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2020 Urban Water Management Plan for South Tahoe Public Utility District

DRAFT



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DRAFT
2020
Urban Water Management
Plan

3 Mayl 2021

Prepared for



South Tahoe
Public Utility District
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Abbreviations

AB	Assembly Bill (California)
Act	DWR 2020 Urban Water Management Planning Act
AF	acre-feet
AFY	acre-feet per year
AMI	Advanced Metering Infrastructure
AWWA	American Water Works Association
Basin	Tahoe Valley Groundwater Basin
CASGEM	California Statewide Groundwater Elevation Monitoring
CCR	Consumer Confidence Report
CIMIS	California Irrigation Management Information System
Compact	Tahoe Regional Planning Compact
CREAT	Climate Resilience Evaluation and Assessment Tool
CUWCC	California Urban Water Conservation Council
CWC	California Water Code
DMM	Demand Management Measures
DOF	Department of Finance (California)
DVR	Diamond Valley Ranch
DWR	Department of Water Resources (California)
DWR Guidebook	DWR Guidebook for Urban Water Suppliers
Eto	evapotranspiration rate
GPCD, gpcd	gallons per capita per day
gpm	gallons per minute (U.S.)
GWMP	Groundwater Management Plan
KJ	Kennedy Jenks Consultants

kWh	kilowatt hour
µg/L	micrograms per liter
MGD	million gallon per day
ml	milliliter
MPN	Most Probable Number
MTBE	Methyl Tert Butyl Ether
PCE	tetrachloroethylene
PWS	public water system
SBX7-7	Senate Bill 7 of Special Extended Session 7, 20x2020
SGMA	Sustainable Groundwater Management Act
STPUD, District	South Tahoe Public Utility District
TRPA	Tahoe Regional Planning Agency
TSS, Basin 6-5.01	Tahoe South Subbasin
UWMP, Plan	Urban Water Management Plan
WSCP	Water Shortage Contingency Plan
WWTP	Wastewater Treatment Plant

Section 1: Introduction/Lay Description

1.1 Overview

This document presents the Urban Water Management Plan (UWMP or Plan) 2020 for the South Tahoe Public Utility District (STPUD or District) service area, which includes most of the City of South Lake Tahoe and portions of unincorporated El Dorado County. This chapter describes the general purpose of the UWMP. A list of acronyms and abbreviations is provided at following the table of contents.

1.2 Purpose

An UWMP is a planning tool that generally guides the actions of water management agencies. It provides managers and the public with a broad perspective on a number of water supply issues. It is not a substitute for project-specific planning documents, nor was it intended to be when mandated by the State Legislature. For example, the Legislature mandated that a plan includes a section which “describes the opportunities for exchanges or water transfers on a short-term or long-term basis.” (California Urban Water Management Planning Act, Article 2, Section 10630(d).) The identification of such opportunities, and the inclusion of those opportunities in a general water service reliability analysis, neither commits a water management agency to pursue a particular water exchange/transfer opportunity, nor precludes a water management agency from exploring exchange/transfer opportunities not identified in the plan. When specific projects are chosen to be implemented, detailed project plans are developed, environmental analysis, if required, is prepared, and financial and operational plans are detailed.

In short, this Plan is a management tool, providing a framework for action, but not functioning as a detailed project development or action. It is important that this Plan be viewed as a long-term, general planning document, rather than as an exact blueprint for supply and demand management. Water management in California is not a matter of certainty, and planning projections may change in response to a number of factors. From this perspective, it is appropriate to look at the Plan as a general planning framework, not a specific action plan. It is an effort to generally answer a series of planning questions including:

- What are the potential sources of supply and what is the reasonable probable yield from them?
- What is the probable demand, given a reasonable set of assumptions about growth and implementation of good water management practices?
- How well do supply and demand figures match up, assuming that the various probable supplies will be pursued by the implementing agency?

Using these “framework” questions and resulting answers, the implementing agency will pursue feasible and cost-effective options and opportunities to meet demands.

The California Urban Water Management Planning Act (Act) became part of the California Water Code with the passage of Assembly Bill (AB) 797 during the 1983-1984 regular session

of the California Legislature. The Act requires that every urban water supplier providing water for municipal purposes either directly or indirectly to more than 3,000 customers or supplying more than 3,000 acre-feet (AF) of water annually to prepare a plan that:

- Accomplishes water supply planning over a 20-year period in 5-year increments (STPUD is going beyond the requirements of the Act by developing a plan which spans 25 years.)
- Identifies and quantifies adequate water supplies, including recycled water, for existing and future demands, in normal, single-dry, and multiple-dry years.
- Implements conservation and efficient use of urban water supplies.

State legislation, Senate Bill 7 of Special Extended Session 7 (SBX7-7) was signed into law in November 2009, which calls for progress towards a 20 percent reduction in per capita water use statewide by 2020. The legislation, known as 20x2020 mandated each urban retail supplier develop and report an interim 2015 water use target, their baseline daily per capita use and 2020 compliance daily per capita use, along with the basis for determining those estimates. This UWMP reports on STPUD's final progress in meeting the SBX7-7 targets in Section 5.

In short, the Plan answers the question: *Will there be enough water for the area served by STPUD in future years, and what mix of programs should be explored for making this water available?*

The analysis in this Plan documents that STPUD has the necessary projected water supplies to meet normal and dry-year demands.

The primary requirements for the UWMP include:

- A description of the water service area.
- A description of the existing and planned supply sources.
- Estimates of past, present, and projected water use.
- SBX7-7 (20x2020) analysis and target compliance.
- An assessment of water supply reliability.
- A description of the conservation program and demand management measures.
- A description of plan adoption, submittal, and implementation.

The 2020 UWMP must submit data in specific tables to the California Department of Water Resources (DWR), which has provided these tables, and this UWMP utilizes the provided tables without changes to format or organization. The STPUD 2020 UWMP presents each required element per the DWR 2020 Urban Water Management Plan Guidelines.

This UWMP is organized to follow the DWR 2020 UWMP Guidelines recommended organization and data tables. Appendix A contains the DWR Checklist providing the location of the content that meets the UWMP legislative requirements.

During assessment of the District's 2014 Groundwater Management Plan (2014 GWMP), the California Department of Water Resources (DWR) recommended that differing water demand projections used in the 2014 GWMP and the Urban Water Management Plan (UWMP) be

reconciled (DWR, 2019). DWR also recommended that the reconciled water demand projections be incorporated into the projected water budgets used in each document. In order to satisfy this recommendation, both the updated 2014 GWMP and the 2020 UWMP use the same population growth rate (California Department of Finance (DOF) El Dorado County 50-year population growth rate) as a basis for projecting future water demands. In addition, projected total supplies and supply/shortfall estimates provided in this UWMP are calculated using the same storage threshold developed for the updated 2014 GWMP. The storage threshold represents the total amount of groundwater available for groundwater extraction in the groundwater Subbasin, without any undesirable results to all beneficial users and uses of groundwater within the Subbasin. However, as differences in GWMP and UWMP reporting requirements (calendar year (CY) versus water year(WY)) do occur, there is not be a direct comparison between the projected future water demands presented in the 2020 UWMP with the projected water demands to be presented in the updated 2014 GWMP.

Section 2: Plan Preparation

STPUD provides potable water service to over 3,000 connections per year and is therefore required to complete the UWMP process. Tables 2-1 through 2-4 list the UWMP background information as required by DWR.

Table 2-1: Retail Only: Public Water Systems			
Public Water System Number	Public Water System Name	Number of Municipal Connections 2020	Volume of Water Supplied 2020
91002	South Tahoe PUD	14,235	4,701
TOTAL		14,235	4,701
NOTES: 1. Volume is in units of AF. 2. Volume of water supplied is for potable water only. Neither raw nor recycled water is used within the District.			

Table 2-2: Plan Identification		
Select Only One	Type of Plan	Name of RUWMP or Regional Alliance if applicable
X	Individual UWMP	
	Water Supplier is also a member of a RUWMP	
	Water Supplier is also a member of a Regional Alliance	
	Regional Urban Water Management Plan (RUWMP)	
NOTES:		

Table 2-3: Supplier Identification	
Type of Agency (select one or both)	
<input type="checkbox"/>	Supplier is a wholesaler
<input checked="" type="checkbox"/>	Supplier is a retailer
Fiscal or Calendar Year (select one)	
<input checked="" type="checkbox"/>	UWMP Tables Are in Calendar Years
<input type="checkbox"/>	UWMP Tables Are in Fiscal Years
Units of Measure Used in UWMP	
Unit	Acre feet

Table 2-4: Retail: Water Supplier Information Exchange	
The retail supplier has informed the following wholesale supplier(s) of projected water use in accordance with CWC 10631.	
Wholesale Water Supplier Name <i>(Add additional rows as needed)</i>	
None. The District does not receive supply from wholesale sources.	

2.1 Coordination and Outreach

The Tahoe Regional Planning Agency (TRPA) is a two-state regional environmental planning agency tasked with planning efforts in the Tahoe Basin. The District regularly participates in the TRPA water, wastewater, and environmental planning efforts. The District notified TRPA, City of South Lake Tahoe, El Dorado County, and the El Dorado County Water Agency of the UWMP preparation, and contacted each respective agency as necessary to develop the UWMP. Furthermore, update of the UWMP was coordinated with the update to the Groundwater Management Plan (GWMP) for the Tahoe South Subbasin, which is due for resubmittal to DWR by January 1, 2022. Agency and public outreach efforts are presented in Section 10 per the UWMP Guideline requirements.

Section 3: System Description

The South Tahoe Public Utility District is a special district that was established in 1950. The District provides water and sewer service throughout the South Lake Tahoe area. The District is the largest water purveyor in the Lake Tahoe Basin. The District maintains a total of 15 wells, with water supply currently provided by 11 active supply wells and four standby wells. In addition to the supply wells, the District as a monitoring entity maintains thirty(30) observation wells for groundwater level monitoring under the California Statewide Groundwater Elevation Monitoring (CASGEM) program. The storage and distribution system is comprised of 16 booster pump stations, 23 storage tanks, 26 pressure-reducing valves, and 320 miles of potable water pipe. Due to the topography of the District's service area, the overall distribution system is separated into 15 pressure zones.

3.1 Service Area Description

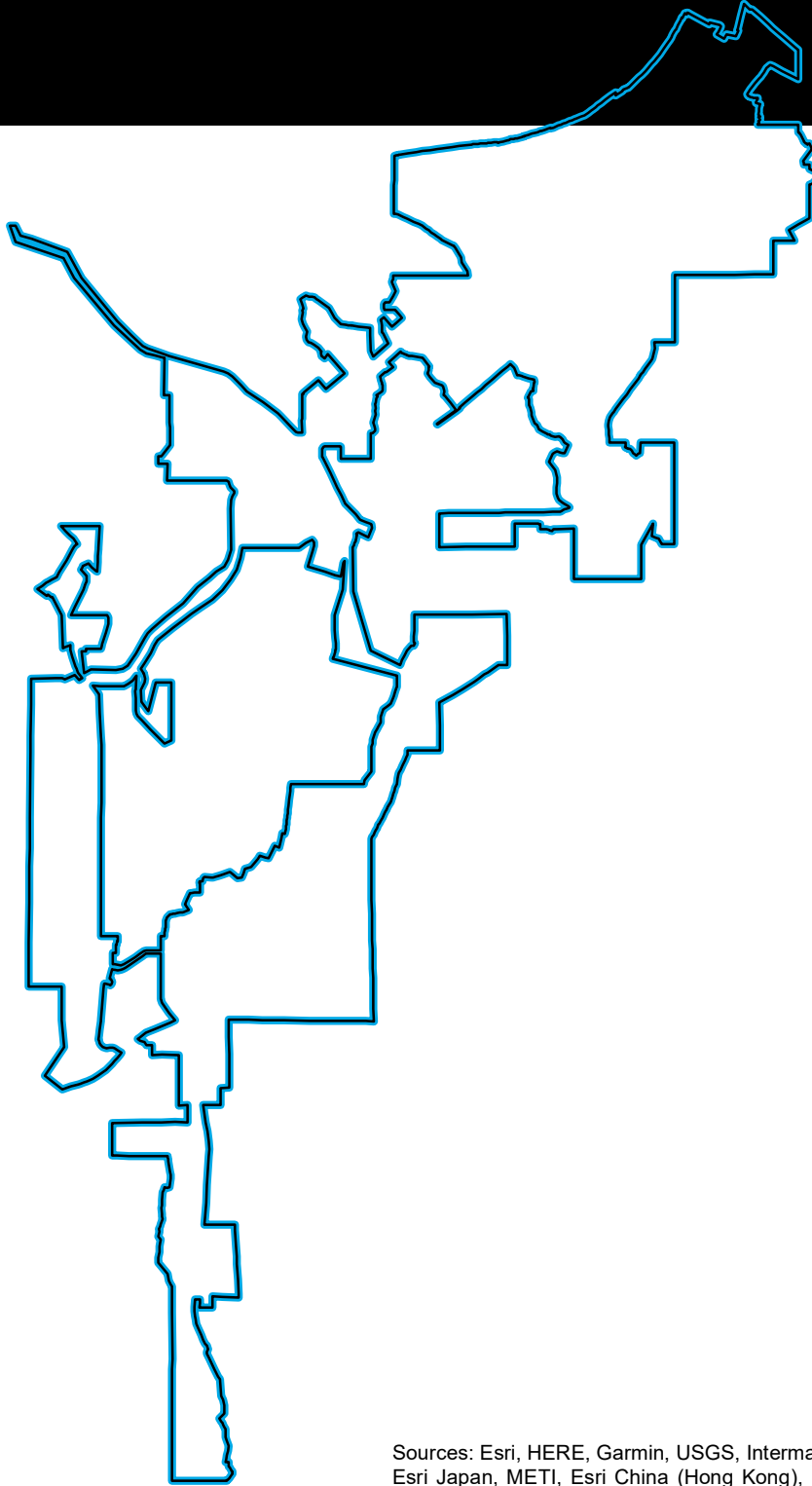
The District's service area encompasses 27,000 acres in eastern El Dorado County on the southern shore of Lake Tahoe. The service area extends west to include Emerald Bay, east to the California Nevada State Line, and south to include Christmas Valley. The service area includes most, but not all, of the City of South Lake Tahoe and portions of unincorporated El Dorado County. Figure 3-1 illustrates the District boundaries.

The District provides water supply within the incorporated City of South Lake Tahoe and the unincorporated communities of Montgomery Estates, Tahoe Paradise, Meyers, Angora Highlands, Fallen Leaf Lake, and Christmas Valley. Lukins Brothers Water Company, Lakeside Water Company, and Tahoe Keys Water Company are small private water providers within or adjacent to the District's service area. These private water companies are mostly built out and serve approximately 2,600 total connections.

The service area has a unique customer base. The area is a tourist destination with extensive lodging facilities and vacation homes. Correspondingly, land use within the service area is primarily residential, with some mixed-use, recreation, and tourist areas, as well as a small portion set aside for conservation. The seasonal fluctuations in the tourist season also affect the seasonal nature of the workforce. These demographics affect the District's water demands resulting in seasonal and weekly variations much different than a typical California city.

All land in the Lake Tahoe region, including the City and the District's service area, falls under the jurisdiction of the TRPA as defined in the Tahoe Regional Planning Compact (Compact). The Compact requires that all local jurisdiction planning be consistent with a series of Environmental Thresholds. The TRPA Environmental Thresholds effectively provide a growth control mechanism for the region, which in turn impacts projected water demands.

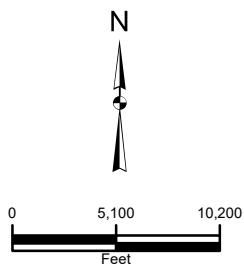
The STPUD service area receives significant precipitation during the winter in the form of snow. Some precipitation occurs during the other seasons in the form of rain. The monthly temperature ranges from an average low of 34 degrees to an average high of 54 degrees Fahrenheit (2015 STPUD UWMP). The historical annual mean precipitation is 33 inches. The average annual evapotranspiration rate (ET_o) is 54.3 inches (California DWR CIMIS Reference Evapotranspiration Zones Map). As described in the District's 2019 Climate Action Plan for the Capital Improvement Program, climate change projections include increased temperature,



Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community

Legend

 STPUD Water Service Area



Kennedy/Jenks Consultants

South Tahoe Public Utility District
2020 Urban Water Management Plan

South Tahoe Public Utility District Service Area Boundary

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Figure 3-1

with a 2.1-2.5°F increase by 2035, changes in precipitation, decreased snowpack, increased climatic water deficit, changes in flooding and runoff, increase in wildfires, and increased kinetic energy of raindrops (Reference, Year).

3.2 Population

The STPUD service area boundary does not match up exactly with census tract or block group zones. Existing service population is therefore estimated using the DWR Population Tool as described in Section 5. The tool uses historic connections and population data to provide a persons per connection. This value is applied to future projected connections to project future population served. The service area is largely built out, with remaining development potential heavily regulated by TRPA requirements. Projected growth rates are based on the DOF growth rates for El Dorado County as a proxy for the entire service area. Resulting population projections are presented in Table 3-1.

The service area demographics present a unique challenge in estimating population served. The census data used in the DWR Population Tool only includes permanent residents. However, the District serves a much larger population during high-season periods and on the weekends when tourists and vacation homeowners visit. This phenomenon was shifted during the 2020 calendar year due to the COVID-19 pandemic. The District saw an increase in the use of vacation homes for extended periods of time and an increase in full time residents which is reflected in increased water usage.

STPUD is using the DWR Population Tool output to demonstrate compliance with the 20x2020 demand reduction goals in this UWMP and demand management compliance reporting, as needed. Using the tool, the STPUD population per connection is 2.19 persons. STPUD acknowledges the population served is larger than the permanent resident population. However, as demand reduction compliance is based on relative reductions over time, STPUD anticipates no significant differences in compliance requirements. STPUD will continue to track this issue and modify its served population estimates in the future if necessary.

Table 3-1: Retail: Population - Current and Projected						
Population Served	2020	2025	2030	2035	2040	2045(opt)
	29,824	30,381	30,948	31,526	32,115	32,714
NOTES: 2020 population calculated using DWR Population Tool and projected using DOF El Dorado County growth rate.						

Section 4: System Water Use

This section presents past and projected water demands. The STPUD serves a wide range of customer types, from small older lots with little landscape to newer larger residences with extensive landscaping and a large resort area with snowmaking.

4.1 Current and Projected Water Demands

Water demands are projected by applying the DOF 50-year population projection growth rate for El Dorado County of 0.37% to the 2020 water demand. As of 2020, STPUD has 116 unmetered connections. The District is installing meters on all connections and intends to be fully metered by 2025. Since 2009 when STPUD initiated metering, water usage per account has decreased almost 20% from 0.498 acre-feet per year/account in 2009 when 6% of the accounts were metered to 0.406 acre-feet per year/account in 2020 when 96% of the accounts were metered. Metering has been an effective means of conservation; these savings are likely a function of the metering and the ability for STPUD staff to be able to communicate directly to customers regarding water use and leaks, as well as provide education and resources to increase water conservation. Since the projections are based on 2020 water demand, which incorporates these savings achieved since 2009, the projections include the effects of water conservation into the future.

Actual 2020 water demands per category are presented in Table 4-1. These values were determined by summing the metered and unmetered water deliveries. The unmetered deliveries were estimated by taking the ratio of unmetered to metered connections for each customer class and applying that ratio to the metered deliveries. As the tables indicate, the majority of the District's customers are residential. The District commercial category includes office and retail, as well as the resort accounts including hotels, restaurants, and snowmaking. "Losses" account for unmetered, unbilled water use such as firefighting, flushing, leaks, water theft, or meter inaccuracies characterized as "real losses" in the DWR/AWWA Water audit. As seen in Table 4-4, water losses in the District's system have been trending downwards over the previous 5 years, with the exception of 2020. This reduction in water loss can be correlated with the installation of customer water meters, beginning in 1993, and the comprehensive water conservation program launched in 2007. It is anticipated that the District will be completely metered by 2025.

Projected customer water demands through 2045 are summarized in Table 4-2. Table 4-3 summarizes the current and projected demands. There are no recycled water demands as discussed in Section 6. Water loss for 2016-2019 was calculated per the DWR/American Water Works Association (AWWA) water audit methodology and summarized in Table 4-4 and provided in Appendix B.

Table 4-1: Retail: Demands for Potable and Raw Water - Actual			
Use Type	2020 Actual		
	Additional Description (as needed)	Level of Treatment When Delivered	Volume
Single Family		Drinking Water	3306
Multi-Family		Drinking Water	787
Commercial	Includes Institutional and Tourism	Drinking Water	750
Losses		Drinking Water	935
TOTAL			5,778
NOTES: 1. Volume is in AFY.			

Table 4-2: Retail: Demands for Potable and Raw Water - Projected						
Use Type	Additional Description (as needed)	Projected Water Use <i>Report To the Extent that Records are Available</i>				
		2025	2030	2035	2040	2045 (opt)
Single Family		3,320	3,382	3,445	3,509	3,575
Multi-Family		753	767	782	796	811
Commercial	Includes Institutional and Tourism	716	729	743	757	771
Losses		872	888	905	922	939
TOTAL		5,661	5,767	5,874	5,984	6,096
NOTES: 1. Units are in AFY.						

