of the regionally pertinent climate studies.
- Mountain Accord: SLCDPU is a primary stakeholder in Mountain Accord, a collaborative process to manage the region's Wasatch Mountain watersheds.

1.4.2 Evaluation Criteria B: Inclusion of Stakeholders

Subcriterion No. B.1 - Stakeholders To Be Involved In The Planning Process

(1) Committed Stakeholders. There is a diverse group of stakeholders in the planning area with interest in water supply and drought planning. Seven stakeholders in the planning area that have committed to be involved in the planning process by participating on the Task Force are: 1) Center for Water Efficient Landscaping at Utah State University, 2) City of Cottonwood Heights, 3) City of Holladay, 4) Metropolitan Water District of Salt Lake & Sandy, 5) Salt Lake City Division of Parks and Public Lands, 6) Salt Lake County Health Department Bureau of Water Quality and Hazardous Waste, and 7) Utah Department of Natural Resources/Division of Water Resources.

(2) Interests Represented By Committed Stakeholders. The committed stakeholders represent interests from the sectors of state/ county/local government, regional water purveyors, and higher education/research.

State Agency Interests. Utah Department of Natural Resource/Division of Water Resources brings critical planning experience to the Plan Update process and will inform stakeholders' understanding and knowledge of SLCDPU's water supply.

Regional Water Agency Interests. As the primary wholesale water provider for SLCDPU, Metropolitan Water District of Salt Lake & Sandy (MWDSLS) is a key partner in providing drinking water to the SLCDPU service area and has a vested interest in building a sustainable, resilient water supply through drought contingency planning.

County Government Interests. Salt Lake County Health Department Bureau of Water Quality and Hazardous Waste is committed to participating in the Plan Update planning process to ensure that public health concerns have a voice at the table and assist in the identification of strategies to overcome potential risks.

Local Government Interests. As customers of SLCDPU, the Cities of Cottonwood Heights and Holladay are interested in ensuring a reliable and drought-resilient supply of water to its residents. Salt Lake City (SLC) Division of Parks and Public Lands' interest is to model best-practices in water use and water stewardship.

Higher Education/Research Institution Interests. The Center for Water Efficient Landscaping at Utah State University is providing their expertise to further best practices in landscape research, climate research, and behavioral understanding.

(3) Letters of Commitment. Letters from the seven stakeholders committing to be involved in the planning process are provided as Appendix C.

(4) Stakeholders In Support Of Project. Letters of support from SLC Division of Sustainability and the Environment and Western Water Assessment, part of the Cooperative Institute for Research in Environmental Sciences at the University of Colorado-Boulder, are provided in Appendix D. Stakeholders in the planning area, who have expressed their support of the planning process, but have not committed yet to participate are listed below.

Salt Lake Area Restaurant Association	University of Utah
Salt Lake City Community Councils	Utah Carwash Association
Salt Lake City Division of Golf	Utah Hotel and Lodging Association
Trout Unlimited-Utah Chapter	Utah Nursery and Landscape Association

(5) Methods For Stakeholder Participation and Engagement.

Efforts To Ensure Participation By Diverse Stakeholders. As part of establishing the Task Force, the SLCDPU will solicit the participation of the stakeholders listed above

that have expressed support for the project. To increase diversity of the Task Force, SLCDPU will identity organizations and groups, particularly from under-represented/ underserved areas of the community and contact them regarding their participation. SLCDPU will also utilize City resources in community development and outreach to engage a diverse group of stakeholders and sectors.

Plan To Address Gaps In Sector Representation. In the first month after an award, the SLCDPU will work with Reclamation to identify key sectors not yet represented on the Task Force and invite representative individuals or agencies from the under-represented sectors to participate in the Task Force. SLCDPU will leverage its professional networks and the resources of the committed stakeholders to reach out to community councils, civic groups, environmental advocacy, golf, nursery and landscape professionals, recreation, hotel and lodging, restaurant, car wash, and other special interest groups and invite their participation. Salt Lake Area Restaurant Association, Utah Carwash Association, Utah Hotel and Lodging Association, and Utah Nursery and Landscape Association participated in the public planning process for the 2003 Plan and are likely to commit their participation to the Plan Update.

Methods to Engage Key Stakeholders. The planning process will be organized to be accessible and transparent with process information, documents, and meeting minutes contained on a central web-based site, available to all planning process participants. The Public Utility Advisory Committee, a nine member public advisory board to SLCDPU, will play a role in disseminating information on the planning process and sustaining stakeholder engagement. SLCDPU has a long history of successfully engaging stakeholders and the public in complex planning processes related to rate structures, watershed management, and riparian corridor protection.

1.4.3 Evaluation Criteria C: Project Implementation

Subcriterion No. C.1 - Approach for Addressing the Six Required Elements of the Drought Contingency Plan

(1) Methods To Address Six Elements of A Drought Contingency Plan. With strategies outlined in the to-be-developed Detailed Work Plan, the completion of the six elements of the Drought Response Program Framework is scheduled for a one year time frame. Monthly project team coordination meetings, Task Force meetings, and electronic document sharing will facilitate the efficiency of the planning process.

(2) Project Schedule. A project schedule showing stages and duration of the work including major tasks, proposed milestones, and dates is provided as Appendix A.

Subcriterion No. C.2 - Availability and Quality of Existing Data and Models

(1) Description of Availability and Quality of Applicable Existing Data and Models. Numerous previous and ongoing studies and watershed monitoring data collection for Upper Colorado Basin and Jordanelle/Deer Creek System provide a broad set of

data for use in the evaluation and selection of drought monitoring indicators, triggers, and levels of drought; assessing risk to water supply; and evaluating mitigation and response actions. The data sets have been used extensively for developing reservoir, water quality, and flow models specific to SLCDPU service area. Sources and types of data/model output that the project may draw upon are:

- Centers for Disease Control and Prevention Community Assessment for Public Health Emergency Response Surveys: health status, emergency response needs.
- National Drought Mitigation Center's Drought Monitor
- National Integrated Drought Information System's Drought Portal
- NOAA National Centers for Environmental Information
- NOAA Advanced Hydrologic Prediction Service: streamflow projections
- NOAA Climate Prediction Center
- Reclamation's Colorado Basin Study, Downscaled Climate Projections and Hydrology Archive, West-Wide Climate Risk Assessment
- SLCDPU and State agencies: chemical analytical data for water quality
- SLCDPU: hydraulic model for distribution supply-demand scenarios
- U.S. Forest Service: wildfire models and assessments
- U.S. Geology Survey: historic and recent flow and water quality data, precipitation runoff models for predicting climate change effects on stream flows, flow and temperature models, ground water model
- Utah Department of Environmental Quality: water quality data
- Utah Department of Natural Resources: regional groundwater models
- Wasatch Front Regional Council: reports on demographics and population

Subcriterion No. C.3. - Technical Expertise of Project Team

(1) Project Team. The project is lead by a core team of professionals with appropriate technical expertise and qualifications to fulfill the following roles:

- *Project Manager.* Stephanie Duer, Water Conservation Manager, SLCDPU, serves as the Project Manager responsible for leading the planning process, coordination between the SLCDPU work team, consultant(s), Reclamation, and the Task Force, and authorship of the Plan Update. Her qualifications include authorship and implementation of the Water Conservation Master Plan 2014, the 2003 Plan, and development of www.slcgardenwise.com.

- *Project Team Leaders.* Four SLCDPU supervisory staff with the Project Manager serves as the project team leaders responsible for coordinating the involvement of the project team members the completion of the tasks and procedural steps. Chief Engineer (Chuck Call) has more than 30 years of experience in water systems engineering. Water Quality Administrator (Jesse Stewart) has 20 years of experience in water resource management and administration. Supervisory Engineer (Jason Brown) has been with SLCDPU since 2005, and has nearly twenty

years experience as an engineer specializing in water and wastewater utilities. Finance Administrator Kurt Spute has more than 30 years of experience in utility finance and budget planning.

- *Work Group.* Sixteen SLCDPU staff serve as the work group and represent all sectors of SLCDPU water service to ensure that potential synergies and unintended consequences are identified early in the planning process and that the planning process informs each Division's staff support of SLCDPU's mission.

- *Plan Update Consultant.* SLCDPU will secure the services of a water resource planning firm to assist in all aspects of plan development with particular attention to drought monitoring, qualitative and quantitative vulnerability assessment, mitigation actions, and communication and outreach. Qualifications sought include experience in planning, feasibility analysis, studies for water resource planning and management, water demand and use studies, water source master planning, major conveyance facilities master planning, water distribution system hydraulic modeling, and water metering structures.

(2) Plans To Request Additional Technical Assistance From Reclamation. SLCDPU has no plans to request additional technical assistance from Reclamation.

1.4.4 Evaluation Criteria D: Nexus to Reclamation

(1) Is there a Reclamation project, facility, or activity within the planning area? The SLCDPU service area is a significant water user of Reclamation water and facilities in the Provo River Project and Central Utah Project water through the wholesale water interest of SLDPU in the MWDSLS.

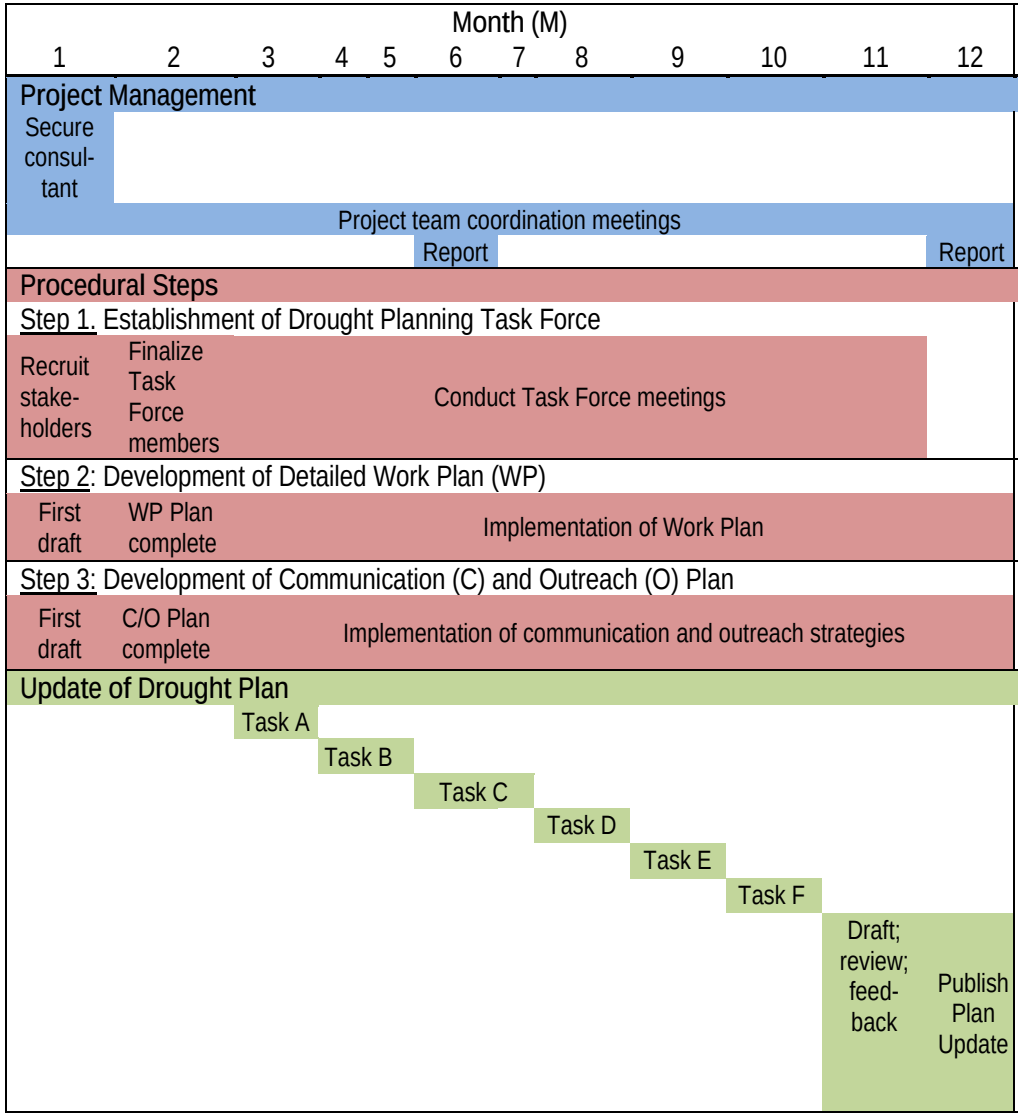
(2) Is the planning area in the same basin as a Reclamation project, facility or activity? The planning area is connected to Reclamation's Colorado River Basin, which supplies water to the Provo River Basin area through delivery systems and the Jordanelle-Deer Creek Reservoir System.

