TWIN CREEKS SPECIAL SERVICE DISTRICT
DROUGHT MANAGEMENT PLAN
RESOLUTION NO. 2022-01

RECITALS

WHEREAS, the Twin Creeks Special Service District (the "District") is a special service district established by the County Legislative Body of Wasatch County, Utah, pursuant to the provisions of Utah law, for the purpose of providing culinary and irrigation water delivery services within the boundaries of Twin Creeks; and

WHEREAS, Utah and surrounding states have been impacted by drought for several years now, which drought is expected to continue in the years to come; and

WHEREAS, the District's water supply is particularly vulnerable to the effects of prolonged drought, and therefore it is particularly important for the District to have a plan to manage its water supply during times of drought; and

WHEREAS, the District engaged Bowen Collins & Associates ("BC&A") to research the best practices and approaches to drought management engaged in by other water suppliers, and to recommend approaches to drought management that would be appropriate in the District; and

WHEREAS, BC&A prepared a draft Drought Management Plan that included increased water rates during times of drought; and

WHEREAS, the Board has reviewed and considered BC&A's recommendations, and has determined that it is in the best interests of the District and its customers to adopt those recommendations, including the increased rates for water service during times of drought.

NOW, THEREFORE, the Wasatch County Council, acting as the governing board of the District (the "Board"), hereby adopts the Drought Management Plan attached hereto as Exhibit A, including the water rates set forth therein.

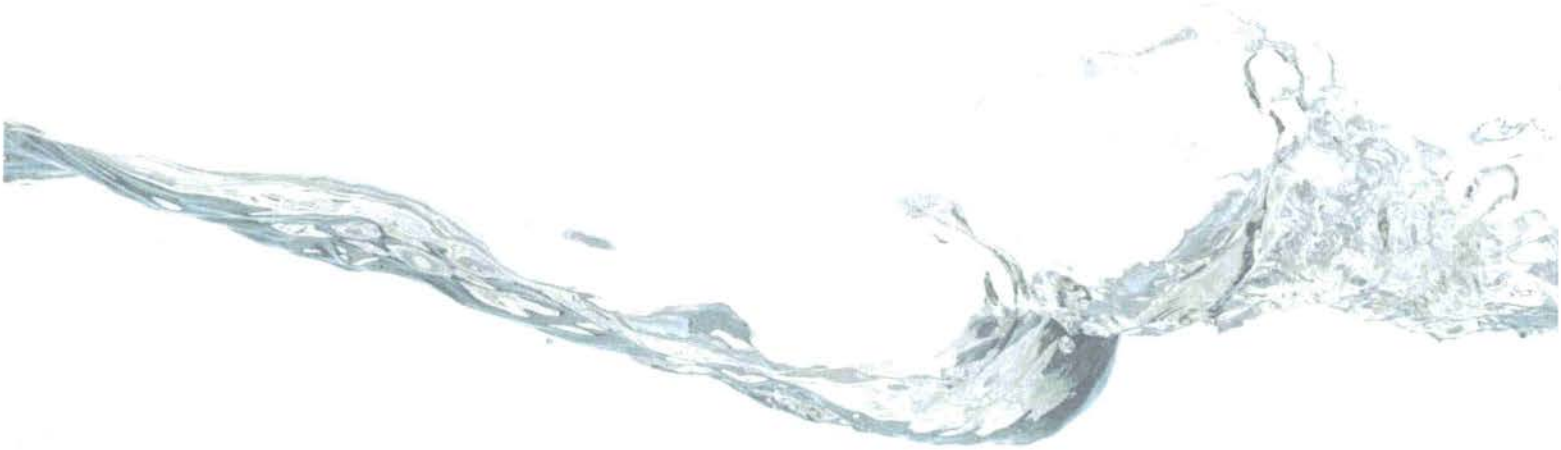
Resolution 2022-01 Approved and adopted this 12th day of April, 2022

By: _____
District Board Chairman

Attest:

By: _____
District Treasurer

TWIN CREEKS SPECIAL SERVICE DISTRICT
CORPORATE
SEAL
UTAH



PREPARED FOR:

TWIN CREEKS SPECIAL SERVICE DISTRICT

PREPARED BY:

BOWEN COLLINS & ASSOCIATES

TCSSD WATER SHORTAGE MANAGEMENT PLAN FOR THE LAKE CREEK DRAINAGE

MARCH 2022

TCSSD WATER SHORTAGE MANAGEMENT PLAN FOR THE LAKE CREEK DRAINAGE

March 2022

Prepared for:

TWIN CREEKS SPECIAL SERVICE DISTRICT

Prepared by:

BOWEN COLLINS & ASSOCIATES

TABLE OF CONTENTS

Page

LIST OF APPENDICES

TABLE OF CONTENTS
(continued)

LIST OF TABLES

Page

INTRODUCTION

Utah has experienced several drought periods over the past 100 years with typical drought periods extending between 3-5 years. In more recent decades, the frequency and intensity of drought has increased with 2021 being an exceptional drought year (highest category of drought conditions) for the area according to the National Integrated Drought Information System. Twin Creeks Special Service District (TCSSD or District) recognizes that it has become increasingly important to protect our current water sources, plan for future water supply during periods of drought, and improve our water reliability.

TCSSD has created this Water Shortage Management Plan (WSMP) with the purpose of evaluating appropriate drought triggers and developing a response plan to achieve necessary water savings. This will assist TCSSD in mitigating and responding to future drought before it becomes an emergency.

Water shortage or drought conditions may derive from a variety of circumstances such as climate change, regular climate variability, water supply contamination, system disruption or interruption, and even unanticipated surges in demand. This Water Shortage Management Plan is intended as a guide for monitoring, measuring, mitigating, and responding to water supply shortages or disruptions resulting from any of these or other causes.

JURISDICTION

This WSMP pertains to the TCSSD customers primarily served by the Lake Creek drainage. It is expected that a separate plan will be adopted which will govern water shortage responses for TCSSD customers primarily served by the upper Provo River drainage.

PLAN PROCESS

Preparing the Water Shortage Management Plan involved three major steps. These steps are summarized here and then discussed in greater detail in subsequent sections.

Evaluate Yield. The District's historic supply is closely related to Lake Creek Irrigation Company's (LCIC) supply. LCIC's yield plays a significant role in drought monitoring, which is analyzed in this section.

Establish Appropriate Drought Triggers. Drought triggers are measurements of drought that, when reached, indicate that action is needed from the District and its customers.

Develop A Response Plan. For each of the drought levels, recommended actions were identified with the intent of achieving the necessary water savings associated with each trigger. Actions include both voluntary and mandatory requirements for all District customers.

YIELD EVALUATION

TCSSD's supply for water is closely tied to LCIC's water system, which is based on surface water resources from the Lake Creek drainage. Therefore, this WSMP uses triggers that assess drought for TCSSD based on two parameters that are published by LCIC every year:

- **High Water End Date** – The term 'high water' in LCIC's water system describes the time during spring runoff when the streamflow exceeds LCIC's storage capacity and thus concern about water consumption is much lower. The High Water End Date is the day at which there is no longer excess streamflow and the tracking of water consumption is critical. The High

Water End Date is later in the season when snowpack is plentiful and we have cool, wet springs which even out the runoff. It comes earlier in the season when we have low snowpack and/or hot dry springs (i.e. drought conditions). In years with extreme drought, the High Water End Date can be as early as May but in years where drought is not a problem the High Water End Date can be as late as August.

- **Yield After High Water End Date** – This parameter is how much volume of water is available to each LCIC primary share after the High Water End Date. The full value of a LCIC primary share for the year (including during high water) is 9 acre-feet. In general, LCIC delivers 4.5 acre-feet during high water and the remaining 4.5 acre-feet can be delivered after the High Water End Date.

