TRUCKEE WATER SYSTEM 2025 URBAN WATER MANAGEMENT PLAN

Adopted June 3, 2026

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INTRODUCTION

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INTRODUCTION

The California Water Code requires all urban water suppliers within the state to prepare urban water management plans and update them every five years. These plans satisfy the requirements of the Urban Water Management Planning Act of 1983 (Act) including amendments that have been made to the Act. Sections 10610 through 10656 of the California Water Code detail the information that must be included in these plans, as well as who must file them. Appendix A contains the text of the Act.

Amendments to the Act now require that total projected water use be compared to water supply sources over the next 20 years in 5-year increments. The Act also requires the information be shown for a single dry water year and multiple dry water years. Additionally, the Act requires that all plans include a water recycling analysis that includes a description of the wastewater collection and treatment system within the agency's service area along with current and potential recycled water uses.

According to the Act, "The conservation and efficient use of urban water supplies are of statewide concern; however, the planning for that use and the implementation of those plans can best be accomplished at the local level." The Act requires that each 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 of water annually, shall prepare, update and adopt its urban water management plan (UWMP) at least once every five years.

In 2009, the Water Conservation Act of 2009 (as known as SB X7-7) was adopted. This legislation created additional requirements regarding urban water management plans. These requirements are documented in Section 10608 of the California Water Code. Appendix B contains the text of SB X7-7.

SUBJECT OF THE PLAN

The Truckee Donner Public Utility District (District) operates two water systems in the Truckee area: the Hirschdale System (PWS CA2910010) and the Truckee System (PWS CA2910003). The Truckee System serves 13,763 accounts. The Hirschdale System serves 25 accounts. The two systems are physically separate and not interconnected. Based upon guidance from the California Department of Water Resources, an UWMP is not required for the Hirschdale system. Therefore, this document addresses the Truckee System only.

UWMP OVERVIEW

The Truckee Water System provides service to 13,763 customer accounts within the Town of Truckee and surrounding areas. The District uses the Martis Valley Groundwater Basin (MVGB) as its sole source of water supply. At buildout conditions, water usage from the MVGB by the District and other users will be less than the sustainable yield of the MVGB. There is sufficient storage volume available in the MVGB to manage a five-year drought and other water supplies are not necessary.

The District has revised its Water Shortage Contingency Plan to comply with State of California requirements. The most likely cause of a water shortage involves a natural disaster such as a flood, earthquake or fire that impacts the water system facilities needed to move water from the groundwater wells to the points of service. The District has implemented a number of water demand management measures. The District intends to continue these efforts and will work to identify and implement additional programs if they are cost effective.

PUBLIC PARTICIPATION

In accordance with the Act, the District is required to make the plan available for public review and to hold a public hearing prior to adoption of the UWMP.

This public hearing was held at the District's regularly scheduled Board Meeting on June 3, 2026. Notices of the public hearing were published in the Sierra Sun on May 22 and May 29, 2026. Letters were mailed directly to the following agencies advising them of the public hearing:

- Town of Truckee
- Nevada County
- Placer County
- Placer County Water Agency (PCWA)
- Northstar Community Services District (NCSD)
- Truckee Sanitation District
- Tahoe-Truckee Sanitation Agency

Prior to the meeting, draft copies of the UWMP were made available for public review on the District's website at www.tdpud.org.

INTERAGENCY COORDINATION

In accordance with the Act, the District is required to coordinate preparation of its UWMP with other local agencies. In the past, the District has worked cooperatively with NCSD and PCWA to study the available water supplies in the Truckee and Martis Valley area. In October 2015, NCSD took ownership of the PCWA Zone 4 water system in the Martis Valley and PCWA no longer has a local presence as a retail water purveyor. However, PCWA continues to be actively involved in management of the Martis Valley Groundwater Basin.

Two major studies that were jointly funded by all three agencies have been completed:

- ***Ground Water Availability In The Martis Valley Ground Water Basin, Nevada And Placer Counties, California,*** prepared by Nimbus Engineers, Reno, Nevada, March 2001.

- ***Martis Valley Groundwater Management Plan,*** prepared by Brown and Caldwell and Balance Hydrologics, Reno, Nevada, April 2013.

Preparation of the ***Martis Valley Groundwater Management Plan*** (GMP) document also included development of a finite element model for the MVGB by the Desert Research Institute. Development of this model was funded by the three local agencies and the US Bureau of Reclamation. This effort is documented in:

- ***Integrated Surface and Groundwater Modeling of Martis Valley, California, for Assessment of Potential Climate Change Impacts on Basin-Scale Water Resources,*** prepared by Desert Research Institute, Reno, Nevada, April 2015.

In 2014 California adopted the Sustainable Groundwater Management Act (SGMA). The MVGB was subject to this new regulation as a medium priority basin. In response, implementation of the 2013 GMP was placed on hold. The District, NCSD, PCWA, Town of Truckee, Nevada County and Placer County (Local SGMA Agencies) hired GEI Consultants to prepare an Alternative Submittal to California Department of Water Resources (DWR) as allowed under SGMA.

The Alternative Submittal and supporting documentation contain information on SGMA, the requirements for an alternative submittal, and a report certifying that the MVGB has operated within the sustainable yield for at least 25 years. The MVGB Alternative Submittal was submitted to DWR in December, 2016. This effort is documented in:

- ***Martis Valley Groundwater Basin Sustainable Groundwater Management Act Alternative Submittal***. Prepared for the Truckee Donner Public Utility District, Placer County Water Agency, Northstar Community Services District, Town of Truckee, Nevada County and Placer County by GEI Consultants, Rancho Cordova, California. December 2016.

In early 2019, while the MVGB Alternative Submittal was under review DWR, DWR separately conducted analyses to reconsider basin prioritization which is a criteria for being required to comply with the provisions of SGMA. The MVGB was originally classified as a 'Medium' priority. The outcome of the DWR process was that the MVGB was re-prioritized to 'Very Low' and was no longer required to comply with SGMA.

The Local SGMA Agencies agreed to formally withdraw the Alternative Submittal from DWR consideration and revert to the 2013 GMP framework, which had been placed on hold due to the passage of SGMA. Implementation of the 2013 GMP would begin in 2019, including the requirements for annual reports and a comprehensive update every five years. The Local Water Agencies engaged GEI Consultants to provide annual reports for the water years of 2018 to 2022.

In 2024, the Local Water Agencies began a comprehensive update of the GMP which was completed in 2025, along with the water year 2023 annual report. This process included public hearings on the intent to update a GMP along with public hearings on the intent to adopt an updated GMP. This effort is documented in:

- ***Martis Valley Groundwater Plan 5-Year Update, Summary Report for the Groundwater Management Plan Update Martis Valley Groundwater Basin, and the Martis Valley Groundwater Basin Annual Report Water Year 2025***. Prepared for the Truckee Donner Public Utility District, Placer County Water Agency, and Northstar Community Services District by GEI Consultants, Rancho Cordova, California. July 11, 2025.

A copy of the GMP is included in Appendix C. The District anticipates that it will continue to work cooperatively with NCSD and PCWA on issues related to the Martis Valley Groundwater Basin in the future.

ENVIRONMENTAL REVIEW

The preparation of an UWMP is specifically exempt from the California Environmental Quality Act (CEQA). Therefore, a CEQA review has not been performed in conjunction with the preparation of this document. However, the exemption only applies to preparation of the UWMP and the District will have to conduct environmental reviews in order to physically construct any of the projects described in this UWMP.

PLAN ADOPTION

The District's Board of Directors adopted the 2025 Urban Water Management Plan on June 3, 2026. A copy of the adopting resolution is included in Appendix E.

After adoption, the UWMP was submitted to the California Department of Water Resources and the California State Library. The UWMP was also posted on the District's website. The local public agencies were also informed that the UWMP was adopted and is available on the District's website.