(3) How will the plan update benefit a basin where a Reclamation project, facility or activity is located? The project will benefit the Provo River Basin and Reclamation's Colorado River Basin by supporting the contractual obligations pursuant to Section 8 of "Petition of Metropolitan Water District of Salt Lake & Sandy to the Central Utah Water Conservancy District for the Allotment of water For Municipal and Industrial Use" (contract No. 40-WC-40-150, March 15, 2005 (ULS Petition).

(4) Does the plan update support implementation of a relevant Department of the Interior initiative? The Plan Update does not support implementation of a Department of the Interior initiative beyond the WaterSMART Drought Response Program.

Appendix A. Project Schedule

Appendix A. Project Schedule



Proposed Milestones

Project Management

M1: Consultant(s) selected; contracts signed
M1-M12: Team meetings conducted monthly
M4 and M8: Programmatic and financial reports filed on time with Reclamation (R)

Procedural Steps

Step 1. Establishment of Drought Planning Task Force

M1: Gaps in sector representation filled
M2: Member roster and meeting schedule finalized
M3-M11: Meetings conducted as scheduled
M6 and M12: Report Task Force activities, barriers, success

Step 2: Development of Detailed Work Plan (WP)

M1: Work plan draft transmitted to R for review/input
M2: Work plan completed and approved by R
M6 and M12: Report completed tasks, milestones achieved

Step 3: Development of Communication (C) and Outreach (O) Plan

M1: C/O Plan draft transmitted to R for review/input
M2: C/O Plan completed and approved by R
M6 and M12: Report completed tasks, milestones achieved

Update of Drought Plan

M3: Monitoring process defined and completed
M5: Vulnerability assessment completed
M7: Mitigation actions identified
M8: Response actions updated
M9: Operational/Administrative framework completed
M10: Plan Update process defined
M11: Plan Update draft produced | Plan reviewed by R, Task Force, and public | Feedback incorporated | Plan Update final draft completed
M12: Plan Update produced | E-publishing of Plan Update | Press release issued | Plan Update completion logged on on-line Dashboard | Transmission to SLC Council for adoption

Appendix B. Official Resolution

Insert Official Resolution Page 1

Insert Official Resolution Page 2

Appendix C. Stakeholder Commitment Letters

UtahStateUniversity

Department of Plants, Soils, and Climate

April 8, 2016

Bureau of Reclamation, Financial Assistance Services
Mr. Michael Dieterich
Grants Management Specialist
Mail Code: 8427852 P.O. Box 25007 Denver, CO 80225

Dear Mr. Dieterich:

The Center for Water Efficient Landscaping (CWEL) at Utah State University is pleased to commit its support and participation in the development of the Salt Lake City Public Utilities Drought Contingency Plan.

The Center for Water Efficient Landscaping is a research and outreach center designed to improve efficient use of water for landscape irrigation. It promotes water conservation through environmentally, socially, and economically sound landscape management practices. Salt Lake City Department of Public Utilities and its Water Conservation Program is one of the CWEL's key partners in delineating the effects of short-term drought on landscapes and the characterization of community-wide landscape water demand and use patterns.

As the population of Utah continues to grow and the potential impacts of climate change take shape, water conservation becomes increasingly important. The proposed multi-stakeholder planning process is a critical step in defining workable and sustainable water supply monitoring practices that increase the drought readiness of our community.

In the event that a WaterSMART: Drought Contingency Planning Grant for Fiscal Year 2016 grant award is made to Salt Lake City Corporation and its Department of Public Utilities, CWEL commits to

- participate in the Task Force meetings and activities related to the development of a Salt Lake City Department of Public Utilities Drought Contingency Plan,
- support the implementation of the outreach and communication strategy to involve diverse stakeholders and the public in the planning process, and
- lend our expertise and understanding of the impacts of drought stress on the urban forest, turf, and landscape plants in the identification, evaluation, and prioritization of Response Actions for the water service area.

In addition, CWEL has developed relationships with state-wide Extension offices, the green industry, water purveyors/institutions, and the general public through our out-reach education programs. The Center is prepared to leverage these relationships to increase the diversity of interests represented and participation of diverse stakeholders in the planning process.

We look forward to the opportunity to partner with the Bureau of Reclamation and Salt Lake City Department of Public Utilities to meet the 21st century water needs of the local and regional water service area.

Sincerely,

Larry A. Rupp, Ph.D.
Director, Center for Water Efficient Landscaping

4820 Old Main Hill Logan, UT 84322-4820 Ph: 435.797.2233 Fax: 435.797.3376 www.psc.usu.edu

Cottonwood Heights
City between the canyons

April 8, 2016

Bureau of Reclamation
Financial Assistance Services
Mr. Michael Dieterich
Grants Management Specialist
Mail Code: 8427852
P.O. Box 25007
Denver, CO 80225

Dear Mr. Dieterich:

The City of Cottonwood Heights, Utah is pleased to commit its support and participation in the development of the Salt Lake City Department of Public Utilities Drought Contingency Plan.

The City of Cottonwood Heights is a water user in the service area of the Salt Lake City Department of Public Utilities and Jordan Valley Water Conservancy District. We are located as the gateway between Big Cottonwood Canyon and Little Cottonwood Canyon, which are home to two of the seven protected watersheds supplying water to the Salt Lake City Metropolitan Area. Our residents know very well that water is one of our most precious resources and needs to be preserved and maintained responsibly if we are to flourish.

The development of the Salt Lake City Department of Public Utilities Drought Contingency Plan offers the opportunity for incorporated areas of Salt Lake County to participate with other municipalities and stakeholders in the critical assessment of the impacts of population growth, development, weather patterns, and drought conditions on water availability.

In the event that a WaterSMART: Drought Contingency Planning Grant for Fiscal Year 2016 grant award is made to Salt Lake City Corporation and its Department of Public Utilities, the City of Cottonwood Heights commits to:

- participate in the Task Force meetings and activities related to the development of a Salt Lake City Department of Public Utilities Drought Contingency Plan and
- support the implementation of the outreach and communication strategy to involve stakeholders and the public in the planning process.

The City of Cottonwood Heights looks forward to partnering with the Bureau of Reclamation, Salt Lake City Department of Public Utilities, and other stakeholder to increase the resiliency of our community to respond to drought conditions and other impacts of climate change.

Sincerely,

Kelvyn H. Cullimore, Jr.
Mayor, Cottonwood Heights

CITY of HOLLADAY

April 8, 2016

Bureau of Reclamation
Financial Assistance Services
Mr. Michael Dieterich
Grants Management Specialist
Mail Code: 8427852
P.O. Box 25007
Denver, CO 80225

Dear Mr. Dieterich:

The City of Holladay, Utah is pleased to commit its support and participation in the development of the Salt Lake City Department of Public Utilities Drought Contingency Plan.

The City of Holladay is a water user in the service area of the Salt Lake City Department of Public Utilities. Our resident population increased significantly from 14,561 residents in 2000 to 26,478 in 2010. We are keenly aware that the increase in our population creates a reciprocal increase in water demand and pressure on water management by the Utility.

The development of a Drought Contingency Plan for the service area of the Salt Lake City Department of Public Utilities offers the opportunity for incorporated areas of Salt Lake County to participate with other service area municipalities to make a critical assessment of the impacts of population growth, development, weather patterns, and drought conditions on water availability.

In the event that a WaterSMART: Drought Contingency Planning Grant for Fiscal Year 2016 grant award is made to Salt Lake City Corporation and its Department of Public Utilities, the City of Holladay commits to:

- participate in the Task Force meetings and activities related to the development of a Salt Lake City Department of Public Utilities Drought Contingency Plan and
- support the implementation of the outreach and communication strategy to involve stakeholders and the public in the planning process.

The City of Holladay looks forward to partnering with the Bureau of Reclamation, Salt Lake City Department of Public Utilities, and other stakeholders in the service area in developing the drought readiness preparedness of our community.

Sincerely,

Robert M. Dahle
Mayor, City of Holladay

Metropolitan Water District of Salt Lake & Sandy
3430 East Danish Road, Cottonwood Heights, UT 84093
Phone: 801-942-1391 Fax: 801-942-3674
www.mwdsls.org

April 6, 2016

Bureau of Reclamation, Financial Assistance Services
Mr. Michael Dieterich, Grants Management Specialist
Mail Code: 8427852
P.O. Box 25007
Denver, CO 80225

Dear Mr. Dieterich:

The Metropolitan Water District of Salt Lake & Sandy (District) is pleased to commit its support and participation in the development of the Salt Lake City Department of Public Utilities (SLCPU) Drought Contingency Plan.

The District is dedicated to promoting the wise, long term, and sustainable use of water resources. We accomplish this by effectively managing valuable resources and utilizing practical technologies. The District has grown in size and capacity over the years. As a result, the District and SLCPU have responded by building our capacity to collaborate in water planning and water management issues.

The development of a Drought Contingency Plan for the service area of the SLCPU offers the opportunity for the two agencies to work with other stakeholders to make a critical assessment of compounded impacts of population growth, development, weather patterns, and drought conditions on water availability and utility for the Jordan River Basin.

In the event that a WaterSMART: Drought Contingency Planning Grant for Fiscal Year 2016 grant award is made to SLCPU, the District commits to participate in the Task Force meetings and activities related to the development of a SLCPU Drought Contingency Plan and support the implementation of the outreach and communication strategy to involve stakeholders and the public in the planning process. The District brings knowledge of the water supply and delivery systems critical to the target water service area.

The District looks forward to supporting SLCPU and the Bureau of Reclamation in building the drought readiness capacity of our collective water service areas. Please don't hesitate to contact me if you have any questions.

Sincerely,

Michael L. Wilson
General Manager

JACKIE BISKUPSKI
Mayor

DEPARTMENT OF PUBLIC SERVICES

April 8, 2016

Bureau of Reclamation
Financial Assistance Services
Mr. Michael Dieterich
Grants Management Specialist
Mail Code: 8427852
P.O. Box 25007
Denver, CO 80225

Dear Mr. Dieterich:

The Salt Lake City Division of Parks and Public Lands (PPL) is pleased to commit its support and participation in the development of the Salt Lake City Department of Public Utilities Drought Contingency Plan.

PPL is responsible for the stewardship and management of 2,215 acres of parks, natural lands, greenway, parkways, urban forests, and cemetery grounds in Salt Lake City, Utah. The Division works closely with Salt Lake City Department of Public Utilities and its Water Conservation Program to use water resources responsibly and optimally to ensure viability and health of public green spaces and model responsible water use to the public.

As a stakeholder, PPL's specific interest in the project is to represent the interests of public lands management in the planning process and to have a voice in defining workable and sustainable water supply monitoring practices and response actions that increase the drought readiness of our community.