When comparing High Water End Date and Yield After High Water End Date to typical plant needs in the late summer (i.e. normal), earlier High Water End Dates and lower Yields After High Water End Dates is essentially a reduction in water use below "normal" regardless of how much water was used during high water. Based on data in the last decade, the LCIC system Yield After High Water End Date has been reduced to as low as 63% of normal in 2018 and 2021. The goal of the drought plan is to effectively manage the system in drought years such that drought responses are at the appropriate level to induce water use reductions proportional to the yield reduction below normal (i.e. If normal yields are reduced by 37% as was the case in 2018 and 2021, the goal of the drought plan is to reduce normal consumption by 37%, and thus keep use within entitlement based on shares held by TCSSD).

The consequence of not reducing water use in drought years is that the system must shutdown irrigation use earlier in the year to ration out remaining water stores for indoor use only. It is much preferable to be proactive in drought years and reduce water use throughout the year to preserve and be able to operate the system throughout the full irrigation season[1]. The normal yield in LCIC for each month can be found in Table 1.

Table 1
LCIC Primary Share Normal Yield Curve

Month	Yield (acre-feet)	Month	Yield (acre-feet)
January	0.00	July	2.19
February	0.00	August	2.08
March	0.00	September	0.70
April	0.20	October	0.03
May	1.74	November	0.00
June	2.07	December	0.00
		Total	9.00

[1] In past droughts, unused water rights have had a buffering effect during droughts. These have been used to pump water into the system from the Provo River Drainage. These water rights will eventually be fully utilized, and this buffering effect will not be available.

Based on the historic yield of the LCIC system, four drought levels and a "non-drought" level have been defined. These are depicted in Table 2.

Table 2
Drought Levels

Drought Level	% Actual Yield Versus Normal Yield
0	≥ 100%
1	91-99%
2	81-90%
3	66-80%
4	≤ 65%

DROUGHT INDICATOR & TRIGGER

A significant part of this WSMP is defining what the proposed drought levels are and how they will play a part in the District's drought response. Sometimes droughts are minor and sometimes droughts are major, so it was decided to create multiple levels of drought that designate how severe the drought is for a given year. A drought trigger was developed in this WSMP to help the District measure how severe the drought level will be for the given year so that the District can have a proportional response to the drought.

It is recommended that TCSSD utilize the following parameters to guide the District on drought levels – snow level early warning, High Water End Date, and Actual Yield After High Water End Date.

Based on the LCIC-published parameters, it is possible to determine drought level once High Water End Date and Yield After High Water End Date are known. Therefore, TCSSD will utilize these two parameters from LCIC as its drought level indicators.

However, the High Water End Date is not typically declared by LCIC much before the High Water End Date itself (mid-summer). Therefore, it was decided that an early warning (spring) indicator of potential drought conditions would be beneficial. An early warning indicator will allow TCSSD to begin messaging campaigns to customers and prepare to take action quickly once the drought level is known (at the announcement of the High Water End Date). After discussions with TCSSD, it was determined that end-of-winter snow levels close to or within the Lake Creek drainage would be a good parameter to use as an early warning indicator for drought conditions.

Snow Level Early Warning (Indicator)

Snow water equivalent or SWE describes the equivalent amount of liquid water that is stored in the snowpack. It is the amount of water that will be released from the snowpack when it melts. SWE is defined in inches of water and represents the snow level (aka "snow pack").

The Lake Creek Drainage does not have a snow gage with publicly available data. It was decided that the SNOTEL site at Beaver Divide[2] (site ID 330) would be the best gage to use since it is in the neighboring drainage and has a similar elevation to the Lake Creek Drainage. Snow water equivalent (SWE) on March 1st of every year was determined has historically correlated well with actual drought conditions. Appendix A shows a screenshot of where to find this SWE data point on the SNOTEL website.

Therefore, the early warning indicator for this WSMP is the SWE at the Beaver Divide site on March 1st of each year. The historic average SWE at the Beaver Divide Site is 9.8 inches.

High Water End Date (Trigger)

High Water End Date (described above) is the parameter designated as the trigger for determining drought level for a given year. The earlier the High Water End Date, the more severe the drought level.

Drought Level Summary

Table 3 summarizes recommended drought triggers for TCSSD. The indicators and triggers set in Table 3 were determined by correlating historic indicator/trigger data to historic yield after highwater end date.

Table 3
Drought Level Determination

Drought Level	Preliminary Indicator – Snow Level Early Warning on March 1st	Trigger – High Water End Date*	% Actual Yield Versus Normal Yield
0	≥ SWE of 10.9 inches	July 8th or later	≥ 100%
1	SWE of 8.7 inches to 10.8 inches	July 1st to July 7th	91-99%
2	SWE of 8.1 inches to 8.6 inches	June 22nd to June 30th	81-90%
3	SWE of 5.5 inches to 8.0 inches	June 4th to June 21st	66-80%
4	≤ SWE of 5.4 inches	June 3rd or earlier	≤ 65%

*If the Actual Yield After High Water End Date is not equal to 4.5 acre-feet see Appendix B to determine the drought level.

[2] SNOTEL Website for Beaver Divide location:
https://www.nrcs.usda.gov/wps/portal/wcc/home/quicklinks/imap#version=158&elements=&networks=!&states=!&counties=!&hucs=&minElevation=&maxElevation=&elementSelectType=any&activeOnly=true&activeForecastPointsOnly=false&hucLabels=false&hucIdLabels=false&hucParameterLabels=true&stationLabels=&overlays=&hucOverlays=2&basinOpacity=75&basinNoDataOpacity=25&basemapOpacity=100&maskOpacity=0&mode=data&openSections=dataElement,parameter,date,basin,options,elements,location,networks&controlsOpen=true&popup=330:UT:SNTL&popupMulti=&popupBasin=&base=esriNgwm&displayType=station&basinType=6&dataElement=WTEQ&depth=-8&parameter=PCTMED&frequency=DAILY&duration=I&customDuration=&dayPart=E&year=2022&month=2&day=21&monthPart=E&forecastPubMonth=2&forecastPubDay=1&forecastExceedance=50&seqColor=1&divColor=7&scaleType=D&scaleMin=&scaleMax=&referencePeriodType=POR&referenceBegin=1991&referenceEnd=2020&minimumYears=20&hucAssociations=true&lat=40.6807&lon=-111.3303&zoom=9.5

ANNUAL PROCEDURES FOR DETERMINING DROUGHT LEVEL

The first step in using Table 3 is at the end of the day on March 1st of each year go to the NRCS SNOTEL website and browse to the Beaver Divide location (site ID 330). Obtain the March 1st SWE value in inches at this location. Compare that value to the value ranges in the Preliminary Indicator column in Table 3 to determine the early warning drought level for the year.

The second step in using this table is to stay in contact with LCIC and obtain the High Water End Date and Yield After The High Water End Date as soon as it is available. Verify that the Yield After High Water End Date is 4.5 acre-feet. If it is, compare the year's High Water End Date with the date ranges in the Trigger column in Table 3 to determine the drought level for the current year. If it is not, consult the table in Appendix B to determine the drought level for the current year.

RESPONSE ACTIONS

Response actions are those activities that can be implemented during a drought to reduce demand and mitigate the impacts of the drought. Response actions are triggered during specific stages of drought to manage the limited supply and decrease the severity of immediate impacts. Defining response actions ahead of drought allows them to be quickly implemented and provide expeditious benefits.