Table 4-3: Retail: Total Water Demands						
	2020	2025	2030	2035	2040	2045 (opt)
Potable and Raw Water <i>From Tables 4-1 and 4-2</i>	5,778	5,886	5,884	6,014	6,147	6186
Recycled Water Demand <i>From Table 6-4</i>	0	0	0	0	0	0
TOTAL WATER DEMAND	5,778	5886	5884	6014	6147	6186

NOTES:

1. Projected demands in units of AFY.
2. There are no recycled water applications in the Lake Tahoe Basin.

Table 4-4: Retail: Last 5 Years of Water Loss Audit Reporting	
Reporting Period Start Date (mm/yyyy)	Volume of Water Loss ¹
Jan-16	1,217
Jan-17	1,119
Jan-18	1,335
Jan-19	787
Jan-20	935

NOTES:

1. Volume of Water Loss is “Real Losses” from DWR/AWWA Water audit and are in units of AFY.

4.2 Water Use for Low Income Households

The City of South Lake Tahoe’s 2014 adopted General Plan and Housing Element noted that the Sacramento County Of Governments (SACOG) Regional Housing Needs Projection for City of South Lake Tahoe projects a total of 155 affordable housing units to meet the regional housing share target (2014 City of South Lake Tahoe General Plan Housing Element). These affordable housing units are assumed to be multi-family units. Using the multi-family unit water demand of 0.62 acre-feet per year (AFY)/connection, the estimated low income household water demand is 96.1 AFY. These demands are embedded in the projected demands presented throughout this UWMP. The required information for factors to include in water use projections is presented in Table 4-5.

Table 4-5: Retail Only: Inclusion in Water Use Projections	
Are Future Water Savings Included in Projections? (Refer to Appendix K of UWMP Guidebook)	Yes
If "Yes" to above, state the section or page number, in the cell to the right, where citations of the codes, ordinances, etc... utilized in demand projections are found.	Section 4.1
Are Lower Income Residential Demands Included In Projections?	Yes

4.3 Climate Change Considerations

Increased temperatures and drought may warrant additional water conservation efforts, especially for outdoor irrigation which can increase in multiple dry years, unless efforts are made to reduce water use. Indoor water conservation efforts, however, can lead to complications and changes in wastewater treatment operations from high strength raw wastewater, damage to systems, and increased cost. Lower wastewater flows can also could also reduce the volume of water available for irrigation applications outside of the district service area.

In addition, wildfire frequency is expected to increase due to increased temperatures ~~as well~~ with drought which can result in more frequent spikes of peak water demand as

seen during the 2007 Angora fire. These water demand peaks can stress water systems and supplies.

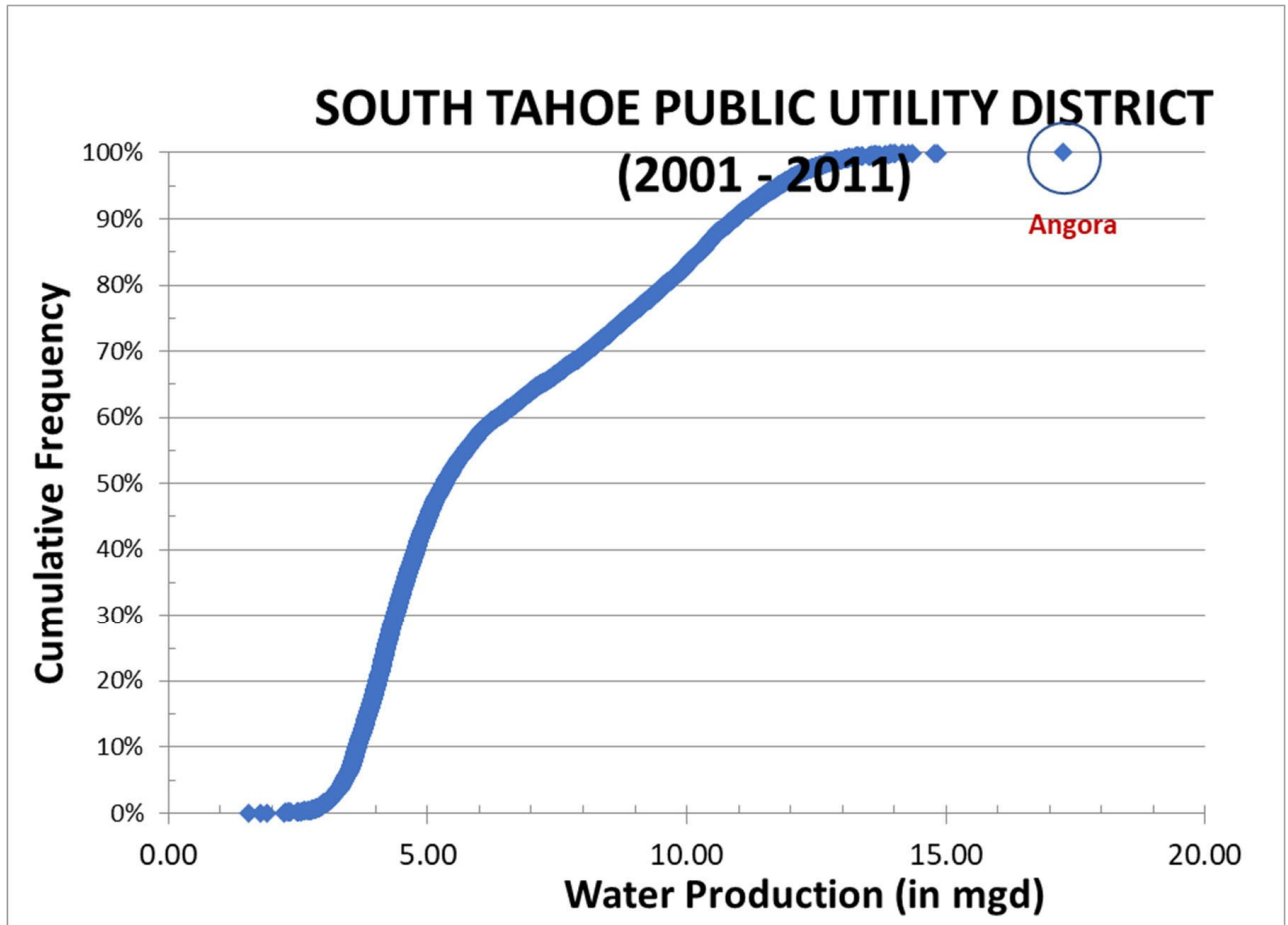


Figure 4-1: Peak Water Use During Angora Fire

Section 5: Baseline and Targets

State law requires that urban water agencies reduce demand 20 percent by 2020, from the baseline period. DWR has incorporated these requirements into the UWMP requirements. The required demand reduction is based on an agency's gallons per capita per day (gpcd). Specific methodologies for estimation and analysis of population and demands to determine gpcd targets are provided in the 2020 UWMP Guidebook and Appendices.

5.1 2020 Baseline Demand and Target

The DWR UWMP Guidebook methodologies for calculating baseline and reduction targets were used to update the baseline and targets from the 2010 UWMP for the 2015 UWMP as described in Section 5.2. The District is not required to update its baseline and targets for the 2020 UWMP. The detailed calculations and methodologies are presented in Appendix C.

Table 5-1 shows the Compliance Water Use Target for the District is 181 gpcd as determined for the 2015 UWMP. 2020 gpcd was determined using methodologies for estimation and analysis of population and demands. Table 5-2 shows that the District is in compliance with the 2020 target.

Table 5-1: Baselines and Targets Summary <i>Retail Agency or Regional Alliance Only</i>				
Baseline Period	Start Year	End Year	Average Baseline GPCD*	Confirmed 2020 Target*
10-15 year	1995	2004	226	181
5 Year	2003	2007	210	
*All values are in Gallons per Capita per Day (GPCD)				
NOTE: Based on DWR Table 5-1.				

Table 5-2: 2020 Compliance <i>Retail Supplier or Regional Alliance Only</i>							
Actual 2020 GPCD*	Optional Adjustments to 2020 GPCD Enter "0" if no adjustment is made <i>From Methodology 8</i>					2020 GPCD* <i>(Adjusted if applicable)</i>	Did Supplier Achieve Targeted Reduction for 2020? Y/N
	Extraordinary Events*	Economic Adjustment*	Weather Normalization*	TOTAL Adjustments*	Adjusted 2020 GPCD*		
173				0	173	173	Yes
<i>*All values are in Gallons per Capita per Day (GPCD)</i>							
NOTES:							

5.2 SB X7-7 Tables and Methodology

The 20x2020 process requires that a baseline demand be calculated from which target water demands are determined. The baseline demand is taken as the 10-year average gallon per day per capita, ending no earlier 2004. The baseline demand calculation is based on total supply into the system, and estimated service population for each year. The 2020 goal must be no more than 95 percent of a 5-year gpcd average ending no earlier than 2007. The baseline and target calculation methodologies are presented in Appendix C. Target Method 1, 20 percent of the baseline value, is the selected target. Resulting targets and compliance are summarized above in Tables 5-1 and 5-2. These tables will also be submitted to DWR per the UWMP Requirements.

Section 6: Water Supply Characterization

The District is 100% reliant on groundwater sources to meet its water system demands. The District does hold some surface water permits and filings in progress, but currently does not supply surface water. This section presents the supply analysis and discussion.

6.1 Surface Water

The District holds a permit to divert up to 2,718 AFY from Cold Creek (2015 STPUD UWMP). However, it discontinued this diversion in 1991 due to water quality constraints. The District also has diversion rights to the Upper Truckee River and tributaries for up to 4,424 AFY. These rights have not been utilized in the past and are not planned for use in the future due to supply reliability concerns (UWMP 2005). STPUD has submitted a water rights application in order to retain the option of exercising the water rights in the future. In addition, a feasibility study of surface water treatment to meet regional water supply needs has also been conducted and found not to be cost-effective when compared to groundwater. At this time, STPUD does not project surface water use for the next 20 years.

6.2 Groundwater

The District draws its groundwater supply from the basin underlying the service area. The California Department of Water Resources Groundwater Update 2003 Bulletin 118 defines the basin as the Tahoe Valley South Subbasin (Basin 6-5.01).

6.2.1 Basin Description

As described in the District's GWMP and Bulletin 118, the groundwater basin is primarily unconsolidated sedimentary deposits within the Tahoe Valley South Subbasin of the Tahoe Valley Groundwater Basin (Basin). Glacial deposits are predominant and include moraines and outwash that make up the predominant aquifers. The outwash deposits are generally sand, gravel, and cobble layers that are interbedded with silt and clay layers. Glacial melt waters and streams that drained moraines to the south produced the outwash deposits. Later, glacial outwash deposits in some areas were eroded and replaced with stream channel deposits. Hardrock assemblages, including granitic, metamorphic, and volcanic rocks, are also common to the District and in the Basin. Granitic outcrops are common over a large area east, and within most of the District.

In 1996, the fuel additive Methyl Tert Butyl Ether (MTBE) was detected in one of the District's wells. Gasoline/MTBE leaking from local gas station tanks travels easily through porous granitic soil into groundwater supplies. MTBE is a suspected carcinogen and even at low levels the chemical causes a foul taste and odor. The District has made significant efforts to combat this contaminant and, since 1996, MTBE has become the primary limiting factor to the District's supply and operations. Since 1997, more than fifteen public water supply wells have been removed from service due to MTBE contamination.

The District has been very proactive in addressing the challenges that MTBE contamination has caused. The District lobbied legislators and government officials to ban the use of MTBE as a

fuel additive. The District was successful in enlisting the help of El Dorado County and the City of South Lake Tahoe to create an MTBE-free zone at South Lake Tahoe beginning in April 1999. In 2000, the District completed a comprehensive Master Plan Update, MTBE Water System Impacts and Mitigation Evaluation addressing the restoration of water production lost to MTBE contamination. Options studied included

- constructing new wells,
- securing surface water rights,
- purchasing water,
- rehabilitating its wells,
- conserving water, and
- installing treatment facilities to remove MTBE from wells.

The District continues to implement and modify this plan as needed.

In addition to wellhead treatment, the District has pursued a new drinking water well development program. The Bayview Well, put online in summer of 2007, produces 3,600 gallons of water per minute, and is the District's highest producing well. South Upper Truckee Well No. 3, put online in 2008, adds another 1,200 gallons per minute of supply. With these new wells and recent distribution system improvements, the District has completely returned to pre-MTBE production capability.

Currently, there is a known tetrachloroethylene (PCE) plume within the west central portion of the Tahoe Valley South Sub-basin northeast of the Emerald Bay Road and South Lake Tahoe Boulevard Y area (also known as the South Y Area). Chlorinated hydrocarbons have been detected in the public water system (PWS), monitoring, and private wells north and south of the South Y Area since 1989, when these compounds were required to be first tested in regulated drinking water sources. Many of the PWS wells have since ceased operating due to PCE concentrations exceeding the drinking water standard of 5 micrograms per liter ($\mu\text{g/L}$). The majority of these South Y Area wells have been disconnected and many have been taken offline (i.e., ceased operation).

PCE groundwater contamination has impacted the beneficial use of groundwater in the South Y Area. In order to address these impacts, Kennedy Jenks Consultants (KJ) completed a Feasibility Study (South Y PCE Facilities Feasibility Study [Agreement D1712508], 2020) that evaluated the feasibility of cost-effective means of removing PCE from groundwater and managing existing groundwater sources to maintain adequate drinking water supply and quantity. The Feasibility Study evaluated remedial alternatives that will prevent further migration of contaminants and potential future impacts to downgradient water supply wells.

Three different alternatives were considered in the Feasibility Study and it was determined that the preferred remedial alternative was targeted pumping with potable reuse, based on the evaluation and ranking of alternatives. Targeted pumping with potable reuse will best meet the Feasibility Study goals, control or remove PCE from groundwater and prevent further migration

of contaminants and potential future impacts to downgradient water supply wells that serves or has served as a source of drinking water; and replace lost drinking water production caused by the impairment of groundwater sources in the South Y Area (Kennedy Jenks, 2020).

The District's water quality is reported in the Consumer Confidence Report (CCR), distributed to each customer annually. The latest CCR is included in Appendix D.

6.2.2 Groundwater Management

The District first developed and adopted a the GWMP in 2005. This plan was later updated in December 2014 in accordance with the Groundwater Management Act (AB303). In 2015 the District was recognized by DWR as the Groundwater Sustainability Agency (GSA) for the portion of the Tahoe South Subbasin lying within its service area. In 2019, DWR approved the 2014 GWMP as an alternative Groundwater Sustainability Plan for the Tahoe South Subbasin (DWR, 2019). The District and El Dorado Water Agency are in the process of completing the first five year update of the 2014 GWMP for resubmittal to DWR by January 1, 2022. The 2014 GWMP is available at <https://stpud.us/asset/3211/>.

Within the 2005 GWMP, the District established a safe pumping yield of 9,528 AFY for its operation. Historical and current demand is below the safe yield and has been declining since 2007. However, since that time, the State has adopted the Sustainable Groundwater Management Act (SGMA). SGMA legislation and rules contain more detailed analysis requirements and criteria for managing groundwater. The District is the lead agency for implementing SGMA. The 2016 Analysis of Basin Conditions report states that under the SGMA, the sustainable yield be at a minimum, less than or equal to the amount of groundwater recharge. The average recharge in for the entire basin between 1983 and 2015 was 39,000 AFY. The available groundwater for extraction in the TSS is 32,050 AFY. The District operates well below this value and is expected to remain within the sustainable yield well into the future.

In addition to developing the GWMP and implementing SGMA, the District is also the reporting agency for the CASGEM program. Per the 2015 CASGEM 2015 reporting, Basin 6-5.01 is a medium priority for the following reasons:

- 1) High reliance on Groundwater;
- 2) High Density of Public Supply Wells;
- 3) High Density of Production Wells;
- 4) Population Density; and
- 5) Documented Impacts/Impaired Water Quality (PCE and MTBE Contamination)

As stated previously, STPUD has been, and continues to be, proactive in addressing groundwater contamination.

6.2.3 Overdraft Conditions

The overall trend of the groundwater elevation data indicates that groundwater pumping is not causing any long-term declines in groundwater levels, or overdraft, in the Tahoe Valley South Basin. The water balance summary supports that the overall groundwater withdrawals are below the level that would result in an overdraft condition. As part of the groundwater annual report, review of water levels and groundwater modeling are conducted and would highlight any significant declines early so that management actions can be taken if needed. Also, even with

the high reliance on groundwater use within the Tahoe Valley South Basin, the regulatory policies restricting growth throughout the Lake Tahoe Basin, will help to ensure that overdraft conditions do not develop in the future (Tahoe Valley South Basin (6-5.01) 2014 Groundwater Management Plan, 2014).

6.2.4 Historical Pumping

STPUD maintains 11 active supply production and four standby groundwater wells as of the end of 2020. Well production capacity ranges from 90 gallons per minute (gpm) up to 3,000 gpm.

The District has reported as many as 34 wells from historic records. However, wells are abandoned over time due to age, failing production, and water quality issues such as the MTBE and PCE contamination issues.

Past groundwater usage from 2016-2020 is presented in Table 6-1. Water quality and well age issues will continue to impact supply capacities. STPUD will continue to monitor water quality and well performance and implement treatment and/or new well programs to maintain supply reliability.

Table 6-1: Retail: Groundwater Volume Pumped						
<input type="checkbox"/>	Supplier does not pump groundwater. The supplier will not complete the table below.					
<input type="checkbox"/>	All or part of the groundwater described below is desalinated.					
Groundwater Type	Location or Basin Name	2016	2017	2018	2019	2020
Alluvial Basin	Tahoe South Sub-basin 6-5.01	5,507	5,624	5,940	5,457	5,778
TOTAL		5,507	5,624	5,940	5,457	5,778
NOTES: Volume is in units of AFY.						

6.3 Wastewater and Recycled Water

STPUD owns and operates the wastewater collection and treatment system. The system produces effluent at recycled water standards. However, the State’s Lahontan Regional Water Quality Control Board prohibits the use of recycled water within the Tahoe Basin. Therefore, all the treatment plant effluent is pumped to Alpine County and stored and used for agricultural purposes. This section presents the required information per the Guidelines.

6.3.1 Wastewater Collection, Treatment, and Disposal

The District provides all wastewater treatment, collection, and disposal within its service area. The wastewater collection, treatment, and recycling disposal processes can treat 7.7 million gallon per day (MGD) serving approximately 18,000 connections. The District’s award-winning collection system and wastewater treatment plant produces an average 4 MGD, 100 percent of which is recycled. However, the Basin Plan promulgated by the Lahontan Regional Water Quality Control Board prohibits reuse of treated wastewater within the Lake Tahoe basin watershed, leaving no opportunities for re-use within the service area.

The District's treatment plant is currently permitted for "secondary 23" recycled water. This means the water has been oxidized and disinfected so that the median concentration of total coliform bacteria does not exceed a Most Probable Number (MPN) of 23 per 100 milliliters (ml) and the single day maximum does not exceed a MPN of 240 per 100 ml in any 30-day period. This quality of water is generally suitable for agricultural and some industrial uses. It is not suitable for unrestricted irrigation use. Since 1968, the District has delivered its treated effluent through a 26-mile export system, over Luther Pass (a lift of 1,200 feet), to Alpine County. The recycled water is stored during the winter months in 3,800-acre-foot Harvey Place Reservoir and distributed to six ranches for irrigation purposes in the dry summer months.

Despite the prohibition on recycled water use within the District's own service area, through a special legislative act in 2000, the District was able to install six fire hydrants along a short section of its export pipeline. These hydrants provide emergency fire suppression to a small residential community (that does not have municipal water service) and the District's critical wastewater pumping station at the base of Luther Pass. The availability of recycled water in the event of a catastrophic fire in this heavily forested area provides a level of security to the residents, the District, and the Lake Valley Fire Department.

Four additional hydrants in Alpine County provide similar fire protection as the export line makes its way to Harvey Place Reservoir. A 2015 project resulted in the use of recycled water for irrigation at the District's Diamond Valley Ranch (DVR), located outside the Tahoe Basin. DVR has been used for producing wheat and alfalfa since 2017. In 2020, 147 AF of recycled wastewater was used in the irrigation of DVR between April 23rd and September 30th. Tables 6-2 and 6-3 presents the required information regarding the wastewater collection, treatment, and discharge within the service area.

Table 6-2: Retail: Wastewater Collected Within Service Area in 2020

There is no wastewater collection system. The supplier will not complete the table below.

Wastewater Collection			Recipient of Collected Wastewater			
Name of Wastewater Collection Agency	Wastewater Volume Metered or Estimated?	Volume of Wastewater Collected from UWMP Service Area 2020	Name of Wastewater Treatment Agency Receiving Collected Wastewater	Treatment Plant Name	Is WWTP Located Within UWMP Area?	Is WWTP Operation Contracted to a Third Party? <i>(optional)</i>
<i>Add additional rows as needed</i>						
South Tahoe PUD	Estimated	3,498	South Tahoe PUD	South Tahoe PUD	Yes	
Total Wastewater Collected from Service Area in 2020:		3,498				
NOTES:						

Table 6-3: Retail: Wastewater Treatment and Discharge Within Service Area in 2020

No wastewater is treated or disposed of within the UWMP service area. The supplier will not complete the table below.