In the event that a WaterSMART: Drought Contingency Planning Grant for Fiscal Year 2016 grant award is made to Salt Lake City Corporation and its Department of Public Utilities, the PPL commits to:

- participate in the Task Force meetings and activities related to the development of a Salt Lake City Department of Public Utilities Drought Contingency Plan,
- support the implementation of the outreach and communication strategy to involve diverse stakeholders and the public in the planning process, and
- lend our expertise and understanding of the impacts of drought stress on the stewardship and maintenance needs of parks, natural lands, greenway, parkways, urban forests, and cemetery grounds.

We look forward to the opportunity to partner with the Bureau of Reclamation and Salt Lake City Department of Public Utilities in the development of a robust Drought Contingency Plan grounded in best-practices that further our ability to respond to water shortages brought about by drought conditions.

Sincerely,

Kristin Riker
Salt Lake City Parks and Public Lands Director

PARKS AND PUBLIC LANDS
1965 WEST 500 SOUTH
PO BOX 145510
SALT LAKE CITY, UTAH 84114-5510

WWW.SLCGOV.COM
TEL 801-972-7800 FAX 801-972-7887

SALT LAKE COUNTY
HEALTH DEPARTMENT

Ben McAdams
Salt Lake County Mayor

April 8, 2016

Bureau of Reclamation
Financial Assistance Services
Michael Dieterich, Grants Management Specialist
Mail Code: 8427852
P.O. Box 25007
Denver, CO 80225

Dear Mr. Dieterich:

The Salt Lake County Health Department is pleased to commit its support and participation in the development of the Salt Lake City Department of Public Utilities Drought Contingency Plan.

Water quality is a cornerstone of the role environmental health plays in the efforts of the Salt Lake County Health Department to serve the public health needs of our community. The development of a Drought Contingency Plan for the service area of the Salt Lake City Department of Public Utilities offers a unique opportunity for local government to work with diverse stakeholders to identify climate change impacts on drought conditions and water supply. The efforts of the proposed multi-stakeholder Task Force are a critical step in defining workable and sustainable water supply monitoring practices that increase the drought readiness of our community.

In the event that a WaterSMART: Drought Contingency Planning Grant for Fiscal Year 2016 grant award is made to Salt Lake City Corporation and its Department of Public Utilities, the Salt Lake County Division of Environmental Health commits to:

- Participate in the Task Force meetings and activities related to the development of a Salt Lake City Department of Public Utilities Drought Contingency Plan,
- Support the implementation of the outreach and communication strategy to involve stakeholders and the public in the planning process, and
- Provide information and expertise specific to the impacts of climate change on water quality and public health and a critical understanding of the needs of under-represented populations in the Utilities' water service area.

We look forward to participating in the planning process and representing our vested interest in the critical importance of access to reliable, high quality, and safe drinking water for all water users and the broader issues of public health.

Sincerely,

Royal P. DeLegge, PhD, LEHS, RS
Environmental Health Director

GARY R. HERBERT
Governor
SPENCER J. COX
Lieutenant Governor

State of Utah
DEPARTMENT OF NATURAL RESOURCES
MICHAEL R. STYLER
Executive Director
Division of Water Resources
ERIC L. MILLIS
Division Director

April 7, 2016

Bureau of Reclamation
Financial Assistance Services
Mr. Michael Dieterich
Grants Management Specialist
Mail Code: 8427852
P.O. Box 25007
Denver, CO 80225

Mr. Dieterich:

The Utah Division of Water Resources (DWRe) is fully supportive of the Salt Lake City Department of Public Utilities (SLCDPU) as it develops its Drought Contingency Plan.

DWRe has a long-standing partnership with SLCDPU in efforts to conserve and use water more efficiently in Utah. Sustaining adequate water resources for humans and ecosystems will be one of the most critical and potentially contentious issues facing society in the future. The development of the Drought Contingency Plan will better position the city to respond to drought conditions through mitigation and/or response actions that support the longevity and sustainability of the area's water supply.

If a WaterSMART Drought Contingency Planning Grant for FY2016 is awarded to SLCDPU, DWRe commits to sharing our expertise by participating in the Drought Task Force meetings and activities related to the development of this Drought Contingency Plan and its implementation with stakeholders. This project will assist DWRe in gaining a better understanding of the planning necessary for community drought readiness to help assist other communities across the state.

We are very supportive of the grant application and believe it would be a beneficial use of WaterSMART funding.

Thank you,

Eric L. Millis, P.E.
Director

1594 West North Temple, Suite 310, PO Box 146201, Salt Lake City, UT 84114-6201
telephone (801) 538-7230 • facsimile (801) 538-7279 • TTY (801) 538-7458 • *www.water.utah.gov*

Appendix D. Letters of Support

JACKIE BISKUPSKI
MAYOR

DEPARTMENT *of* PUBLIC SERVICES
SUSTAINABILITY DIRECTOR

VICKI BENNETT
SUSTAINABILITY DIRECTOR

April 11, 2016

Bureau of Reclamation
Financial Assistance Services
Mr. Michael Dieterich
Grants Management Specialist
Mail Code: 8427852
P.O. Box 25007
Denver, CO 80225

Dear Mr. Dieterich:

The Salt Lake City Division of Sustainability and the Environment is pleased to commit its support of the development of the Salt Lake City Department of Public Utilities Drought Contingency Plan.

The City's Division of Sustainability and the Environment is responsible for guiding the implementation of the City's award-winning environmental programs that conserve resources, reduce pollution, slow climate change and ensure a healthy, sustainable future for the city. The Division works closely with Salt Lake City Department of Public Utilities and its Water Conservation Program to promote responsible water use to the public and raise awareness of potential impacts of drought conditions to the community. The Division maintains the on-line tool Sustainable City Dashboard to track key metrics and milestones on the City's climate response initiatives and promote public engagement and feedback on climate response initiatives (http://dashboard.slcgov.com).

The Division of Sustainability and the Environment's specific interest in the project is in its demonstration of the City's further efforts to build the capacity of its municipal operations to respond to climate change and the opportunity for public engagement in efforts to increase the drought-readiness of the community. In the event that a WaterSMART: Drought Contingency Planning Grant for Fiscal Year 2016 grant award is made to Salt Lake City Corporation and its Department of Public Utilities, the Division of Sustainability and the Environment commits to:

- Support the implementation of the outreach and communication strategy to involve diverse stakeholders and the public in the planning process
- Integrate the Salt Lake City Department of Public Utilities Drought Contingency Plan into the metric and milestone tracking on the **Sustainable City Dashboard** (http://dashboard.slcgov.com)**.**

The Salt Lake City Division of Sustainability and the Environment is committed to leveraging its resources and staff expertise to support the Bureau of Reclamation and Salt Lake City Department of Public Utilities in the development of a robust Drought Contingency Plan that ensures a reliable and sustainable supply of water even during droughts and other water shortages conditions.

Sincerely,

Vicki Bennett
Director

WESTERN WATER ASSESSMENT
A NOAA RISA TEAM

University of Colorado at Boulder
Cooperative Institute for Research in Environmental Sciences
Western Water Assessment
216 UCB Boulder, CO 80309
web: wwa.colorado.edu
email: wwa@colorado.edu

April 11, 2016

Bureau of Reclamation
Financial Assistance Services
Mr. Michael Dieterich
Grants Management Specialist
Mail Code: 8427852
P.O. Box 25007
Denver, CO 80225

Dear Mr. Dieterich:

Western Water Assessment is pleased to commit its support of the development of the Salt Lake City Department of Public Utilities Drought Contingency Plan.

The Western Water Assessment (WWA) is a university-based applied research program that addresses societal vulnerabilities to climate variability and climate change, particularly those related to water resources. While we are based in Boulder, Colorado, we work across the Intermountain West—Colorado, Utah, and Wyoming. Our mission is to **conduct innovative research in partnership with decision makers in the Rocky Mountain West, helping them make the best use of science to manage for climate impacts.**

Western Water Assessment's specific interest in the project is in to ensure that the research products will be usable in their planning and decision-making processes. Ultimately, our goal is to improve societal preparedness for climate variability and climate change. In the event that a WaterSMART: Drought Contingency Planning Grant for Fiscal Year 2016 grant award is made to Salt Lake City Corporation and its Department of Public Utilities, Western Water Assessment commits to:

- Support the planning effort by making available our most recent research on regional climate assessments through our *Intermountain West Climate Dashboard*
- Share innovative research to help the Department of Public Utilities and their stakeholders make the best use of science to manage for climate impacts

Western Water Assessment is committed to leveraging its resources and staff expertise to support the Bureau of Reclamation and Salt Lake City Department of Public Utilities in the development of a robust Drought Contingency Plan that ensures a reliable and sustainable supply of water even during droughts and other water shortages conditions.

Sincerely,

Lisa Dilling

Lisa Dilling, Ph.D.
PI and Director of WWA
Associate Professor, Environmental Studies
Fellow, Cooperative Institute for Environmental Sciences
University of Colorado Boulder

Appendix E. 2003 Salt Lake City Water Shortage Contingency Plan

SALT LAKE CITY ORDINANCE
No. 50 of 2003

(Enacting new Sections 17.16.092 and 17.16.792, relating to a Water Shortage Contingency Plan, and related civil fines.)

AN ORDINANCE ENACTING NEW SECTIONS 17.16.092 AND 17.16.792, RELATING TO THE PREPARATION AND IMPLEMENTATION OF A WATER SHORTAGE CONTINGENCY PLAN AND RELATED CIVIL FINES.

Be it ordained by the City Council of Salt Lake City, Utah:

SECTION 1. Section 17.16.092 of the Salt Lake City Code is hereby enacted, to read as follows:

17.16.092 Water Shortage Management

A. Declaration of Policy. Given the prevailing semi-arid climate of the region, the limited water resources available to Salt Lake City, and the vitally important role an adequate supply of municipal and industrial (M&I) water plays in maintaining a healthy and safe environment in the community, it is hereby declared to be the policy of Salt Lake City that, during times of water shortage caused by drought, facilities failure or any other condition or event, M&I water usage within the City's water service area shall be managed, regulated, prioritized and restricted in such a manner as to prevent the wasteful or unreasonable use of water, and to preserve at all times an adequate supply of M&I water for essential uses.

B. Water Shortage Contingency Plan. The Director of the Department of Public Utilities shall cause to be prepared and implemented a Water Shortage Contingency Plan (the "Plan"). Such Plan may be included as part of, or prepared separately from, the Water Conservation Master Plan provided for in Section 78-10-32, Utah Code Annotated, and shall be

revised from time to time as conditions and circumstances warrant. The Plan shall, among other things (i) establish graduated stages of water shortage severity, and (ii) establish appropriate M&I water use restriction response measures for each stage. The Plan shall include guidelines and criteria for determining the appropriate stage to be implemented under various water supply, delivery, and demand conditions. Each Plan stage of water shortage, and the accompanying use restrictions, shall be implemented by declaration of the Mayor, upon the advice and recommendation of the Director pursuant to the Plan guidelines.

C. Compliance. Compliance with the water use restriction response measures called for under any applicable Plan stage may be either recommended or mandatory, as specified in the Plan. The Plan may not provide for mandatory restrictions on residential or commercial customers until either (i) the projected water supply from all sources is sixty (60) percent or less of the average annual water supply, or (ii) the Director otherwise determines that, in the exercise of his or her best professional judgment, the City is unable to meet anticipated essential water needs without implementing such mandatory measures.

D. Enforcement. The Director shall enforce compliance with all mandatory response measures set forth in the Plan through the imposition and collection of civil fines, as provided in Section 17.16.792 of this Code. Nothing herein or in Section 17.16.792 shall prevent the City from exercising any other available means, either in law or equity, of enforcing compliance with the Plan.