Drought Warning and Drought Designation

Two actions that are common to drought levels 1 through 4 are a Drought Warning Letter and a Drought Designation Letter. The Drought Warning Letter is a letter sent out to District users in March that states what the District expects will be the drought level for the year based on the Preliminary Indicator. The Drought Designation Letter is a letter sent out to District users as soon after High Water End Date as possible that states what the official drought level is based on the Trigger. Drought Warning Letters and Drought Designation Letters are only sent out on years when drought conditions are expected (i.e. not in level 0 years). Appendix C provides draft Drought Warning Letters and Drought Designation Letters for drought levels 1 through 4.

Drought Actions

Defined actions for each of the drought levels defined above are outlined in the following sections. For each level, actions are grouped into three categories: Education and Outreach, Watering Guidelines, and Rates.

I. Level 0 – Normal Water Supply

In this level, no additional water conservation actions are required. Regular conservation activities continue to be encouraged including:

- **Education and Outreach:** The District will continue its conservation programs, including assisting with public education and outreach. Encouraged conservation practices include following irrigation guidelines, use of drought tolerant plants and grasses, use of low water-use fixtures, and any other means of reducing water use.
- **Watering Guidelines:** Customers will be requested to follow the State of Utah Division of Water Resources lawn watering guide, which gives outdoor watering recommendations, include time of day of watering and length of watering.
- **Rates:** The District has adopted a tiered water rate system which encourages conservation through water pricing.

Level 0 is always in effect unless the District's General Manager adopts a higher level.

II. Level 1 – Voluntary Water Conservation

Level 1 – Voluntary Water Conservation includes the District contacting customers to request a voluntary reduction in water use, especially to customers with higher water usage. The purpose of this drought action level is to draw attention to the reduced water supply and for customers to use this resource wisely.

The District's General Manager shall define the additional means of communication and the actions requested to reduce water use after the time of drought warning and after the time of the drought level designation. These actions may include:

- **Education and Outreach:** The District's General Manager shall define the means and content of communication with customers after the time of drought warning and after the time of the drought level designation. These actions may include:
  a. E-mailing customers requesting voluntary water reduction
  b. Mailing flyers requesting voluntary water reduction
  c. Posting on social media and the District website requesting voluntary water reduction
- **Watering Guidelines:** Customers will be requested to continue to follow the State of Utah Division of Water Resources lawn watering guide and look for other ways to reduce outdoor watering. This will be communicated to customers after drought warning and after the time of the drought level designation.
- **Rates:** No change to District's current tiered water rate system.

III. Level 2 – Voluntary Water Restrictions

Level 2 – Voluntary Water Restrictions may include the District contacting customers to request additional voluntary reduction in water use. The purpose of this drought action level is to continue to draw attention to reduced water supplies and to attempt to reduce water use even more than Level 1.

The District's General Manager shall define the additional means of communication and the actions requested to reduce water use after the time of drought warning and after the time of the drought level designation. These actions may include:

- **Education and Outreach:** The District's General Manager shall define the means and content of communication with customers after the time of drought warning and after the time of the drought level designation. These actions may include:
  a. Additional e-mails, flyers, and social media and website postings requesting additional water use reductions including voluntary restrictions as defined above.
- **Watering Guidelines:** Voluntary time of day, watering frequency and/or other voluntary water restrictions. The likely recommendation will be to limit watering to two times per week. There are no penalties associated with these voluntary water restrictions. This will be communicated to customers after drought warning and after the time of the drought level designation.
- **Rates:** No change to District's current tiered water rate system.

IV. Level 3 – Mandatory Water Restrictions

Level 3 - Mandatory Water Restrictions may include directives imposed by the District's General Manager which may limit the manner of use of water, such as recommended time of day and watering days per week limitations. The purpose of this drought action level is to reduce overall use by 20-35% throughout the year, specifically reducing outdoor water use.

The District's General Manager shall define the requirements of Level 3 to reduce water use after the time of drought warning and after the time of the drought level designation. These actions may include:

- **Education and Outreach:** The District's General Manager shall define the means and content of communication with customers after the time of drought warning and after the time of the drought level designation. These actions may include:
    a. Additional e-mails, flyers, and social media and website postings outlining the mandatory water use restrictions and temporary rate changes, especially to high water using customers.
- **Watering Guidelines:** Mandatory time of day, watering frequency and/or other water restrictions. Likely requirement to limit watering to two times per week or less. Although designated as "mandatory", there will be no policing or penalties associated with these water restrictions. The primary enforcement mechanism will be through increased rates (see next). This will be communicated to customers after drought warning and after the time of the drought level designation.
- **Rates:** Moderate Drought Pricing as detailed in next section. This will include temporary rate increases to the two upper tiers of water rates. The expectation of rate increases will be communicated to customers at the time of drought warning. However, the rate increases will only be effective and finalized at the time of the drought level designation.

Any additional limitations may be imposed by the General Manager upon adoption of Level 3.

V. Level 4 – Emergency Water Restrictions

Level 4 – Emergency Water Restrictions may include directives imposed by the District's General Manager which may limit the manner of use of water, such as recommended time of day and watering days per week limitations, and temporary increases to the top one or two tiers of water rates. The purpose of this drought action level is to reduce overall use by more than 35% throughout the year, specifically targeting outdoor water use.

The District's General Manager shall define the requirements of Level 4 to reduce water use after the time of drought warning and after the time of the drought level designation. These actions may include:

- **Education and Outreach:** The District's General Manager shall define the means and content of communication with customers after the time of drought warning and after the time of the drought level designation. These actions may include:
    a. Additional e-mails, flyers, and social media and website postings outlining the mandatory water use restrictions and temporary rate changes, especially to high water using customers.

- **Watering Guidelines:** Mandatory time of day, watering frequency and/or other water restrictions. Likely requirement to limit watering to less than two times per week and to eliminate irrigation of non-essential areas. Although designated as "mandatory", there will be no policing or penalties associated with these water restrictions. Primary enforcement mechanism will be through increased rates (see next). This will be communicated to customers after drought warning and after the time of the drought level designation.
- **Rates:** Extreme Drought Rates as detailed in next section. This will include temporary rate increases to the two upper tiers of water rates. The expectation of rate increases will be communicated to customers at the time of drought warning. However, the rate increases will only be effective and finalized at the time of the drought level designation.

2022 Culinary and Secondary Rates

To better understand the drought mitigation rates discussed below, it is helpful to see the regular rates in effect at the time of this plan's adoption. The District's 2022 culinary overage rates and secondary rates are shown Tables 4 and 5.

Table 4
2022 Culinary Overage Rates

	Tier 1
Overage Volume Rate	$17.87
Tier Definition (kgals)	12,000+

Table 5
2022 Secondary Rates

	Tier 1	Tier 2	Tier 3	Tier 4
Existing Volume Rate	$0.24	$0.65	$1.35	$2.02
Tier Definition (kgals)	0-50	50-90	90-250	250+

Drought Mitigation Rates

For more severe levels of drought, one of the primary mechanisms that will be used to encourage needed reductions in demand will be drought pricing. Drought pricing is a temporary change in volume charges for upper tiers designed to discourage the excess use of water for outdoor watering and encourage indoor conservation. Proposed rates for both Moderate Drought Rates (Level 3) and Extreme Drought Rates (Level 4) are summarized in Tables 6 through 9.

Culinary Rates. For culinary rates the proposed changes have been designed to encourage the necessary reduction in demand in each tier based on the observed price elasticity of water. As noted in Tables 6 and 7, rates are expressed as a dollar value for the overage volume rate. This will allow the recommendations to remain current and applicable even as regular rates change in the future. As can be seen in the tables, no changes are recommended to Tier 1 or Tier 3 water use. This will keep the cost of basic water service for drinking and hygiene affordable during periods of drought.