Wastewater Treatment Plant Name	Discharge Location Name or Identifier	Discharge Location Description	Wastewater Discharge ID Number (optional)	Method of Disposal	Does This Plant Treat Wastewater Generated Outside the Service Area?	Treatment Level	2020 volumes			
							Wastewater Treated	Discharged Treated Wastewater	Recycled Within Service Area	Recycled Outside of Service Area
South Tahoe PUD	Harvey Place Reservoir	3800 ac-ft reservoir in Alpine County		Lake outfall	No	Secondary, Disinfected - 23	3,498	0	0	3,351
South Tahoe PUD	Diamond Valley Ranch	70- Acre field in Alpine County		Land disposal	No	Secondary, Disinfected - 23				147
Total							3,498	0	0	3,498

NOTE:
1. Volume is in units of AFY.

6.3.2 Actions to Encourage and Optimize Future Recycled Water Use

The Porter-Cologne Water Quality Act prohibits the use of recycled water within the Tahoe Basin. STPUD's only option at this time is to pump treated wastewater to Alpine County for agricultural reuse. As reflected in Tables 6-4 and 6-5, the District plans to continue this practice for the foreseeable future.

Table 6-4: Retail: Recycled Water Direct Beneficial Uses Within Service Area	
<input checked="" type="checkbox"/>	Recycled water is not used and is not planned for use within the service area of the supplier. The supplier will not complete the table below.
NOTES:	

Table 6-5: Retail: 2015 UWMP Recycled Water Use Projection Compared to 2020 Actual		
<input checked="" type="checkbox"/>	Recycled water was not used in 2010 nor projected for use in the service area in 2015. The supplier will not complete the table below.	
Use Type	2015 Projection for 2020	2020 actual use
Total	0	0
NOTES:		

Table 6-6 lists the current methods and programs to encourage recycled water use as not applicable (N/A) as there are no current plans for recycled water supply use in service area as it is illegal.

Table 6-6: Retail: Methods to Expand Future Recycled Water Use			
<input checked="" type="checkbox"/>	Supplier does not plan to expand recycled water use in the future. Supplier will not complete the table below but will provide narrative explanation.		
6.3.2	Provide page location of narrative in UWMP		
Name of Action	Description	Planned Implementation Year	Expected Increase in Recycled Water Use
Total			0
NOTES:			

6.4 Desalinated Water Opportunities

There are no opportunities for desalinated water projects for the District.

6.5 Transfer Opportunities

STPUD relies on its own produced groundwater for its supply. The District does not transfer or exchange any of its groundwater to other water agencies on a long-term basis although they have supplied neighboring water companies through emergency interties on an as-needed basis. Should transfer opportunities arise in the future, the District will evaluate the opportunities at that time.

6.6 Emergency Interties

STPUD maintains interconnection with the smaller private water companies within their service area. The interconnections are mostly intended to provide supply to the private companies during an emergency. The use of these connections during an emergency is not considered transfers or exchanges that provide additional supply on a regular basis.

6.7 Energy Intensity of STPUD System

Water energy intensity is the amount of energy, calculated on a whole-system basis, required for use of water in a specific location, such as the STPUD service area. DWR provides guidance for calculating the operational energy intensity of water, defined as the total amount of energy expended by the urban water supplier on a per AF basis to take water from the location where the urban water supplier acquires the water to its point of delivery. DWR requires that urban water suppliers only report the energy intensity associated with water management processes occurring within their operational control and not include energy embedded in water supplies purchased from a wholesale water agency. Table OB-1 below provides an estimate, using the total utility approach, of the water energy intensity of STPUD’s potable water system. DWR’s Energy Intensity spreadsheet is provided in Appendix E.

Table OB-1: Energy Intensity STPUD Potable Water Supply - Total Utility Approach				
Start Date for Reporting	01/01/2020	Sum of All Water Management Processes	Non-Consequential Hydropower	
End Date for Reporting	12/30/2020	Total Utility	Hydropower	Net Utility
Volume of Water Entering Process (AF)		5,778	0	5,778
Energy Consumed (kWh)		4,762,776	0	4,762,776
Energy Intensity (kWh/AF)		824	0	824

6.8 Future Water Supply Projects

District plans do not include any new supply sources over the next 10 years. However, if well water quality or quantity dictate, the District will implement efforts to add treatment to a well or drill a new well if necessary. Table 6-7 illustrates that there are no planned additional supply projects at this time. However, the District will continue to monitor and track opportunities for additional supply as needed.

Table 6-7: Retail: Expected Future Water Supply Projects or Programs						
<input checked="" type="checkbox"/>	No expected future water supply projects or programs that provide a quantifiable increase to the agency's water supply. Supplier will not complete the table below.					
Name of Future Projects or Programs	Joint Project with other agencies?		Description (if needed)	Planned Implementation Year	Planned for Use in Year Type	Expected Increase in Water Supply to Agency
	Y/N	Agency Name?				
<input checked="" type="checkbox"/>						
NOTES:						

6.9 Summary of Existing and Planned Sources of Water

The District's source water demand is met entirely by groundwater. The District intends to continue its groundwater program and does not plan to use any additional sources of water for the foreseeable future. Table 6-8 summarizes the 2020 supply volumes. Projected supply availability is summarized in Table 6-9.

Table 6-8: Retail: Water Supplies — Actual			
Water Supply	Additional Detail on Water Supply	2020	
		Actual Volume	Water Quality
Groundwater		5,778	Drinking Water
Total		5,778	
NOTE: Volume is in units of AFY.			

Table 6-9: Retail: Water Supplies — Projected

Water Supply	Additional Detail on Water Supply	Projected Water Supply <i>Report To the Extent Practicable</i>									
		2025		2030		2035		2040		2045 (opt)	
		Reasonably Available Volume	Total Right or Safe Yield (optional)	Reasonably Available Volume	Total Right or Safe Yield (optional)	Reasonably Available Volume	Total Right or Safe Yield (optional)	Reasonably Available Volume	Total Right or Safe Yield (optional)	Reasonably Available Volume	Total Right or Safe Yield (optional)
<i>Add additional rows as needed</i>											
Groundwater (not desalinated) ¹		5,661	20,169 ²	5,767	20,169 ²	5,874	20,169 ²	5,984	20,169 ²	6,096	20,169 ²
Total		5,661	20,169 ²	5,767	20,169 ²	5,874	20,169 ²	5,984	20,169 ²	6,096	20,169 ²

NOTE:
 1. Volume is in units of AFY.
 2. Provisional Baseline Sustainable Yield for the Tahoe South Subbasin

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6.10 Climate Change Effects

A topic of growing concern for water planners and managers is climate change and the potential impacts it could have on California's future water supplies. Climate change models have predicted that potential effects from climatic changes will result in increased temperature, early snow melt, and bigger storm events.

The District Prepared a Climate Action Plan for the Capital Improvement Program in December of 2019. This plan highlights the effects that climate change will have on the region and its impacts on water supply. The Climate Action Plan can be found here:

<https://stpud.us/asset/7741/>

In the 2013 update of the *DWR California Water Plan*, the implications of future climate conditions are evaluated. These changing hydrological conditions could affect future planning efforts, which are typically based on historic conditions. The *California Water Plan* identifies the following probable impacts due to changes in temperature and precipitation:

- More winter runoff and less spring/summer runoff due to warmer temperatures.
- Greater extremes in flooding and droughts.
- Greater water demand for irrigation and landscape water due to increased temperatures and their impacts on plant water needs.

In the 2019 Climate Action Plan for the Capital Improvement Program, the implications of future climate conditions are evaluated. These changing hydrological conditions could affect future planning efforts, which are typically based on historic conditions. The report identifies the following probable impacts due to changes in temperature, precipitation, runoff, erosion, and other variables:

- Longer Droughts
- Lower Groundwater Table
- Increase in Wildfire Potential
- Increase in Flooding Potential
- Increase in Landslides
- Wetter and Contracted Winter Season
- Increased seasonal visitation due to increased temperatures in the Valley

Even without population changes, water demand could increase. STPUD could face additional demands given the potential effects of climate change and will be monitoring water usage and groundwater conditions annually through the annual groundwater report preparation process.

Section 7: Water Supply Reliability and Drought Risk Assessment

This section summarizes the total water supplies for STPUD, describes the reliability of the supply and presents the drought risk assessment.

7.1 Constraints on Water Sources

The District’s supply is provided by local groundwater. The “safe yield” of this supply has been quantified in the District’s GWMP as described in Section 6. The greatest risk for the water supply is groundwater contamination from PCE and MTBE, as well as naturally occurring arsenic and uranium. These issues have required the District to take some wells out of service and carefully plan the location of new wells. As described in Section 6, the District is assessing the feasibility of PCE mitigation and has developed a plan for mitigating MTBE as well as other constituent impacts. These risks are not expected to substantially impact District sources over the period of this UWMP.

The groundwater basin historically has shown response to hydrologic year types; however, groundwater levels within the Subbasin were not severely impacted during the most recent statewide drought emergency declared under the California Emergency Services Act (2012-2016 Event). As a part of the GWMP Annual report, prepared each year, the District models the recent climatic conditions to assess the impacts to groundwater in storage and to evaluate whether, over multiple dry years, groundwater management actions including water conservation messaging, is necessary to maintain a sustainable groundwater condition. For the purposes of this UWMP, the District’s analysis indicates that the groundwater basin supply is highly reliable with no anticipated water supply shortage in the planning period of this Plan. The attached Water Shortage Contingency Plan, Appendix F details actions the District can take to manage demand if supply constraints occur.

7.2 Reliability of Water Supplies

The District relies solely on groundwater to meet its water demands. A summary of the potential factors limiting District supplies is presented in Table 7-1.

Table 7-1: Factors Resulting in Inconsistency of Supply				
Water Supply Source	Legal	Environmental	Water Quality	Climatic
Supplier produced groundwater	None identified	None identified	Beneficial uses may be impacted by PCE or MTBE, Uranium, or Arsenic contamination.	The subbasin is largely dependent on precipitation for groundwater recharge.

District groundwater supplies are not anticipated to be susceptible to inconsistencies resulting from legal or environmental impacts. The combination of groundwater recharge, basin storage volumes, pumping capacity, treatment capacity and management actions outlined in the District GWMP (Kennedy/Jenks, 2014) minimize possible water quality and climatic constraints and ensure consistency of District supplies. It should be noted, however, that groundwater contamination could cause inconsistency of supply if not addressed with proper mitigation.

7.3 Supply and Demand Comparisons

The available supplies and water demands for the District's service area were analyzed to assess the District's ability to satisfy demands during three scenarios: a normal water year, single-dry year, and multiple-dry years. Tables 7-1, 7-2, 7-3, and 7-4 in this section present the supplies and demands under the various water year scenarios for the 25-year planning period in 5-year increments. Because the basin is not adjudicated, the STPUD is not assigned an available supply. The District will pump sufficient supply to meet the demands during each of the single and multiple dry year scenarios, without requiring a reduction in demand or supplemental supplies. It is acknowledged that demand has been reduced during the recent drought period, but reductions have been regulatory-driven by the State Water Resources Control Board, and were not based on supply availability.

Based on the available data, the District's water supply appears to be partially impacted by single or multiple dry water years. The District's groundwater studies confirm that the wells that serve as the water supply are supported by local recharge and, in part, by Lake Tahoe. During the drought of 1985-1991, lake levels dropped 10 feet but the static water level decline observed in District wells was less than 4 feet and observed in only a few wells (STPUD 2015 UWMP). More recently, in the Tahoe South Subbasin (TSS) Annual Report for Water Year 2020, groundwater elevations within the TSS declined from between the 2012 WY through 2015 WY and then recovered during the 2016 WY (normal) and 2017 WY (very wet) indicating the rapid recovery of groundwater levels over dry and wet cycles. It is anticipated that the more extreme precipitation events in wet years that could occur as a result of climate change will result in sufficient groundwater recharge to replenish additional pumping that could occur as a result of hotter drier conditions. With this historical data in mind, it is anticipated that although climate change will result in more frequent and severe periods of drought, the District will continue to be able to meet demands. Additional discussion regarding climate change impacts is provided in Section 7.4.1.1.

Table 7-2 presents supply volumes that are available during each of the dry year types. STPUD assumes the supply is 100 percent available during each year type.

Table 7-2: Retail: Basis of Water Year Data (Reliability Assessment)

Year Type	Base Year <i>If not using a calendar year, type in the last year of the fiscal, water year, or range of years, for example, water year 2019-2020, use 2020</i>	Available Supplies if Year Type Repeats	
		<input type="checkbox"/>	Quantification of available supplies is not compatible with this table and is provided elsewhere in the UWMP. Location
		<input checked="" type="checkbox"/>	Quantification of available supplies is provided in this table as either volume only, percent only, or both.
		Volume Available ¹	% of Average Supply ³
Average Year	2005	32,050 ²	100%
Single-Dry Year	2012	28,131	88%
Consecutive Dry Years 1st Year	2013	22,355	70%
Consecutive Dry Years 2nd Year	2014	18,125	57%
Consecutive Dry Years 3rd Year	1987	13,851	43%
Consecutive Dry Years 4th Year	1988	14,637	46%
Consecutive Dry Years 5th Year	1989	6,086	19%

¹ All volumes reported in acre-feet

² Tahoe South Subbasin Storage Threshold (ST) which equals the total amount of water available for groundwater extraction within groundwater basin without any undesirable results, under baseline (average) climate conditions.

³ Volume Available as a % of the Tahoe South Subbasin Storage Threshold

7.3.1 Normal Water Year

The normal water year is a year in the historical sequence that most closely represents median runoff levels and patterns. Table 7-3 summarizes the District's water supplies available over the planning period during an average/normal year and compares them to demands for the same

period. The numbers demonstrate that the District anticipates adequate supplies for 2020 to 2045 under normal water conditions.

Table 7-3: Retail: Normal Year Supply and Demand Comparison					
	2025	2030	2035	2040	2045 (Opt)
Supply totals	5886	5883	6014	6147	6185
Demand totals	5886	5883	6014	6147	6185
Difference	0	0	0	0	0
NOTES: 1. Supply and demand volumes are in AFY. 2. Although the groundwater basin could produce greater supply, for the purposes of this table supply totals are shown as the volume that the District's groundwater wells would pump to meet demand.					

7.3.2 Single-Dry Year

The water supplies and demands for the District's service area over the 25-year planning period were analyzed in the event that a single-dry year occurs, similar to the drought that occurred in California in 1977. Table 7-4 summarizes the District supplies available to meet demands during a single-dry year. It is assumed that the single dry year supply and demand are equivalent to a normal year due to the basin's robust supply even during the driest years. The numbers demonstrate that the District anticipates adequate supplies for 2020 to 2045 under single-dry water conditions.

Table 7-4: Retail: Single Dry Year Supply and Demand Comparison					
	2025	2030	2035	2040	2045 (Opt)
Supply totals	5886	5883	6014	6147	6185
Demand totals	5886	5883	6014	6147	6185
Difference	0	0	0	0	0
NOTES: 1. Supply and demand volumes are in AFY. 2. Although the groundwater basin could produce greater supply, for the purposes of this table supply totals are shown as the volume that the District's groundwater wells would pump to meet demand.					

7.3.3 Multiple-Dry Year (5-years)

The water supplies and demands for the District's service area over the 25-year planning period were analyzed in the event that a multiple-dry year event occurs. The demand is assumed to increase 10% for the first dry year to reflect increased irrigation usage as a result of drier conditions. As with the single dry year, during a multiple dry year, supply and demand are assumed to be equivalent to a normal year due to the robust nature of the basin. Table 7-5 summarizes District supplies available to meet demands during multiple-dry years. The numbers demonstrate that the District anticipates adequate supplies for 2020 to 2045 under multiple-dry year water conditions.

Table 7-5: Retail: Multiple Dry Years Supply and Demand Comparison

		2025	2030	2035	2040	2045 (opt)
First year	Supply totals	32,050	32,050	32,050	32,050	32,050
	Demand totals	5886	5996	6108	6222	6338
	Difference	26,164	26,054	25,942	25,828	25,712
Second year	Supply totals	28,131	28,131	28,131	28,131	28,131
	Demand totals	5908	6018	6130	6245	6361
	Difference	22,223	22,113	22,001	21,886	21,770
Third year	Supply totals	22,355	22,355	22,355	22,355	22,355
	Demand totals	5930	6040	6153	6268	6385
	Difference	16,425	16,315	16,202	16,087	15,970
Fourth year	Supply totals	18,125	18,125	18,125	18,125	18,125
	Demand totals	5952	6063	6176	6291	6409
	Difference	12,173	12,062	11,949	11,834	11,716
Fifth year	Supply totals	13,851	13,851	13,851	13,851	13,851
	Demand totals	5974	6085	6199	6315	6432
	Difference	7,877	7,766	7,652	7,536	7,419

NOTES:

1. Supply and demand volumes are in AFY.
2. Although the groundwater basin could produce greater supply, for the purposes of this table supply totals are shown as the volume that the District's groundwater wells would pump to meet demand.

7.3.4 Summary of Comparisons

As shown in the analyses above, the District has adequate supplies to meet demands during normal, single-dry, and multiple-dry years throughout the 25-year planning period.

7.4 Drought Risk Assessment

The Water Code requires that every urban water supplier include in its UWMP a drought risk assessment for its water service to its customers. This is to benefit and inform the demand management measures and water supply projects and programs to be included in the urban water management plan.

7.4.1 Data and Methodologies Used

7.4.1.1 Water Demands

The water demands for this UWMP are based on 2020 actual demands derived from meter data and supply volumes. District staff observed increased demands during 2020 as it appeared that occupancy increased at second homes due to Covid-19 restrictions in more urbanized areas. Due to the District not being fully metered, the volume of unmetered water deliveries was estimated based on the ratio of unmetered to metered connections within each customer class. The volume of water supplied for 2020 was then escalated at the El Dorado County annual growth rate of 0.37 percent to project the water demand 25 years to 2045. For these projections, it was assumed that supply will be equal to demand and that the difference between the supply and water deliveries is the unaccounted-for water losses. The anticipated buildout water demand that was calculated in the Tahoe Demands report was not exceeded in this projection.

In the Climate Action Plan for the Capital Improvement Program prepared in 2019 for the District, the US Environmental Protection Agency's Climate Resilience Evaluation and Assessment Tool (CREAT) was applied to the District service area to understand the impacts of extreme weather. The CREAT results for average annual temperature scenario show a projected annual average annual temperature increases of 2.1 to 2.5°F by 2035, and 4-4.8°F by 2060 (CREAT 2019). Based on the CREAT analysis, demand changes due to climate change are not expected to be significant enough to be included in projections during the 2045 planning period but may need to be considered in the future. For example, the Q6 supply-deficit groundwater model analysis shows that after a drought of 6 consecutive years, the groundwater pumped in the TSS approaches the storage threshold in the sub basin which may cause undesirable effects on beneficial uses of groundwater. Spikes in demand may occur as a result of increased wildfire frequency as discussed in Section 4.3, however these spikes are usually of relatively short duration (days to weeks) and can likely be managed by local water conservation efforts.

7.4.1.2 Water Supplies

This Drought Risk Assessment looks at the water supplies anticipated to be available 2021 through 2025 including any limitations due to infrastructure, regulations, and assuming drought conditions.

Groundwater

As described in Section 6, groundwater supplies are anticipated to be reliable sources of supply for the District. Table 7-6 reflects the anticipated supplies.

Table 7-6: Anticipated Groundwater Supplies Consecutive Dry Years 2021-2025 (AF)					
	2021	2022	2023	2024	2025
Groundwater ¹	29,425	25,197	20,924	21,712	13,163
<i>Total</i>	29,425	25,197	20,924	21,712	13,163

¹ From Q6 Supply-Deficit Groundwater Model Analysis

7.4.2 Comparison of Total Water Supply Sources and Total Projected Water Use

Table 7-7: Five-Year Drought Risk Assessment Tables to address Water Code Section 10635(b)	
2021	Total
Total Water Use	5,779
Total Supplies	29,425
Surplus/Shortfall w/o WSCP Action	23,646
Planned WSCP Actions (use reduction and supply augmentation)	
WSCP - supply augmentation benefit	
WSCP - use reduction savings benefit	
Revised Surplus/(shortfall)	23,646
Resulting % Use Reduction from WSCP action	0%

2022	Total
Total Water Use	5,821
Total Supplies	25,197
Surplus/Shortfall w/o WSCP Action	19,376
Planned WSCP Actions (use reduction and supply augmentation)	
WSCP - supply augmentation benefit	
WSCP - use reduction savings benefit	
Revised Surplus/(shortfall)	19,376
Resulting % Use Reduction from WSCP action	0%

2023	Total
Total Water Use	5,842
Total Supplies	20,924
Surplus/Shortfall w/o WSCP Action	15,082
Planned WSCP Actions (use reduction and supply augmentation)	
WSCP - supply augmentation benefit	
WSCP - use reduction savings benefit	
Revised Surplus/(shortfall)	15,082
Resulting % Use Reduction from WSCP action	0%

2024	Total
Total Water Use	5,864
Total Supplies	21,712
Surplus/Shortfall w/o WSCP Action	15,848
Planned WSCP Actions (use reduction and supply augmentation)	
WSCP - supply augmentation benefit	
WSCP - use reduction savings benefit	
Revised Surplus/(shortfall)	15,848
Resulting % Use Reduction from WSCP action	0%

2025	Total
Total Water Use	5,886
Total Supplies	13,163
Surplus/Shortfall w/o WSCP Action	7,277
Planned WSCP Actions (use reduction and supply augmentation)	
WSCP - supply augmentation benefit	
WSCP - use reduction savings benefit	
Revised Surplus/(shortfall)	7,277
Resulting % Use Reduction from WSCP action	0%

The above and other DWR Standardized Tables are found in Appendix F.