FORMAT OF THE PLAN

The State of California has developed a number of standard tables to be included in an UWMP. In a number of cases, these standard tables include or discuss data that is not relevant to the District. One example is water used for "saline water intrusion barriers." These unmodified standard tables are included in order to comply with State reporting and filing requirements.

SECTION 2

SERVICE AREA

SECTION 2
SERVICE AREA

The Truckee Donner Public Utility District (District) provides water service to portions of the town of Truckee, California, along with adjacent unincorporated areas of Nevada and Placer Counties. The District operates two water systems in the Truckee area: the Hirschdale System (PWS CA2910010) and the Truckee System (PWS CA2910003). The general location of the town of Truckee is given in **Figure 2-1** and the boundaries of the District's water system service areas are shown in **Figure 2-2**.

DISTRICT HISTORY AND BACKGROUND

Public water service in the Truckee area began in 1880, when the Schaeffer Lumber Company developed the Tonini Springs to serve what is now downtown Truckee. In 1883, the McGlashen infiltration gallery was constructed, along with a transmission system to convey water to the downtown area. In 1885, the adjacent McGlashen Springs was developed.

In 1927, the Truckee Donner Public Utility District was formed to provide electrical service to the Truckee area. In 1935, the District began providing water service with the purchase of the McGlashen water system. In 1943, the Southside Spring was acquired by the District and in 1953, the Tonini Springs water system was obtained by the District.

Originally, the District's water system provided service to only the downtown area. The system was expanded to serve the Gateway and Meadow Park areas in the late 1940s. Significant expansion of the District's service area occurred in the 1960s as new residential subdivisions were constructed in the area.

Service was extended to the Olympic Heights area in the early 1960s, and the Sierra Meadows area in the mid-1960s. The Tahoe Donner, Prosser Lakeview and Ponderosa Palisades areas were developed in the late 1960s, and the Armstrong area in the late 1970s.

Prior to 2001, there were two other water purveyors in the Truckee area. In the Summer of 2001, the District took possession of the Donner Lake Water System. In February of 2002, the District took possession of the Glenshire Mutual Water Company's system.

Significant development occurred during the 2000s. New residential developments included Gray's Crossing, Old Greenwood, Spring Creek and Winter Creek. Non-residential development included the Alder Creek Middle School, Pioneer Commerce Center and the Sierra College campus. A large number of infill homes were also constructed on vacant lots in the older subdivisions.

From 2008 to about 2017, there was minimal new development within the service area with growth mainly involving infill construction of new homes within previously created subdivisions. Within the past few years, a number of new multi-phase projects have started. These include the Coldstream (formerly known as PC-1), Joerger Ranch (formerly known as PC-3) and the Truckee Railyard.

TRUCKEE DONNER
Public Utility District

Figure 2-1
Location Map

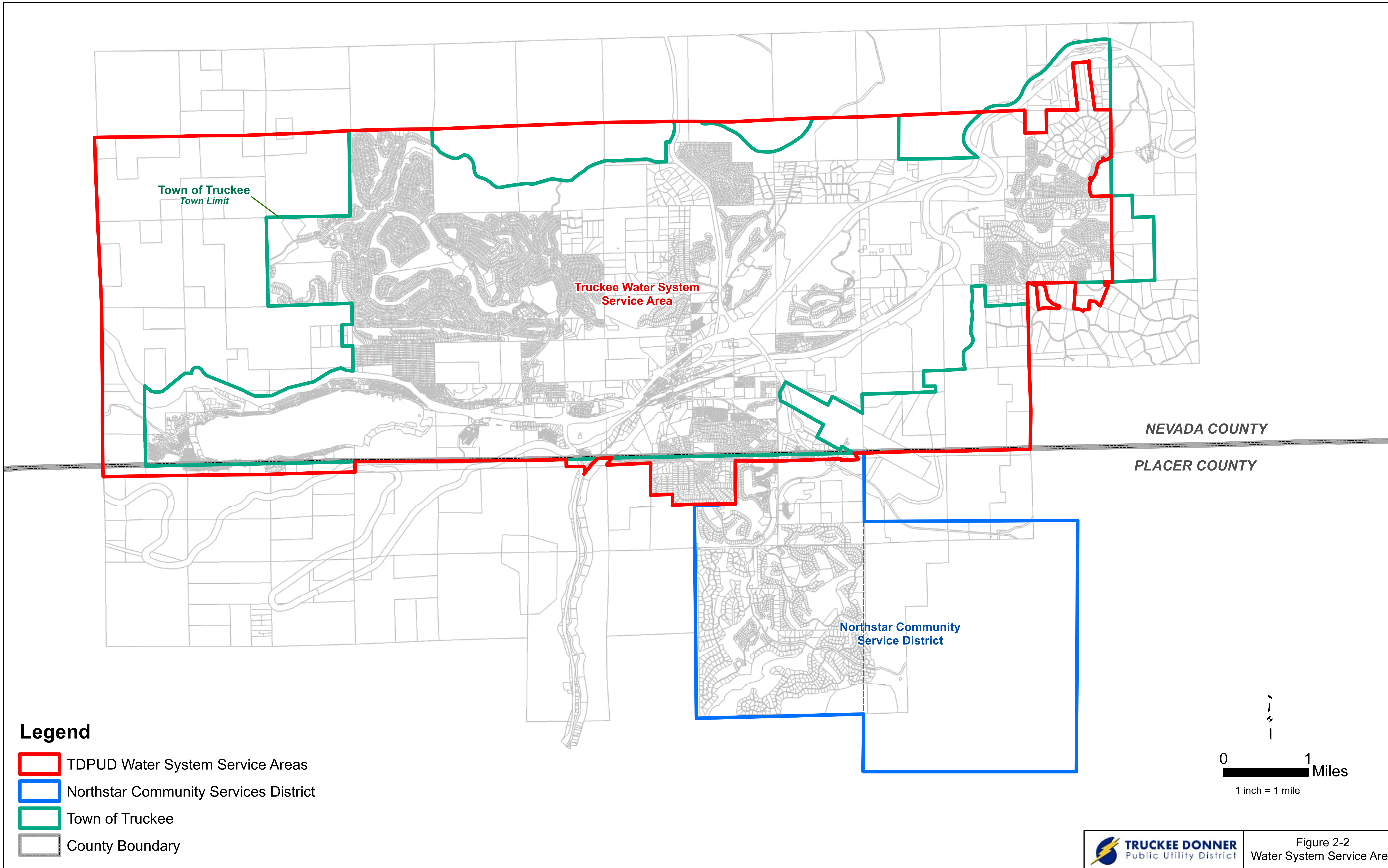


Figure 2-2
Water System Service Area

SERVICE AREA

The great majority of the service area consists of detached single-family homes, which make up about 94 percent of the customer accounts. There is additional multi-family development ranging from duplexes to apartment buildings with up to 24 units. Commercial development is concentrated in the downtown Truckee and Gateway areas and is mainly retail stores and small office buildings. There are two relatively large industrial facilities in the area (Teichert Materials Martis Valley aggregate plant & TNT Concrete batch plant) that are served by private wells. Institutional development entails primary and secondary schools along with governmental offices, parks and recreation facilities and public utilities.

CLIMATE

The District's service area is located in the eastern Sierra Nevada mountains at the east end of Donner Pass. Water system service elevations range from 5700 to over 7300 feet above mean sea level. The area receives substantial amounts of precipitation during the winter as both rain and snow. Average high temperatures range from the low 80s in Summer to the low 40s in Winter. Average low temperatures range from the low 40s in Summer to the mid-teens in Winter.

CURRENT AND PROJECTED POPULATION

The Town of Truckee and surrounding areas have been experiencing slow to moderate population growth over the past 50 years. The permanent population within the town has increased from 7,631 in 1985 to a current level of 16,928. **Table 2-1** shows this historic population data. **Figure 2-3** shows this data graphically.