Table 6
Moderate Drought Rates (Level 3) – Culinary Overage

	Tier 1: Adjusted Base Allowance	Tier 2: Drought Base Use	Tier 3: Overage Volume Rate
Overage Volume Rate	$0.00	$3.00	Currently Adopted Overage Volume Rate
Tier Definition (kgals)	0-9,000	9,000-Adopted Overage Volume Amount	More Than Adopted Overage Volume Amount

Table 7
Extreme Drought Rates (Level 4) – Culinary Overage

	Tier 1: Adjusted Base Allowance	Tier 2: Drought Base Use	Tier 3: Overage Volume Rate
Overage Volume Rate	$0.00	$6.00	Currently Adopted Overage Volume Rate
Tier Definition (kgals)	0-9,000	9,000-Adopted Overage Volume Amount	More Than Adopted Overage Volume Amount

Secondary Rates. For secondary rates the proposed changes have been designed to encourage the necessary reduction in demand in each tier based on the observed price elasticity of water. As noted in Tables 8 and 9, rates are expressed as a percent increase to regular (non-drought) rates. This will allow the recommendations to remain current and applicable even as regular rates change in the future.

Table 8
Moderate Drought Rates (Level 3) - Secondary

	Tier 1	Tier 2	Tier 3	Tier 4
Change to Existing Volume Rate	+20%	+50%	+65%	+70%

Table 9
Extreme Drought Rates (Level 4) - Secondary

	Tier 1	Tier 2	Tier 3	Tier 4
Change to Existing Volume Rate	+50%	+90%	+110%	+120%

It will be important that these rate increases follow a normal rate increase process, including a noticed public hearing and public communication (flyers, social media, newspaper advertisement). However, to avoid the challenges of completing this process in a timely manner during emergencies, it is recommended that the optional and temporary use of these rates during periods of drought be noticed and adopted in conjunction with the adoption of this Water Shortage Management Plan.

Response Action Summary

Recommended drought response activities as detailed above; highlights are summarized in Table 10 on the following page.

Table 10
TCSSD Drought Response Actions

Drought Level	Education & Outreach	Watering Guidelines		Rates	
		@ Warning	@ Designation	@ Warning	@ Designation
Level 0	District's existing conservation efforts	Follow the State of Utah lawn watering guide and time of day restrictions		Regular tiered water rates	
Level 1	Additional efforts to request voluntary reduction in water use	Voluntary reductions in lawn watering		Regular tiered water rates	
Level 2	Additional efforts to request voluntary reduction in water use including voluntary restrictions on watering	Limit watering to two times per week		Regular tiered water rates	
Level 3	Additional efforts to outline mandatory reduction in water use and rate changes	Limit watering to two times per week or less	Mandatory Limit to watering two times per week or less	Moderate drought rates are expected	Moderate drought rates in effect
Level 4	Additional efforts to outline mandatory & emergency reduction in water use and rate changes	Limit watering to less than two times per week and eliminate watering to non-essential areas	Mandatory Limit to watering two times per week or less and eliminate watering to non-essential areas	Extreme drought rates are expected	Extreme drought rates in effect

OPERATIONAL AND ADMINISTRATIVE FRAMEWORK

Drought Level Designation

- It will be the responsibility of the General Manager to monitor drought conditions in the District.
- After examining the early warning indicator (snow level) in March, the General Manager will report to the District's board regarding the predicted drought level and what actions will be taken.
- The General Manager shall create, sign, and distribute the Drought Warning Letter to the public. The General Manager may add any additional recommendations regarding actions to be taken in association with the drought response. This may include specific guidance on education and outreach, watering guidelines, and/or drought mitigation rates. If there is no predicted drought (Level 0), no Drought Warning Letter will go out to the public.

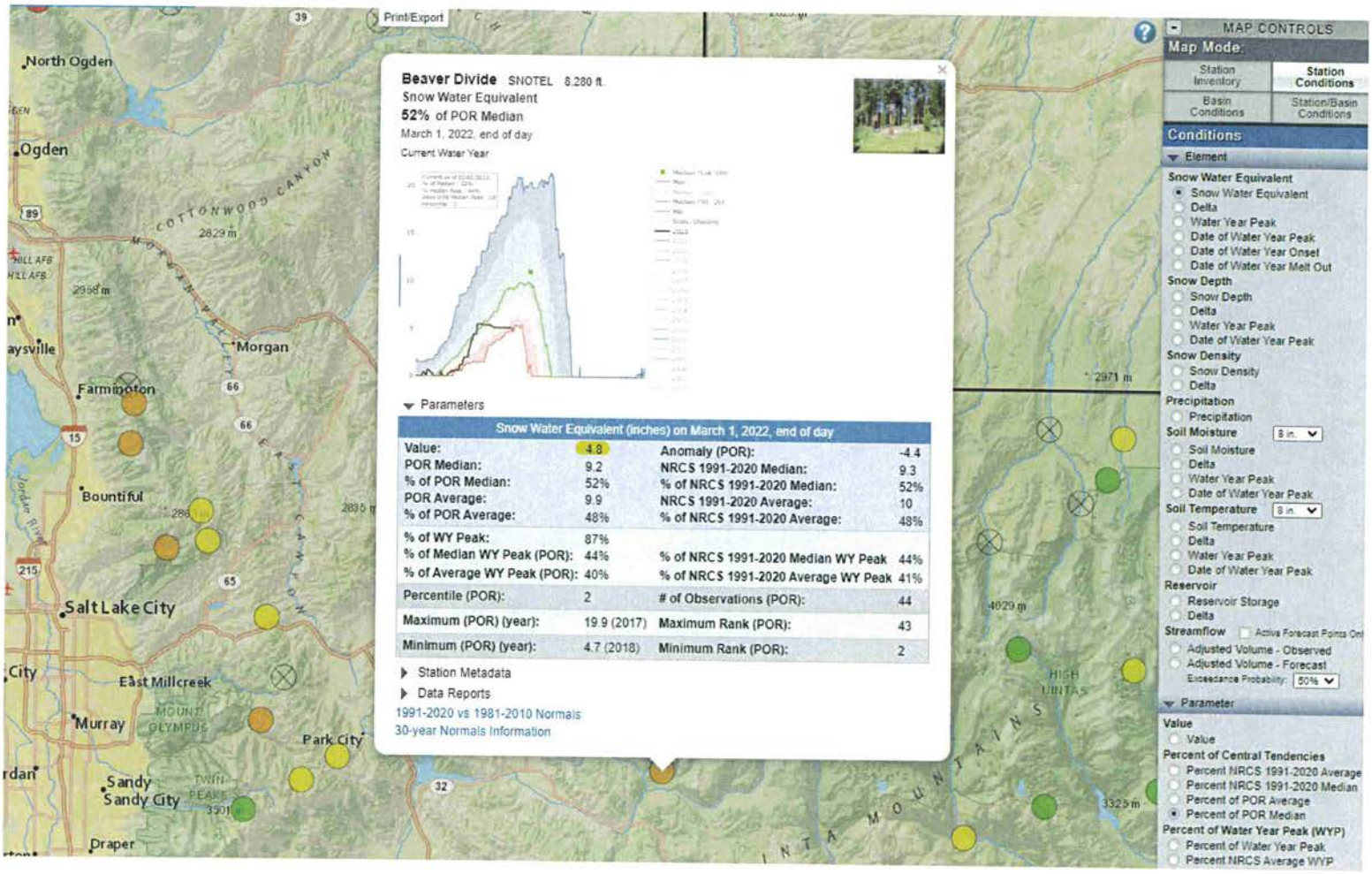
- If any of the triggers are reached, the General Manager may contact the District's Board within 30 days to report on drought action taken and any Drought Designation Letters which have been issued.
- The General Manager shall create, sign, and distribute the Drought Designation Letter to the public. The General Manager may add any additional recommendations or requirements regarding actions to be taken in association with the drought response. This may include specific guidance on education and outreach, watering guidelines, and/or drought mitigation rates. If there is no drought (Level 0), no Drought Designation Letter will go out to the public.
- Weather conditions patterns vary from drought to drought and other types of conditions (such as a significant infrastructure failure or water quality issue) can cause water shortages. In general, drought designations made according to this WSMP will remain in effect and remain unchanged through the irrigation season. However, for extraordinary circumstances, the General Manager shall monitor the situation and may adjust the drought designation level at any time.
- The General Manager shall designate the duration of drought response actions. He can do this at the time of original notice (e.g. "... shall be in effect through the end of the irrigation season") or at conclusion (e.g. "... shall be in effect until further notice").