7.5 Regional Supply Reliability

As discussed previously, the TRPA planning and regulatory process limits growth in the Tahoe Basin. Within the STPUD service area, there is sufficient groundwater supply for the projected water demands. In addition, there are limited opportunities for additional supplies to be imported from other regions. STPUD will continue to monitor projected demands and supply reliability and assess needs to develop additional supplies as they arise.

Section 8: Water Shortage Contingency Planning

The District has prepared a separate stand-alone Water Shortage Contingency Plan (WSCP), contained in Appendix G. The WSCP was adopted by the District Board on June 17, 2021. This section includes a brief description summary of the WSCP; the WSCP includes the drought risk assessment, described in Section 7.4 as required by the UWMP Guidelines.

8.1 Purpose of the WSCP

The District has developed a WSCP to provide guidance if triggering events occur — whether from reduced supply, increased demand, or an emergency declaration — and to identify corresponding actions to be taken during the various stages of a water shortage. The plan includes voluntary and mandatory stages which are intended to be fair to all water customers and users while having the least impact on business, employment and quality of life for residents.

8.2 Annual Assessment

New provisions in Water Code Section 10632.1. require that an urban water supplier such as STPUD, conduct an annual water supply and demand assessment (“Annual Assessment”), on or before July 1 of each year, to be submitted to DWR. As part of the WSCP, the District has identified the timeline, staff and outside agency coordination, and other actions necessary to conduct the Annual Assessment.

8.3 Shortage Stages

The WSCP describes six water shortage stages corresponding to progressive ranges of up to 10, 20, 30, 40, and 50 percent shortages and greater than 50 percent shortage. For STPUD, water shortages are likely to be fire and/or infrastructure related and of short duration. The redundancy provide by multiple groundwater wells minimizes the shortages related to infrastructure. Water supply shortages because of drought are unlikely because of the robust aquifer supply.

8.4 Water Shortage Response Actions

The WSCP identifies water shortage response actions, including:

- Consumption Reduction Method
 - Public outreach
 - Communication with Customers
- Operational changes
- Customer Compliance, Enforcement and Appeal and Exemption Procedures for Triggered Response Actions

- Supply augmentation
- Prohibitions on End Uses
- Penalties, Charges, Other Enforcement of Prohibitions

Section 9: Conservation and Demand Management

9.1 Demand Management (2015 - 2020)

The purpose of the Demand Management Measures (DMM) section of this UWMP is to (a) provide a description of the past water conservation programs that STPUD has implemented since 2007 to meet its urban water use reduction targets and (b) describe the activities and actions STPUD plans to use in the future to continue to maintain urban water use reduction. For the purposes of this UWMP the DMMs are categorized as “Foundational” and “Other”. Foundational DMMs, listed below, are those DMMs that the UWMP Act and Water Code specifically mention:

- a. Water waste prevention ordinances
- b. Metering
- c. Conservation pricing
- d. Public education and outreach
- e. Programs to assess and manage distribution system real loss
- f. Water conservation program coordination and staffing support

Activities outside of the Foundational DMMs that encourage less water use in the STPUD service area fall in the “Other DMM” category.

9.2 Foundational DMMs

9.2.1 Water Waste Prohibition

The water waste prohibition is part of the District’s Administrative Code included in Appendix H, which includes designated irrigation days. The program is managed by the Public Affairs and Conservation Manager. With access to Automatic Metering Infrastructure (AMI) data, the District hires a seasonal Water Efficiency Technician and a Water Educator to lead the turf buy back program, offer Water Wise landscape consultations, coordinate individual conservation plans for high water use customers, process water conservation rebate applications, and enforce the water waste ordinance. The District also hires a contractor to conduct water wise house calls, install water efficient fixtures, and help locate leaks. The District advertise the water waste ordinance in the local newspapers, radio stations, and television station, as well as including reminders via bill inserts and emails through the WaterSmart portal, and can increase outreach if needed. Exemptions and violations given are tracked in a Microsoft Excel™ spreadsheet and in the customer database. Additionally, any warning/violation letters or correspondences are scanned and attached to the customer account. Enforcement is ongoing and is independent of water shortage stages.

The District also has the WaterSmart portal where customers can view their water use, apply for conservation rebates, and receive leak alerts. The Customer Service Specialist managers the WaterSmart program and actively contacts and follows-up with customers to locate leaks. Once a leak has been fixed, the customer can submit a copy of their invoices to be reimbursed up to \$500 and can apply for a leak adjustment on their bill.

9.2.2 Metering

The District has required the installation of meters on all new construction, both residential and non-residential, since 1993. As of 2020, the District is estimated to be 96% metered and has 116 unmetered connections remaining to be metered. The remaining water meter retrofits are scheduled for completion by the year 2025 in accordance with State law. Once a meter is installed, the customer is switched to volumetric billing per the current rate structure.

The District does not evaluate metering for water savings as it provides an indirect benefit to the other quantifiable programs. The District utilizes meters and tiered pricing to develop a value of water for its customers who then can utilize the quantifiable programs to reduce their water use. The installation of meters and AMI is also a direct positive use of grant funding. As noted in Section 4.1, installation of metering and the District's comprehensive conservation program has resulted in over 18% reduction in water use per account.

9.2.3 Conservation Pricing

As required by AB 2572, the District is converting existing residential connections to meters. Within 12 months of converting, these accounts are billed on volumetric rates. The current water rate structure includes a two-tier volumetric charge for all residential customers. The current rate structure is available on the District's website at:

http://www.stpud.us/water_and_sewer_rates.html

The District will continue to update its rate structure as necessary and when all customers become metered.

STPUD does not evaluate conservation pricing for water savings as it provides an indirect benefit to the District's other quantifiable programs. The District utilizes meters and tiered pricing to develop a value of water for its customers who then can utilize the other programs to reduce their water use.

9.2.4 Public Education and Outreach

The District provides information on its water conservation program and on water conservation to the public through speakers for community groups, events, and schools.

In addition, customers receive information through paid and public service advertising. STPUD coordinates with other governmental agencies, industry groups, public interest groups, and the media to continue offering information to customers. STPUD also maintains a school education program as part of its outreach efforts. The District is a member of the South Tahoe Environmental Education Coalition and educates students through the Coalition's programs. Programs include annual tours of the wastewater treatment plant for 5th graders, Wonders of Water curriculum for K-6th graders, Woods, Water and Wildlife programs for K-2nd graders, and the Science Expo for 3rd-5th graders.

STPUD continues to evaluate its public outreach program and will modify it as necessary. The public information budget including advertising is approximately \$50,000 per year. Implementation schedule is to continue every year.

There is no current method in the industry to evaluate this program. The outreach efforts support the District's other customer-specific programs that can be evaluated for water savings. Anecdotally, during the 2014-2017 drought, the broad statewide message regarding reduction of water use, when combined with local messages achieved the target 25% reduction in water use.

9.2.5 Programs to Assess and Manage Distribution System Real Loss

The District maintains a surface leak repair program. The program includes District staff identifying and repairing approximately 160 leaks per year.

The District has budgeted to continue these services annually. The efforts result in an average of 6-10 main, service, and fire hydrant leaks detected during each inspection period. Pre-screening system audits are completed each year to prioritize areas for inspection. The District also maintains seven District Metered Areas to assist in determining which areas of the water system are the primary sources of water loss.

The District maintains a leak data spreadsheet to track location and type of leak and other information such as pipe material. The District completes the American Water Works Association water loss audit annually. In 2019, the audit procedure identified approximately 14.5 percent unaccounted for system losses. The District will continue to conduct the AWWA water loss audit and identify and repair leaks as needed.

In addition to the leak data spreadsheet, the District tracks the number of miles of pipeline surveyed and repaired, along with annual dollar expenditures. The water savings from this measure are difficult to track at this time as the system is not fully metered. However, efforts will be made to try to determine water savings based on approximate leak rate and approximate flow volume of repairs made. As the system becomes fully metered, the estimates and calculations for the entire system will become more definitive.

9.2.5.1 Consistency with State Water Loss Standards

9.2.6 Water Conservation Program Coordination and Staffing Support

The District's conservation program is managed by the Public Affairs and Conservation Manager who manages the District's water conservation program, including water-saving incentives, community education, outreach, and enforcement; analyzes program goals, performance measures, and sources of funding; and oversees field audits and consultations. In addition, the Customer Service Specialist is a full-time position managing the meter program, including AMI data and the WaterSmart portal.

In addition to the two full time staff, two seasonal workers are hired to assist with processing rebates, conducting Water Wise landscape consultations, public information programs, customer demand analysis, or other tasks. A contractor is hired annually to conduct the Water Wise house calls. This contractor also works with Liberty Utilities, the local energy provider, and provides customers with energy efficient lighting, as well as installing free aerators, showerheads, and information on Water Wise rebates.

9.3 Other DMMs

In addition to the conservation programs required by the UWMP Guidelines, STPUD also maintains additional programs specific to their unique customer demographics and water use. The additional programs are listed below, with additional information included on the District's website.

9.3.1 Residential Programs

- Water efficient appliance rebates for toilets and clothes washers
- Water Wise house call
- Water Wise landscape consultation
- Turf buy-back
- Irrigation efficiency evaluations and rebates
- Leak detection assistance

9.3.2 Commercial Programs

- Customized commercial rebate program
- Commercial water use review

9.4 Planned DMMs to Meet Water Use Targets

STPUD customers have already achieved demand reductions sufficient to meet SBX7-7 water use targets. STPUD will continue to perform Foundational DMMs. These DMMs, as well as residential and commercial programs and meeting, will help the District keep its GPCD within or lower than the SBX7-7 water use targets.

Section 10: Plan Adoption, Submittal, and Implementation

10.1 Notice of Public Hearing

The UWMP requires specific coordination efforts as well. The agency must send a notice to all county and city governments within its service area of its intent to develop and adopt a 2020 UWMP. This notice must be sent at least 60 days prior to the public hearing to discuss the UWMP. A notice was sent to El Dorado County, City of South Lake Tahoe, TRPA, and El Dorado County Water Agency informing them of STPUD’s UWMP process as presented in Appendix I. These notifications are summarized in Table 10-1.

A public review process was included in the UWMP development. STPUD held a public review of the UWMP to discuss the plan and receive comments from the public. The meeting was conducted at the June 17, 2021 Board of Directors Meeting. Public notice of the availability of the UWMP for public inspection and the public hearing was provided per the UWMP Guideline Requirements, and is included in Appendix I.

Table 10-1: Retail: Notification to Cities and Counties		
City Name	60 Day Notice	Notice of Public Hearing
South Lake Tahoe	X	X
County Name	60 Day Notice	Notice of Public Hearing
El Dorado County	X	X

10.2 Public Hearing and Adoption

The UWMP was approved at the June 17, 2021 Board of Directors meeting. The adoption resolution is provided in Appendix J.

10.3 Plan Submittal

STPUD will submit the UWMP electronically to DWR by July 1, 2021. Within 30 days of adoption, STPUD will submit a copy of the UWMP to the State Library, City of South Lake Tahoe, and El Dorado County. Appendix K includes copies of the transmittals included with the adopted UWMP. A copy of the UWMP is available for public viewing at the District Office during normal business hours located at 1275 Meadow Crest Drive, South Lake Tahoe, CA 96150.

10.4 Implementation

The 2020 UWMP presents a description of: the water service area, the existing and planned supply sources, water use, continued SBx7-7 (20x2020) gpcd compliance, water supply

reliability, water conservation and demand management measures, as well as plan adoption, submittal, implementation, and economic impact. The District has continued to maintain and improve its groundwater supply infrastructure by developing new wells and conducting maintenance and improvements on existing wells.

The District has maintained its efforts for the conservation program with positive results evidenced by decreased water demands. All foundational conservation best management practices are implemented. The District will continue to monitor its gpcd water usage and investigate alternative programs based on need. The District has been a signatory of the California Urban Water Conservation Council (now California Water Efficiency Partnership) and utilizes partnership programs as necessary.

Implementation of the 2020 UWMP will be tracked through a variety of methods. Supply reliability issues will mostly be tracked through the District's water quality monitoring program, well infrastructure program, and production values. Progress and results of the conservation program will continue to be tracked and submitted to the State as required to for UWMP updates and AB 1420 compliance requirements.

References

- California Department of Water Resources, 2021. *Urban Water Management Plan Guidebook*, 2020. State of California, The Natural Resources Agency DEPARTMENT OF WATER RESOURCES, Division of Regional Assistance, Water Use Efficiency Branch, FINAL March 2021.
- J. Crowley Group and ECORP Consulting, Inc., 2016. *2015 Urban Water Management Plan*, South Tahoe Public Utility District, June 2016.
- Kennedy/Jenks Consultants, Inc., 2014. *Tahoe Valley South Subbasin (6-05.01) 2014 Groundwater Management Plan for the*. South Tahoe Public Utility District, December 2014.
- Kennedy/Jenks Consultants, Inc., 2019. *2019 Climate Action Plan for the Capital Improvement Program*. South Tahoe Public Utility District, September 2019.
- Kennedy/Jenks Consultants, Inc., 2020. *South Y PCE Facilities Feasibility Study*. South Tahoe Public Utility District, May 2020.
- PMC, Inc, 2014. *City of South Lake Tahoe 2014-2022 Housing Element*, City of South Lake Tahoe, May, 2014
- South Tahoe Public Utility District, 2005. *2005 Urban Water Management Plan*, June 2005.
- South Tahoe Public Utility District, 2019. *Local Hazard Mitigation Plan*, July 2019.
- South Tahoe Public Utility District, 2020. *2019 Water Year Tahoe South Subbasin (6-005.01) Annual Report*, South Tahoe Public Utility District, April 2020.

Appendix A: DWR Checklist

Appendix A: UWMP Checklist

						2020 UWMP Location (Optional Column for Agency Review Use)
Retail	Wholesale	2020 Guidebook Location	Water Code Section	Summary as Applies to UWMP	Subject	
x	x	Chapter 1	10615	A plan shall describe and evaluate sources of supply, reasonable and practical efficient uses, reclamation and demand management activities.	Introduction and Overview	Section 6, Section 7, Section 9
x	x	Chapter 1	10630.5	Each plan shall include a simple description of the supplier's plan including water availability, future requirements, a strategy for meeting needs, and other pertinent information. Additionally, a supplier may also choose to include a simple description at the beginning of each chapter.	Summary	Section 1.2

						2020 UWMP Location (Optional Column for Agency Review Use)
Retail	Wholesale	2020 Guidebook Location	Water Code Section	Summary as Applies to UWMP	Subject	
x	x	Section 2.2	10620(b)	Every person that becomes an urban water supplier shall adopt an urban water management plan within one year after it has become an urban water supplier.	Plan Preparation	Section 10.2
x	x	Section 2.6	10620(d)(2)	Coordinate the preparation of its plan with other appropriate agencies in the area, including other water suppliers that share a common source, water management agencies, and relevant public agencies, to the extent practicable.	Plan Preparation	Section 2.1

						2020 UWMP Location (Optional Column for Agency Review Use)
Retail	Wholesale	2020 Guidebook Location	Water Code Section	Summary as Applies to UWMP	Subject	
x	x	Section 2.6.2	10642	Provide supporting documentation that the water supplier has encouraged active involvement of diverse social, cultural, and economic elements of the population within the service area prior to and during the preparation of the plan and contingency plan.	Plan Preparation	Section 10.1, Section 10.2, and Appendix I
x		Section 2.6, Section 6.1	10631(h)	Retail suppliers will include documentation that they have provided their wholesale supplier(s) - if any - with water use projections from that source.	System Supplies	Section 2 Table 2-2

						2020 UWMP Location (Optional Column for Agency Review Use)
Retail	Wholesale	2020 Guidebook Location	Water Code Section	Summary as Applies to UWMP	Subject	
	x	Section 2.6	10631(h)	Wholesale suppliers will include documentation that they have provided their urban water suppliers with identification and quantification of the existing and planned sources of water available from the wholesale to the urban supplier during various water year types.	System Supplies	Not Applicable
x	x	Section 3.1	10631(a)	Describe the water supplier service area.	System Description	Section 3.1
x	x	Section 3.3	10631(a)	Describe the climate of the service area of the supplier.	System Description	Section 3.1

						2020 UWMP Location (Optional Column for Agency Review Use)
Retail	Wholesale	2020 Guidebook Location	Water Code Section	Summary as Applies to UWMP	Subject	
x	x	Section 3.4	10631(a)	Provide population projections for 2025, 2030, 2035, 2040 and optionally 2045.	System Description	Section 3.2 Table 3-1
x	x	Section 3.4.2	10631(a)	Describe other social, economic, and demographic factors affecting the supplier's water management planning.	System Description	Section 3.1 and Section 3.2
x	x	Sections 3.4 and 5.4	10631(a)	Indicate the current population of the service area.	System Description and Baselines and Targets	Section 3.2 Table 3-1
x	x	Section 3.5	10631(a)	Describe the land uses within the service area.	System Description	Section 3.1

						2020 UWMP Location (Optional Column for Agency Review Use)
Retail	Wholesale	2020 Guidebook Location	Water Code Section	Summary as Applies to UWMP	Subject	
x	x	Section 4.2	10631(d)(1)	Quantify past, current, and projected water use, identifying the uses among water use sectors.	System Water Use	Section 4.1 Table 4-1 and Table 4-2
x	x	Section 4.2.4	10631(d)(3)(C)	Retail suppliers shall provide data to show the distribution loss standards were met.	System Water Use	Section 4.1, Table 4-4, Appendix B
x	x	Section 4.2.6	10631(d)(4)(A)	In projected water use, include estimates of water savings from adopted codes, plans, and other policies or laws.	System Water Use	Section 4.2, Table 4-5
x	x	Section 4.2.6	10631(d)(4)(B)	Provide citations of codes, standards, ordinances, or plans used to make water use projections.	System Water Use	Section 4.1

						2020 UWMP Location (Optional Column for Agency Review Use)
Retail	Wholesale	2020 Guidebook Location	Water Code Section	Summary as Applies to UWMP	Subject	
x	optional	Section 4.3.2.4	10631(d)(3)(A)	Report the distribution system water loss for each of the 5 years preceding the plan update.	System Water Use	Section 4.1 Table 4-4
x	optional	Section 4.4	10631.1(a)	Include projected water use needed for lower income housing projected in the service area of the supplier.	System Water Use	Section 4.2
x	x	Section 4.5	10635(b)	Demands under climate change considerations must be included as part of the drought risk assessment.	System Water Use	Section 7.4.1.1

						2020 UWMP Location (Optional Column for Agency Review Use)
Retail	Wholesale	2020 Guidebook Location	Water Code Section	Summary as Applies to UWMP	Subject	
x		Chapter 5	10608.20(e)	Retail suppliers shall provide baseline daily per capita water use, urban water use target, interim urban water use target, and compliance daily per capita water use, along with the bases for determining those estimates, including references to supporting data.	Baselines and Targets	Section 5.1
x		Chapter 5	10608.24(a)	Retail suppliers shall meet their water use target by December 31, 2020.	Baselines and Targets	Section 5.1, Table 5-2

						2020 UWMP Location (Optional Column for Agency Review Use)
Retail	Wholesale	2020 Guidebook Location	Water Code Section	Summary as Applies to UWMP	Subject	
	x	Section 5.1	10608.36	Wholesale suppliers shall include an assessment of present and proposed future measures, programs, and policies to help their retail water suppliers achieve targeted water use reductions.	Baselines and Targets	N/A
x		Section 5.2	10608.24(d)(2)	If the retail supplier adjusts its compliance GPCD using weather normalization, economic adjustment, or extraordinary events, it shall provide the basis for, and data supporting the adjustment.	Baselines and Targets	N/A

						2020 UWMP Location (Optional Column for Agency Review Use)
Retail	Wholesale	2020 Guidebook Location	Water Code Section	Summary as Applies to UWMP	Subject	
x		Section 5.5	10608.22	Retail suppliers' per capita daily water use reduction shall be no less than 5 percent of base daily per capita water use of the 5-year baseline. This does not apply if the suppliers base GPCD is at or below 100.	Baselines and Targets	Section 5
x		Section 5.5 and Appendix E	10608.4	Retail suppliers shall report on their compliance in meeting their water use targets. The data shall be reported using a standardized form in the SBX7-7 2020 Compliance Form.	Baselines and Targets	Section 5, Appendix C