E. Plan Non-Exclusive. The creation and implementation of the Plan shall be in addition to, and not exclusive of, any other steps taken by the City from time to time to conserve water or manage limited water supplies, including Mayoral proclamations issued pursuant to Section 17.16.080.

SECTION 2. Section 17.16.792 of the Salt Lake City Code is hereby enacted, to read as follows:

17.16.792 Water Shortage Contingency Plan-Civil Fines

A. Any customer of the City's municipal and industrial water system found to be in violation of any mandatory water use restriction in effect from time to time under the Water Shortage Contingency Plan established under Section 17.16.092, shall be subject to the following maximum civil fines:

First violation:	$100
Second violation:	$250
Third violation:	$500
Fourth violation and thereafter:	$1,000

The violation level shall be based on violation history for the preceding 12 months. A civil fine for a customer's first violation shall be imposed only after the issuance of a written warning to such customer. Any civil fine based on a violation susceptible to corrective action shall be imposed only after failure by the customer to take such corrective action within a reasonable period of time, as determined by the Director, taking into account the nature of the action needed and the anticipated cost. "Customer" for purposes of this Section 17.16.792 and Section 17.16.092 of the Salt lake City Code, shall mean and include any person responsible, whether by ordinance or by contract between the city and such person, to pay the water charges on any account for use of water from the city's municipal and industrial water treatment and distribution system, whether the location at which such water is used is situated within or outside of the corporate limits of the city. It is the intent of the city that compliance with the provisions of Section 17.16.092, as enforced pursuant to this Section, by customers situated outside of the corporate limits of the city shall be a contractual condition of continued water service.

B. Any customer subject to a civil fine under this Section shall be notified by the Director, in writing, of the date, nature, and circumstances of the violation, which notification shall be delivered by posting such notice at a conspicuous location on the property, and by mailing notice, by certified mail, no more than 15 calendar days after the date of occurrence of the violation. The notice shall advise the customer of his/her right to protest the fine to a hearing officer, which shall be the Director or his or her designee, within ten business days after receipt of the notice. The hearing officer shall have the authority to adjust the fine to take into account any extenuating circumstances. Any determination by the hearing officer may be appealed to a three (3) member Water Shortage Appeals Panel. The City Council shall designate three (3) members of the Public Utilities Advisory Committee to serve on the Panel; provided, however, that the Director may designate other members of the PUAC to serve as alternates as needed. All decisions of the Water Shortage Appeals Panel shall be final.

C. All fines collected pursuant to this Section shall be set aside in a segregated fund within the Public Utilities Enterprise Fund, and used exclusively for paying all or a portion of the costs and expenses incurred by the City in connection with the implementation and administration of the Plan and other elements of the City's water conservation program.

SECTION 4. This ordinance shall take effect immediately upon the date of its first publication.

Passed by the City Council of Salt Lake City, Utah this 8th day of July, 2003.

CHAIRPERSON

ATTEST:

CHIEF DEPUTY CITY RECORDER

Transmitted to Mayor on July 9, 2003.

Mayor's Action: X Approved. _____Vetoed.

MAYOR

CHIEF DEPUTY CITY RECORDER

APPROVED AS TO FORM
Salt Lake City Attorney's Office
Date 7/10/03
By

(SEAL)

Bill No. 50 of 2003.
Published: July 21, 2003.

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WATER SHORTAGE CONTINGENCY PLAN

Salt Lake City Department of Public Utilities
Last Modified June 2003

SECTION I: DECLARATION OF POLICY, PURPOSE, AND INTENT

In order to conserve the available water supply and protect the integrity of water supply facilities, with particular regard for domestic water use, sanitation, and fire protection, and to protect and preserve public health, welfare, and safety, and at the same time minimize the adverse impacts of water supply shortages or other water supply emergency conditions, the Salt Lake City Department of Public Utilities (Public Utilities) hereby adopts the following Plan to address water shortages brought about by drought, service interruption, or other emergency or event.

This Plan is intended as a supplement to the Water Conservation Master Plan. For information pertaining to Public Utilities long-term water conservation plans and measures, as well as support information on water conservation, consult the appropriate section of the Water Conservation Master Plan.

SECTION II: LEGAL AUTHORITY

This Plan is adopted by Public Utilities pursuant to the direction of the City Council contained in Section 17.16.092, Salt Lake City Code (hereafter referred to as the Ordinance).

SECTION III: APPLICATION

The provisions of this Plan shall apply to all persons, customers, and property utilizing water provided by Public Utilities.

SECTION IV: DEFINITIONS

For the purposes of this Plan, the following definitions shall apply:

Acre feet (AF): A quantity of volume of water that covers one acre to a depth of one foot; equal to 43,560 cubic feet or 325,851 gallons.

Average Annual Demand: 105,000 AF as measured from supply to conduit.

Average Annual Supply: 126,900 AF, as of January 1, 2003. In 2005, Salt Lake City's average annual supply will increase by 4000 AF per year for five years as a result of additional Central Utah Project water, increasing the average annual supply by 20,000 AF in 2008.

Best Management Practices (BMPs): Applicable Best Management Practices for a particular industry (see Appendices for examples).

Conservation: Those practices, techniques, and technologies that reduce the consumption of water, reduce the loss or waste of water, improve efficiency in the use of water, or increase the recycling and reuse of water so that a supply is conserved and made available for future or alternative uses.

Culinary Water: See Municipal and Industrial Water.

Customer: Any person, company, corporation, partnership, association, organization, or other legal entity using water supplied by Public Utilities through system connections, or legal or contractual agreement.

Director: Shall mean the Director of Salt Lake City Department of Public Utilities, or his or her designee.

Even number address: Street addresses ending in 0, 2, 4, 6, or 8 and locations without addresses.

Hearing Officer: Shall mean the Director of Salt Lake City Department of Public Utilities or such other employee of Public Utilities as the Director shall designate from time to time.

Hearing Review Panel: A panel designated by the Salt Lake City Council and comprised of three (3) current members of the Public Utilities Advisory Committee.

Industrial water use: The use of water in processes designed to convert materials of lower value into forms having greater usability and value.

Landscape irrigation use: Water used for the irrigation and maintenance of landscaped areas, whether publicly or privately owned, including lawns, gardens, golf courses, parks, rights-of-way, medians, and park strips.

Municipal and Industrial Water (M&I): Water treated by Public Utilities specifically to meet Safe Drinking Water Standards as defined by the Safe Drinking Water Act. For the purpose of this Plan, M&I water is divided into the following categories: 1) d*omestic use* is that water which is used in private residences, apartment houses, etc., for drinking, bathing, cleaning, landscape sprinkling, sanitary, and other purposes; 2) c*ommercial and industrial use* is that water used by commercial establishments and industries; and 3) *public use* includes water required for use in parks, public golf courses, civic buildings, schools, hospitals, and churches.

Odd numbered address: Street addresses ending in 1, 3, 5, 7, or 9.

Ordinance: Ordinance adopted by Salt Lake City Council, enacting Section 17.16.092 of the Salt Lake City Code, authorizing the adoption of the Plan.

Positive Pressure Nozzle: A spring-loaded nozzle attached to the end of a hose that requires positive pressure to maintain water flow.

Projected Demand: The estimated water demand at any given point in time (stated as a percentage of the average annual demand or as total gallons per day).

Projected Supply: The anticipated supply at any given point in time (stated as a percentage of the average annual supply or as total gallons per day).

Public Utilities: Salt Lake City Department of Public Utilities

Reclaimed Water: Wastewater treated by Public Utilities to levels appropriate for irrigation and industrial uses

Response Plan: Shall mean the Water Shortage Response Summary, an attachment to the Plan which identifies each Water Shortage Stage and the specific calls to action, both voluntary and restricted. This Response Summary is to be updated as the Plan is updated.

SECTION V: CRITERIA FOR INITIATION AND TERMINATION OF WATER SHORTAGE STAGES

Monitoring

All relevant components of the Salt Lake City water system will be monitored to ensure timely response to water situations by the Director. Public Utilities will monitor supply, treatment and distribution system, demand trends, and potential constraints, for the purpose of identifying potential shortages. The Director shall determine when conditions warrant initiation or termination of each stage of the Plan, that is, when specified triggers are reached.

Initiation of Water Shortage Stage

Meeting or exceeding one or more trigger conditions will be sufficient cause to initiate a corresponding Water Shortage Stage. However, the Director can decide that a stage not be initiated under these circumstances. The decision may be influenced by factors that include, but are not limited to, the time of year, weather conditions, anticipation of replenished water supplies, or anticipation that facilities will be placed on-line to meet water demand. The Director shall make a recommendation to initiate a stage or a stage change to the Mayor, who will make the final determination in accordance with the Ordinance.

It is not incumbent on the Director to implement lower steps before higher ones. If the Director judges the situation to warrant it, he can declare a higher stage of water shortage response at any time. All measures contained in the Plan for lower levels of response automatically come into action at that point.

Termination of Water Shortage Stage
Termination of the Plan stage will be announced when the trigger conditions that initiated the drought measures have subsided and the shortage no longer exists, by the determination of the Director.

Upon terminating a stage, it is not incumbent on the Director to implement the stage immediately lower. If the Director does not designate a Plan stage, then the next lower stage becomes active.

SECTION VI: NOTIFICATION AND EDUCATION

The Director shall notify the public of the initiation of the applicable Plan stage and corresponding conservation measures, or the termination of a Plan stage and corresponding conservation measures, by one or more of the following means:

- Publication of notices in a newspaper of general circulation
- Direct mail to each customer on the utility bill, as a bill insert, and/or as a special mailing
- Public service announcements
- Signs posted in public places
- Take-home fliers at schools
- Public meetings/community council meetings
- Public Utilities Water Conservation website
- Salt Lake City municipal website

Customer Agency Notification:
The Director shall endeavor to notify directly the following individuals and entities:

Salt Lake City Council
Public Utilities Advisory Committee
Fire Chief(s)
City and/or County Emergency Management Coordinator(s)
Salt Lake City Department of Public Services
State Disaster District / Department of Public Safety
Critical water users, i.e. hospitals

Additionally, Public Utilities will periodically provide customers and customer agencies with information about the Plan, including information about water conditions under which each stage of the Plan is to be initiated or terminated, the response measures to be implemented in each stage, as well as any Plan updates.

The success of any water conservation program in achieving short term and immediate water conservation targets as might be required under a water shortage is dependant on Public Utilities' ability to convey to the community the water-supply situation, the expected response actions, and clear and measurable targets. The Response Summary and Appendices have been developed to enhance public understanding of water supply levels, response actions, and restrictions.

SECTION VII: STAGES AND RESPONSES

This Plan provides for five Water Shortage stages and responses of increasing severity, as progressively more serious conditions warrant. The triggering criteria described are based on the projected percentage of water available from a number of sources, including, but not limited to snow pack, soil moisture, surface water, ground water, stored water, and spot market water. Degrees of flexibility have been built into this Plan to allow for timely adjustments at all levels of planning and implementation.

Key elements of a successful demand management program are that the resources and hardships are shared as equitably as possible, and that customers are kept informed about the status of the shortage.

The five stages are characterized as follows:

- STAGE 1—ADVISORY Stage: the public is informed as early as meaningful data are available that a possible shortage may occur.

- STAGE 2—MILD Stage: this stage is initiated if supply conditions worsen and relies on voluntary cooperation and support of water customers to meet target consumption goals. During this stage, specific voluntary actions are suggested for all customers, and specific mandatory actions are identified for municipal customers, including parks, golf courses, schools, and other government facilities.

- STAGE 3—MODERATE Stage: this stage is to be initiated if the Mild Stage does not result in the reduction needed, or circumstances warrant its initiation as specified in Section V: Initiation. This stage increases the prohibition or limitation of certain actions and relies on both voluntary and mandatory actions.