Plan Execution

Plan execution will be under the direction of the General Manager. At District-owned facilities, the General Manager will follow any specific guidance provided in the Drought Warning Letter or the Drought Designation Letter.

The Board may choose to authorize and direct the General Manager to deviate from the prescribed actions in this plan. However, in the absence of specific guidance from the Board, the General Manager will follow the recommended actions for the specific drought level designation as identified in this document.

APPENDIX A


Print/Export
North Ogden
Ogden
COTTONWOOD CANYON
2829 m
Morgan
Farmington
Bountiful
Salt Lake City
East Millcreek
Murray
Park City
Sandy
Sandy City
Draper
MOUNT OLYMPUS
TWIN PEAKS
3501 m
2971 m
4029 m
3325 m
HIGH UINTAS
Beaver Divide SNOTEL 8,280 ft.
Snow Water Equivalent
52% of POR Median
March 1, 2022, end of day
Current Water Year
Parameters
Snow Water Equivalent (inches) on March 1, 2022, end of day
Value: 4.8
Anomaly (POR): -4.4
POR Median: 9.2
NRCS 1991-2020 Median: 9.3
% of POR Median: 52%
% of NRCS 1991-2020 Median: 52%
POR Average: 9.9
NRCS 1991-2020 Average: 10
% of POR Average: 48%
% of NRCS 1991-2020 Average: 48%
% of WY Peak: 87%
% of Median WY Peak (POR): 44%
% of NRCS 1991-2020 Median WY Peak 44%
% of Average WY Peak (POR): 40%
% of NRCS 1991-2020 Average WY Peak 41%
Percentile (POR): 2
# of Observations (POR): 44
Maximum (POR) (year): 19.9 (2017)
Maximum Rank (POR): 43
Minimum (POR) (year): 4.7 (2018)
Minimum Rank (POR): 2
Station Metadata
Data Reports
1991-2020 vs 1981-2010 Normals
30-year Normals Information
MAP CONTROLS
Map Mode:
Station Inventory
Station Conditions
Basin Conditions
Station/Basin Conditions
Conditions
Element
Snow Water Equivalent
Snow Water Equivalent
Delta
Water Year Peak
Date of Water Year Peak
Date of Water Year Onset
Date of Water Year Melt Out
Snow Depth
Snow Depth
Delta
Water Year Peak
Date of Water Year Peak
Snow Density
Snow Density
Delta
Precipitation
Precipitation
Soil Moisture 8 in.
Soil Moisture
Delta
Water Year Peak
Date of Water Year Peak
Soil Temperature 8 in.
Soil Temperature
Delta
Water Year Peak
Date of Water Year Peak
Reservoir
Reservoir Storage
Delta
Streamflow Active Forecast Points Only
Adjusted Volume - Observed
Adjusted Volume - Forecast
Exceedance Probability: 50%
Parameter
Value
Value
Percent of Central Tendencies
Percent NRCS 1991-2020 Average
Percent NRCS 1991-2020 Median
Percent of POR Average
Percent of POR Median
Percent of Water Year Peak (WYP)
Percent of Water Year Peak
Percent NRCS Average WYP

APPENDIX B

	Yield After High Water End Date (acre-feet)						
Drought Level	4	4.5	5	5.5	6	6.5	7
4	May 1st to June 14th	May 1st to June 3rd	May 1st to May 22nd	May 1st to May 9th	Before May 1st	Before May 1st	Before May 1st
3	June 15th to June 30th	June 4th to June 21st	May 23rd to June 13th	May 10th to June 3rd	May 1st to May 25th	May 1st to May 15th	May 1st to May 2nd
2	July 1st to July 8th	June 22nd to June 30th	June 14th to June 22nd	June 4th to June 15th	May 26th to June 6th	May 16th to May 29th	May 3rd to May 21st
1	July 9th to July 14th	July 1st to July 7th	June 23rd to June 30th	June 16th to June 22nd	June 7th to June 15	May 30th to June 8th	May 22nd to May 31st
0	July 15th to July 31st	July 8th to July 31st	July 1st to July 31st	June 23rd to July 31st	June 16th to July 31st	June 9th to July 31st	June 1st to July 31st

APPENDIX C

Twin Creeks SSD

TWIN CREEKS SPEICAL SERVICE DISTRICT
PO BOX 519
HEBER CITY, UT 84032
OFFICE: (435) 654-9233

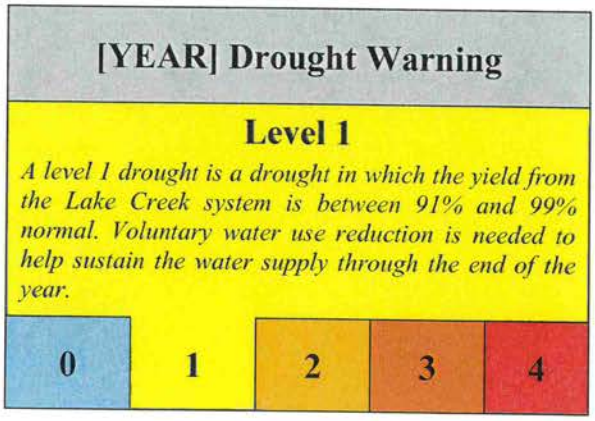
Drought Warning Letter

Date

Dear TCSSD Customer,

We have been monitoring the snowpack this year and unfortunately, the levels are predicting that this year will be a Level 1 drought.

If we all work together and conserve water, we can help to extend our system supply through the end of the year. The District is implementing measures and coordinating with other local water districts and irrigation companies in an effort to mitigate some of these issues, and to provide additional resources to make the most efficient use of the current water supply.



The following actions are needed by all to sufficiently conserve water for this year:

- Continue to follow the State of Utah Division of Water Resources lawn watering guidelines.
- Check for broken sprinklers, pipes, etc. to minimize water loss.
- Please report and repair any leaking connections/fixtures, etc. to avoid wasting water.
- Please notify the District where applicable for system repairs.
- Avoid watering during the hottest part of the day (10:00 am to 6:00 pm).
- Postpone new landscape projects until a wetter year.
- Do not use water for washing of driveways and sidewalks.
- Look for other ways to reduce outdoor watering.

Please utilize the following resources for additional information:

- LocalScapes (localscapes.com): LocalScapes guides homeowners through the process of designing a landscape that thrives in Utah and uses water wisely.
- Slow the Flow (slowtheflow.org): The Governor's Water Conservation Team formed this organization to promote conservation throughout the state. Resources and information can be found on the website slowtheflow.org.
- Conservewater.utah.gov: This site offers information on water conservation in Utah, a weekly lawn watering guide, water conservation plans, resources for waterwise plants, state water campaign information, etc.
- Additional information can also be found on the Twin Creeks SSD website, including the District's Water Shortage Management Plan.

Thank you for your water conserving efforts through this drought, it helps the water supply to last for all of us.