						2020 UWMP Location (Optional Column for Agency Review Use)
Retail	Wholesale	2020 Guidebook Location	Water Code Section	Summary as Applies to UWMP	Subject	
x	x	Sections 6.1 and 6.2	10631(b)(1)	Provide a discussion of anticipated supply availability under a normal, single dry year, and a drought lasting five years, as well as more frequent and severe periods of drought.	System Supplies	Section 7.1, Section 7.3
x	x	Sections 6.1	10631(b)(1)	Provide a discussion of anticipated supply availability under a normal, single dry year, and a drought lasting five years, as well as more frequent and severe periods of drought, including changes in supply due to climate change.	System Supplies	Section 6.10, Section 7.2, Section 7.3

						2020 UWMP Location (Optional Column for Agency Review Use)
Retail	Wholesale	2020 Guidebook Location	Water Code Section	Summary as Applies to UWMP	Subject	
x	x	Section 6.1	10631(b)(2)	When multiple sources of water supply are identified, describe the management of each supply in relationship to other identified supplies.	System Supplies	N/A
x	x	Section 6.1.1	10631(b)(3)	Describe measures taken to acquire and develop planned sources of water.	System Supplies	Section 6.8
x	x	Section 6.2.8	10631(b)	Identify and quantify the existing and planned sources of water available for 2020, 2025, 2030,2035, 2040 and optionally 2045.	System Supplies	Section 6.9

						2020 UWMP Location (Optional Column for Agency Review Use)
Retail	Wholesale	2020 Guidebook Location	Water Code Section	Summary as Applies to UWMP	Subject	
x	x	Section 6.2	10631(b)	Indicate whether groundwater is an existing or planned source of water available to the supplier.	System Supplies	Section 6.2
x	x	Section 6.2.2	10631(b)(4)(A)	Indicate whether a groundwater sustainability plan or groundwater management plan has been adopted by the water supplier or if there is any other specific authorization for groundwater management. Include a copy of the plan or authorization.	System Supplies	Section 6.2.2, Appendix E
x	x	Section 6.2.2	10631(b)(4)(B)	Describe the groundwater basin.	System Supplies	Section 6.2.1

						2020 UWMP Location (Optional Column for Agency Review Use)
Retail	Wholesale	2020 Guidebook Location	Water Code Section	Summary as Applies to UWMP	Subject	
x	x	Section 6.2.2	10631(b)(4)(B)	Indicate if the basin has been adjudicated and include a copy of the court order or decree and a description of the amount of water the supplier has the legal right to pump.	System Supplies	Section 7.3
x	x	Section 6.2.2.1	10631(b)(4)(B)	For unadjudicated basins, indicate whether or not the department has identified the basin as a high or medium priority. Describe efforts by the supplier to coordinate with sustainability or groundwater agencies to achieve sustainable groundwater conditions.	System Supplies	Section 6.2.2

						2020 UWMP Location (Optional Column for Agency Review Use)
Retail	Wholesale	2020 Guidebook Location	Water Code Section	Summary as Applies to UWMP	Subject	
x	x	Section 6.2.2.4	10631(b)(4)(C)	Provide a detailed description and analysis of the location, amount, and sufficiency of groundwater pumped by the urban water supplier for the past five years	System Supplies	Section 6.2.3 and Section 6.2.4
x	x	Section 6.2.2	10631(b)(4)(D)	Provide a detailed description and analysis of the amount and location of groundwater that is projected to be pumped.	System Supplies	Section 6.9
x	x	Section 6.2.7	10631(c)	Describe the opportunities for exchanges or transfers of water on a short-term or long-term basis.	System Supplies	Section 6.5

						2020 UWMP Location (Optional Column for Agency Review Use)
Retail	Wholesale	2020 Guidebook Location	Water Code Section	Summary as Applies to UWMP	Subject	
x	x	Section 6.2.5	10633(b)	Describe the quantity of treated wastewater that meets recycled water standards, is being discharged, and is otherwise available for use in a recycled water project.	System Supplies (Recycled Water)	Section 6.3
x	x	Section 6.2.5	10633(c)	Describe the recycled water currently being used in the supplier's service area.	System Supplies (Recycled Water)	Section 6.3.1
x	x	Section 6.2.5	10633(d)	Describe and quantify the potential uses of recycled water and provide a determination of the technical and economic feasibility of those uses.	System Supplies (Recycled Water)	Section 6.3.2

						2020 UWMP Location (Optional Column for Agency Review Use)
Retail	Wholesale	2020 Guidebook Location	Water Code Section	Summary as Applies to UWMP	Subject	
x	x	Section 6.2.5	10633(e)	Describe the projected use of recycled water within the supplier's service area at the end of 5, 10, 15, and 20 years, and a description of the actual use of recycled water in comparison to uses previously projected.	System Supplies (Recycled Water)	Section 6.3.2
x	x	Section 6.2.5	10633(f)	Describe the actions which may be taken to encourage the use of recycled water and the projected results of these actions in terms of acre-feet of recycled water used per year.	System Supplies (Recycled Water)	Section 6.3.2
x	x	Section 6.2.5	10633(g)	Provide a plan for optimizing the use of recycled water in the supplier's service area.	System Supplies (Recycled Water)	Section 6.3.2

						2020 UWMP Location (Optional Column for Agency Review Use)
Retail	Wholesale	2020 Guidebook Location	Water Code Section	Summary as Applies to UWMP	Subject	
x	x	Section 6.2.6	10631(g)	Describe desalinated water project opportunities for long-term supply.	System Supplies	Section 6.4
x	x	Section 6.2.5	10633(a)	Describe the wastewater collection and treatment systems in the supplier's service area with quantified amount of collection and treatment and the disposal methods.	System Supplies (Recycled Water)	Section 6.3.1
x	x	Section 6.2.8, Section 6.3.7	10631(f)	Describe the expected future water supply projects and programs that may be undertaken by the water supplier to address water supply reliability in average, single-dry, and for a period of drought lasting 5 consecutive water years.	System Supplies	Section 6.8

						2020 UWMP Location (Optional Column for Agency Review Use)
Retail	Wholesale	2020 Guidebook Location	Water Code Section	Summary as Applies to UWMP	Subject	
x	x	Section 6.4 and Appendix O	10631.2(a)	The UWMP must include energy information, as stated in the code, that a supplier can readily obtain.	System Suppliers, Energy Intensity	Section 6.7, Appendix I
x	x	Section 7.2	10634	Provide information on the quality of existing sources of water available to the supplier and the manner in which water quality affects water management strategies and supply reliability	Water Supply Reliability Assessment	Section 6.2.1, Section 6.2.3, Section 6.2.4, Section 7.1, Section 7.2
x	x	Section 7.2.4	10620(f)	Describe water management tools and options to maximize resources and minimize the need to import water from other regions.	Water Supply Reliability Assessment	Section 6.2.1, Section 6.2.2, Section 7.2, Section 7.5

						2020 UWMP Location (Optional Column for Agency Review Use)
Retail	Wholesale	2020 Guidebook Location	Water Code Section	Summary as Applies to UWMP	Subject	
x	x	Section 7.3	10635(a)	Service Reliability Assessment: Assess the water supply reliability during normal, dry, and a drought lasting five consecutive water years by comparing the total water supply sources available to the water supplier with the total projected water use over the next 20 years.	Water Supply Reliability Assessment	Section 7.3
x	x	Section 7.3	10635(b)	Provide a drought risk assessment as part of information considered in developing the demand management measures and water supply projects.	Water Supply Reliability Assessment	Section 7.4

						2020 UWMP Location (Optional Column for Agency Review Use)
Retail	Wholesale	2020 Guidebook Location	Water Code Section	Summary as Applies to UWMP	Subject	
x	x	Section 7.3	10635(b)(1)	Include a description of the data, methodology, and basis for one or more supply shortage conditions that are necessary to conduct a drought risk assessment for a drought period that lasts 5 consecutive years.	Water Supply Reliability Assessment	Section 7.4.1
x	x	Section 7.3	10635(b)(2)	Include a determination of the reliability of each source of supply under a variety of water shortage conditions.	Water Supply Reliability Assessment	Section 7.3

						2020 UWMP Location (Optional Column for Agency Review Use)
Retail	Wholesale	2020 Guidebook Location	Water Code Section	Summary as Applies to UWMP	Subject	
x	x	Section 7.3	10635(b)(3)	Include a comparison of the total water supply sources available to the water supplier with the total projected water use for the drought period.	Water Supply Reliability Assessment	Section 7.3
x	x	Section 7.3	10635(b)(4)	Include considerations of the historical drought hydrology, plausible changes on projected supplies and demands under climate change conditions, anticipated regulatory changes, and other locally applicable criteria.	Water Supply Reliability Assessment	Section 6.10, Section 7.1, Section 7.2
x	x	Chapter 8	10632(a)	Provide a water shortage contingency plan (WSCP) with specified elements below.	Water Shortage Contingency Planning	Section 8, Appendix G

						2020 UWMP Location (Optional Column for Agency Review Use)
Retail	Wholesale	2020 Guidebook Location	Water Code Section	Summary as Applies to UWMP	Subject	
x	x	Chapter 8	10632(a)(1)	Provide the analysis of water supply reliability (from Chapter 7 of Guidebook) in the WSCP	Water Shortage Contingency Planning	Appendix G Chapter 1
x	x	Section 8.10	10632(a)(10)	Describe reevaluation and improvement procedures for monitoring and evaluation the water shortage contingency plan to ensure risk tolerance is adequate and appropriate water shortage mitigation strategies are implemented.	Water Shortage Contingency Planning	Appendix G Chapter 9
x	x	Section 8.2	10632(a)(2)(A)	Provide the written decision- making process and other methods that the supplier will use each year to determine its water reliability.	Water Shortage Contingency Planning	Appendix G Chapter 2

Retail	Wholesale	2020 Guidebook Location	Water Code Section	Summary as Applies to UWMP	Subject	2020 UWMP Location (Optional Column for Agency Review Use)
x	x	Section 8.2	10632(a)(2)(B)	Provide data and methodology to evaluate the supplier's water reliability for the current year and one dry year pursuant to factors in the code.	Water Shortage Contingency Planning	Appendix G Chapter 2, Appendix G, Appendix A

Retail	Wholesale	2020 Guidebook Location	Water Code Section	Summary as Applies to UWMP	Subject	2020 UWMP Location (Optional Column for Agency Review Use)
x	x	Section 8.3	10632(a)(3)(A)	Define six standard water shortage levels of 10, 20, 30, 40, 50 percent shortage and greater than 50 percent shortage. These levels shall be based on supply conditions, including percent reductions in supply, changes in groundwater levels, changes in surface elevation, or other conditions. The shortage levels shall also apply to a catastrophic interruption of supply.	Water Shortage Contingency Planning	Appendix G Chapter 3.1

						2020 UWMP Location (Optional Column for Agency Review Use)
Retail	Wholesale	2020 Guidebook Location	Water Code Section	Summary as Applies to UWMP	Subject	
x	x	Section 8.3	10632(a)(3)(B)	Suppliers with an existing water shortage contingency plan that uses different water shortage levels must cross reference their categories with the six standard categories.	Water Shortage Contingency Planning	Appendix G Chapter 3.1
x	x	Section 8.4	10632(a)(4)(A)	Suppliers with water shortage contingency plans that align with the defined shortage levels must specify locally appropriate supply augmentation actions.	Water Shortage Contingency Planning	Appendix G Chapter 4.1
x	x	Section 8.4	10632(a)(4)(B)	Specify locally appropriate demand reduction actions to adequately respond to shortages.	Water Shortage Contingency Planning	Appendix G Chapter 4.4

						2020 UWMP Location (Optional Column for Agency Review Use)
Retail	Wholesale	2020 Guidebook Location	Water Code Section	Summary as Applies to UWMP	Subject	
x	x	Section 8.4	10632(a)(4)(C)	Specify locally appropriate operational changes.	Water Shortage Contingency Planning	Appendix G Chapter 4.5
x	x	Section 8.4	10632(a)(4)(D)	Specify additional mandatory prohibitions against specific water use practices that are in addition to state-mandated prohibitions are appropriate to local conditions.	Water Shortage Contingency Planning	Appendix G Chapter 4.2
x	x	Section 8.4	10632(a)(4)(E)	Estimate the extent to which the gap between supplies and demand will be reduced by implementation of the action.	Water Shortage Contingency Planning	Appendix G Chapter 4.1, Appendix G Chapter 4.4
x	x	Section 8.4.6	10632.5	The plan shall include a seismic risk assessment and mitigation plan.	Water Shortage Contingency Plan	Appendix G Chapter 3.4

						2020 UWMP Location (Optional Column for Agency Review Use)
Retail	Wholesale	2020 Guidebook Location	Water Code Section	Summary as Applies to UWMP	Subject	
x	x	Section 8.5	10632(a)(5)(A)	Suppliers must describe that they will inform customers, the public and others regarding any current or predicted water shortages.	Water Shortage Contingency Planning	Appendix G Chapter 5
x	x	Section 8.5 and 8.6	10632(a)(5)(B)10632(a)(5)(C)	Suppliers must describe that they will inform customers, the public and others regarding any shortage response actions triggered or anticipated to be triggered and other relevant communications.	Water Shortage Contingency Planning	Appendix G Chapter 5
x		Section 8.6	10632(a)(6)	Retail supplier must describe how it will ensure compliance with and enforce provisions of the WSCP.	Water Shortage Contingency Planning	Appendix G Chapter 4.6, Appendix G Chapter 6.1

						2020 UWMP Location (Optional Column for Agency Review Use)
Retail	Wholesale	2020 Guidebook Location	Water Code Section	Summary as Applies to UWMP	Subject	
x	x	Section 8.7	10632(a)(7)(A)	Describe the legal authority that empowers the supplier to enforce shortage response actions.	Water Shortage Contingency Planning	Appendix G Chapter 6.1
x	x	Section 8.7	10632(a)(7)(B)	Provide a statement that the supplier will declare a water shortage emergency Water Code Chapter 3.	Water Shortage Contingency Planning	Appendix G Chapter 6.1
x	x	Section 8.7	10632(a)(7)(C)	Provide a statement that the supplier will coordinate with any city or county within which it provides water for the possible proclamation of a local emergency.	Water Shortage Contingency Planning	Appendix G Chapter 2.6

						2020 UWMP Location (Optional Column for Agency Review Use)
Retail	Wholesale	2020 Guidebook Location	Water Code Section	Summary as Applies to UWMP	Subject	
x	x	Section 8.8	10632(a)(8)(A)	Describe the potential revenue reductions and expense increases associated with activated shortage response actions.	Water Shortage Contingency Planning	Appendix G Chapter 7
x	x	Section 8.8	10632(a)(8)(B)	Provide a description of mitigation actions needed to address revenue reductions and expense increases associated with activated shortage response actions.	Water Shortage Contingency Planning	Appendix G Chapter 7
x		Section 8.8	10632(a)(8)(C)	Retail suppliers must describe the cost of compliance with Water Code Chapter 3.3: Excessive Residential Water Use During Drought	Water Shortage Contingency Planning	Appendix G Chapter 7

						2020 UWMP Location (Optional Column for Agency Review Use)
Retail	Wholesale	2020 Guidebook Location	Water Code Section	Summary as Applies to UWMP	Subject	
x		Section 8.9	10632(a)(9)	Retail suppliers must describe the monitoring and reporting requirements and procedures that ensure appropriate data is collected, tracked, and analyzed for purposes of monitoring customer compliance.	Water Shortage Contingency Planning	Appendix G Chapter 8, Appendix G Chapter 11.4
x		Section 8.11	10632(b)	Analyze and define water features that are artificially supplied with water, including ponds, lakes, waterfalls, and fountains, separately from swimming pools and spas.	Water Shortage Contingency Planning	Appendix G Chapter 10

						2020 UWMP Location (Optional Column for Agency Review Use)
Retail	Wholesale	2020 Guidebook Location	Water Code Section	Summary as Applies to UWMP	Subject	
x	x	Sections 8.12 and 10.4	10635(c)	Provide supporting documentation that Water Shortage Contingency Plan has been, or will be, provided to any city or county within which it provides water, no later than 30 days after the submission of the plan to DWR.	Plan Adoption, Submittal, and Implementation	Appendix G Chapter 11.3
x	x	Section 8.14	10632(c)	Make available the Water Shortage Contingency Plan to customers and any city or county where it provides water within 30 after adopted the plan.	Water Shortage Contingency Planning	Appendix G Chapter 11.3

						2020 UWMP Location (Optional Column for Agency Review Use)
Retail	Wholesale	2020 Guidebook Location	Water Code Section	Summary as Applies to UWMP	Subject	
	x	Sections 9.1 and 9.3	10631(e)(2)	Wholesale suppliers shall describe specific demand management measures listed in code, their distribution system asset management program, and supplier assistance program.	Demand Management Measures	Section 9.1, Section 9.2, Section 9.3
x		Sections 9.2 and 9.3	10631(e)(1)	Retail suppliers shall provide a description of the nature and extent of each demand management measure implemented over the past five years. The description will address specific measures listed in code.	Demand Management Measures	Section 9.1, Section 9.2, Section 9.3

						2020 UWMP Location (Optional Column for Agency Review Use)
Retail	Wholesale	2020 Guidebook Location	Water Code Section	Summary as Applies to UWMP	Subject	
x		Chapter 10	10608.26(a)	Retail suppliers shall conduct a public hearing to discuss adoption, implementation, and economic impact of water use targets (recommended to discuss compliance).	Plan Adoption, Submittal, and Implementation	Section 10.2, Section 10.4
x	x	Section 10.2.1	10621(b)	Notify, at least 60 days prior to the public hearing, any city or county within which the supplier provides water that the urban water supplier will be reviewing the plan and considering amendments or changes to the plan. Reported in Table 10-1.	Plan Adoption, Submittal, and Implementation	Section 10.1

						2020 UWMP Location (Optional Column for Agency Review Use)
Retail	Wholesale	2020 Guidebook Location	Water Code Section	Summary as Applies to UWMP	Subject	
x	x	Section 10.4	10621(f)	Each urban water supplier shall update and submit its 2020 plan to the department by July 1, 2021.	Plan Adoption, Submittal, and Implementation	Section 10.3
x	x	Sections 10.2.2, 10.3, and 10.5	10642	Provide supporting documentation that the urban water supplier made the plan and contingency plan available for public inspection, published notice of the public hearing, and held a public hearing about the plan and contingency plan.	Plan Adoption, Submittal, and Implementation	Section 10.1, Appendix J WSCP Chapter 11.1, WSCP Appendix J

						2020 UWMP Location (Optional Column for Agency Review Use)
Retail	Wholesale	2020 Guidebook Location	Water Code Section	Summary as Applies to UWMP	Subject	
x	x	Section 10.2.2	10642	The water supplier is to provide the time and place of the hearing to any city or county within which the supplier provides water.	Plan Adoption, Submittal, and Implementation	Section 10.1
x	x	Section 10.3.2	10642	Provide supporting documentation that the plan and contingency plan has been adopted as prepared or modified.	Plan Adoption, Submittal, and Implementation	Section 10.2, Appendix K, WSCP Chapter 11.2, WSCP Appendix K
x	x	Section 10.4	10644(a)	Provide supporting documentation that the urban water supplier has submitted this UWMP to the California State Library.	Plan Adoption, Submittal, and Implementation	Section 10.3, Appendix L

						2020 UWMP Location (Optional Column for Agency Review Use)
Retail	Wholesale	2020 Guidebook Location	Water Code Section	Summary as Applies to UWMP	Subject	
x	x	Section 10.4	10644(a)(1)	Provide supporting documentation that the urban water supplier has submitted this UWMP to any city or county within which the supplier provides water no later than 30 days after adoption.	Plan Adoption, Submittal, and Implementation	Section 10.3, Appendix L
x	x	Sections 10.4.1 and 10.4.2	10644(a)(2)	The plan, or amendments to the plan, submitted to the department shall be submitted electronically.	Plan Adoption, Submittal, and Implementation	Section 10.3

						2020 UWMP Location (Optional Column for Agency Review Use)
Retail	Wholesale	2020 Guidebook Location	Water Code Section	Summary as Applies to UWMP	Subject	
x	x	Section 10.5	10645(a)	Provide supporting documentation that, not later than 30 days after filing a copy of its plan with the department, the supplier has or will make the plan available for public review during normal business hours.	Plan Adoption, Submittal, and Implementation	Section 10.3
x	x	Section 10.5	10645(b)	Provide supporting documentation that, not later than 30 days after filing a copy of its water shortage contingency plan with the department, the supplier has or will make the plan available for public review during normal business hours.	Plan Adoption, Submittal, and Implementation	WSCP Chapter 11.3

						2020 UWMP Location (Optional Column for Agency Review Use)
Retail	Wholesale	2020 Guidebook Location	Water Code Section	Summary as Applies to UWMP	Subject	
x	x	Section 10.6	10621(c)	If supplier is regulated by the Public Utilities Commission, include its plan and contingency plan as part of its general rate case filings.	Plan Adoption, Submittal, and Implementation	N/A
x	x	Section 10.7.2	10644(b)	If revised, submit a copy of the water shortage contingency plan to DWR within 30 days of adoption.	Plan Adoption, Submittal, and Implementation	