- STAGE 4—SEVERE Stage: this stage is to be initiated if the Moderate Stage does not result in the reduction needed, or circumstances warrant its initiation as specified in Section V: Initiation. The Severe Stage has increasingly stringent prohibitions and limits on certain actions, including certain mandatory actions for residential and commercial customers.

- STAGE 5—CRITICAL Stage: this stage addresses the most critical need for demand reduction and increases the number of restricted water uses and mandatory actions. This could be used as a stage of a progressive situation, such as a drought of increasing severity, or to address an immediate crisis, such as a facility failure.

STAGE 1—ADVISORY

The ADVISORY STAGE is intended to increase the community's awareness of the potential for future water shortages. Under this stage, conservation efforts which are on-going will receive additional emphasis, and measures not pursued during normal water supply times because they are not cost-effective will be re-evaluated.

The ADVISORY STAGE triggers an increase in public education and information to assist all customers impacted by the shortage in order that those customers better understand the state of the water shortage condition and the need for voluntary action.

Trigger

- Total reservoir storage is not projected to be at standard operating capacity on or near April 1, due to exceptionally low snow pack, precipitation and/or lack or carryover storage from the previous year

- Total reservoir storage and predicted inflows are significantly below historical normal for the current time of year, and supply modeling indicates that expected demands may not be met if current trend continues or worsens

- Other water supplies are protected to be below standard operating capacity or historic levels

Objectives

- To prepare Public Utilities, the City, relevant agencies, and water customers for a potential water shortage thereby allowing all parties adequate time for planning and coordination

- To undertake supply management actions that forestall or minimize the need for later, more stringent supply or demand management actions

- To minimize the waste of water through carelessness, either intentional or accidental

STAGE 2—MILD

The conservation measures in this stage are focused on specific voluntary actions. However, some prohibitions on water waste are enforced with fines and/or flow restrictors or disconnection.

Trigger

- Supply levels identified in the ADVISORY STAGE have not improved
- Demand levels indicate the need for a more systematic response to manage the situation
- Water supply levels are projected to be eighty (80) percent of the Average Annual Supply.

Response

As outlined in the Response Summary.

Target: Achieve a five (5) percent reduction in total daily water use or Average Annual Demand.

Objectives:

- To maintain or reduce demand to meet target consumption levels by customer voluntary actions
- To forestall or minimize the need for later, more stringent actions
- To minimize disruption to customers' lives and businesses while meeting target consumption goals
- To maintain the highest water quality standards throughout the shortage

Termination of Stage

The Director may rescinded STAGE 2 of the Plan when the conditions listed as triggering events have ceased to exist for such a period as deemed appropriate and reasonable. Upon termination of Stage 2, the ADVISORY STAGE becomes active unless otherwise stated.

STAGE 3—MODERATE

Demand reduction responses are voluntary, with the exception of Park, Golf, and other Government facilities, having some mandatory response actions.

Trigger

The Director would approve progression to this stage if the goals established in the preceding stage have not been met and additional action is needed. The specific voluntary restrictions imposed during the MODERATE STAGE would be determined based on the season of year, targeted demand levels, and other considerations.

- Projected water supply is seventy (70) percent of the Average Annual Supply
- Supply levels identified in the MILD STAGE have not improved

- Demand levels indicate the need for a more systematic response to manage the situation

Response
As outlined in the Response Summary.

Target
Achieve a fifteen (15) percent reduction in total daily demand or Average Annual Demand.

Objectives

- To achieve targeted consumption reduction goals by restricting defined water uses
- To ensure that adequate water supply will be available for the duration of the situation to protect public health and safety and to balance the need for stream flows
- To minimize the disruption to customers' lives and businesses while meeting target consumption goals
- To maintain the highest water quality standards throughout the shortage
- To promote equity amongst water customers by establishing clear restrictions that affect all customers

Termination of Stage
The Director may rescinded STAGE 3 of the Plan when the conditions listed as triggering events have ceased to exist for such a period as deemed appropriate and reasonable.

STAGE 4—SEVERE
Some elements of STAGE 4 will become mandatory and be enforced, in addition to elements under previous stages. Such elements may include mandatory curtailments of water for certain types of non-essential use.

Trigger
The Director would approve progression to this stage if the goals established in the MODERATE STAGE have not been met and additional action is needed. Increasingly stringent water restrictions may be established and enforced.

- Projected water supply is sixty (60) percent of the Average Annual Supply.
- Supply levels identified in the MODERATE STAGE have not improved
- Demand levels indicate the need for a more systematic response to manage the situation, including restricted or prohibited water uses

Response
As outlined in the Response Summary.

Target
Achieve a twenty-five (25) percent reduction in total daily water use or Average Annual Demand.

Objectives

- To achieve targeted consumption reduction goals by restricting defined water uses
- To ensure that adequate water supply will be available for the duration of the situation to protect public health and safety and to balance the need for stream flows
- To minimize the disruption to customers' lives and businesses while meeting target consumption goals
- To maintain the highest water quality standards throughout the shortage
- To promote equity amongst water customers by establishing clear restrictions that affect all customers

Termination of Stage
The Director may rescinded STAGE 4 of the Plan when the conditions listed as triggering events have ceased to exist for such a period as deemed appropriate and reasonable.

STAGE 5—CRITICAL

Elements under STAGE 5 are mandatory, unless otherwise stated.

Trigger
The Director would approve progression to this stage if the goals established in the SEVERE STAGE have not been met and additional action is needed. Increasingly stringent water restrictions may be established and enforced.

- Major water line breaks, or pump or system failures, which cause unprecedented loss of capability to provide water service
- Natural or man-made contamination of the water supply source(s)
- Supply levels identified in the SEVERE STAGE have not improved
- A projected water supply of fifty (50) percent of the Average Annual Supply

Response

As outlined in the Response Summary.

Target

Achieve a thirty-five (35) percent reduction in total daily water use.

Objectives

- To achieve targeted consumption reduction goals by restricting defined water uses
- To ensure that adequate water supply will be available for the duration of the situation to protect public health and safety and to balance the need for stream flows
- To minimize the disruption to customers' lives and businesses while meeting target consumption goals
- To maintain the highest water quality standards throughout the shortage
- To promote equity amongst water customers by establishing clear restrictions that affect all customers

Termination of Stage

The Director or his or her designee may rescinded STAGE 4 of the Plan when the conditions listed as triggering events have ceased to exist for such a period as deemed appropriate and reasonable by the Director.

SECTION VIII: ENFORCEMENT

Provisions of the Plan and Response Summary shall be enforced as indicated in the Ordinance.

Penalties for violation of any portion of the Plan are defined in the Ordinance. A civil fine for a customer's first violation shall be imposed only after the issuance of a written warning to such customer. Any civil fine based on a violation susceptible to corrective action shall be imposed only after failure by the customer to take such corrective action within a reasonable period of time, as determined by the Director, taking into account the nature of the action needed and the anticipated cost. The time allowed will vary with the nature of the violation; for instance, corrective measures can be taken more quickly for a violation of time-of-day restrictions than can be taken for a system repair or a pump retrofit for a fountain.

Subsequent violations will result in a formal violation notice, a fine, and/or water service shut off. Notification of a violation shall be as set forth in the Ordinance.

Customers violating any portion of the Plan as defined by Public Utilities shall be assessed a fine according to the following schedule. The violation level shall be based upon violation history for the preceding twelve (12) months.

The fines for a violation and each subsequent violation are as follows:

1st Violation	$ 100
2nd Violation	$ 250
3rd Violation	$ 500
4th Violation	$ 1000
5th Violation	Flow restrictor or interruption of service until corrective action is taken and previous fines paid in full

If a service is disconnected, Public Utilities may assess and collect a fee before service is restored. That fee is in addition to other fines or charges imposed under a particular water shortage response measure.

Any customer subject to a civil fine shall be notified by the Director, in writing, of the date, nature, and circumstances of the violation, which notification shall be delivered by certified mail no more than 15 calendar days after the date of occurrence of the violation. The notice shall advise the customer of his/her right to protest the fine to the Director, or his or her designee, within ten business days after receipt of the notice. Any determination by the Director or designee may be appealed to the Water Shortage Appeals Panel, as established in the Ordinance. All decisions of the Water Shortage Appeals Panel shall be final.

The Director may grant written variances to persons who apply, on forms supplied by Public Utilities, for usage of water not in compliance with the Plan or for relief from a fine. Variances may be granted if it is found that such water use is necessary to prevent an emergency condition relating to health or safety, extreme economic hardship, or essential government services such as police, fire, and similar emergency services. Variances may also be considered for customers under irrigation targets who have already made every reasonable effort to reduce water use.

Monies collected from fines are not considered rates for the production of water revenue. Those monies will be placed in a special fund, to be administered by Public Utilities, and will be used for, but not limited to, meeting the expenses of enforcement of restrictions under this Plan, producing educational materials relating to water conservation, promoting information related to the Plan, or augmenting water supplies.

SECTION IX: LIMITED EXEMPTION FOR RECLAIMED WATER

The Director may exempt certain uses and users of Reclaimed Water from any or all of the water use restriction requirements contained in this Plan. Users must apply for exemption on forms supplied by Public Utilities. Only the use of Reclaimed Water may be exempted from the provisions of the Plan. Users of both Reclaimed Water and M&I Water will not be exempt from restrictions on the use of

M&I Water, and must comply with restrictions in effect during all stages of the Plan.

The Director, in the interest of equity and community acceptance of such exemption on the use of Reclaimed Water during a declared drought, water shortage, or other water emergency, may require exempt users to clearly post notices to the effect that the water being used is not from the public drinking water supply, and that the use conforms to restrictions in force at the time. Failure to make such posting in a timely fashion may, at the discretion of the Director, result in loss of exemption from the provisions of this Plan.

LeRoy W. Hooton, Director, Department Public Utilities

6-5-03
Date

Water Shortage Response Summary

Follow guidelines for water conservation as presented in Water Conservation Master Plan

General Information: Water Waste may be subject to fines and/or delivery restriction or disconnection		
Single Family, Duplex, and Triplex Residential		
Lawn Watering	Voluntary	Voluntarily follow schedule (see Appendix A)
Trees, shrubs, perennials, annuals, and vegetables	Voluntary	It is encouraged that non-turf areas are watered separately and less frequently from lawn areas; use of hand-held hoses, hand-held buckets, drip irrigation, or subterranean irrigation recommended
Time of Day (applies to over-head sprays only)	Voluntary	Avoid watering between 10 AM and 6 PM
Irrigation Systems	Voluntary	Maintain irrigation systems in good working order with no damaged, misaligned, or missing sprinkler heads; minimize spray on walks, drives, and gutters
New Landscape	Voluntary	No restrictions; spring and fall planting recommended
Pools and Jacuzzis	Voluntary	No restrictions; pool covers are recommended
Fountains, Waterfalls, and Ponds	Voluntary	No restrictions; the use of recirculation pumps is recommended
Hard-surface Washing	Voluntary	No restrictions; the use of brooms is encouraged
Personal Vehicle Washing	Voluntary	No restrictions; the use of hand held buckets or positive pressure nozzles encouraged
Commercial, Industrial, Business, Multi-family Apartments, and Home Owners Associations		
All Businesses, Industries, and Commercial Users	Voluntary	Develop, adopt, and implement Best Management Practices for Water Conservation; reduce consumption 5 to 14 percent
Lawn Watering	Voluntary	Voluntarily follow schedule (see Appendix A)
Trees, shrubs, perennials, annuals, and vegetables	Voluntary	It is recommended that non-turf areas are watered separately from lawn areas; use of hand-held hoses, hand-held buckets, drip irrigation, or subterranean irrigation recommended
Time of Day (applies to over-head sprays only)	Voluntary	Avoid watering between 10 AM and 6 PM