The economy of Truckee and the surrounding area relies upon tourism as the main industry. There are a significant number of residential units used as vacation homes that are not occupied on a full-time basis with estimates ranging as high as 75 to 80 percent for certain portions of the service area. The Town of Truckee's current ***General Plan*** was adopted in 2023. The ***General Plan*** estimated that 50 percent of all housing units are occupied full-time on a town-wide basis. The California Department of Finance (CDOF) cited a 49 percent occupancy rate in May of 2025, with an average of 2.44 persons per household for the owner-occupied properties.

Given the tourism-based economy and the large number of vacation homes, the actual population of the District's water service area on any given day is likely 2-3 times the official reported California Department of Finance population. The time of year, day of the week and weather conditions significantly impact the number of people in the Truckee area, with the highest local population occurring in the December holiday period around Christmas and New Year's Day and in the early part of July around Independence Day. Other high occupancy periods occur on weekends throughout the winter ski season and throughout the Summer when schools are not in session. The lowest occupancy periods occur during the "shoulder seasons" of April/May and October/November.

Table 2-1. Historic Population Data

Year	Truckee Area Population	Data Source
1985	7,631	1995 Water System Master Plan
1986	7,800	1995 Water System Master Plan
1987	7,950	1995 Water System Master Plan
1988	8,240	1995 Water System Master Plan
1989	8,471	1995 Water System Master Plan
1990	8,912	Town of Truckee General Plan, 1996
1991	9,482	1995 Water System Master Plan
1992	9,975	1995 Water System Master Plan
1993	10,250	1995 Water System Master Plan
1994	11,150	California Department of Finance [a]
1995	11,800	California Department of Finance [a]
1996	12,050	California Department of Finance [a]
1997	12,600	California Department of Finance [a]
1998	13,000	California Department of Finance [a]
1999	13,300	California Department of Finance [a]
2000	13,864	US Census Bureau, Census 2000
2001	14,148	California Department of Finance [b]
2002	14,583	California Department of Finance [b]
2003	14,784	California Department of Finance [b]
2004	15,098	California Department of Finance [b]
2005	15,448	California Department of Finance [b]
2006	15,651	California Department of Finance [b]
2007	15,837	California Department of Finance [b]
2008	16,085	California Department of Finance [b]
2009	16,230	California Department of Finance [b]
2010	16,180	US Census Bureau, Census 2010
2011	16,139	California Department of Finance [c]
2012	15,968	California Department of Finance [c]
2013	15,983	California Department of Finance [c]
2014	16,043	California Department of Finance [c]
2015	16,205	California Department of Finance [c]
2016	16,305	California Department of Finance [c]
2017	16,398	California Department of Finance [c]
2018	16,535	California Department of Finance [c]
2019	16,537	California Department of Finance [c]
2020	16,642	US Census Bureau, Census 2020
2021	16,781	California Department of Finance [d]
2022	16,843	California Department of Finance [d]
2023	16,744	California Department of Finance [d]
2024	16,923	California Department of Finance [d]
2025	16,928	California Department of Finance [d]

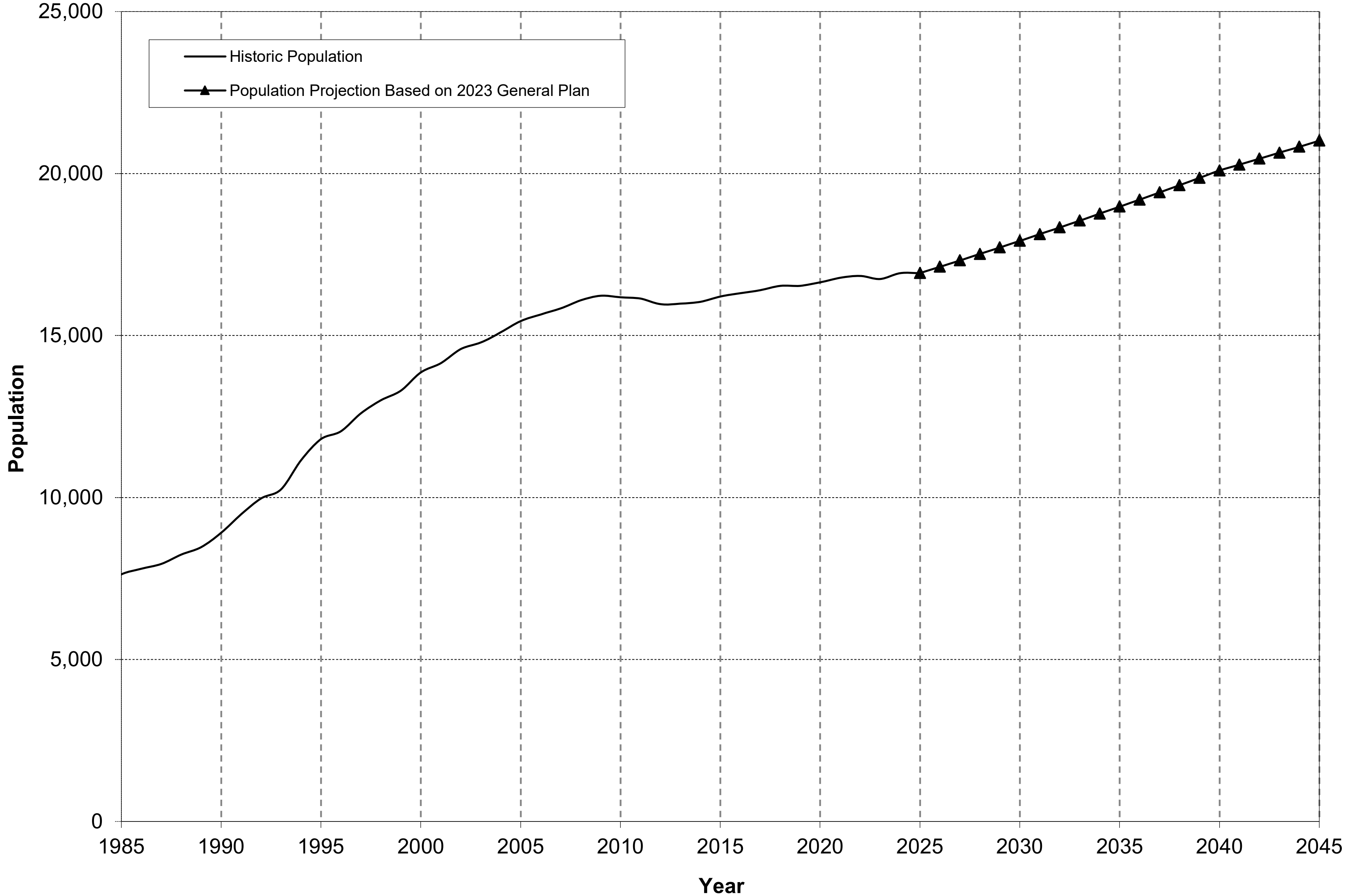
[a] State of California, Department of Finance, *Revised Historical City, County and State Population Estimates, 1991-2000, with 1990 and 2000 Census Counts.* Sacramento, California. March 2002.

[b] State of California, Department of Finance, E-4 Population Estimates for Cities, Counties and the State, 2001–2010, with 2000 Benchmark. Sacramento, California, May 2010.

[c] State of California, Department of Finance, E-4 Population Estimates for Cities, Counties and the State, 2011–2020, with 2010 Benchmark. Sacramento, California, May 2021.

[d] State of California, Department of Finance, E-4 Population Estimates for Cities, Counties and the State, 2021–2025, with 2020 Benchmark. Sacramento, California, May 2025.

Figure 2-3. Historic and Projected Population, 1985-2045



The District has conducted correspondence with the California State Water Resources Control Board (SWRCB) regarding this significant transient/tourist population and the SWRCB has agreed to the use of a higher population value when calculating per capita water usage. For consistency when calculating compliance with SB 7X-7, the District used the official CDOF population of 16,228 that was published in the May 2020 edition of E-4.