Appendix B: Water Loss Audit Reports



AWWA Free Water Audit Software: Reporting Worksheet

WAS v5.0
American Water Works Association
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?	Click to access definition
+	Click to add a comment

Water Audit Report for: South Tahoe Public Utility District (0910002)
Reporting Year: 2016 1/2016 - 12/2016

Please enter data in the white cells below. Where available, metered values should be used; if metered values are unavailable please estimate a value. Indicate your confidence in the accuracy of the input data by grading each component (n/a or 1-10) using the drop-down list to the left of the input cell. Hover the mouse over the cell to obtain a description of the grades

All volumes to be entered as: MILLION GALLONS (US) PER YEAR

To select the correct data grading for each input, determine the highest grade where the

WATER SUPPLIED

Volume from own sources:	+ ?	4	1,794.510	MG/Yr
Water imported:	+ ?	n/a	0.000	MG/Yr
Water exported:	+ ?	n/a	0.000	MG/Yr

Master Meter and Supply Error Adjustments

+ ?	2	Pcnt:	Value:	MG/Yr
+ ?		Pcnt:	Value:	MG/Yr
+ ?		Pcnt:	Value:	MG/Yr

WATER SUPPLIED: 1,794.510 MG/Yr

Enter negative % or value for under-registration
Enter positive % or value for over-registration

AUTHORIZED CONSUMPTION

Billed metered:	+ ?	3	977.630	MG/Yr
Billed unmetered:	+ ?	3	420.510	MG/Yr
Unbilled metered:	+ ?	n/a		MG/Yr
Unbilled unmetered:	+ ?	5	22.431	MG/Yr

Default option selected for Unbilled unmetered - a grading of 5 is applied but not displayed

AUTHORIZED CONSUMPTION: 1,420.571 MG/Yr

Click here: ? for help using option buttons below

Pcnt: 1.25% Value: MG/Yr

Use buttons to select percentage of water supplied

OR

value

WATER LOSSES (Water Supplied - Authorized Consumption)

373.939 MG/Yr

Apparent Losses

Unauthorized consumption: + ? 4.486 MG/Yr

Default option selected for unauthorized consumption - a grading of 5 is applied but not displayed

Customer metering inaccuracies:	+ ?	3	9.875	MG/Yr
Systematic data handling errors:	+ ?	5	2.444	MG/Yr

Default option selected for Systematic data handling errors - a grading of 5 is applied but not displayed

Apparent Losses: ? 16.805 MG/Yr

Pcnt: 0.25% Value: MG/Yr

1.00% 0.25%

Real Losses (Current Annual Real Losses or CARL)

Real Losses = Water Losses - Apparent Losses: ? 357.133 MG/Yr

WATER LOSSES: 373.939 MG/Yr

NON-REVENUE WATER

NON-REVENUE WATER: ? 396.370 MG/Yr

= Water Losses + Unbilled Metered + Unbilled Unmetered

SYSTEM DATA

Length of mains:	+ ?	9	253.0	miles
Number of <u>active AND inactive</u> service connections:	+ ?	8	14,119	
Service connection density:	?		56	conn./mile main

Are customer meters typically located at the curbside or property line? Yes

Average length of customer service line: + ? (length of service line, beyond the property boundary, that is the responsibility of the utility)

Average length of customer service line has been set to zero and a data grading score of 10 has been applied

Average operating pressure: + ? 3 84.0 psi

COST DATA

Total annual cost of operating water system:	+ ?	10	\$9,726,022	\$/Year
Customer retail unit cost (applied to Apparent Losses):	+ ?	8	\$1.23	\$/100 cubic feet (ccf)
Variable production cost (applied to Real Losses):	+ ?	7	\$498.33	\$/Million gallons <input type="checkbox"/> Use Customer Retail Unit Cost to value real losses

WATER AUDIT DATA VALIDITY SCORE:

*** YOUR SCORE IS: 50 out of 100 ***

A weighted scale for the components of consumption and water loss is included in the calculation of the Water Audit Data Validity Score

PRIORITY AREAS FOR ATTENTION:

Based on the information provided, audit accuracy can be improved by addressing the following components:

- 1: Volume from own sources
- 2: Billed metered
- 3: Billed unmetered



AWWA Free Water Audit Software: Reporting Worksheet

WAS v5.0
American Water Works Association
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?	Click to access definition
+	Click to add a comment

Water Audit Report for: South Tahoe Public Utility District (0910002)
Reporting Year: 2017 / 1/2017 - 12/2017

Please enter data in the white cells below. Where available, metered values should be used; if metered values are unavailable please estimate a value. Indicate your confidence in the accuracy of the input data by grading each component (n/a or 1-10) using the drop-down list to the left of the input cell. Hover the mouse over the cell to obtain a description of the grades

All volumes to be entered as: MILLION GALLONS (US) PER YEAR

To select the correct data grading for each input, determine the highest grade where the

WATER SUPPLIED

----- Enter grading in column 'E' and 'J' ----->			
Volume from own sources:	+ ?	4	1,832.680 MG/Yr
Water imported:	+ ?	n/a	0.000 MG/Yr
Water exported:	+ ?	4	29.351 MG/Yr

Master Meter and Supply Error Adjustments

		Pcmt:	Value:	
+ ?	2	<input checked="" type="radio"/>	<input type="radio"/>	MG/Yr
+ ?		<input type="radio"/>	<input checked="" type="radio"/>	MG/Yr
+ ?	1	<input checked="" type="radio"/>	<input type="radio"/>	MG/Yr

WATER SUPPLIED: 1,803.329 MG/Yr

Enter negative % or value for under-registration
Enter positive % or value for over-registration

AUTHORIZED CONSUMPTION

Billed metered:	+ ?	3	1,055.306 MG/Yr
Billed unmetered:	+ ?	4	383.506 MG/Yr
Unbilled metered:	+ ?	n/a	MG/Yr
Unbilled unmetered:	+ ?	5	4.508 MG/Yr

AUTHORIZED CONSUMPTION: 1,443.320 MG/Yr

Click here: ?
for help using option buttons below

Pcmt: 0.25% Value: 4.508 MG/Yr

Use buttons to select percentage of water supplied
OR
value

WATER LOSSES (Water Supplied - Authorized Consumption)

360.009 MG/Yr

Apparent Losses

Unauthorized consumption: 4.508 MG/Yr

Default option selected for unauthorized consumption - a grading of 5 is applied but not displayed

Customer metering inaccuracies:	+ ?	4	10.660 MG/Yr
Systematic data handling errors:	+ ?	5	2.638 MG/Yr

Default option selected for Systematic data handling errors - a grading of 5 is applied but not displayed

Apparent Losses: 17.806 MG/Yr

Pcmt: 0.25% Value: MG/Yr

1.00% MG/Yr

0.25% MG/Yr

Real Losses (Current Annual Real Losses or CARL)

Real Losses = Water Losses - Apparent Losses: 342.202 MG/Yr

WATER LOSSES: 360.009 MG/Yr

NON-REVENUE WATER

NON-REVENUE WATER: 364.517 MG/Yr

= Water Losses + Unbilled Metered + Unbilled Unmetered

SYSTEM DATA

Length of mains:	+ ?	9	253.0 miles
Number of <u>active AND inactive</u> service connections:	+ ?	9	14,159
Service connection density:	?		56 conn./mile main

Are customer meters typically located at the curbside or property line? Yes

Average length of customer service line has been set to zero and a data grading score of 10 has been applied

Average operating pressure: 84.0 psi

COST DATA

Total annual cost of operating water system:	+ ?	10	\$9,970,422	\$/Year
Customer retail unit cost (applied to Apparent Losses):	+ ?	10	\$1.31	\$/100 cubic feet (ccf)
Variable production cost (applied to Real Losses):	+ ?	7	\$518.65	\$/Million gallons <input type="checkbox"/> Use Customer Retail Unit Cost to value real losses

WATER AUDIT DATA VALIDITY SCORE:

***** YOUR SCORE IS: 54 out of 100 *****

A weighted scale for the components of consumption and water loss is included in the calculation of the Water Audit Data Validity Score

PRIORITY AREAS FOR ATTENTION:

Based on the information provided, audit accuracy can be improved by addressing the following components:

- 1: Volume from own sources
- 2: Billed metered
- 3: Billed unmetered



AWWA Free Water Audit Software: Reporting Worksheet

WAS v5.0
American Water Works Association.

Water Audit Report for: South Tahoe Public Utility District (0910002)
Reporting Year: 2018 1/2018 - 12/2018

Please enter data in the white cells below. Where available, metered values should be used; if metered values are unavailable please estimate a value. Indicate your confidence in the accuracy of the

All volumes to be entered as: MILLION GALLONS (US) PER YEAR

To select the correct data grading for each input, determine the highest grade where the utility meets or exceeds all criteria for that grade and all grades below it.

WATER SUPPLIED

<----- Enter grading in column 'E' and 'J' ----->

Volume from own sources:	+ ?	5	1,935.750	MG/Yr	+ ?
Water imported:	+ ?	n/a		MG/Yr	+ ?
Water exported:	+ ?	5	12.309	MG/Yr	+ ?

Master Meter and Supply Error Adjustments

Pcnt:	Value:	MG/Yr
3	<input type="radio"/> <input checked="" type="radio"/> <input type="radio"/>	
	<input type="radio"/> <input checked="" type="radio"/> <input type="radio"/>	
1	<input type="radio"/> <input checked="" type="radio"/> <input type="radio"/>	

Enter negative % or value for under-registration
Enter positive % or value for over-registration

WATER SUPPLIED: 1,923.441 MG/Yr

AUTHORIZED CONSUMPTION

Billed metered:	+ ?	5	1,234.985	MG/Yr	+ ?
Billed unmetered:	+ ?	5	253.462	MG/Yr	+ ?
Unbilled metered:	+ ?	n/a	0.000	MG/Yr	+ ?
Unbilled unmetered:	+ ?	5	4.809	MG/Yr	+ ?

AUTHORIZED CONSUMPTION: 1,493.256 MG/Yr

Click here: for help using option

Pcnt: Value: 4.809 MG/Yr

Use buttons to select percentage of water supplied OR value

WATER LOSSES (Water Supplied - Authorized Consumption)

430.185 MG/Yr

Apparent Losses

Unauthorized consumption: 4.809 MG/Yr

Default option selected for unauthorized consumption - a grading of 5 is applied but not displayed

Customer metering inaccuracies:	+ ?	5	12.475	MG/Yr	+ ?
Systematic data handling errors:	+ ?	5	3.087	MG/Yr	+ ?

Default option selected for Systematic data handling errors - a grading of 5 is applied but not displayed

Apparent Losses: 20.371 MG/Yr

Pcnt: 0.25% Value: MG/Yr

1.00% MG/Yr

0.25% MG/Yr

Real Losses (Current Annual Real Losses or CARL)

Real Losses = Water Losses - Apparent Losses: 409.815 MG/Yr

WATER LOSSES: 430.185 MG/Yr

NON-REVENUE WATER

NON-REVENUE WATER: 434.994 MG/Yr

= Water Losses + Unbilled Metered + Unbilled Unmetered

SYSTEM DATA

Length of mains:	+ ?	9	253.0	miles	+ ?
Number of <u>active AND inactive</u> service connections:	+ ?	9	14,243		+ ?
Service connection density:	+ ?	?	56	conn./mile main	+ ?

Are customer meters typically located at the curbstops or property line? (length of service line, beyond the property boundary, that is the responsibility of the utility)

Average length of customer service line has been set to zero and a data grading score of 10 has been applied

Average operating pressure: 5 84.0 psi

COST DATA

Total annual cost of operating water system:	+ ?	10	\$11,173,828	\$/Year	+ ?
Customer retail unit cost (applied to Apparent Losses):	+ ?	10	\$1.38	\$/100 cubic feet (ccf)	+ ?
Variable production cost (applied to Real Losses):	+ ?	7	\$494.59	\$/Million gallons <input type="checkbox"/> Use Customer Retail Unit Cost to value real losses	+ ?

WATER AUDIT DATA VALIDITY SCORE:

*** YOUR SCORE IS: 61 out of 100 ***

A weighted scale for the components of consumption and water loss is included in the calculation of the Water Audit Data Validity Score

PRIORITY AREAS FOR ATTENTION:

Based on the information provided, audit accuracy can be improved by addressing the following components:

1: Volume from own sources

2: Billed metered

3: Billed unmetered



AWWA Free Water Audit Software: Reporting Worksheet

WAS v5.0

American Water Works Association

- ? Click to access definition
- + Click to add a comment

Water Audit Report for: South Tahoe Public Utility District (CA0910002)
Reporting Year: 2019 1/2019 - 12/2019

Please enter data in the white cells below. Where available, metered values should be used; if metered values are unavailable please estimate a value. Indicate your confidence in the accuracy of the

All volumes to be entered as: MILLION GALLONS (US) PER YEAR

To select the correct data grading for each input, determine the highest grade where the utility meets or exceeds all criteria for that grade and all grades below it.

<----- Enter grading in column 'E' and 'J' ----->

Master Meter and Supply Error Adjustments

WATER SUPPLIED

Volume from own sources:	+	?	4	1,778.240	MG/Yr
Water imported:	+	?	n/a		MG/Yr
Water exported:	+	?	3	7.890	MG/Yr

	+	?	3		Pcnt:		Value:		
						<input checked="" type="radio"/>	4.426		MG/Yr
	+	?				<input type="radio"/>			MG/Yr
	+	?				<input type="radio"/>			MG/Yr

Enter negative % or value for under-registration
Enter positive % or value for over-registration

WATER SUPPLIED: 1,770.350 MG/Yr

AUTHORIZED CONSUMPTION

Billed metered:	+	?	5	1,201.553	MG/Yr
Billed unmetered:	+	?	6	312.400	MG/Yr
Unbilled metered:	+	?	n/a		MG/Yr
Unbilled unmetered:	+	?	5	4.426	MG/Yr

Click here: ?
for help using option buttons below

	+	?	5		Pcnt:		Value:		
						<input checked="" type="radio"/>	4.426		MG/Yr

Use buttons to select percentage of water supplied
OR
value

AUTHORIZED CONSUMPTION: 1,518.379 MG/Yr

WATER LOSSES (Water Supplied - Authorized Consumption)

251.971 MG/Yr

Apparent Losses

Unauthorized consumption: 4.426 MG/Yr

Default option selected for unauthorized consumption - a grading of 5 is applied but not displayed

Customer metering inaccuracies:	+	?	5	12.137	MG/Yr
Systematic data handling errors:	+	?		3.004	MG/Yr

Default option selected for Systematic data handling errors - a grading of 5 is applied but not displayed

Apparent Losses: 19.567 MG/Yr

	+	?	5		Pcnt:		Value:		
						<input checked="" type="radio"/>	0.25%		MG/Yr
						<input type="radio"/>			MG/Yr
						<input type="radio"/>			MG/Yr

Real Losses (Current Annual Real Losses or CARL)

Real Losses = Water Losses - Apparent Losses: 232.404 MG/Yr

WATER LOSSES: 251.971 MG/Yr

NON-REVENUE WATER

NON-REVENUE WATER: 256.397 MG/Yr

= Water Losses + Unbilled Metered + Unbilled Unmetered

SYSTEM DATA

Length of mains:	+	?	9	253.0	miles
Number of <u>active AND inactive</u> service connections:	+	?	9	14,168	
Service connection density:	?			56	conn./mile main

Are customer meters typically located at the curbstop or property line? Yes

Average length of customer service line: ? (length of service line, beyond the property boundary, that is the responsibility of the utility)

Average length of customer service line has been set to zero and a data grading score of 10 has been applied

Average operating pressure: ? 5 84.0 psi

COST DATA

Total annual cost of operating water system:	+	?	10	\$11,871,821	\$/Year
Customer retail unit cost (applied to Apparent Losses):	+	?	10	\$1.65	\$/100 cubic feet (ccf)
Variable production cost (applied to Real Losses):	+	?	7	\$554.13	\$/Million gallons <input type="checkbox"/> Use Customer Retail Unit Cost to value real losses

WATER AUDIT DATA VALIDITY SCORE:

*** YOUR SCORE IS: 58 out of 100 ***

A weighted scale for the components of consumption and water loss is included in the calculation of the Water Audit Data Validity Score

PRIORITY AREAS FOR ATTENTION:

Based on the information provided, audit accuracy can be improved by addressing the following components:

- 1: Volume from own sources
- 2: Billed metered
- 3: Customer metering inaccuracies



AWWA Free Water Audit Software: Reporting Worksheet

WAS v5.0
American Water Works Association.
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Click to access definition
 Click to add a comment

Water Audit Report for: South Tahoe Public Utility District (0910002)
Reporting Year: 2020 1/2020 - 12/2020

Please enter data in the white cells below. Where available, metered values should be used; if metered values are unavailable please estimate a value. Indicate your confidence in the accuracy of the input data by grading each component (n/a or 1-10) using the drop-down list to the left of the input cell. Hover the mouse over the cell to obtain a description of the grades

All volumes to be entered as: MILLION GALLONS (US) PER YEAR

To select the correct data grading for each input, determine the highest grade where the utility meets or exceeds all criteria for that grade and all grades below it.

WATER SUPPLIED

----- Enter grading in column 'E' and 'J' ----->

Volume from own sources:	<input type="button" value="+"/> <input type="button" value="3"/>	<input type="text" value="1,882.730"/>	MG/Yr
Water imported:	<input type="button" value="+"/> <input type="button" value="n/a"/>	<input type="text" value="0.000"/>	MG/Yr
Water exported:	<input type="button" value="+"/> <input type="button" value="3"/>	<input type="text" value="6.158"/>	MG/Yr

Master Meter and Supply Error Adjustments

Pcnt:	<input type="button" value="3"/>	<input type="text" value=""/>	MG/Yr
Value:	<input type="button" value=""/>	<input type="text" value=""/>	MG/Yr
Pcnt:	<input type="button" value="1"/>	<input type="text" value=""/>	MG/Yr
Value:	<input type="button" value=""/>	<input type="text" value=""/>	MG/Yr

Enter negative % or value for under-registration
Enter positive % or value for over-registration

WATER SUPPLIED: MG/Yr

AUTHORIZED CONSUMPTION

Billed metered:	<input type="button" value="+"/> <input type="button" value="7"/>	<input type="text" value="1,385.348"/>	MG/Yr
Billed unmetered:	<input type="button" value="+"/> <input type="button" value="5"/>	<input type="text" value="186.590"/>	MG/Yr
Unbilled metered:	<input type="button" value="+"/> <input type="button" value="n/a"/>	<input type="text" value="0.000"/>	MG/Yr
Unbilled unmetered:	<input type="button" value="+"/> <input type="button" value="3"/>	<input type="text" value="3.930"/>	MG/Yr

Click here: for help using option buttons below

Pcnt:	<input type="button" value=""/>	<input type="text" value="3.930"/>	MG/Yr
Value:	<input type="button" value=""/>	<input type="text" value=""/>	MG/Yr

Use buttons to select percentage of water supplied **OR** value

AUTHORIZED CONSUMPTION: MG/Yr

WATER LOSSES (Water Supplied - Authorized Consumption)

MG/Yr

Apparent Losses

Unauthorized consumption:	<input type="button" value="+"/> <input type="button" value="3"/>	<input type="text" value="3.930"/>	MG/Yr
Customer metering inaccuracies:	<input type="button" value="+"/> <input type="button" value="7"/>	<input type="text" value="13.993"/>	MG/Yr
Systematic data handling errors:	<input type="button" value="+"/> <input type="button" value="3"/>	<input type="text" value="3.930"/>	MG/Yr

Pcnt:	<input type="button" value=""/>	<input type="text" value="3.930"/>	MG/Yr
Value:	<input type="button" value=""/>	<input type="text" value=""/>	MG/Yr

1.00%	<input type="button" value=""/>	<input type="text" value=""/>	MG/Yr
	<input type="button" value=""/>	<input type="text" value="3.930"/>	MG/Yr

Apparent Losses: MG/Yr

Real Losses (Current Annual Real Losses or CARL)

Real Losses = Water Losses - Apparent Losses: MG/Yr

WATER LOSSES: MG/Yr

NON-REVENUE WATER

NON-REVENUE WATER: MG/Yr

= Water Losses + Unbilled Metered + Unbilled Unmetered

SYSTEM DATA

Length of mains:	<input type="button" value="+"/> <input type="button" value="10"/>	<input type="text" value="253.0"/>	miles
Number of <u>active AND inactive</u> service connections:	<input type="button" value="+"/> <input type="button" value="8"/>	<input type="text" value="14,235"/>	
Service connection density:	<input type="button" value=""/>	<input type="text" value="56"/>	conn./mile main

Are customer meters typically located at the curbside or property line?