Sincerely,

[General Manager Name]
General Manager
Twin Creeks Special Service District

Twin Creeks SSD

TWIN CREEKS SPEICAL SERVICE DISTRICT
PO BOX 519
HEBER CITY, UT 84032
OFFICE: (435) 654-9233

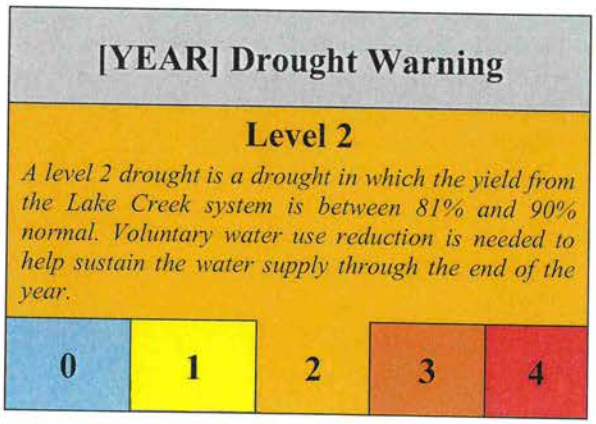
Drought Warning Letter

Date

Dear TCSSD Customer,

We have been monitoring the snowpack this year and unfortunately, the levels are predicting that this year will be a Level 2 drought.

If we all work together and conserve water, we can help to extend our system supply through the end of the year. The District is implementing measures and coordinating with other local water districts and irrigation companies in an effort to mitigate some of these issues, and to provide additional resources to make the most efficient use of the current water supply.



The following actions are needed by all to sufficiently conserve water for this year:

- Continue to follow the State of Utah Division of Water Resources lawn watering guidelines.
- Check for broken sprinklers, pipes, etc. to minimize water loss.
- Please report and repair any leaking connections/fixtures, etc. to avoid wasting water.
- Please notify the District where applicable for system repairs.
- Avoid watering during the hottest part of the day (10:00 am to 6:00 pm).
- Postpone new landscape projects until a wetter year.
- Do not use water for washing of driveways and sidewalks.
- Look for other ways to reduce outdoor watering.

Please utilize the following resources for additional information:

- LocalScapes (localscapes.com): LocalScapes guides homeowners through the process of designing a landscape that thrives in Utah and uses water wisely.
- Slow the Flow (slowtheflow.org): The Governor's Water Conservation Team formed this organization to promote conservation throughout the state. Resources and information can be found on the website slowtheflow.org.
- Conservewater.utah.gov: This site offers information on water conservation in Utah, a weekly lawn watering guide, water conservation plans, resources for waterwise plants, state water campaign information, etc.
- Additional information can also be found on the Twin Creeks SSD website, including the District's Water Shortage Management Plan.

Thank you for your water conserving efforts through this drought, it helps the water supply to last for all of us.

Sincerely,

[General Manager Name]
General Manager
Twin Creeks Special Service District

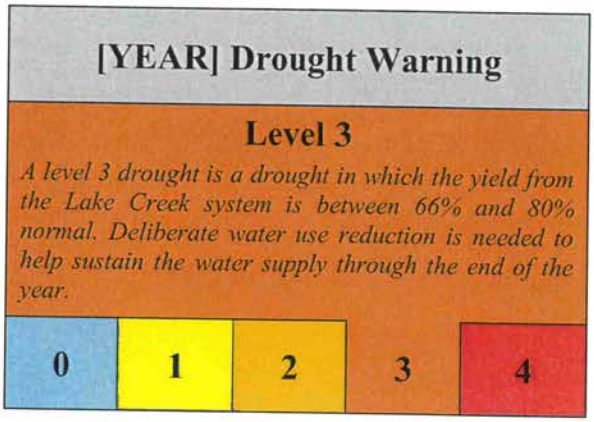
Twin Creeks SSD

TWIN CREEKS SPEICAL SERVICE DISTRICT
PO BOX 519
HEBER CITY, UT 84032
OFFICE: (435) 654-9233

Drought Warning Letter

Date

Dear TCSSD Customer,



We have been monitoring the snowpack this year and unfortunately, the levels are predicting that this year will be a Level 3 drought, which is a moderate drought.

It is mandatory that we all work together to conserve water so we can help to extend our system supply through the end of the year. The District is implementing extreme measures and coordinating with other local water districts and irrigation companies in an effort to mitigate these drought related issues, and to provide additional resources to make the most efficient use of the current water supply.

The following actions will be mandatory if a Level 3 drought is designated:

- Limit watering to less than two times per week.
- Eliminate irrigation of non-essential areas, which includes any grass, lawns, or planters, etc.
- Check for broken sprinklers, pipes, etc. to minimize water loss.
- Please report and repair any leaking connections/fixtures, etc. to avoid wasting water.
- Please notify the District where applicable for system repairs.
- Avoid watering during the hottest part of the day (10:00 am to 6:00 pm).
- Postpone new landscape projects until a wetter year.
- Do not use water for washing of driveways and sidewalks.
- Look for other ways to reduce outdoor watering.

In a Level 3 Drought, the District is implementing moderate drought mitigation rates for culinary and secondary water. For culinary water drought mitigation rates, the overage volume rate will start at 9,000 kgals instead of 12,000 kgals. For secondary water drought mitigation rates, there are still four tiers for water usage, but the Tier 1 rates will increase by 20%, Tier 2 rates will increase by 50%, Tier 3 rates will increase by 65%, and the Tier 4 rates will increase by 70%. These drought mitigation rates become effective once the drought has been designated, and based on current conditions, implementing drought mitigation rates is expected.

Please utilize the following resources for additional information:

- LocalScapes (localscapes.com): LocalScapes guides homeowners through the process of designing a landscape that thrives in Utah and uses water wisely.
- Slow the Flow (slowtheflow.org): The Governor's Water Conservation Team formed this organization to promote conservation throughout the state. Resources and information can be found on the website slowtheflow.org.
- Conservewater.utah.gov: This site offers information on water conservation in Utah, a weekly lawn watering guide, water conservation plans, resources for waterwise plants, state water campaign information, etc.

- Additional information can also be found on the Twin Creeks SSD website, including the District's Water Shortage Management Plan.

Thank you for your water conserving efforts and compliance to these restrictions through this drought. Your efforts make it possible for the water supply to last longer for us all.

Sincerely,

[General Manager Name]
General Manager
Twin Creeks Special Service District

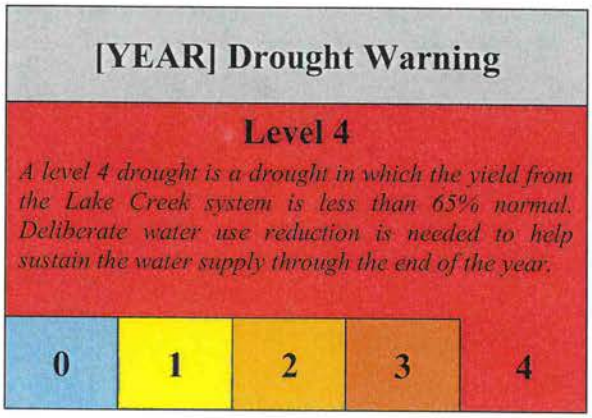
Twin Creeks SSD

TWIN CREEKS SPEICAL SERVICE DISTRICT
PO BOX 519
HEBER CITY, UT 84032
OFFICE: (435) 654-9233

Drought Warning Letter

Date

Dear TCSSD Customer,



We have been monitoring the snowpack this year and unfortunately, the levels are predicting that this year will be a Level 4 drought, which is an extreme drought.

It is mandatory that we all work together to conserve water so we can help to extend our system supply through the end of the year. The District is implementing extreme measures and coordinating with other local water districts and irrigation companies in an effort to mitigate these drought related issues, and to provide additional resources to make the most efficient use of the current water supply.