It should be noted that in May 2021, CDOF revised the population estimates for Truckee based upon the official US 2020 Census. This revision covered the period of 2011-2020. These revised values are given in **Table 2-1**.

Appendix B of the ***General Plan*** discusses future population growth. This data is summarized in **Table 2-2** and is also shown on **Figure 2-3**. A growth rate of about 1.1% per year is expected with the buildout population of 23,200 permanent residents.

Table 2-2. Current and Future Population Projections

Year	Population
2025	16,928
2030	18,300
2035	18,980
2040	20,100
2045	21,020
2050	22,000
Buildout	23,200

It should be noted that the District's water system service area extends outside the Town of Truckee limits encompassing small adjoining areas of unincorporated Nevada and Placer Counties. There are also small developed areas within the Town of Truckee that utilize private wells and are not supplied water by the District. However, for the purposes of this study, it is assumed that the Town of Truckee's population as determined by the California Department of Finance is equal to the population of the District's water service area.

SECTION 3

EXISTING WATER FACILITIES

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EXISTING WATER FACILITIES

The District's water system is reasonably complicated with 47 pressure zones, 26 pumping stations, 13 active wells and 33 active storage tanks. All demands in the Truckee systems are currently served by groundwater wells, although natural springs and surface water have been used as a water supply in the past.

PRESSURE ZONES

There are currently 47 pressure zones in the service area, with service elevations ranging from 5745 feet in the Martis Valley to 7370 feet at the highest point in Tahoe Donner. Static service pressures ranges from a high of about 200 psi to a low of about 20 psi. Approximate minimum and maximum ground elevations and static service pressures in the pressure zones are given in **Table 3-1**.

GROUNDWATER WELLS

The District currently has 10 active wells that are used to supply potable water to customers. The total production capacity of the active potable water wells is about 9,935 gpm (14.3 mgd). The wells are located at various locations throughout the distribution system. The locations of the wells are shown in **Figure 3-1** and selected well characteristics are shown in **Table 3-2.**

There are three active wells that are used to serve non-potable water demands. The Donner Creek Well is connected to a separate piping system that is used to provide irrigation water to the Coyote Moon Golf Course. The Fibreboard Well is connected to a separate piping system that is used to provide irrigation water to the Gray's Crossing and Old Greenwood golf courses. The Southside No. 1 well is used to supply construction water for contractor use during the Summer construction season.

There are two additional wells (A Well, Southside No. 2 Well) that were previously used to provide potable water. A Well has been experiencing problems with air entrainment that resulted in customer complaints. Southside Well No. 2 is a relatively shallow well that is near a series of natural springs and may be under the influence of surface water. Both of these wells are considered inactive and the District has been investigating the potential to supply customers that do not require potable water (irrigation and snowmaking uses) from these wells with a corresponding reduction in potable water demand.

There are three other wells that have not been operated for at least 25 years. They are the B, Biltz, and Bingham Place wells. All three of these wells are low in capacity and the District does not intend to use these wells in the future. However, they have not been abandoned in accordance with California State requirements and are therefore considered inactive.

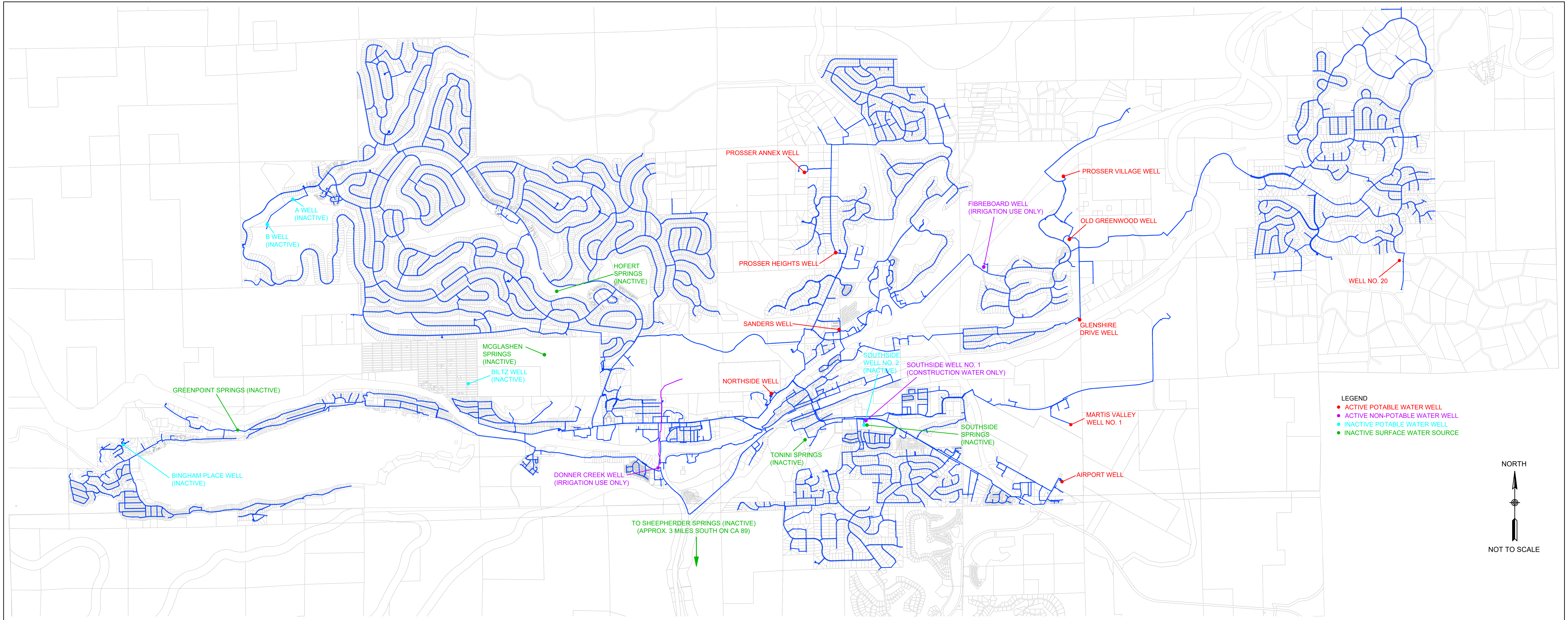
WATER TREATMENT FACILITIES

All of the District's active potable water wells are equipped with disinfection systems utilizing sodium hypochlorite. Water supplied to the District's customers complies with the appropriate federal and State standards.

Table 3-1. Summary of Pressure Zone Data

Pressure Zone	Target HGL, feet	Lowest Service Elevation, feet	Highest Static Service Pressure, psi	Highest Service Elevation, feet	Lowest Static Service Pressure, psi
6040	6040	5838	87	5927	49
6170	6170	5880	125	6050	52
Alder Creek	6610	6300	134	6440	74
Armstrong	6334	5959	162	6200	58
Bennett Flat	6352	6196	68	6225	55
Coldstream 6080	6080	5920	69	5930	65
DL-6124	6124	5940	80	6050	32
DL-6323	6323	5950	161	6245	34
DL-Northeast	6085	5940	63	5975	48
DL-Red Mountain	6260	6020	103	6160	43
DL-Wolfe	6220	6035	80	6140	35
Donner Trails	6160	5932	99	6005	67
Donner View	6894	6612	122	6806	38
Donner View Hydro	6990	6820	74	6890	43
Gateway	6040	5825	93	5990	22
Gateway Hydro	6300	6120	78	6160	61
Glacier	7500	7210	126	7370	56
Glenshire 1	6341	5880	200	6203	60
Glenshire 2	6163	5823	147	6038	54
Heidi Way	6815	6595	95	6645	74
Heights Hydro	6415	6183	100	6325	40
Hillside	6660	6357	131	6526	58
Icknield	6058	5840	94	5850	90
Innsbruck	6493	6157	145	6455	16
Lower Lakeview	6130	5820	134	6040	40
Lower Ski Run	7088	6850	103	6954	58
Lower Skislope	7015	6752	114	6830	80
Martiswoods	6360	6210	65	6255	45
Middle Skislope	7146	6800	150	7010	59
Palisades Hydro	6390	6180	91	6220	74
Pinnacle	6843	6588	110	6756	38
Pinnacle Hydro	6950	6752	86	6820	56
Ponderosa Palisades	6298	6025	118	6220	34
Prosser Heights	6338	6000	146	6180	68
Riverview	6020	5790	100	5875	63
Roundhill Hydro	6790	6618	74	6660	56
Sierra Meadows	6146	5880	115	6030	50
Sitzmark Hydro	6580	6435	63	6440	61
Soma Sierra	6286	6000	124	6200	37
Stockholm	6708	6395	135	6641	29
Town	6024	5745	121	5950	32
Trout Creek 6550	6550	6375	76	6420	56
Upper Lakeview	6230	5975	110	6100	56
Upper Ski Run	7195	6930	115	6950	106
Upper Skislope	7341	7010	143	7240	44
Waterloo	6071	5825	106	5900	74
West Palisades Hydro	6250	6100	65	6210	17