Average length of customer service line: (length of service line, beyond the property boundary, that is the responsibility of the utility)

Average length of customer service line has been set to zero and a data grading score of 10 has been applied

Average operating pressure: psi

COST DATA

Total annual cost of operating water system:	<input type="button" value="+"/> <input type="button" value="10"/>	<input type="text" value="\$12,119,486"/>	\$/Year
Customer retail unit cost (applied to Apparent Losses):	<input type="button" value="+"/> <input type="button" value="9"/>	<input type="text" value="\$1.73"/>	\$/100 cubic feet (ccf)
Variable production cost (applied to Real Losses):	<input type="button" value="+"/> <input type="button" value="9"/>	<input type="text" value="\$503.94"/>	\$/Million gallons <input type="checkbox"/> Use Customer Retail Unit Cost to value real losses

WATER AUDIT DATA VALIDITY SCORE:

***** YOUR SCORE IS: 56 out of 100 *****

A weighted scale for the components of consumption and water loss is included in the calculation of the Water Audit Data Validity Score

PRIORITY AREAS FOR ATTENTION:

Based on the information provided, audit accuracy can be improved by addressing the following components:

- 1: Volume from own sources
- 2: Billed unmetered
- 3: Unauthorized consumption

Appendix C: SBX7-7 Tables

SB X7-7 Table 0: Units of Measure Used in 2020 UWMP*

(select one from the drop down list)

Acre Feet

**The unit of measure must be consistent throughout the UWMP, as reported in Submittal Table 2-3.*

NOTES:

SB X7-7 Table 2: Method for 2020 Population Estimate

Method Used to Determine 2020 Population
(may check more than one)

**1. Department of Finance (DOF) or
American Community Survey (ACS)**

2. Persons-per-Connection Method

3. DWR Population Tool

4. Other
DWR recommends pre-review

NOTES:

SB X7-7 Table 3: 2020 Service Area Population

2020 Compliance Year Population

2020	29,824
-------------	--------

NOTES:

SB X7-7 Table 4: 2020 Gross Water Use

Compliance Year 2020	2020 Volume Into Distribution System <i>This column will remain blank until SB X7-7 Table 4-A is completed.</i>	2020 Deductions				2020 Gross Water Use	
		Exported Water *	Change in Dist. System Storage* (+/-)	Indirect Recycled Water <i>This column will remain blank until SB X7-7 Table 4-B is completed.</i>	Water Delivered for Agricultural Use*		Process Water <i>This column will remain blank until SB X7-7 Table 4-D is completed.</i>
	5,778			-		-	5,778

* Units of measure (AF, MG , or CCF) must remain consistent throughout the UWMP, as reported in SB X7-7 Table 0 and Submittal Table 2-3.

NOTES:

SB X7-7 Table 4-A: 2020 Volume Entering the Distribution System(s), Meter Error Adjustment

Complete one table for each source.

Name of Source		Groundwater	
This water source is (check one) :			
<input checked="" type="checkbox"/>	The supplier's own water source		
<input type="checkbox"/>	A purchased or imported source		
Compliance Year 2020	Volume Entering Distribution System ¹	Meter Error Adjustment ² Optional (+/-)	Corrected Volume Entering Distribution System
	5,778	-	5,778
<p>¹ Units of measure (AF, MG , or CCF) must remain consistent throughout the UWMP, as reported in SB X7-7 Table 0 and Submittal Table 2-3.</p> <p>² Meter Error Adjustment - See guidance in Methodology 1, Step 3 of Methodologies Document</p>			
NOTES			

SB X7-7 Table 5: 2020 Gallons Per Capita Per Day (GPCD)

2020 Gross Water <i>Fm SB X7-7 Table 4</i>	2020 Population <i>Fm</i> <i>SB X7-7 Table 3</i>	2020 GPCD
5,778	29,824	173

NOTES:

SB X7-7 Table 9: 2020 Compliance

Actual 2020 GPCD ¹	Optional Adjustments to 2020 GPCD				2020 Confirmed Target GPCD ^{1,2}	Did Supplier Achieve Targeted Reduction for 2020?	
	Enter "0" if Adjustment Not Used			TOTAL Adjustments ¹			Adjusted 2020 GPCD ¹ <i>(Adjusted if applicable)</i>
	Extraordinary Events ¹	Weather Normalization ¹	Economic Adjustment ¹				
173	-	-	-	-	173	NO	

¹ All values are reported in GPCD

² **2020 Confirmed Target GPCD** is taken from the Supplier's SB X7-7 Verification Form Table SB X7-7, 7-F.

NOTES:

SB X7-7 Table 0: Units of Measure Used in UWMP*

Acre Feet

**The unit of measure must be consistent with Table 2-3*

NOTES:

SB X7-7 Table-1: Baseline Period Ranges			
Baseline	Parameter	Value	Units
10- to 15-year baseline period	2008 total water deliveries	6,918	Acre Feet
	2008 total volume of delivered recycled water	0	Acre Feet
	2008 recycled water as a percent of total deliveries	0.00%	Percent
	Number of years in baseline period ¹	10	Years
	Year beginning baseline period range	2000	
	Year ending baseline period range ²	2009	
5-year baseline period	Number of years in baseline period	5	Years
	Year beginning baseline period range	2004	
	Year ending baseline period range ³	2008	
¹ If the 2008 recycled water percent is less than 10 percent, then the first baseline period is a continuous 10-year period. If the amount of recycled water delivered in 2008 is 10 percent or greater, the first baseline period is a continuous 10- to 15-year period.			
² The ending year must be between December 31, 2004 and December 31, 2010.			
³ The ending year must be between December 31, 2007 and December 31, 2010.			
NOTES:			

SB X7-7 Table 2: Method for Population Estimates**Method Used to Determine Population**
(may check more than one)

<input type="checkbox"/>	1. Department of Finance (DOF) DOF Table E-8 (1990 - 2000) and (2000-2010) and DOF Table E-5 (2011 - 2015) when available
<input type="checkbox"/>	2. Persons-per-Connection Method
<input checked="" type="checkbox"/>	3. DWR Population Tool
<input type="checkbox"/>	4. Other DWR recommends pre-review

NOTES: Capita per dwelling unit methodology preliminary approved

SB X7-7 Table 3: Service Area Population

Year	Population	
10 to 15 Year Baseline Population		
Year 1	2000	31,961
Year 2	2001	32,487
Year 3	2002	31,728
Year 4	2003	31,296
Year 5	2004	31,085
Year 6	2005	30,902
Year 7	2006	30,691
Year 8	2007	30,215
Year 9	2008	29,714
Year 10	2009	29,340
<i>Year 11</i>		
<i>Year 12</i>		
<i>Year 13</i>		
<i>Year 14</i>		
<i>Year 15</i>		
5 Year Baseline Population		
Year 1	2004	31,085
Year 2	2005	30,902
Year 3	2006	30,691
Year 4	2007	30,215
Year 5	2008	29,714
2015 Compliance Year Population		
2015		29,236
NOTES:		

SB X7-7 Table 4: Annual Gross Water Use *

	Baseline Year <i>Fm SB X7-7 Table 3</i>	Volume Into Distribution System <i>Fm SB X7-7 Table(s) 4-A</i>	Deductions				Annual Gross Water Use	
			Exported Water	Change in Dist. System Storage (+/-)	Indirect Recycled Water <i>Fm SB X7-7 Table 4-B</i>	Water Delivered for Agricultural Use		Process Water <i>Fm SB X7-7 Table(s) 4-D</i>
10 to 15 Year Baseline - Gross Water Use								
Year 1	2000	7734.558			0		0	7,735
Year 2	2001	8081.7443			0		0	8,082
Year 3	2002	7835.9601			0		0	7,836
Year 4	2003	7102.6292			0		0	7,103
Year 5	2004	7508.78099			0		0	7,509
Year 6	2005	6924.70121			0		0	6,925
Year 7	2006	7447.60817			0		0	7,448
Year 8	2007	8163.58436			0		0	8,164
Year 9	2008	7638.05869			0		0	7,638
Year 10	2009	6920.43084			0		0	6,920
<i>Year 11</i>	0	0			0		0	0
<i>Year 12</i>	0	0			0		0	0
<i>Year 13</i>	0	0			0		0	0
<i>Year 14</i>	0	0			0		0	0
<i>Year 15</i>	0	0			0		0	0
10 - 15 year baseline average gross water use							5,024	
5 Year Baseline - Gross Water Use								
Year 1	2004	7,509			0		0	7,509
Year 2	2005	6,925			0		0	6,925
Year 3	2006	7,448			0		0	7,448
Year 4	2007	8,164			0		0	8,164
Year 5	2008	7,638			0		0	7,638
5 year baseline average gross water use							7,537	
2015 Compliance Year - Gross Water Use								
	2015	5,241			0		0	5,241
* NOTE that the units of measure must remain consistent throughout the UWMP, as reported in Table 2-3								
NOTES:								

SB X7-7 Table 4-A: Volume Entering the Distribution System(s)

Complete one table for each source.

Name of Source groundwater

This water source is:

- The supplier's own water source
- A purchased or imported source

Baseline Year <i>Fm SB X7-7 Table 3</i>	Volume Entering Distribution System	Meter Error Adjustment* <i>Optional (+/-)</i>	Corrected Volume Entering Distribution System
---	--	---	--

10 to 15 Year Baseline - Water into Distribution System

Year 1	2000	7,735		7,735
Year 2	2001	8,082		8,082
Year 3	2002	7,836		7,836
Year 4	2003	7,103		7,103
Year 5	2004	7,509		7,509
Year 6	2005	6,925		6,925
Year 7	2006	7,448		7,448
Year 8	2007	8,164		8,164
Year 9	2008	7,638		7,638
Year 10	2009	6,920		6,920
Year 11	0			0
Year 12	0			0
Year 13	0			0
Year 14	0			0
Year 15	0			0

5 Year Baseline - Water into Distribution System

Year 1	2004	7,509		7,509
Year 2	2005	6,925		6,925
Year 3	2006	7,448		7,448
Year 4	2007	8,164		8,164
Year 5	2008	7,638		7,638

2015 Compliance Year - Water into Distribution System

2015	5241		5,241
-------------	------	--	-------

** Meter Error Adjustment - See guidance in Methodology 1, Step 3 of Methodologies Document*

NOTES:

SB X7-7 Table 5: Gallons Per Capita Per Day (GPCD)

Baseline Year <i>Fm SB X7-7 Table 3</i>		Service Area Population <i>Fm SB X7-7 Table 3</i>	Annual Gross Water Use <i>Fm SB X7-7 Table 4</i>	Daily Per Capita Water Use (GPCD)
10 to 15 Year Baseline GPCD				
Year 1	2000	31,961	7,735	216
Year 2	2001	32,487	8,082	222
Year 3	2002	31,728	7,836	220
Year 4	2003	31,296	7,103	203
Year 5	2004	31,085	7,509	216
Year 6	2005	30,902	6,925	200
Year 7	2006	30,691	7,448	217
Year 8	2007	30,215	8,164	241
Year 9	2008	29,714	7,638	229
Year 10	2009	29,340	6,920	211
<i>Year 11</i>	0	0	0	
<i>Year 12</i>	0	0	0	
<i>Year 13</i>	0	0	0	
<i>Year 14</i>	0	0	0	
<i>Year 15</i>	0	0	0	
10-15 Year Average Baseline GPCD				217
5 Year Baseline GPCD				
Baseline Year <i>Fm SB X7-7 Table 3</i>		Service Area Population <i>Fm SB X7-7 Table 3</i>	Gross Water Use <i>Fm SB X7-7 Table 4</i>	Daily Per Capita Water Use
Year 1	2004	31,085	7,509	216
Year 2	2005	30,902	6,925	200
Year 3	2006	30,691	7,448	217
Year 4	2007	30,215	8,164	241
Year 5	2008	29,714	7,638	229
5 Year Average Baseline GPCD				221
2015 Compliance Year GPCD				
2015		29,236	5,241	160
NOTES:				

SB X7-7 Table 6: Gallons per Capita per Day
Summary From Table SB X7-7 Table 5

10-15 Year Baseline GPCD	217
5 Year Baseline GPCD	221
2015 Compliance Year GPCD	160
NOTES:	

SB X7-7 Table 7: 2020 Target Method*Select Only One*

Target Method		Supporting Documentation
<input checked="" type="checkbox"/>	Method 1	SB X7-7 Table 7A
<input type="checkbox"/>	Method 2	SB X7-7 Tables 7B, 7C, and 7D <i>Contact DWR for these tables</i>
<input type="checkbox"/>	Method 3	SB X7-7 Table 7-E
<input type="checkbox"/>	Method 4	Method 4 Calculator

NOTES:

SB X7-7 Table 7-A: Target Method 1

20% Reduction

10-15 Year Baseline	2020 Target
217	174

NOTES:

SB X7-7 Table 7-F: Confirm Minimum Reduction for 2020 Target

5 Year Baseline GPCD <i>From SB X7-7 Table 5</i>	Maximum 2020 Target*	Calculated 2020 Target <i>Fm Appropriate Target Table</i>	Confirmed 2020 Target
221	210	181	181

* Maximum 2020 Target is 95% of the 5 Year Baseline GPCD

NOTES:

SB X7-7 Table 8: 2015 Interim Target GPCD

Confirmed 2020 Target <i>Fm SB X7-7 Table 7-F</i>	10-15 year Baseline GPCD <i>Fm SB X7-7 Table 5</i>	2015 Interim Target GPCD
181	217	199

NOTES:

SB X7-7 Table 9: 2015 Compliance

Actual 2015 GPCD	2015 Interim Target GPCD	Optional Adjustments (<i>in GPCD</i>)					Adjusted 2015 GPCD	2015 GPCD (<i>Adjusted if applicable</i>)	Did Supplier Achieve Targeted Reduction for 2015?
		Extraordinary Events	Weather Normalization	Economic Adjustment	TOTAL Adjustments				
160	199	<i>From Methodology 8 (Optional)</i>	<i>From Methodology 8 (Optional)</i>	<i>From Methodology 8 (Optional)</i>	0	160.0377365	160.0377365	YES	

NOTES:

Appendix D: 2019 Consumer Confidence Report

South Tahoe Public Utility District CONSUMER CONFIDENCE REPORT 2019



IS MY WATER SAFE? Yes. Last year, as in years past, your tap water met all U.S. Environmental Protection Agency (EPA) and state drinking water health standards. The South Tahoe Public Utility District vigilantly safeguards its water supplies and we are proud to report that our system has not violated a maximum contaminant level or any other water quality standard.

DO I NEED TO TAKE SPECIAL PRECAUTIONS?

Some people may be more vulnerable to contaminants in drinking water than the general population. Immuno-compromised persons such as persons with cancer undergoing chemotherapy, persons who have undergone organ transplants, people with HIV/AIDS or other immune system disorders, some elderly, and infants can be particularly at risk from infections. These people should seek advice about drinking water from their health care providers. EPA/Centers for Disease Control (CDC) guidelines on appropriate means to lessen the risk of infection by *Cryptosporidium* and other microbial contaminants are available from the USEPA's Safe Water Drinking Hotline (1-800-426-4791).

WHERE DOES MY WATER COME FROM? There are 11 active drinking water wells and 4 standby wells which supply more than 14,000 homes and businesses. All our drinking water is pumped from underground aquifers. No water is taken from Lake Tahoe or any other surface water source.

SOURCE WATER ASSESSMENT AND PROTECTION

The District's Groundwater Management Plan (California Water Code Section 10750) was adopted on December 4, 2014 and is on file with the California

Department of Public Health (CDPH). You may view the document by visiting the District's website at www.stpud.us or by requesting a copy by calling Customer Service at 530-544-6474.

The District has an ongoing drinking water source development program that seeks potential drinking water well locations. Due to the volume of the average annual Sierra snowpack and Lake Tahoe itself, our aquifer has a significant recharge capability. The District continues to work diligently to protect and maintain this precious natural resource.

WHY ARE THERE CONTAMINANTS IN MY DRINKING WATER?

Drinking water, including bottled water, may reasonably be expected to contain at least small amounts of some contaminants. The presence of contaminants does not necessarily indicate that water poses a health risk. More information about contaminants and potential health effects can be obtained by calling the Environmental Protection Agency's (EPA) Safe Drinking Water Hotline (1-800-426-4791). The sources of drinking water (both tap water and bottled water) include rivers, lakes, streams, ponds, reservoirs, springs, and wells. As water travels over the surface of the land or through the ground, it dissolves naturally occurring minerals and, in some cases, radioactive material, and can pick up substances resulting from the presence of animals or from human activity. Microbial contaminants, such as viruses and bacteria, may come from sewage treatment plants, septic systems, agricultural livestock operations, and wildlife. Inorganic contaminants, such as salts and metals, can be naturally occurring or result from urban stormwater runoff, industrial, or

domestic wastewater discharges, oil and gas production, mining, or farming. Pesticides and herbicides, may come from a variety of sources such as agriculture, urban stormwater runoff, and residential uses. Organic chemical contaminants, including synthetic and volatile organic chemicals, are by-products of industrial processes and petroleum production, and can also come from gas stations, urban stormwater runoff, agricultural application and septic systems. Radioactive contaminants, can be naturally occurring or be the result of oil and gas production and mining activities. In order to ensure that tap water is safe to drink, the United States Environmental Protection Agency (USEPA) and the California Department of Public Health (DPH) prescribe regulations that limit the amount of certain contaminants in water provided by public water systems. Food and Drug Administration (FDA) regulations establish limits for contaminants in bottled water which must provide the same protection for public health.

HOW CAN I FIND OUT MORE? The information contained in the Consumer Confidence Report may not answer all the questions you may have about the quality of the South Tahoe Public Utility District's drinking water supply. The District welcomes public participation in developing water quality policy. If you would like more detailed information, please call the District Laboratory at 530-544-6474 extension 6231, or check our website at www.stpud.us.

The District is governed by an elected five-member Board of Directors. Board meetings are held on the first and third Thursday of each month at 2 p.m. at the Customer Service Facility located at 1275 Meadow Crest Drive. All meetings are open to the public and the District

encourages our customers to attend, ask questions, and provide feedback.

RESULTS OF RADON MONITORING Radon is a radioactive gas that cannot be seen, tasted or smelled. It is found throughout the U.S. Radon can move up through the ground and into a home through cracks and holes in the foundation. Radon can build up to high levels in all types of homes. Radon can also get into indoor air when released from tap water from showering, washing dishes, and other household activities. Compared to radon entering the home through soil, radon entering the home through tap water will, in most cases, be a small source of radon in indoor air. Radon is a known human carcinogen. Breathing air containing radon can lead to lung cancer. Drinking water containing radon may also cause increased risk of stomach cancer. If you are concerned about radon in your home, test the air in your home. Testing is inexpensive and easy. Fix your home if the level of radon in your air is 4 picocuries per liter of air (pCi/L) or higher. There are simple ways to fix a radon problem that aren't too costly. For additional information, call your state radon program or call EPA's Radon Hotline (800-SOS-RADON).

RESULTS OF VOLUNTARY MONITORING

See data sheets.

REGARDING ARSENIC Arsenic is a naturally occurring substance that is sometimes found at very low levels in drinking water, primarily groundwater. The South Tahoe Public Utility District has an active Arsenic monitoring program, as well as a pilot Arsenic removal system in one of its wells.

WATER QUALITY DATA TABLE The table below lists all of the drinking water contaminants which we detected which are applicable for the calendar year of this report. The presence of contaminants in the water does not necessarily indicate that the water poses a health risk. Unless otherwise noted, the data

presented in this table is from testing done in the calendar year of the report. The EPA or the State requires us to monitor for certain contaminants less than once per year because the concentrations of these contaminants do not change frequently.

ADDITIONAL CONTAMINANTS In an effort to insure the safest water possible, the State has required us to monitor some contaminants not required by Federal regulations. Of those contaminants only the ones listed on the last page under "Additional Contaminants" were found in your water.

IMPORTANT DRINKING WATER DEFINITIONS

MCL Maximum Contaminant Level: The highest level of a contaminant that is allowed in drinking water. MCLs are set as close to the MCLGs as feasible using the best available treatment technology.

MCLG Maximum Contaminant Level Goal: The level of a contaminant in drinking water below which there is no known or expected risk to health. MCLGs allow for a margin of safety.

MPL Maximum Permissible Level: As determined by the state of California

MRDL Maximum Residual Disinfectant Level: The highest level of a disinfectant allowed in drinking water. There is convincing evidence that addition of a disinfectant is necessary for control of microbial contaminants.

MRDLG Maximum Residual Disinfection Level Goal: The level of a drinking water disinfectant below which there is no known or expected risk to health. MRDLGs do not reflect the benefits of the use of disinfectants to control microbial contaminants.

PDWS Primary Drinking Water Standards: MCLs for contaminants that affect health along with their monitoring and reporting requirements, and water treatment requirements.

PHG Primary Health Goal: The level of contaminant in drinking water below which there is no known or expected risk to health. PHGs are set by the California Environmental Protection Agency.