The following actions will be mandatory if a Level 4 drought is designated:

- Limit watering to less than two times per week.
- Eliminate irrigation of non-essential areas, which includes any grass, lawns, or planters, etc.
- Check for broken sprinklers, pipes, etc. to minimize water loss.
- Please report and repair any leaking connections/fixtures, etc. to avoid wasting water.
- Please notify the District where applicable for system repairs.
- Avoid watering during the hottest part of the day (10:00 am to 6:00 pm).
- Postpone new landscape projects until a wetter year.
- Do not use water for washing of driveways and sidewalks.
- Look for other ways to reduce outdoor watering.

In a Level 4 Drought, the District is implementing extreme drought mitigation rates for culinary and secondary water. For culinary water drought mitigation rates, the overage volume rate will start at 9,000 kgals instead of 12,000 kgals. For secondary water drought mitigation rates, there are still four tiers for water usage, but the Tier 1 rates will increase by 50%, Tier 2 rates will increase by 90%, Tier 3 rates will increase by 110%, and the Tier 4 rates will increase by 120%. These drought mitigation rates become effective once the drought has been designated, and based on current conditions, implementing drought mitigation rates is expected.

Please utilize the following resources for additional information:

- LocalScapes (localscapes.com): LocalScapes guides homeowners through the process of designing a landscape that thrives in Utah and uses water wisely.
- Slow the Flow (slowtheflow.org): The Governor's Water Conservation Team formed this organization to promote conservation throughout the state. Resources and information can be found on the website slowtheflow.org.
- Conservewater.utah.gov: This site offers information on water conservation in Utah, a weekly lawn watering guide, water conservation plans, resources for waterwise plants, state water campaign information, etc.

- Additional information can also be found on the Twin Creeks SSD website, including the District's Water Shortage Management Plan.

Thank you for your water conserving efforts and compliance to these restrictions through this drought. Your efforts make it possible for the water supply to last longer for us all.

Sincerely,

[General Manager Name]
General Manager
Twin Creeks Special Service District

Twin Creeks SSD

TWIN CREEKS SPEICAL SERVICE DISTRICT
PO BOX 519
HEBER CITY, UT 84032
OFFICE: (435) 654-9233

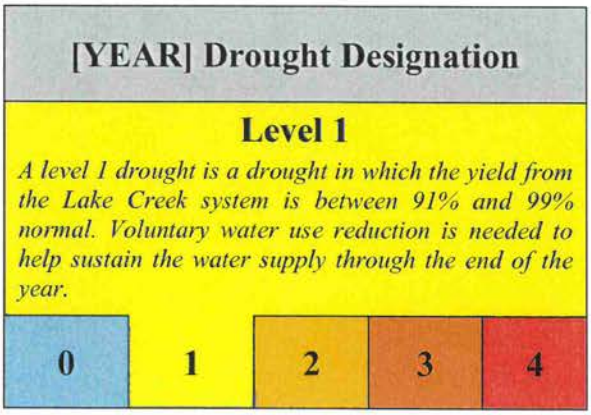
Drought Designation Letter

Date

Dear TCSSD Customer,

High water has ended and the yield of our Lake Creek water supplies this year has been reduced to about ___% of normal. Therefore, this year is a Level 1 drought.

If we all work together and conserve water, we can help to extend our system supply through the end of the year. The District is implementing measures and coordinating with other local water districts and irrigation companies in an effort to mitigate some of these issues, and to provide additional resources to make the most efficient use of the current water supply.



The following actions are needed by all to sufficiently conserve water for this year:

- Continue to follow the State of Utah Division of Water Resources lawn watering guidelines.
- Check for broken sprinklers, pipes, etc. to minimize water loss.
- Please report and repair any leaking connections/fixtures, etc. to avoid wasting water.
- Please notify the District where applicable for system repairs.
- Avoid watering during the hottest part of the day (10:00 am to 6:00 pm).
- Postpone new landscape projects until a wetter year.
- Do not use water for washing of driveways and sidewalks.
- Look for other ways to reduce outdoor watering.

Please utilize the following resources for additional information:

- LocalScapes (localscapes.com): LocalScapes guides homeowners through the process of designing a landscape that thrives in Utah and uses water wisely.
- Slow the Flow (slowtheflow.org): The Governor's Water Conservation Team formed this organization to promote conservation throughout the state. Resources and information can be found on the website slowtheflow.org.
- Conservewater.utah.gov: This site offers information on water conservation in Utah, a weekly lawn watering guide, water conservation plans, resources for waterwise plants, state water campaign information, etc.
- Additional information can also be found on the Twin Creeks SSD website, including the District's Water Shortage Management Plan.

Thank you for your water conserving efforts through this drought, it helps the water supply to last for all of us.

Sincerely,

[General Manager Name]
General Manager
Twin Creeks Special Service District

Twin Creeks SSD

TWIN CREEKS SPEICAL SERVICE DISTRICT
PO BOX 519
HEBER CITY, UT 84032
OFFICE: (435) 654-9233

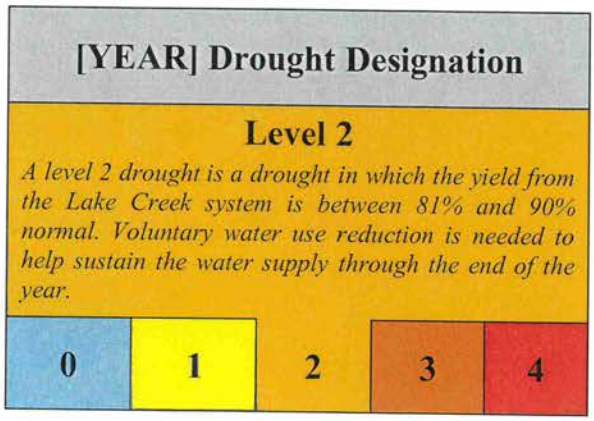
Drought Designation Letter

Date

Dear TCSSD Customer,

High water has ended and the yield of our Lake Creek water supplies this year has been reduced to about ___% of normal. Therefore, this year is a Level 2 drought.

If we all work together and conserve water, we can help to extend our system supply through the end of the year. The District is implementing measures and coordinating with other local water districts and irrigation companies in an effort to mitigate some of these issues, and to provide additional resources to make the most efficient use of the current water supply.



The following actions are needed by all to sufficiently conserve water for this year:

- Continue to follow the State of Utah Division of Water Resources lawn watering guidelines.
- Check for broken sprinklers, pipes, etc. to minimize water loss.
- Please report and repair any leaking connections/fixtures, etc. to avoid wasting water.
- Please notify the District where applicable for system repairs.
- Avoid watering during the hottest part of the day (10:00 am to 6:00 pm).
- Postpone new landscape projects until a wetter year.
- Do not use water for washing of driveways and sidewalks.
- Look for other ways to reduce outdoor watering.

Please utilize the following resources for additional information:

- LocalScapes (localscapes.com): LocalScapes guides homeowners through the process of designing a landscape that thrives in Utah and uses water wisely.
- Slow the Flow (slowtheflow.org): The Governor's Water Conservation Team formed this organization to promote conservation throughout the state. Resources and information can be found on the website slowtheflow.org.
- Conservewater.utah.gov: This site offers information on water conservation in Utah, a weekly lawn watering guide, water conservation plans, resources for waterwise plants, state water campaign information, etc.
- Additional information can also be found on the Twin Creeks SSD website, including the District's Water Shortage Management Plan.

Thank you for your water conserving efforts through this drought, it helps the water supply to last for all of us.