Irrigation Systems	Voluntary	Maintain irrigation systems in good working order with no damaged, misaligned, or missing sprinkler heads; minimize spray on walks, drives, and gutters
New Landscape	Voluntary	No restrictions; spring and fall planting recommended
Pools and Jacuzzis	Voluntary	No restrictions; the use of pool covers is encouraged; lower water level by four (4) inches to minimize loss due to splashing
Fountains, Waterfalls, and Ponds	Voluntary	No restrictions; the use of recirculation pumps is encouraged
Hard-surface Washing	Voluntary	No restrictions; brooms are recommended
Commercial Car Washes	Voluntary	Implement Best Management Practices (see Appendix E)
Commercial and Fleet Vehicle Washing	Voluntary	No restrictions; positive pressure nozzles recommended; use Best Management Practices (see Appendix E)
Commercial Plant Nurseries	Voluntary	Utilize Best Management Practices; Voluntarily restrict all non-essential water use (see Appendix F)
Hotels/Lodging	Voluntary	Utilize Best Management Practices (see Appendix D)
Restaurants	Voluntary	Voluntarily do not serve water except upon request; Utilize Best Management Practices
Parks, Golf, Schools, and other Government Facilities		
Lawn Watering	Mandatory	Follow established water target (See Appendix C)
Trees, shrubs, perennials, annuals, and vegetables	Voluntary	Water separately and less frequently from lawn areas; use of hand-held hoses, hand-held buckets, drip irrigation, or subterranean irrigation recommended
Time of Day (applies to over-head sprays only)	Mandatory	No watering between 10 AM and 6 PM
Irrigation Systems	Mandatory	Maintain irrigation systems in good working order with no damaged, misaligned, or missing sprinkler heads; minimize spray on walks, drives, and gutters
New Landscape	Voluntary	No restrictions; recommend installing in spring or fall
Fleet vehicles	Voluntary	No more than once per week (emergency vehicles exempted)
Pools and Jacuzzis	Voluntary	No restrictions; the use of pool covers is encouraged; lower water level by four (4) inches to minimize loss due to splashing
Fountains, Waterfalls, and Ponds	Voluntary	No restrictions; use of recirculation pumps is encouraged
Hard-surface washing	Voluntary	No restrictions; use of brooms is encouraged

General Information: Water Waste may be subject to fines and or delivery restriction or disconnection		
Single Family, Duplex, and Triplex Residential		
Lawn Watering	Voluntary	Voluntarily follow schedule (see Appendix A)
Trees, shrubs, perennials, annuals, and vegetables	Voluntary	It is recommended that non-turf areas are watered separately and less frequently from lawn areas; use of hand-held hoses, hand-held buckets, drip irrigation, or subterranean irrigation recommended
Time of Day (applies to over-head sprays only)	Voluntary	Avoid watering between 10 AM and 6 PM
Irrigation Systems	Voluntary	Maintain irrigation systems in good working order with no damaged, misaligned, or missing sprinkler heads; minimize spray on walks, drives, and gutters
New Landscape	Voluntary	No restrictions; recommend installing in spring or fall
Pools and Jacuzzis	Voluntary	No restrictions; the use of pool covers is encouraged; lower water level by four (4) inches to minimize loss due to splashing
Fountains, Waterfalls, and Ponds	Voluntary	No restrictions; installation of recirculation pumps encouraged
Hard-surface Washing	Voluntary	No restrictions; the use of brooms is encouraged
Personal Vehicle Washing	Voluntary	No restrictions; the use of positive pressure nozzles and hand held buckets recommended
Commercial, Industrial, Business, Multi-family Apartments, and Home Owners Associations		
All Businesses, Industries, and Commercial Users	Voluntary	Reduce consumption by 15 to 24 percent; Develop, adopt, and implement Best Management Practices for Water Conservation
Lawn Watering	Voluntary	Voluntarily follow schedule (see Appendix A)
Trees, shrubs, perennials, annuals, and vegetables	Voluntary	It is recommended that non-turf areas are watered separately and less frequently from lawn areas; use of hand-held hoses, hand-held buckets, drip irrigation, or subterranean irrigation recommended
Time of Day (applies to over-head sprays only)	Voluntary	Avoid watering between hours of 10 AM and 6 PM
Irrigation Systems	Voluntary	Maintain irrigation systems in good working order with no damaged, misaligned, or missing sprinkler heads; minimize spray on walks, drives, and gutters

Moderate Stage: Reduction Goal 15 to 24 Percent		
General Information: Water Waste may be subject to fines and or delivery restriction or disconnection		
Single Family, Duplex, and Triplex Residential		
Lawn Watering	Voluntary	Voluntarily follow schedule (see Appendix A)
Trees, shrubs, perennials, annuals, and vegetables	Voluntary	It is recommended that non-turf areas are watered separately and less frequently from lawn areas; use of hand-held hoses, hand-held buckets, drip irrigation, or subterranean irrigation recommended
Time of Day (applies to over-head sprays only)	Voluntary	Avoid watering between 10 AM and 6 PM
Irrigation Systems	Voluntary	Maintain irrigation systems in good working order with no damaged, misaligned, or missing sprinkler heads; minimize spray on walks, drives, and gutters
New Landscape	Voluntary	No restrictions; recommend installing in spring or fall
Pools and Jacuzzis	Voluntary	No restrictions; the use of pool covers is encouraged; lower water level by four (4) inches to minimize loss due to splashing
Fountains, Waterfalls, and Ponds	Voluntary	No restrictions; installation of recirculation pumps encouraged
Hard-surface Washing	Voluntary	No restrictions; the use of brooms is encouraged
Personal Vehicle Washing	Voluntary	No restrictions; the use of positive pressure nozzles and hand held buckets recommended
Commercial, Industrial, Business, Multi-family Apartments, and Home Owners Associations		
All Businesses, Industries, and Commercial Users	Voluntary	Reduce consumption by 15 to 24 percent; Develop, adopt, and implement Best Management Practices for Water Conservation
Lawn Watering	Voluntary	Voluntarily follow schedule (see Appendix A)
Trees, shrubs, perennials, annuals, and vegetables	Voluntary	It is recommended that non-turf areas are watered separately and less frequently from lawn areas; use of hand-held hoses, hand-held buckets, drip irrigation, or subterranean irrigation recommended
Time of Day (applies to over-head sprays only)	Voluntary	Avoid watering between hours of 10 AM and 6 PM
Irrigation Systems	Voluntary	Maintain irrigation systems in good working order with no damaged, misaligned, or missing sprinkler heads; minimize spray on walks, drives, and gutters

Severe Stage: Reduction Goal 25 to 34 Percent

General Information: Violation of restrictions and/or water waste may be subject to fines and or delivery restriction or disconnection		
Single Family, Duplex, and Triplex Residential		
Lawn Watering	Mandatory	Permitted two days per week (see Appendix B)
Trees, shrubs, perennials, annuals, and vegetables	Mandatory	Water with hand-held hoses, hand-held buckets, or drip irrigation only
Time of Day (applies to over-head sprays only)	Mandatory	No watering between hours of 10 AM and 6 PM
Irrigation Systems	Mandatory	Maintain irrigation systems in good working order with no damaged, misaligned, or missing sprinkler heads; minimize spray on walks, drives, and gutters
New Landscapes	Voluntary	Recommend installing in spring or fall; must follow mandatory watering practices (new lawns up to 42 days after installation may be watered more frequently but must comply with the time of day rule)
Pools and Jacuzzis	Voluntary	No restrictions; the use of pool covers is encouraged; lower water level by four (4) inches to minimize loss due to splashing
Fountains, Waterfalls, and Ponds	Mandatory	Outdoor features may not be operated if water sprays or shoots into air; must have recirculation pump
Hard-surface Washing	Mandatory	No washing of walks, drives, patios, gutters
Personal Vehicle Washing	Mandatory	Only with bucket or hand-held hose with positive pressure nozzle
Commercial, Industrial, Business, Multi-family Apartments, and Home Owners Associations		
All Businesses, Industries, and Commercial Users	Voluntary	Reduce consumption by 25 to 34 percent; Develop, adopt, and implement Best Management Practices for Water Conservation
Lawn Watering	Mandatory	Permitted two days per week (see Appendix B)
Trees, shrubs, perennials, annuals, and vegetables	Mandatory	Water with hand-held hoses, hand-held buckets, drip irrigation, or subterranean irrigation
Time of Day (applies to over-head sprays only)	Mandatory	No watering between hours of 10 AM and 6 PM
Irrigation Systems	Mandatory	Maintain irrigation systems in good working order with no damaged, misaligned, or missing sprinkler heads; minimize spray on walks, drives, and gutters

New Landscape	Voluntary	No restrictions; recommend installing in spring or fall
Pools and Jacuzzis	Voluntary	No restrictions; the use of pool covers is encouraged; lower water level by four (4) inches to minimize loss due to splashing
Fountains, Waterfalls, and Ponds	Voluntary	May be filled; use of recirculation pump recommended
Hard-surface Washing	Voluntary	No washing of walks, drives, patios, gutters except for health or safety
Commercial Car Washes	Voluntary	Implement Best Management Practices (see Appendix E)
Commercial and Fleet Vehicle Washing	Voluntary	May be washed no more often than once per week (see Appendix E)
Commercial Plant Nurseries	Voluntary	Utilize Best Management Practices; exempted from designated watering restrictions (see Appendix F)
Hotels/Lodging	Voluntary	Serve water to customer only upon request; display table tents or public notice (see Appendix D)
Restaurants	Voluntary	Voluntarily do not change sheets for multiple night stays; voluntarily reduce consumption by 15 percent
Parks, Golf, Schools, and other Government Facilities		
Lawn Watering	Mandatory	Water target less 15 percent (see Appendix C)
Trees, shrubs, perennials, annuals, and vegetables	Voluntary	Water separately and less frequently from lawn areas; use of hand-held hoses, hand-held buckets, drip irrigation, or subterranean irrigation recommended
Time of Day (applies to over-head sprays only)	Mandatory	No watering between 10 am and 6 pm
Irrigation Systems	Mandatory	Maintain irrigation systems in good working order with no damaged, misaligned, or missing sprinkler heads; minimize spray on walks, drives, and gutters
New Landscape	Voluntary	No restrictions; recommend installing in Spring or Fall
Golf Courses	Mandatory	Water target less 15 percent
Pools	Voluntary	No restrictions; the use of pool covers is encouraged; lower water level by four (4) inches to minimize loss due to splashing
Fountains, Waterfalls, and Ponds	Voluntary	May be filled; use of recirculation pump recommended
Hard-surface Washing	Voluntary	No washing of walks, drives, patios, gutters except for health or safety
Fleet vehicle washing	Voluntary	No more than once per week with equipment or at certified car wash (emergency vehicles excepted); utilize Best Management Practices (see appendix E)