	MCLG/PHG OR MRDLG	MCL OR MRDL	AVERAGE	MIN	MAX	SAMPLE DATE	VIOLATION	TYPICAL SOURCE
MICROBIOLOGY								
A total of 1,042 Coliform and E.coli bacteria samples taken throughout our distribution system, as part of our routine monitoring, in 2019.								
Total Coliforms (% Positive each month)	0	5	0	0	0	2019	No	Naturally present in environment
E.coli (% Positive)	0	0	0	0	0	2019	No	Human and animal fecal matter
Heterotrophic Plate Count or HPC (CFU)	200	NA	ND	ND	31	2019	No	Naturally present in environment
Temperature - System (°F)	NA		50	37	81	2019	No	
Turbidity (NTU) The Turbidity limit for the highest single measurement.	1	5	0.16	0.04	0.44	2019	No	Soil runoff

INORGANIC CONTAMINANTS

Arsenic (ppb)	0.004	10	3.1	ND	8.0	2019	No	Erosion of natural deposits; Runoff from orchards; Runoff from glass and electronics production wastes
Fluoride (ppm)	1	2	ND	0.08	0.16	2019	No	Erosion of natural deposits; Discharge from fertilizer and aluminum factories
Nitrate [measured as Nitrogen] (ppm)	10	10	0.20	0.03	0.61	2019	No	Runoff from fertilizer use; Leaching from septic tanks, sewage; Erosion of natural deposits
Sodium (ppm)	NA	NA	12.0	5.0	29.0	2019	No	Erosion of natural deposits; Leaching

RADIONUCLIDES

Gross Alpha (pCi/L), minus Uranium		15	1.7	ND	2.3	2019	No	Erosion of natural deposits
Uranium (pCi/L)	0.43	20	4.6	ND	15.1	2019	No	Erosion of natural deposits
Radium-226 (pCi/L)	0.05		ND	ND	0.9	2019	No	Erosion of natural deposits
Radium-228 (pCi/L)	0.019		ND	ND	ND	2019	No	Erosion of natural deposits
Radium-226 + Radium-228 (pCi/L)		5	ND	ND	0.9	2019	No	Erosion of natural deposits
Radon (pCi/L)	NA	4,000	1,200	280	3,300	2019	No	Erosion of natural deposits

VOLATILE ORGANIC CHEMICALS

MTBE [Methyl Tert Butyl Ether] (ppb)	5	13	ND	ND	ND	2019	No	Leaking underground fuel storage tanks
Total Trihalomethanes (ppb)	NA	80	2.7	ND	10.0	2019	No	By-product of drinking water disinfection
HaloAcetic Acids (ppb)	NA	60	0.3	ND	1.9	2019	No	By-product of drinking water disinfection
1,2,3-TCP (ppb)	0.0007	0.005	ND	ND	ND	2019	No	By-product of drinking water disinfection

INORGANIC CONTAMINANTS	MCLG/PHG	AL	90TH PERCENTILE	SAMPLE DATE	# SAMPLES EXCEEDING AL	EXCEEDS AL	TYPICAL SOURCE
Lead - action level at consumer taps (ppb)	ND	15	1.9	2017	1	No	Corosion of household plumbing systems; Erosion of natural deposits
Copper - action level at consumer taps (ppb)	ND	1,300	144	2017	0	No	Internal corosion of household plumbing systems; erosion of natural deposits; leaching from wood preservatives

ADDITIONAL CONTAMINANTS	UNITS	STATE MCL	AVERAGE	MAXIMUM	VIOLATION	SAMPLE DATE	COMMON SOURCE
Alkalinity - Total	ppm	NA	52.0	67.1	No	2019	Erosion of natural deposits
Aluminum	ppb	1,000	ND	ND	No	2019	Erosion of natural deposits
Asbestos (fibers exceeding 0.01mm)	MFL	7	ND	ND	No	2015	Erosion of nat deps/industrial discharge
Barium	ppb	1,000	12	45	No	2019	Erosion of natural deposits
Bromide	ppm	NA	0.01	0.02	No	2019	Erosion of natural deposits
Calcium	ppm	NA	13.1	20.2	No	2019	Erosion of natural deposits
Carbon Dioxide, Free	ppm	NA	10.9	37.9	No	2019	Naturally occuring
Chloride	ppm	500	10.6	66.7	No	2019	Erosion of natural deposits
Chlorine, Free	ppm	4	0.56	1.1	No	2019	By-product of disinfection process
Chromium	ppb	50	ND	1.1	No	2019	By-product of disinfection process
Chromium 6	ppb	NA	0.42	1.3	No	2015	Erosion of nat deps/industrial discharge
Color	Units	15	ND	ND	No	2019	Naturally occurring organic materials
Copper	ppb	1,000	2.3	3.7	No	2019	Old plumbing/erosian of natural deposits
Dissolved Solids, Total	ppm	1,000	97	214	No	2019	Erosion of natural deposits
Electrical Conductance	µS/cm	1,600	139	326	No	2019	Erosion of natural deposits
Hardness	ppm	NA	45	82	No	2019	Erosion of natural deposits
Iron	ppb	300	ND	27	No	2019	Erosion of natural deposits
Lead	ppb	15	ND	ND	No	2019	Old plumbing/erosian of natural deposits
Magnesium	ppm	NA	2.5	6.5	No	2019	Erosion of natural deposits
Manganese	ppb	50	ND	8.9	No	2019	Erosion of natural deposits
Mercury	ppb	2	ND	ND	No	2019	Erosion of natural deposits
Nickel	ppb	100	ND	ND	No	2019	Erosion of natural deposits
Odor-Threshold	Units	3	ND	ND	No	2019	Naturally occurring organic materials
Perchlorate	ppb	6	ND	ND	No	2019	Industrial discharge
ortho-Phosphate, as P	ppm	NA	0.04	0.15	No	2019	Erosion of natural deposits
Phosphorus - Total	ppm	NA	0.04	0.15	No	2019	Erosion of natural deposits
pH	Units	NA	7.6	6.4 and 9.2	No	2019	Erosion of natural deposits
Potassium	ppm	NA	1.5	4.6	No	2019	Erosion of natural deposits
Selenium	ppb	50	ND	ND	No	2019	Erosion of natural deposits
Silver	ppb	100	ND	ND	No	2019	Erosion of natural deposits
Sulfate	ppm	500	3.2	5.4	No	2019	Erosion of natural deposits
Thallium	ppb	2	ND	ND	No	2019	Erosion of natural deposits
Vanadium	ppb	NA	4.0	6.7	No	2019	Erosion of natural deposits
Zinc	ppb	5,000	ND	ND	No	2019	Runoff/leaching from natural deposits

UNIT DESCRIPTIONS

µg/L: Micrograms per Liter, or parts per billion

mg/L: Milligrams per liter or parts per million

ppm: Parts per million, or milligrams per Liter (mg/L)

ppb: Parts per billion, or micrograms per Liter (µg/L)

pCi/L: Picocuries per Liter (a measure of radioactivity)

MFL: Million Fibers per Liter, used to measure asbestos concentration

NTU: Nephelometric Turbidity Units. Turbidity is a measure of the cloudiness of the water.

CFU/ml: Colony Forming Units per milliliter

NA: Not Applicable

ND: Not Detected

SOCs (Synthetic Organic Compounds) are man-made carbon based chemicals. They are used as pesticides, defoliant, fuel additives and as ingredients in the manufacture of many other compounds. Some of the more well known ones include PCBs, Atrazine, Florene, Dioxins and Caffeine. SOC's health effects include damage to the nervous system and cancer risks. The District last tested for these chemicals in 2018.

SOC RESULTS	AVERAGE	MINIMUM	MAXIMUM	SAMPLE DATE
EPA 505 - Organochlorine Pesticides/PCBs	ND	ND	ND	11/2018
EPA 515.4 - Chlorophenoxy Herbicides	ND	ND	ND	11/2018
EPA 551.1 - EDB/DBCP/HAN	ND	ND	ND	11/2018
EPA 525.2 - Semivolatiles	ND	ND	1.3 ppb*	11/2018
EPA 548.1 - Endothall	ND	ND	ND	11/2018
EPA 1613B - 2,3,7,8-TCDD_Dioxin	ND	ND	ND	11/2018
EPA 547 - Glyphosate	ND	ND	ND	11/2018
EPA 531.2 - Aldicarbs	ND	ND	ND	11/2018
EPA 549.2 - Diquat and Paraquat	ND	ND	ND	11/2018
EPA 524M-TCP - 1,2,3-Trichloropropane	ND	ND	ND	11/2018

*1.3 parts per billion Di(2-Ethylhexyl)phthalate) MCL = 4 parts per billion

ADDITIONAL MONITORING As part of an on-going evaluation program called **UCMR** (Unregulated Contaminant Monitoring Rule), the EPA requires us to monitor a number of additional contaminants/chemicals. Information collected through this monitoring provides information for future decisions on drinking water standards.

UCMR-3 STPUD was required to monitor our source water for 28 chemical contaminants. The first round was completed in August 2014 and the second round in February 2015. In the absence of identifiable industrial sources, these contaminants are naturally occurring in our watershed. Chlorate is an exception and is a degradation product of the disinfectant used by the District for drinking water.

UCMR-3 RESULTS	UNITS	AVERAGE	MINIMUM	MAXIMUM	SAMPLE DATE
Chlorate	ppm	0.083	ND	0.440	2/2015
Chromium, Total	ppb	0.52	ND	1.30	2/2015
Chromium-6	ppb	0.43	0.09	1.10	2/2015
Cobalt	ppb	ND	ND	ND	2/2015
Molybdenum	ppb	13.8	ND	65	2/2015
Strontium	ppb	124	15	330	2/2015
Vanadium	ppb	3.6	ND	13	2/2015

UCMR-4 In this round of UCMR, STPUD was required to monitor for 18 chemical contaminants, as well as the Total Organic Carbon (TOC) content in our Source Water. The first round was completed in January 2019 and the second round in July 2019. These contaminants included metals like Germanium, volatile Pesticides and their byproducts such as alpha-HCH, volatile Alcohols like 1-Butanol and Tar/Oil byproducts like Quinoline.

We also tested our Distribution System for 9 Disinfection byproducts collectively known as Haloacetic Acids (HAA9).

UCMR-4 RESULTS	UNITS	AVERAGE	MINIMUM	MAXIMUM	SAMPLE DATE
Total Haloacetic Acids HAA9	ppb	0.5	ND	4.2	1/2019, 7/2019
TOC	ppm	0.3	ND	0.5	1/2019, 7/2019
Germanium	ppb	ND	ND	ND	1/2019, 7/2019
alpha-HCH	ppb	ND	ND	ND	1/2019, 7/2019
Quinoline	ppb	ND	ND	ND	1/2019, 7/2019
1-Butanol	ppb	ND	ND	ND	1/2019, 7/2019

Appendix E: Energy Intensity Tables

Urban Water Supplier:

South Tahoe Public Utility District

Water Delivery Product (If delivering more than one type of product use Table O-1C)

Retail Potable Deliveries

Table O-1B: Recommended Energy Reporting - Total Utility Approach

Enter Start Date for Reporting Period	1/1/2020	Urban Water Supplier Operational Control		
End Date	12/30/2020			
<input type="checkbox"/> Is upstream embedded in the values reported?		Sum of All Water Management Processes	Non-Consequential Hydropower	
<i>Water Volume Units Used</i>	AF		Total Utility	Hydropower
	<i>Volume of Water Entering Process (volume unit)</i>	5,778	0	5777.903545
	<i>Energy Consumed (kWh)</i>	4762776	0	4762776
	<i>Energy Intensity (kWh/volume)</i>	0.0	0.0	824.3

Quantity of Self-Generated Renewable Energy

kWh

Data Quality (Estimate, Metered Data, Combination of Estimates and Metered Data)

Metered Data

Data Quality Narrative:

Narrative:

Appendix F: DWR Standardized Tables

TO BE PROVIDED IN FINAL

Appendix G: Water Shortage Contingency Plan

Appendix H: STPUD Administrative Code

3.3.10 Existing Backflow Prevention Assemblies. All existing backflow prevention assemblies which do not meet the requirements of this Section 3.3, but were approved when installed and which have been properly maintained shall, except for the inspection and testing requirements under Section 3.3.9, be excluded from the requirements of the Ordinances, rules, and regulations of the District so long as the District has determined that they will satisfactorily protect the District's system. Whenever an existing backflow prevention assembly is moved from its location, requires more than minimum maintenance, or when the District finds that its maintenance constitutes a health hazard, the unit shall be replaced by a backflow prevention assembly meeting the requirements of the Ordinances, rules, and regulations of the District.

Section 3.4 Water Shortage and Drought Response Standards.

(Ref. Ordinance No. 487-04 effective 4-01-04)

3.4.1 Purpose. The specific provisions of this Section are necessary and proper to conserve water resources and minimize cost to the District and expense to its customers.

WATER CONSERVATION STAGES

3.4.2 Water Waste Prohibited. No water user shall waste water or make, cause, or permit the use of water for any purpose contrary to any provision of this Section, or in quantities in excess of the use permitted by the conservation stage in effect pursuant to this Section. Soils should be amended appropriately for the soil conditions, type of vegetation, micro-climates and conditions. With proper lawn and garden maintenance and a properly designed irrigation system, watering three times a week is sufficient. Landscape should be installed in a manner that will reduce the amount of water needed for irrigation. Water for landscape should be applied in a manner that optimizes the use of fertilizer by the landscape and should prevent fertilizer from leaching into the ground water. The conservation stage shall be determined by the General Manager with regard to supply and demand of available water supplies, except that the Board shall determine any conservation stage more restrictive than Stage 2.

3.4.3 Stage 1 - Normal Conditions. During a Stage 1 - normal conditions, Water Users shall not waste water and shall abide by the following:

- a) Water Users shall not allow water to flow over the ground surface or from sprinklers onto impervious surfaces or adjacent property.
- b) Water Users shall repair all leaks in plumbing and irrigation systems.
- c) Hoses shall not be used for washing motor vehicles without an automatic shut-off nozzle attached to the hose. Continuous discharge from hose nozzle is prohibited. Notwithstanding any provision in this Section to the contrary, motor vehicles washing may be done at any time, subject to any

other applicable laws, on the property of a Commercial Car Wash or service station. Further, such washing is exempted from these regulations where the health, safety and welfare of the public is dependent upon frequent vehicle cleanings, such as garbage trucks and vehicles which transport food.

- d) All Water Users are encouraged to report to the District all signs or indications of water leaks or water waste.
- e) The irrigation of non-landscaped, natural vegetation or undeveloped property is expressly prohibited.
- f) Designated irrigation days are established: Properties with street addresses ending with an even number shall irrigate on Monday, Wednesday and Friday; and properties with street addresses ending with an odd number shall irrigate on Sunday, Tuesday and Thursday. There will be no irrigation permitted on Saturday. An individual irrigation zone in a property's irrigation system shall not irrigate more than one hour per day, unless the zone is irrigated exclusively by drip or other low-flow irrigation systems.
- g) Irrigation exclusively utilizing drip or other low-flow systems shall be exempt from designated irrigation days.
- h) An exemption shall exist under Stage 1 for new lawns planted to comply with the Tahoe Regional Planning Agency's Best Management Practices (BMPs) or, for any other reason, as follows:

1) Newly planted sod will be exempt for twenty-one (21) days from the date it was installed.

2) Seeded lawns, whether by hydroseed or other means, will be exempt for thirty (30) days from the date of application.

3) Bedding plants, including annuals and perennials, will be exempt for fifteen (15) days from the date of planting.

The property owner, or his/her designee, must notify the District verbally or in writing to obtain an exemption for the establishment of new vegetation as outlined above.

- i) The General Manager may permit extended periods of irrigation of public facilities if:
 - 1) a hand-held hose with an automatic shut-off is used, or
 - 2) a hand-held, faucet filled bucket of five (5) gallons or less is used, or
 - 3) a drip or low-flow irrigation system is used, or
 - 4) daytime use of public facilities prevents irrigation of all zones on the designated days listed above.

- j) Water shall not be used to wash sidewalks, driveways, parking areas, tennis courts, decks, patios or other improved areas, except in conjunction with driveway repair and sealing, or to alleviate immediate fire or sanitation hazards.
- k) All commercial establishments where food or beverages are provided-should encourage the serving of water to their customers only when specifically requested by the customer.

3.4.4 Stage 2 – Significant Water Shortage. During a Stage 2 – significant water shortage, Stage 1 applies, and also the following shall apply:

- a) The filling with water of outdoor swimming pools, which are not covered during periods of non-use, is prohibited.
- b) The operation of any ornamental fountain or similar decorative water structure is prohibited unless a recycling system is used and a notice to the public of such recycling system is prominently displayed.
- c) Outdoor irrigation of all vegetation including lawns and landscaping is limited to twice per week, one hour per zone - even number addresses shall irrigate on Monday and Thursday and odd number addresses shall irrigate on Tuesday and Friday - except more frequent irrigation of public facilities may be permitted pursuant to Section 3.4.3(h) and 3.4.12.
- d) No water shall be used for irrigating landscaping for new construction.

3.4.5 Stage 3 - Water Emergency. During a Stage 3 - Water shortage emergency, Stages 1 and 2 restrictions apply and the Board may designate specific areas for further restrictions as follows:

- a) The use of water for other than domestic and commercial use is prohibited except irrigation of public facilities may be permitted pursuant to Section 3.4.16.
- b) The use of water for air conditioning purposes, where an alternate source of fresh air is available, is prohibited.

ENFORCEMENT

3.4.6 Enforcement. The General Manager, and other District authorized representatives have the duty and are authorized to enforce all provisions of this Section 3.4.

3.4.7 First Violation. For a first violation within one calendar year, the District shall issue a written warning to the Water User.

3.4.8 Second Violation. For a second violation within one calendar year, a fine of \$100 for residential customers shall be added to the Water User's bill at the property where the violation occurred; for the second violation within one year, a fine of \$500 for commercial customers shall be added to the Water User's bill at the property where the violation occurred.

3.4.9 Third Violation. For a third violation within one calendar year, a fine of \$250 for residential customers shall be added to the Water User's bill at the property where the violation occurred; for the third violation within one year, a fine of \$750 for commercial customers shall be added to the Water User's bill at the property where the violation occurred. In addition to the fine, the Board or the General Manager may require installation of a flow-restricting device on the Water User's service connection.

3.4.10 Fourth Violation. For the fourth and any additional violations within one calendar year, a fine of \$500 for residential customers shall be added to the Water User's bill at the property where the violation occurred; for a fourth and any additional violations within one year, a fine of \$1,000 for commercial customers shall be added to the Water User's bill at the property where the violation occurred. The District may also discontinue the Water User's water service at the property where the violation occurred in accordance with District procedures. Re-connection shall be permitted only when there is reasonable protection against future violations, such as a flow-restricting device on the customer's service connection, as determined at the District's discretion.

3.4.11 District Enforcement Costs. District shall be reimbursed for its costs and expenses in enforcing the provisions of this Section 3.4, including such costs as District incurs for District staff to investigate and monitor the Water User's compliance with the terms of this Section. Charges for installation of flow-restricting devices or for discontinuing or restoring water service, as the District incurs those charges, shall be added to the Water User's bill at the property where the enforcement costs were incurred.

ADMINISTRATION

3.4.14 General. The provisions of this Section 3.4 shall be administered and enforced by the District through the General Manager, who may delegate such enforcement to one or more employees or contractors of the District.

3.4.15 Utility Accounts. Accounts shall not be established for new customers, including the transfer of accounts upon change of ownership, until the customer complies with the provisions of this Section 3.4. In pursuing the objectives of this Section 3.4 the General Manager shall seek the cooperation of other utility purveyors within the District's service area. The District will request that other utility purveyors not permit the establishment of new accounts until the customer complies with the provisions of this Section 3.4.

3.4.16 Discretionary Exemptions. The Board may, in its discretion, exempt Water Users and individual facilities of Water Users from the provisions of this Section 3.4, or impose reasonable conditions in lieu of compliance with this Section 3.4, if the Board finds that any of the following conditions exist:

- a) **Hardship.** The requirements of this Section would cause an unnecessary and undue hardship upon the Water User, the Water User facility or the public.
- b) **Health and Safety.** Strict compliance with the requirements of this Section 3.4 would create an emergency condition, as determined by the Board or other governmental entity with appropriate jurisdiction, affecting the health, protection or safety of the Water User or the public.
- c) **No Impact on Water Use.** The granting of the exemption or imposition of reasonable conditions in lieu of compliance with this Section 3.4 would not increase the quantity of water consumed by the Water User or otherwise adversely affect service to other Water Users. In granting any such relief, the departure from the requirements of this Section 3.4 shall be limited to the minimum necessary to address the circumstances upon which such departure is required by a Water User.

3.4.17 Appeals. Any customer or applicant for a variance permit may appeal any decision under this Section 3.4 in accordance with Section 6.7.

REQUIREMENTS FOR NEW CONSTRUCTION

3.4.18 Mandatory Fixtures. Low water use plumbing fixtures are mandatory for all new construction and any remodeling which involves the installation of new or additional plumbing fixtures. The low water use plumbing fixtures installed pursuant to this Section 3.4.18 shall not be replaced with fixtures which allow greater water use.

Section 3.5 Declining Groundwater Levels. (Ref. Ord. 500-07)

3.5.1 Policy and Purpose. The purpose of this Section 3.5 is to regulate, manage, conserve and protect the District's ongoing water supply in such a manner that the District's water supply, including but not limited to the groundwater resources within the

Appendix I: 60-day and Public Hearing Notifications

UNDER DEVELOPMENT

Appendix J: Board of Directors Acceptance and Adoption of UWMP

UNDER DEVELOPMENT

Appendix K: Transmittal of Adopted UWMP and WSCP

UNDER DEVELOPMENT

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