HGL = Hydraulic Grade Line



TRUCKEE DONNER
Public Utility District

Figure 3-1
Location of Water Production Facilities

Table 3-2. Summary of Data for Active Potable Wells

Name	Current Capacity, gpm
Airport	2,370
Glenshire Drive	1,785
Martis Valley Well No. 1	1,745
Northside	510
Old Greenwood	960
Prosser Annex	480
Prosser Heights	430
Prosser Village	825
Sanders	280
Well No. 20	550
Total	9,935

Note: Current capacity given is based on most recent data

OTHER WATER SUPPLY SOURCES

In the past, the District has used natural springs as water supply sources and has also withdrawn water from Donner Lake. There are four springs: Greenpoint; McGlashen; Southside; and Tonini; at which the District has facilities. These springs are not currently used due to their low capacity and the need to treat the water supply in accordance with the Surface Water Treatment Rule. In addition, the District owns water rights to the Sheepherder Springs and Hofert Springs, although no facilities exist to utilize these supplies. **Figure 3-1** shows the locations of these springs.

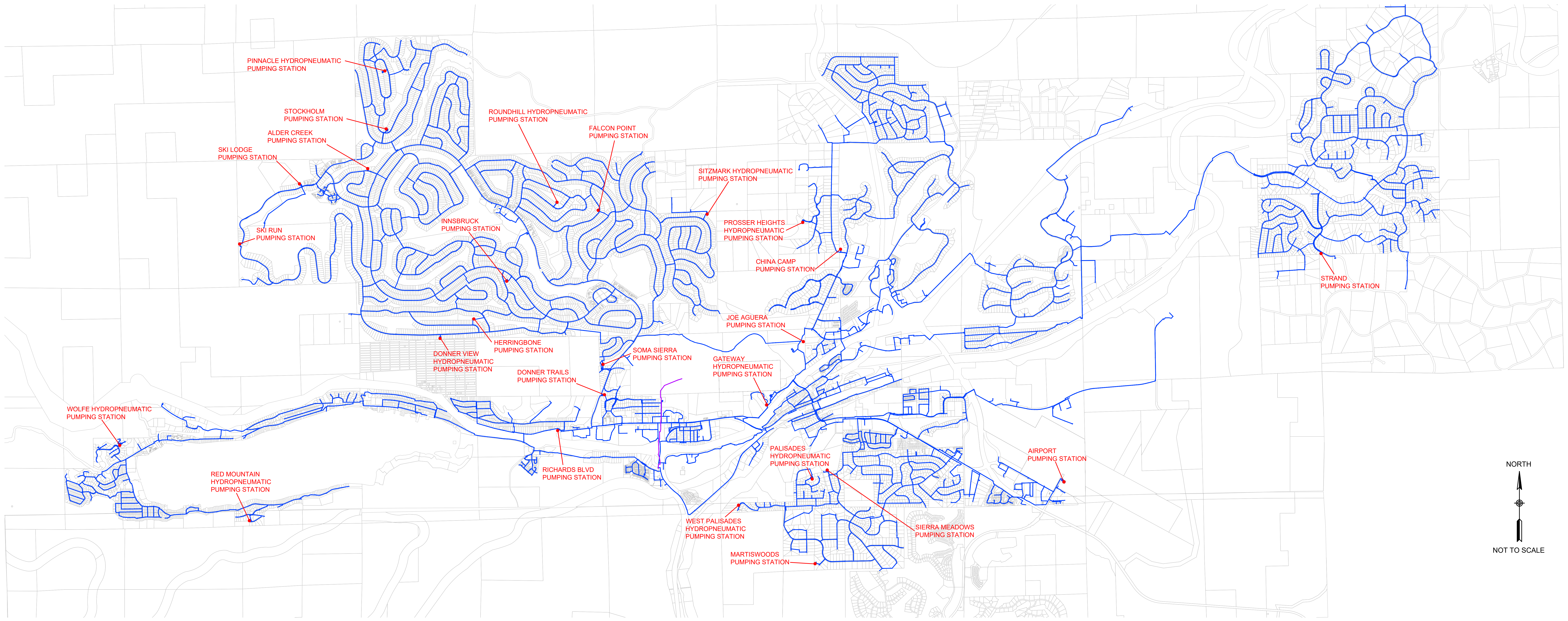
The District has 990 acre-feet per year of surface water rights for withdrawals from Donner Lake. The District has abandoned the Intake Pump Station that was previously used withdraw water from Donner Lake and these rights have not been utilized in recent years.

PUMPING STATIONS

The Truckee System currently has 26 pumping stations located throughout the distribution system. These pumping stations move water from lower pressure zones to higher pressure zones to serve demands in higher elevations of the service area. The different pumping stations have a variety of configurations, with some facilities taking suction directly from distribution system pipelines, while others are located at storage tank sites and use the storage tank as a forebay. Similarly, there is a variety of vertical turbine, end suction and horizontal split case pumps. All of the pumps are driven by electric motors. Some of the pumping stations are equipped with diesel powered generators as a backup power supply. The locations of the pumping stations are shown in **Figure 3-2**, and selected pump characteristics are shown in **Table 3-3**.

STORAGE TANKS

The Truckee System has 36 storage tanks – 33 active and 3 inactive. Most of the tanks provide gravity pressure to a portion of the distribution system. Some also function as a forebay for a pumping station. The total storage capacity of the active water tanks is about 12.4 mg. Storage tank locations are shown in **Figure 3-3** and their characteristics are given in **Table 3-4**.