New Landscapes	Voluntary	Recommended installing in spring or fall; must follow mandatory watering practices (new lawns up to 42 days after installation may be watered more frequently but must comply with the time of day rule)
Pools and Jacuzzis	Mandatory	May be filled under the following circumstances: pool covers are utilized when pool not in use; lower water level by four (4) inches to reduce loss due to splashing; water sprays into the air may not be operated
Fountains, Waterfalls, and Ponds	Mandatory	Outdoor features may not be operated if water sprays or shoots into air; must have recirculation pump
Hard-surface Washing	Mandatory	No washing of walks, drives, patios, gutters except for health or safety
Commercial Car Washes	Voluntary	Implement Best Management Practices (see Appendix E)
Commercial and Fleet Vehicles	Mandatory	No more than once per week; utilize Best Management Practices (see Appendix E)
Commercial Plant Nurseries	Mandatory	Utilize Best Management Practices (see Appendix F)
Hotels/Lodging	Mandatory	Utilize Best Management Practices (see Appendix D)
Restaurants	Mandatory	Required to not serve water except upon request; utilize Best Management Practices (see Appendix D)
Parks, Golf, Schools, and other Government Facilities		
Lawn Watering	Mandatory	Water target less 25 percent (see Appendix C)
Time of Day (applies to over-head sprays only)	Mandatory	No watering between 10 am and 6 pm
Irrigation Systems	Mandatory	Maintain irrigation systems in good working order with no damaged, misaligned, or missing sprinkler heads; minimize spray on walks, drives, and gutters
New Landscapes	Mandatory	No new landscapes unless already under contract at time of stage implementation or if irrigated by drip system
Golf courses	Mandatory	Water Target less 25 percent
Fleet vehicle washing	Mandatory	No more than once per week (emergency vehicles excepted)
Pools	Mandatory	May be filled under the following circumstances: pool covers are utilized when pool not in use; lower water level by four (4) inches to reduce loss due to splashing; water sprays into the air may not be operated
Fountains, Waterfalls, and Ponds	Mandatory	Outdoor features may not be operated if water sprays or shoots into air; must have recirculation pump

Hard-surface washing	Mandatory	No washing of walks, drives, patios, gutters except for health or safety
Critical Stage: Reduction Goal 35 Percent or more		
General Information: Violation of restrictions and/or water waste may be subject to fines and or delivery restriction or disconnection		
Single Family, Duplex, and Triplex Residential		
Lawn watering	Mandatory	Prohibited
Trees, shrubs, perennials, and vegetables	Mandatory	On permitted day (see Appendix B) using hand-held hoses, hand-held buckets, or drip irrigation only
Time of Day (applies to over-head sprays only)	Mandatory	Prohibited between the hours of 10 AM and 6 PM
New Landscape	Mandatory	No new landscapes without permit (see Appendix G)
Pools and Jacuzzis	Mandatory	May not be filled
Fountains, Waterfalls, and Ponds	Mandatory	May not be filled
Hard-surface washing	Mandatory	No washing of walks, drives, patios, gutters
Personal vehicle washing	Mandatory	Prohibited
Business, Multi-family Apartments, and Home Owners Associations		
All Businesses, Industries, and Commercial Users	Mandatory	Develop a plan to reduce consumption by at least 35 percent; Develop and/or adopt, and implement Best Management Practices for Water Conservation
Lawn watering	Mandatory	Prohibited
Trees, shrubs, perennials, and vegetables	Mandatory	On permitted day (see Appendix B) using hand-held hoses, hand-held buckets, or drip irrigation only
Time of Day (applies to over-head sprays only)	Mandatory	Prohibited between the hours of 10 AM and 6 PM
Irrigation System	Mandatory	Maintain irrigation systems in good working order with no damaged, misaligned, or missing sprinkler heads
New Landscape	Mandatory	No new landscapes without permit (see Appendix G)
Pools and Jacuzzis	Mandatory	May be filled under the following circumstances: pool covers are utilized when pool not in use; lower water level by four (4) inches to reduce loss due to splashing; water sprays into the air may not be operated
Fountains, Waterfalls, and Ponds	Mandatory	May not be filled
Hard-surface washing	Mandatory	No washing of walks, drives, patios, gutters except for health or safety

Commercial and Fleet Vehicles	Mandatory	Washing of cars is prohibited (emergency vehicles and instances of public safety are excluded)
Commercial Plant Nurseries	Mandatory	Utilize Best Management Practices (see Appendix F)
Hotels/Lodging	Mandatory	Utilize Best Management Practices; request that laundry not be washed daily unless requested by guest; display table tents or public notice
Restaurants	Mandatory	Will not serve water except upon request; Utilize Best Management Practices
Parks, Golf, Schools, and other Public Facilities		
Lawn Watering	Mandatory	Not allowed without permit (see Appendix G)
Trees, shrubs, perennials, and vegetables	Mandatory	Hand-held hoses, hand-held buckets, drip irrigation, or water trucks only
Time of Day (applies to over-head sprays only)	Mandatory	No watering between 10 am and 6 pm
New Landscapes	Mandatory	Prohibited except by permit (see Appendix G)
Golf Courses	Mandatory	Watering greens and tees allowed by permit (see Appendix G); no watering of roughs and fairways unless from non-culinary source
Irrigation System	Mandatory	Maintain irrigation systems in good working order with no damaged, misaligned, or missing sprinkler heads
Fleet vehicle washing	Mandatory	Not allowed; emergency vehicles excepted
Pools and Jacuzzis	Mandatory	May be filled under the following circumstances: pool covers are utilized when pool not in use; lower water level by four (4) inches to reduce loss due to splashing; water sprays into the air may not be operated
Fountains, Waterfalls, and Ponds	Mandatory	Not allowed

Appendix A:
Lawn Watering Schedule

Salt Lake City Department of Public Utilities, Jordan Valley Water Conservancy District, USU Extension Services, Bureau of Reclamation, and Division of Water Resources jointly developed this watering schedule based on historic ET data provided by USU.

It is recommended that ½ inch of water be applied to the lawn during each interval. With average water pressure and fixed pop-up heads, this would take approximately 21 minutes. It is best that the water be applied in cycles in order to maximize penetration of water into the soil and to the root zone. For example, set the automatic timer to run for seven minutes, repeated three times, with one hour between each cycle to achieve 21 minutes or ½ inch of water per interval. But keep in mind this schedule is based on averages, and your lawn may require a different cycle time, and you may need to water less frequently.

Lawn Watering Schedule	
Month	**Interval (1/2 inch of water per interval)**
Startup until April 30	Only as necessary; no watering if there is rain
May	Once every 4 days
June, July, and August	Once every 3 days
September	Once every 6 days
October to shutdown	Once every 10 days; no watering if there is rain

Watering less frequently and more deeply will save water, money, and time by reducing water consumption, decreasing the need for frequent fertilizer applications, lessening the likelihood of disease, reducing the presence of weeds, and making your long stronger and healthier.

It is also recommended that mowing heights be adjusted to 2-1/2 to 3 inches. Longer grass blades mean deeper roots and shaded soil, thus reducing water demand. An added benefit to mowing higher is that weed seeds are more lightly to be shaded and less likely to germinate and that translates to fewer weeds.

Regularly check your irrigation system for misaligned, broken, or missing sprinkler heads. Conducting annual irrigation audits can help you in identifying system inefficiencies and fine tuning your irrigation schedule.

Appendix B:
Limited Lawn Watering Schedule

This watering schedule is to be followed when a STAGE 3—SEVERE water shortage has been declared.

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
Even Addresses Single-family residential	**No Watering** Public Utilities approved exceptions only	-Home Owners Associations -Apartments -Multi-family (Duplex, 3plex, etc) -Government	**Odd Addresses** Single-family residential	**Even Addresses** Single-family residential	-Home Owners Associations -Apartments -Multi-family (Duplex, 3plex, etc) -Government	**Odd Addresses** Single-family residential

Even or Odd Addresses
Determined by the last digit of the home address

Watering Hours
6 PM to Midnight on your assigned watering day
Midnight to 10 AM on your assigned watering day

Appendix C:
Irrigation Targets

Meters that are read only during non-winter months are referred to as irrigation-only accounts. Under the Department of Public Utilities rate structure, irrigation-only accounts receive a water-use target based on a number of factors, including, but not limited to the total area being irrigated, historical evapotranspiration data (ET), landscape coefficients, and demand levels, with each account receiving a unique target. The formula used to calculate each water-use target was developed by the Utah State University, utilizing local ET data.

Water used within the target will be billed, per unit, in Tier 2; water consumption exceeding the target will be billed, per unit, in Tier 3.

All water customers receiving a water target should strive to maintain their irrigation system in optimum operating standards to maximize efficiencies and minimize water waste. During periods of declared water shortages, irrigation-only accounts may be called upon to make measurable reductions in outdoor water consumption so as to help in reducing overall water demand.

For information on how to save water in the landscape, refer to Appendix F: Best Management Practices for the Green Industry, or visit www.slcsaveh2o.com.

Appendix D:
Hotel and Lodging Water Conservation Best Management Practices

Water conservation needs to be a part of our daily activities. The hotel and lodging industry offers many opportunities to save water without compromising the quality of the visit or public health and safety. The average-sized hotel, with 150 rooms, can save about $30,000 a year if 65 percent of their guests participate in a linen-reuse program. Every employee needs to understand the importance of conservation, and be educated on water saving practices and how their job affects water use. Make conservation part of their job and part of the day to day work environment.

Consider using this simple three step process

- Educate and involve all employees on water conservation
- Locate all water-using sources (dishwashing machines, wash sinks, cooling water, HVAC, etc in your facility) and examine for leaks, check for inefficiencies, and conduct repairs
- Identify and implement water conservation practices

Icemakers

- Replace old icemakers with new air-cooled, water efficient model. The useful life of an icemaker is about five years
- Use ice flake machines rather than ice cube machines
- Use softened water in ice cube machines to minimize bleed-off
- Collect spent cooling water from water-cooled icemakers and use it for non-potable purposes such as mopping floors

Laundry

- Operate laundry equipment with full loads only
- Reduce water levels, if possible, for partial loads
- Replace or modify existing conventional laundry equipment (e.g., washer-extractors) to reduce water use
- Install a computer-controlled rinse water reclamation system
- Install a wash and rinse water treatment and reclamation system
- Install a continuous-batch washer
- Install an electrically generated ozone laundry system
- Adjust chemicals or washer program to reduce the number of wash and rinse steps
- Avoid excessive backflushing of filters or softeners; backflush only when necessary
- Place "save water" notices in guest rooms
- Encourage your guests to forego daily linen changes for multiple night visits
- Replace conventional washers with high-efficiency, horizontal axis machines

Building Maintenance

- Replace water-cooled refrigeration units with air-cooled units
- Repair leaks and malfunctioning equipment promptly
- Install on-demand, point-of-use hot water dispensers where feasible, eliminating the need to run faucets to produce hot water

- Replace worn-out fixtures with water-conserving models
- Install low flow toilets and faucet aerators in restrooms

Exterior Areas

- Water landscapes only as needed
- Remove turf from hard to water areas such as islands in parking lots
- Sweep loading docks, sidewalks, and driveways rather than hosing them off
- Install rainfall sensors on automatic irrigation systems
- Mulch around plants to reduce evaporation and discourage weeds
- Do not water on windy or rainy days
- Use low angle nozzles when feasible
- Avoid using overhead sprinklers or sprays in narrow areas, islands, and medians to eliminate overspray onto hardscape surfaces
- Set watering times to reflect plant type
- Install pressure reduction valves where pressure exceeds optimum operating levels (30 psi for spray heads and 60 psi for rotor heads)
- Utilize pressure compensating and reducing equipment when appropriate

Appendix E:
Suggested Best Management Practices for Commercial Car Washers

The amount of water used by carwash facilities varies with the type of facility, the cleaning system used, and the utilization of water reclamation and recycling processes. And while recycling can greatly reduce the volume of M&I water used, there are many other ways in which carwash facilities can save water.