Sincerely,

[General Manager Name]
General Manager
Twin Creeks Special Service District

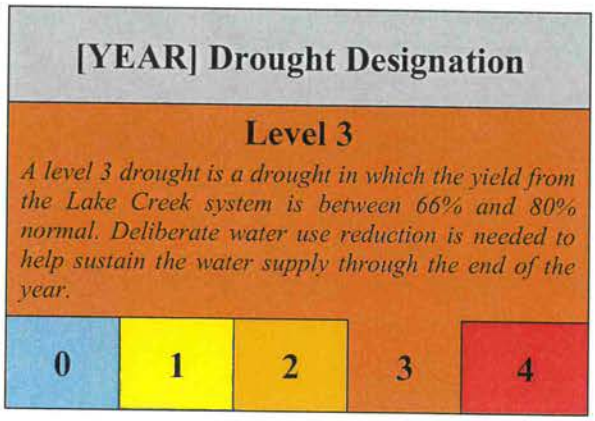
Twin Creeks SSD

TWIN CREEKS SPEICAL SERVICE DISTRICT
PO BOX 519
HEBER CITY, UT 84032
OFFICE: (435) 654-9233

Drought Designation Letter

Date

Dear TCSSD Customer,



High water has ended, and the yield of our Lake Creek water supplies this year has been reduced to about ___% of normal. Therefore, this year is a Level 3 drought, which is a moderate drought.

It is mandatory that we all work together to conserve water so we can help to extend our system supply through the end of the year. The District is implementing extreme measures and coordinating with other local water districts and irrigation companies in an effort to mitigate some of these drought related issues, and to provide additional resources to make the most efficient use of the current water supply.

The following actions are now mandatory:

- Limit watering to two times per week or less.
- Eliminate irrigation of non-essential areas, which includes any grass, lawns, or planters, etc.
- Check for broken sprinklers, pipes, etc. to minimize water loss.
- Please report and repair any leaking connections/fixtures, etc. to avoid wasting water.
- Please notify the District where applicable for system repairs.
- Avoid watering during the hottest part of the day (10:00 am to 6:00 pm).
- Postpone new landscape projects until a wetter year.
- Do not use water for washing of driveways and sidewalks.
- Look for other ways to reduce outdoor watering.

In a Level 3 Drought, the District is implementing moderate drought mitigation rates for culinary and secondary water. For culinary water drought mitigation rates, the overage volume rate will start at 9,000 kgals instead of 12,000 kgals. For secondary water drought mitigation rates, there are still four tiers for water usage, but the Tier 1 rates will increase by 20%, Tier 2 rates will increase by 50%, Tier 3 rates will increase by 65%, and the Tier 4 rates will increase by 70%. The drought has been designated as a Level 3, so these drought mitigation rates are now in effect.

Please utilize the following resources for additional information:

- LocalScapes (localscapes.com): LocalScapes guides homeowners through the process of designing a landscape that thrives in Utah and uses water wisely.
- Slow the Flow (slowtheflow.org): The Governor's Water Conservation Team formed this organization to promote conservation throughout the state. Resources and information can be found on the website slowtheflow.org.
- Conservewater.utah.gov: This site offers information on water conservation in Utah, a weekly lawn watering guide, water conservation plans, resources for waterwise plants, state water campaign information, etc.

- Additional information can also be found on the Twin Creeks SSD website, including the District's Water Shortage Management Plan.

Thank you for your water conserving efforts and compliance to these restrictions through this drought. Your efforts make it possible for the water supply to last longer for us all.

Sincerely,

[General Manager Name]
General Manager
Twin Creeks Special Service District

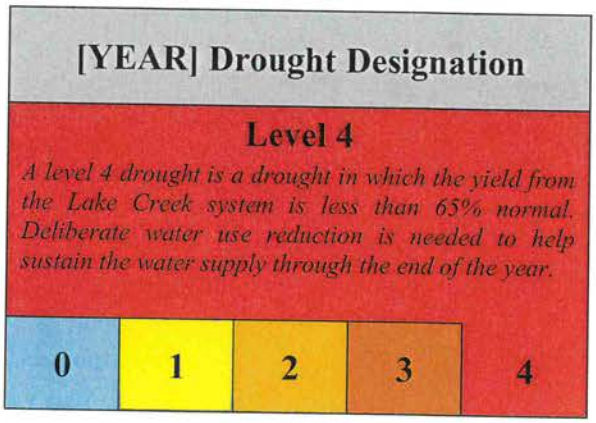
Twin Creeks SSD

TWIN CREEKS SPEICAL SERVICE DISTRICT
PO BOX 519
HEBER CITY, UT 84032
OFFICE: (435) 654-9233

Drought Designation Letter

Date

Dear TCSSD Customer,



High water has ended, and the yield of our Lake Creek water supplies this year has been reduced to about ___% of normal. Therefore, this year is a Level 4 drought, which is an extreme drought.

It is mandatory that we all work together to conserve water so we can help to extend our system supply through the end of the year. The District is implementing extreme measures and coordinating with other local water districts and irrigation companies in an effort to mitigate some of these drought related issues, and to provide additional resources to make the most efficient use of the current water supply.

The following actions are now mandatory:

- Limit watering to less than two times per week.
- Eliminate irrigation of non-essential areas, which includes any grass, lawns, or planters, etc.
- Check for broken sprinklers, pipes, etc. to minimize water loss.
- Please report and repair any leaking connections/fixtures, etc. to avoid wasting water.
- Please notify the District where applicable for system repairs.
- Avoid watering during the hottest part of the day (10:00 am to 6:00 pm).
- Postpone new landscape projects until a wetter year.
- Do not use water for washing of driveways and sidewalks.
- Look for other ways to reduce outdoor watering.

In a Level 4 Drought, the District is implementing extreme drought mitigation rates for culinary and secondary water. For culinary water drought mitigation rates, the overage volume rate will start at 9,000 kgals instead of 12,000 kgals. For secondary water drought mitigation rates, there are still four tiers for water usage, but the Tier 1 rates will increase by 50%, Tier 2 rates will increase by 90%, Tier 3 rates will increase by 110%, and the Tier 4 rates will increase by 120%. The drought has been designated as a Level 4, so these drought mitigation rates are now in effect.

Please utilize the following resources for additional information:

- LocalScapes (localscapes.com): LocalScapes guides homeowners through the process of designing a landscape that thrives in Utah and uses water wisely.
- Slow the Flow (slowtheflow.org): The Governor's Water Conservation Team formed this organization to promote conservation throughout the state. Resources and information can be found on the website slowtheflow.org.
- Conservewater.utah.gov: This site offers information on water conservation in Utah, a weekly lawn watering guide, water conservation plans, resources for waterwise plants, state water campaign information, etc.

- Additional information can also be found on the Twin Creeks SSD website, including the District's Water Shortage Management Plan.

Thank you for your water conserving efforts and compliance to these restrictions through this drought. Your efforts make it possible for the water supply to last longer for us all.

Sincerely,

[General Manager Name]
General Manager
Twin Creeks Special Service District

DRAPER, UTAH OFFICE
154 E 14075 S
DRAPER, UTAH 84020
PHONE: 801.495.2224

BOISE, IDAHO OFFICE
776 E RIVERSIDE DRIVE
SUITE 250
EAGLE, IDAHO 83616
PHONE: 208.939.9561

ST. GEORGE, UTAH OFFICE
20 NORTH MAIN
SUITE 107
ST.GEORGE, UTAH 84770
PHONE: 435.656.3299

OGDEN, UTAH OFFICE
2036 LINCOLN AVENUE
SUITE 104
OGDEN, UTAH 84401
PHONE: 801.495.2224

BOWEN COLLINS & ASSOCIATES

WWW.BOWENCOLLINS.COM