TRUCKEE DONNER
Public Utility District

Figure 3-2
Location of Pumping Stations

Table 3-3. Summary of Pumping Station Data

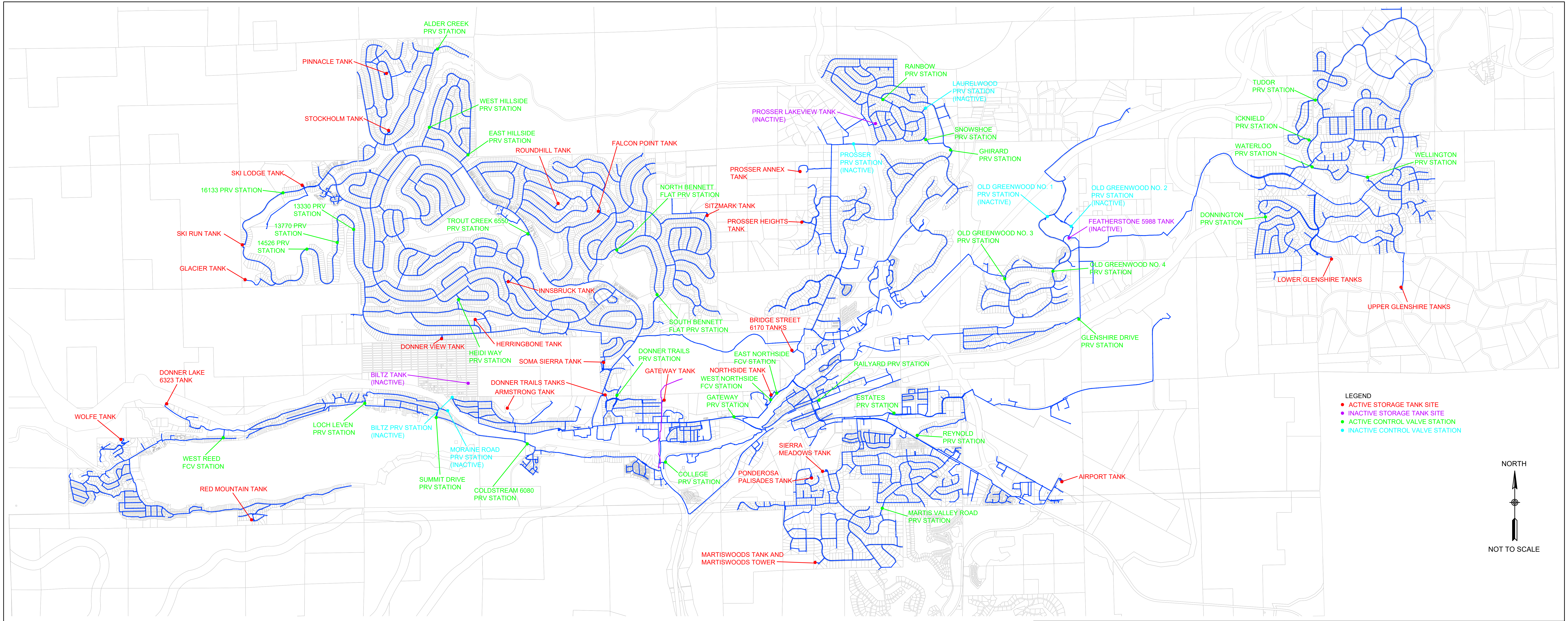
Name	Suction Pressure Zone	Discharge Pressure Zone	Number of Pumps	Total Power, hp
Airport	---	6170	4	400
Alder Creek	Stockholm	Donner View	2	60
China Camp	6170	Prosser Heights	3	90
Donner Trails	Gateway	Soma Sierra	4	600
Donner View Hydro	Donner View	Donner View Hydro	3	55
Falcon Point	Innsbruck	Stockholm	3	225
Gateway Hydro	Gateway	Gateway Hydro	3	75
Herringbone	Stockholm	Donner View	3	150
Innsbruck	Innsbruck	Stockholm	4	200
Joe Aguera	6170	Innsbruck	4	400
Martiswoods	Ponderosa Palisades	Martiswoods	2	15
Pinnacle Hydro	Pinnacle	Pinnacle Hydro	2	27.5
Palisades Hydro	Ponderosa Palisades	Palisades Hydro	5	100
Prosser Heights Hydro	Prosser Heights	Prosser Heights Hydro	2	70
Red Mountain Hydro	DL-6124	Red Mountain	2	20
Richards Boulevard	Gateway	Armstrong/DL-6323	3	300
Roundhill Hydro	Stockholm	Roundhill Hydro	2	30
Sierra Meadows	6170/Sierra Meadows	Ponderosa Palisades	3	90
Sitzmark Hydro	Innsbruck	Sitzmark Hydro	2	30
Ski Lodge	Donner View	Upper Ski Run	2	80
Ski Run	Upper Ski Run	Upper Glacier	2	50
Soma Sierra	Soma Sierra	Innsbruck	4	600
Stockholm	Stockholm	Pinnacle	3	150
Strand	6170/Glenshire 2	Glenshire 1	3	120
West Palisades Hydro	Ponderosa Palisades	West Palisades Hydro	1	3
Wolfe Hydro	DL-6124	Wolfe	2	45

CONTROL VALVE STATIONS

There are 41 control valve stations located throughout the Truckee System – 35 active and 6 inactive. These stations provide service to small pressure zones, allow a means to relieve pressure in zones not directly served by a reservoir and provide additional water for fire flow demands. The locations of the stations are shown on **Figure 3-3** and selected data on the stations is given in **Table 3-5**.

PIPELINES

The existing distribution system consists of about 230 miles of pipeline ranging from 2-inches to 24-inches in diameter. The majority of the pipelines are between 4-inches and 8-inches in diameter. The oldest piping in the system dates to the 1940s. There are a number of different pipeline materials throughout the system. The majority of the distribution pipelines are steel, with large portions of ductile iron and PVC pipe as well.



TRUCKEE DONNER Public Utility District

Figure 3-3
Location of Storage Tanks and Control Valve Stations

Table 3-4. Summary of Storage Tank Data

Storage Tank	Volume, mg	Diameter, feet	Floor Elevation	Shell Height, feet	Overflow Elevation	Year Built
Airport	0.60	70	5886	20	5906	1979
Armstrong	0.10	27	6310	24	6334	1979
Biltz[a]	0.085	25	6350	24	6374	1985
Bridge Street 6170A	1.50	90	6139	32	6171	2002
Bridge Street 6170B	2.25	110	6139	32	6171	2024
Donner Trails 1	0.15	36	6022	20	6042	1973
Donner Trails 2	0.15	36	6022	20	6042	1990
Donner Lake 6323	0.30	40	6291	32	6323	2005
Donner View	0.35	40	6861	32	6893	1973
Falcon Point	0.20	39	6469	24	6493	1974
Featherstone 5988[a]	0.36	44	5956	32	5988	2002
Gateway	0.45	60	6021	24	6045	1995
Glacier	0.15	36	7476	24	7500	1972
Herringbone	0.30	40	6676	32	6708	1973
Innsbruck	0.20	39	6469	24	6493	1972
Lower Glenshire 1	0.42	55	6139	24	6163	1993
Lower Glenshire 2	0.32	48	6139	24	6163	1972
Martiswoods	0.20	40	6276	22	6298	1982
Martiswoods Tower	0.10	20	6338	22	6360	1982
Northside	0.40	55	6003	24	6027	1974
Pinnacle	0.18	31.5	6811	32	6843	1973
Ponderosa Palisades	0.20	40	6276	22	6298	1972
Prosser Annex	0.215	40	6314	24	6338	1994
Prosser Heights	0.215	40	6314	24	6338	1963
Prosser Lakeview[a]	0.25	40	6102	28	6130	1971
Red Mountain	0.21	39	6100	24	6124	2021
Roundhill	0.30	40	6676	32	6708	1974
Sierra Meadows	0.25	34	6110	36	6146	1971
Sitzmark	0.20	39	6469	24	6493	1973
Ski Lodge	0.35	50	6870	24	6894	1971
Ski Run	0.21	39	7171	24	7195	2024
Soma Sierra	0.20	40	6262	24	6286	1972
Stockholm	0.32	42	6676	32	6708	1972
Upper Glenshire 1	0.28	45	6315	24	6339	1991
Upper Glenshire 2	0.21	39	6315	24	6339	1989
Wolfe	0.23	42	6100	24	6124	1993
Total	12.405					