All Carwash Facilities

- Maintain all water devices and equipment to original or improved specifications at all times
- Modify existing carwashes to recycle as much water as possible by installing filters, storage tanks, and high-pressure pumping systems
- Limit the number of spray nozzles and set flow rates at the minimum volume and pressure required
- Take advantage of gravity; place bigger nozzles on top and smaller nozzles on the sides
- Replace all nozzles annually
- Install automatic shutoff valves or preset timers on faucets and hoses
- Increase conveyor speed to reduce rinse cycles to no more than 40 seconds per vehicle
- Minimize dripping by replacing or maintaining positive-cutoff solenoid valves at all control points for prewash, wash, hot wax, and rinse
- Conduct regular checks for leakage and maintenance of all water-using equipment
- Install positive shut-off valves on all wringer sinks
- Sweep out bays before washing them; use high-pressure wands instead of hoses
- Avoid using water to wash impervious surfaces; broom or use high-pressure, low-volume water systems
- Install water-efficient faucets and toilets

In addition to implementing the above practices, utilize the following for specific facilities

Self-serve

- Set a maximum flow of 3.5 gallons per nozzle
- Turn off spot-free rinse or recycle reject water
- Install a weep management system
- Install automatic shutoff valves on hoses or preset timers for self-serve car wash systems
-

In-Bay Automatic

- Ensure that the direction, arch, and timing of sprays on automatic car washes are properly set and that they shut off when no longer in contact with the vehicle
- Set timers to create a minimum 5-second dwell time for water to run off into the bay before exiting
- Calibrate spray bars to use no more than 55 gallons per basic wash

Conveyor Systems

- Install automatic high-level water cut-offs in all towel and chamois washing machines
- Fit all hoses with positive pressure nozzles or automatic timer shut-offs; never leave open hoses unattended

Appendix F:
Suggested Best Management Practices for the Green Industry

Of the water we use per person, it has been estimated that half of that water goes to the landscape, and of that, as much as half is wasted, or in other words, as much as 25 percent of the total volume of water used for domestic purposes. Summer water usage increases to a peak that is nearly 4 to 5 times more than the typical daily winter consumption, and it is that peak which drives our need to build large infrastructure. By utilizing Best Management Practices in the landscape, whether as a professional or a home or business owner, we can sustain our landscape, reduce dependence on supplemental water and chemicals, while extending the life of existing infrastructure and reducing future costs to the community. Using water more wisely protects this vital, finite resource, improves the health of our landscape, and maintains our quality of life.

All Green Industries

- Educate employees on water quality and conservation practices
- Model and teach water conservation and pollution prevention to customers, the general public, and the industry
- Utilize brooms to clean walks, drives, decks, and other impervious areas
- Avoid watering, whenever practicable, between the hours of 10 am and 6 pm
- Water flowers, shrubs, and trees separately from lawns
- Utilize positive pressure nozzles on all hoses
- If utilizing an irrigation-only meter, stay within irrigation target (see Appendix C)
- If not utilizing an irrigation-only meter, follow the recommended watering schedule (see Appendix A) unless directed to follow Watering Schedule B (see Appendix B)

Landscape and Irrigation Design

- Make wise choices in the design process to how water will be used consciously choose to use it efficiently and wisely
- Select those plants best suited to a particular site, taking into account such things as soil and microclimates
- Group plants together with similar water requirements and design and install irrigation to deliver the appropriate amount of water to each group (i.e., "hydrazoning"); water turf areas separately from other landscaped areas
- Design, install, and maintain irrigation systems to ensure uniform distribution of water
- Limit turf to functional areas, and select the appropriate turf species; use alternative groundcovers where appropriate
- Avoid oscillating sprinklers and sprinkler heads that produce mists or fine sprays
- Evaluate soil and improve, if necessary, to promote plant health and maximize water efficiency
- Install a rain shut-off device
- Establish a site-specific water budget

Landscape and Irrigation Maintenance

- Examine irrigation systems to ensure that those systems do not leak and are operating efficiently on a regularly scheduled basis; make needed repairs or adjustments
- Hand water brown or dry spots; don't over-water the entire lawn
- Turn off irrigation systems when wind or rain is forecast
- Mulch flowers, shrubs, and trees to reduce moisture loss due to evaporation, reduce soil loss, suppress weeds, and provide a more uniform soil temperature; avoid using plastic or fiber barriers
- Minimize erosion and control sediment
- Use pesticides, fertilizers, and herbicides responsibly; dispose of unused products properly
- Practice regular maintenance such as weeding and appropriate pruning to maximize plant health; healthy plants are more likely to withstand periods of drought than are plants under stress

Lawn Maintenance

- Adjust or replace sprinkler heads to eliminate over-spray on hardscape, fences, and buildings
- Conduct regularly scheduled water audits of both indoor and outdoor water appliances, features, and plumping
- Mow lawns to the proper height and at the proper frequency to maintain turf health, thereby minimizing the need for fertilizer and pesticide application and reducing water usage
- Aerate lawns to reduce compaction and improve nutrient uptake and minimize runoff
- Leave turf clippings on the lawn to increase organic material and to reduce soil temperature and loss to evaporation; recycle and compost when ever possible, disposing of waste so as to minimize negative environmental impacts

Nurseries, Greenhouses and Growers

- Properly irrigate crops with the minimum amount of water waste
- Utilize positive pressure nozzles to hoses and faucets; never leave operating hoses unattended
- Operate to maintain the health of the plants, to conserve water, and to promote water conservation and water resource protection

Appendix G:
Suggested Best Management Practices for Commercial Water Customers

It is strongly encouraged that each business, in adopting Best Management Practices (BMP), addresses water-use issues relating to that specific business, industry, or work place. The most effective BMPs result from employee involvement and provide for training and verification of implementation.

- Generally examine water use, both indoors and out of doors, to eliminate waste
- As new landscapes are developed or as established landscapes are renovated, consider how water will be used, and make choices regarding irrigation, plants, and design that use water efficiently and wisely
- Examine irrigation systems, indoor plumbing and water-using appliances, to ensure that those systems do not leak and are operating efficiently on a regularly scheduled basis; make needed repairs or adjustments
- Adjust or replace sprinkler heads to eliminate over-spray on hardscape, fences, and buildings
- Conduct regularly scheduled water audits of both indoor and outdoor water appliances, features, and plumping
- If not utilizing an irrigation-only meter, follow the recommended watering schedule (see Appendix A) unless directed to follow Watering Schedule B (see Appendix B)
- If utilizing an irrigation-only meter, stay within irrigation target (see Appendix c)
- Avoid watering, whenever practicable, between the hours of 10 am and 6 pm
- Hand water brown or dry spots; don't over-water the entire lawn
- Turn off irrigation systems when wind or rain is forecast
- Water flowers, shrubs, and trees separately from lawns
- Utilize positive pressure nozzles on all hoses
- Avoid using water to wash or clean walks, drives, and gutters
- Mulch flowers, shrubs, and trees to retain soil moisture
- Use washing machines and dish washers only when full, or adjust water levels accordingly
- When installing or replacing appliances, install water-efficient appliances
- Become a partner in the EPA Water Alliance for Voluntary Efficiency (EPA-WAVE) program

Appendix H:
Suggested Best Management Practices for Restaurant and Food Service

Commercial and institutional kitchens use water primarily for food and drink preparation, dishwashing, ice machines, ice cream and frozen yogurt machines, garbage disposers, and scrapping troughs. Additionally, water is used for washing, cleaning, and sanitizing processes (including laundry), plumbing fixtures in restrooms, cooling and heating systems, and landscapes. For BMPs relating to uses not directly related to food preparation, consult the index to locate the appropriate BPMs.

Water Audits

Conduct regular audits on water-using fixtures and features, being certain to include the following:

- Record the number and type of water-using appliances or pieces of equipment, such as dishwashers, garbage disposers, ice makers, faucets, and food scrapping troughs
- Determine the average number of loads per day completed by each water-using appliance and piece of equipment
- Determine the average number of meals served per day
- Determine the amount of time faucets and other continuous-flow appliances are used each day
- Identify pipe sizes and estimate flow rates of incoming water supply lines
- Catalog dripping faucets, puddles, and leaks

General Practices

- Train employees to conserve water, and post signs in the kitchen and other work areas promoting water conservation
- Promptly repair leaks and malfunctioning equipment
- Replace appliances and equipment with water-saving models
- Recycle water whenever feasible and consistent with regulatory requirements
- Become a partner in the EPA Water Alliance for Voluntary Efficiency (EPA-WAVE) program

Food and Drink Preparation

- Kitchen faucets should use a maximum of 2.5 gpm at 80 psi; if higher flows are needed for utility sinks install a fingertip control valve for aerated or full flow operations
- Reduce or eliminate using water to thaw food; if water must be used, reduce flows to minimum need
- Turn off continuous flows used to clean drains trays such as those utilized in beverage islands, unless required by law
- Install hands-free or foot activated valves and faucets
- Serve water to customers only upon request; provide signs at the table or entryway urging water conservation

- Use the minimum amount of dishware, glasses, utensils, and cookware needed so as to reduce dishwashing loads
- Avoid using water to melt ice in strainers
- Wash vegetables and fruits in ponded water; avoid using running water
- Install on-demand, point-of-use hot water dispensers to eliminate or reduce the need to run water at faucets; choose a unit that does not require a constantly running recirculation pump
- Install automatic shutoff faucets for bar sinks

Dishwashers

- Presoak and wash items in basins of water instead of under running water
- Fit hoses used to wash sinks and kitchen areas with throttling valves on the spigot to reduce water use; these valves should be checked regularly for leaks
- Use full loads in sanitizers, sterilizers, dishwashers, and washing machines consistent with sound sanitary practices and infection control requirements
- Scrape or brush dishes and cookware rather than using running water or pre-rinse sprayers, when possible
- Replace pre-rinse sprayers with water-saving 1.6 gpm sprayers
- Install pressure reducing valves on dishwasher supply lines when water pressure exceeds the pressure recommended by the manufacturer
- Operate scrapping troughs only during dish washing operations
- Wash full loads only in rack-type machines
- Turn dishwasher off when not in use

Ice Cream and Frozen Yogurt Machines; Walk-in Coolers and Freezers

- Replace water-cooled units with air-cooled units, or install storage tanks and re-circulating systems to reuse waste water
- Connect water-cooled machines to existing chilled water systems, if possible
- Turn off the machines when not in use, if possible

Food Disposers

- Replace disposers with garbage strainers if possible
- Scrape food from dishes and cookware into trash receptacles when possible
- Use the minimum acceptable flow of water through the disposer by installing electronic sensors to detect food in the grinding chamber and by installing solenoid valves to stop the flow of water when the disposer is off
- Reuse water from the dishwasher in the mixing chamber of the disposer
- Eliminate excess water flow by installing pressure reducers on the dispoer's water supply lines per manufacturer's specifications
- Replace older disposer models with a model with pre-set controls to reduce the amount of time the disposer is operated

ATTACHMENTS FORM

Instructions: On this form, you will attach the various files that make up your grant application. Please consult with the appropriate Agency Guidelines for more information about each needed file. Please remember that any files you attach must be in the document format and named as specified in the Guidelines.

Important: Please attach your files in the proper sequence. See the appropriate Agency Guidelines for details.

1) Please attach Attachment 1	SaltLakeCityCorporation_Propo	Add Attachment	Delete Attachment	View Attachment
2) Please attach Attachment 2		Add Attachment	Delete Attachment	View Attachment
3) Please attach Attachment 3		Add Attachment	Delete Attachment	View Attachment
4) Please attach Attachment 4		Add Attachment	Delete Attachment	View Attachment
5) Please attach Attachment 5		Add Attachment	Delete Attachment	View Attachment
6) Please attach Attachment 6		Add Attachment	Delete Attachment	View Attachment
7) Please attach Attachment 7		Add Attachment	Delete Attachment	View Attachment
8) Please attach Attachment 8		Add Attachment	Delete Attachment	View Attachment
9) Please attach Attachment 9		Add Attachment	Delete Attachment	View Attachment
10) Please attach Attachment 10		Add Attachment	Delete Attachment	View Attachment
11) Please attach Attachment 11		Add Attachment	Delete Attachment	View Attachment
12) Please attach Attachment 12		Add Attachment	Delete Attachment	View Attachment
13) Please attach Attachment 13		Add Attachment	Delete Attachment	View Attachment
14) Please attach Attachment 14		Add Attachment	Delete Attachment	View Attachment
15) Please attach Attachment 15		Add Attachment	Delete Attachment	View Attachment