[a] Tank is inactive

Table 3-5. Summary of Control Valve Station Data

Name	Upstream Pressure Zone	Downstream Pressure Zone	Notes
13330 Skislope	Middle Skislope	Lower Skislope	
13770 Skislope	Upper Skislope	Middle Skislope	
14526 Skislope	Glacier	Upper Skislope	
16133 Skislope	Upper Ski Run	Lower Ski Run	
Alder Creek	Stockholm	Alder Creek	
Biltz	Biltz Tank	Armstrong	Inactive
Coldstream 6080	DL-6323	Coldstream 6080	
College	6170	Gateway	
Donner Trails	Soma Sierra	Donner Trails	
Donnington	Glenshire 1	Glenshire 2	
East Hillside	Stockholm	Hillside	
East Northside	6170	Town	
Estates	6170	Riverview	
Gateway	6170	Gateway	
Ghirard	6170	Lower Lakeview	
Glenshire Drive	6170	6040	
Heidi Way	Stockholm	Innsbruck	
Icknield	Glenshire 2	Icknield	
Laurelwood	Upper Lakeview	Lower Lakeview	Inactive
Loch Leven	DL-6323	DL-Northeast	
Martis Valley Road	Ponderosa Palisades	Sierra Meadows	
Moraine Road	Armstrong	DL-Northeast	Inactive
North Bennett Flat	Innsbruck	Bennett Flat	
Old Greenwood No. 1	6170	6040	Inactive
Old Greenwood No. 2	6170	6040	Inactive
Old Greenwood No. 3	6170	6040	
Old Greenwood No. 4	6170	6040	
Prosser	Prosser Heights	Upper Lakeview	Inactive
Railyard	6170	Town	
Rainbow	Prosser Heights	Lower Lakeview	
Reynold	6170	Riverview	
Snowshoe	Prosser Heights	Lower Lakeview	
South Bennett Flat	Innsbruck	Bennett Flat	
Summit Drive	DL-6323	DL-Northeast	
Trout Creek 6550	Stockholm	Trout Creek 6550	
Tudor	Glenshire 2	Icknield	
Waterloo	Glenshire 2	Waterloo	
Wellington	Glenshire 2	Waterloo	
West Hillside	Stockholm	Hillside	
West Northside	6170	Gateway	
West Reed	DL-6323	DL-6124	

SECTION 4

SYSTEM WATER USE

SECTION 4
SYSTEM WATER USE

This section describes the historic and future water demands for the Truckee System.

HISTORIC POTABLE WATER DEMANDS

Potable water demand in the Truckee System reached a historic peak in 2007 with an average day demand of 6.67 mgd and a maximum day demand of 14.84 mgd. Since 2007, there has been a significant reduction in potable water usage with an average day demand of 3.61 mgd and a maximum day demand of 6.95 mgd for the year 2025. **Figure 4-1** shows the historical trend of water demand for the Truckee System and **Table 4-1** gives this information in tabular form.

As shown in **Figure 4-1**, the maximum demand for 2025 continued the general downward trend that has been observed since about 2010. The maximum day demand of 9.64 mgd for 2013 is considered anomalous because the Fibreboard Well was out of service on the maximum day (July 24, 2013) and two golf courses that normally receive untreated irrigation water from the Fibreboard Well were instead supplied from the potable water system. Otherwise, the maximum day demand for 2013 was 8.68 mgd on July 5, 2013.

Average demand has been essentially flat for the past ten years. There was a noticeable increase for 2020 and 2021. There are two factors that likely contributed to this increase:

1) September and October of 2020 were drier and warmer than the previous few years. This resulted in above normal irrigation demands during this September-October period that affected the overall water demand for that calendar year.

2) As noted in Section 2, about half of the residential units in the Truckee area are normally used as vacation homes. With the impact of COVID-19 resulting in schools using remote learning and businesses using work from home arrangements when feasible, many property owners relocated to their vacation properties in the Truckee area to avoid restrictions implemented in more urbanized areas of California.

However, water demand has decreased for the past few years. Precipitation for this period has been at least average with the winter of 2022-23 extremely heavy. This has resulted in reduced irrigation demands compared to prior years. It is also likely that some of the owners with multiple properties that relocated to Truckee during the COVID-19 pandemic have returned to other locations with the lifting of restrictions.

EXISTING WATER DEMANDS

Potable water production for the year 2025 averaged 3.61 million gallons per day (mgd) with a peak of 6.95 mgd that occurred on July 3, 2025. Total potable water production was about 1,319 million gallons. An additional 236 million gallons of raw water was produced to serve golf course irrigation demands. About 760,000 gallons of raw water was produced to serve construction water demands. **Table 4-2** gives a breakdown of this demand by customer category.

Figure 4-1. Historic Potable Water Demands, 1985 - 2025

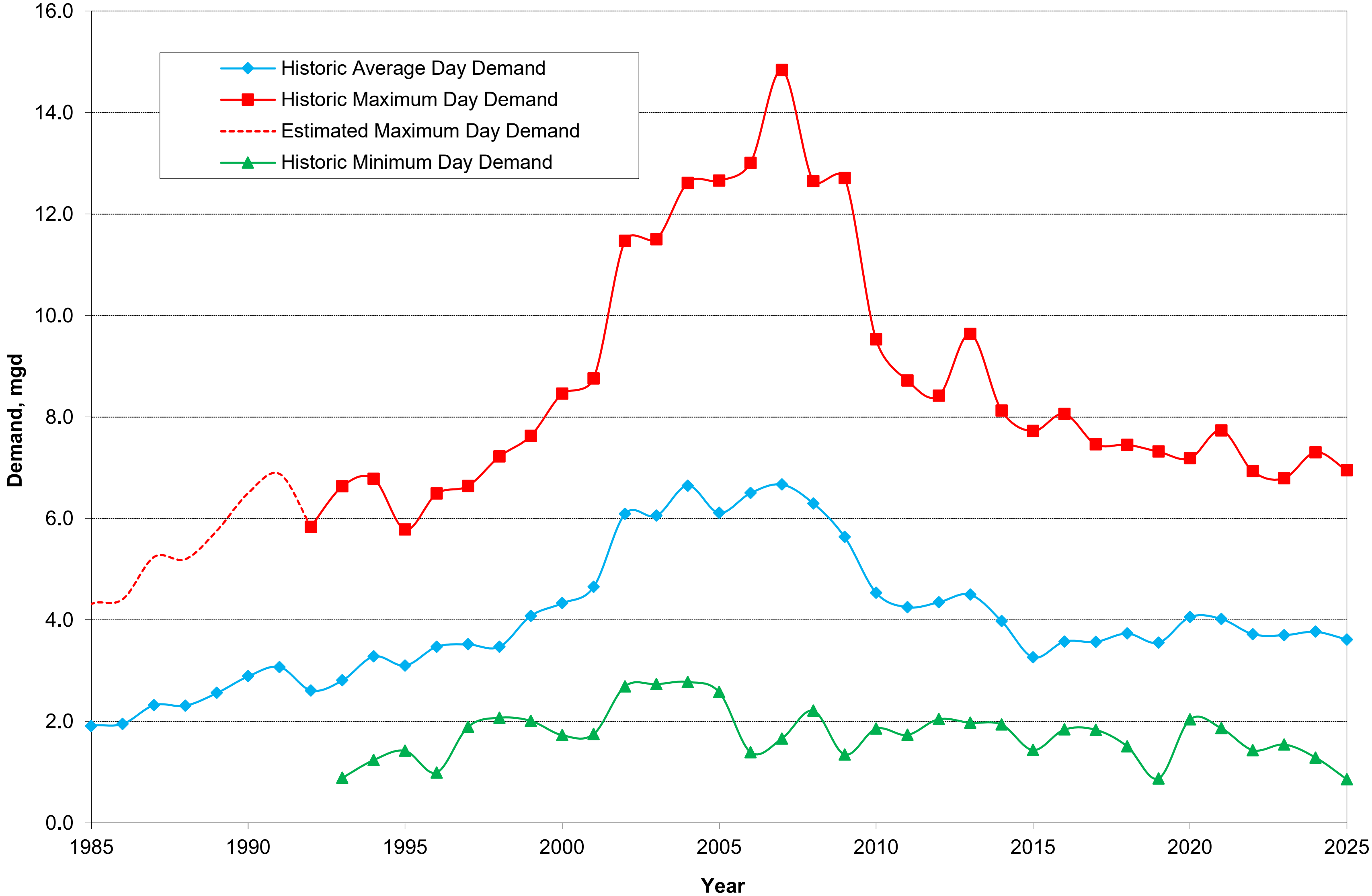


Table 4-1. Historic Potable Water Production, 1980-2025

Year	Average Day		Maximum Day		Peaking Factor
	mgd	gpm	mgd	gpm	
1985	1.91	1,328	NA	NA	NA
1986	1.95	1,353	NA	NA	NA
1987	2.32	1,611	NA	NA	NA
1988	2.31	1,606	NA	NA	NA
1989	2.56	1,775	NA	NA	NA
1990	2.89	2,005	NA	NA	NA
1991	3.07	2,131	NA	NA	NA
1992	2.61	1,810	NA	NA	NA
1993	2.81	1,954	NA	NA	NA
1994	3.28	2,277	6.78	4,708	2.07
1995	3.10	2,150	5.78	4,016	1.86
1996	3.47	2,407	6.49	4,505	1.87
1997	3.52	2,445	6.64	4,611	1.89
1998	3.47	2,413	7.22	5,014	2.08
1999	4.08	2,833	7.63	5,299	1.87
2000	4.33	3,004	8.46	5,877	1.96
2001	4.65	3,228	8.76	6,085	1.88
2002	6.09[a]	4,229	11.47[a]	7.965	1.88
2003	6.05	4,204	11.50	7,986	1.90
2004	6.64	4,614	12.61	8,759	1.90
2005	6.11	4,244	12.66	8,790	2.07
2006	6.50	4,514	13.01	9,034	2.00
2007	6.67	4,631	14.84	10,304	2.23
2008	6.29	4,371	12.65	8,783	2.01
2009	5.63	3,913	12.71	8,826	2.26
2010	4.53	3,149	9.53	6,616	2.10
2011	4.25	2,952	8.72	6,055	2.05
2012	4.35	3,019	8.42	5,847	1.94
2013	4.50	3,124	9.64	6,692	2.14
2014	3.98	2,761	8.13	5,643	2.04
2015	3.26	2,266	7.72	5,362	2.37
2016	3.57	2,481	8.06	5,598	2.26
2017	3.57	2,478	7.46	5,181	2.09
2018	3.73	2,591	7.45	5,175	2.00
2019	3.55	2,466	7.32	5,081	2.06
2020	4.06	2,817	7.18	4,989	1.77
2021	4.02	2,790	7.74	5,372	1.93
2022	3.72	2,582	6.93	4,814	1.86
2023	3.70	2,568	6.79	4,716	1.84
2024	3.77	2,616	7.31	5,073	1.94
2025	3.61	2,509	6.95	4,823	1.92

[a] Large increase in production for 2002 results from acquisition of Donner Lake and Glenshire Water Systems

Table 4-2. Demands for Potable Water and Raw Water – Actual – 2025

Use Type	Additional Description	Level of Treatment	Volume (million gals)
Single-Family		Drinking Water	672
Multi-Family		Drinking Water	86
Commercial		Drinking Water	115
Industrial		Drinking Water	0
Institutional/Governmental		Drinking Water	60
Landscape		Drinking Water	42
Saline Water Intrusion Barrier		Drinking Water	0
Agricultural Irrigation		Drinking Water	0
Wetlands or Wildlife Habitat		Drinking Water	0
Sales/Transfers to Other Agencies		Drinking Water	0
Losses		Drinking Water	343
Other	Irrigation	Raw Water	236
Other	Construction Water	Raw Water	1
Total			1,555

FUTURE WATER DEMANDS

Water demand projections for buildout conditions have been calculated based upon anticipated development of all currently vacant parcels. Currently developed parcels were assumed to continue into the future with no change in land use. A projected buildout demand was then calculated for each vacant parcel based on the anticipated land use and the size of the parcel. This analysis resulted in a buildout average day potable water demand of 7.76 mgd and a buildout maximum day potable water demand of 14.26 mgd. Detailed information regarding these buildout projections is given in the report entitled ***Buildout Water Demand Projections***, July 2025. **Table 4-3** gives the projected breakdown of future water demand by category in 5-year increments.

Table 4-3. Demands for Potable Water and Raw Water – Projected

		Volume (million gals)			
Use Type	Additional Description	2030	2035	2040	2045
Single-Family	Drinking Water	821	990	1,159	1,327
Multi-Family	Drinking Water	105	127	148	170
Commercial	Drinking Water	140	169	198	227
Industrial	Drinking Water	0	0	0	0
Institutional/Governmental	Drinking Water	73	88	103	118
Landscape	Drinking Water	77	88	98	109
Saline Water Intrusion Barrier	Drinking Water	0	0	0	0
Agricultural Irrigation	Drinking Water	0	0	0	0
Wetlands or Wildlife Habitat	Drinking Water	0	0	0	0
Sales/Transfers	Drinking Water	0	0	0	0
Losses	Drinking Water	339	335	331	327
Other – Non Potable Irrigation	Raw Water	240	240	240	240
Other – Non Potable Const. Water	Raw Water	1	1	1	1
Total		1,796	2,038	2,278	2,519

CURRENT AND POTENTIAL USE OF RECYCLED WATER

In November 1990, the Truckee-Carson-Pyramid Lake Water Rights Settlement Act, Title II of Public Law 101-618 [104 Stat. 3289, 3294] was signed into law by the US Government. Section 204.c.1.G of that Act essentially prohibits the reduction in return flow of treated wastewater to the Truckee River and thereby precludes use of recycled water in the Truckee area. The text of the Section is given below:

G) if the Tahoe-Truckee Sanitation Agency or its successor (hereafter 'TTSA') changes in whole or in part the place of disposal of its treated wastewater to a place outside the area between Martis Creek and the Truckee River below elevation 5800 NGVD Datum, or changes the existing method of disposing of its wastewater, which change in place or method of disposal reduces the amount or substantially changes the timing of return flows to the Truckee River of the treated wastewater, TTSA shall:

(i) acquire or arrange for the acquisition of preexisting water rights to divert and use water of the Truckee River or its tributaries in California or Nevada and discontinue the diversion and use of water at the preexisting point of diversion and place of use under such rights in a manner legally sufficient to offset such reduction in the amount of return flow or change in timing, and California's Truckee River basin gross diversion allocation shall continue to be charged the amount of the discontinued diversion; or

(ii) in compliance with California law, extract and discharge into the Truckee River or its tributaries an amount of Truckee River basin groundwater in California sufficient to offset such reduction or change in timing, subject to the following conditions:

(a) extraction and discharge of Truckee River Basin groundwater for purposes of this paragraph shall comply with the terms and conditions of subparagraphs 204(c)(1) (B) and (D) and shall not be deemed use of Truckee River basin groundwater within the State of Nevada within the meaning of subparagraph 204(c)(1)(D); and

(b) California's Truckee River basin gross diversion allocation shall be charged immediately with the amount of groundwater discharged and, when California's Truckee River Basin gross diversion allocation equals 22,000 acre-feet or when the total of any reductions resulting from the changes in the place or method of disposal exceed 1000 acre-feet, whichever occurs first, the California Truckee River basin gross diversion allocation shall thereafter be charged with an additional amount of water required to compensate for the return flows which would otherwise have accrued to the Truckee River basin from municipal and industrial use of the discharged groundwater. In no event shall the total of California's Truckee River gross diversions and extractions exceed 32,000 acre-feet.

(iii) For purposes of this paragraph, the existing method of disposal shall include, in addition to underground leach field disposal, surface spray or sprinkler infiltration of treated wastewater on the site between Martis Creek and the Truckee River referred to in this subsection.

(iv) The provisions of this paragraph requiring the acquisition of water rights or the extraction and discharge of groundwater to offset reductions in the amount or timing of return flow to the Truckee River shall also apply to entities other than TTSA that may treat and dispose of wastewater within the California portion of the Truckee River basin, but only if and to the extent that the treated wastewater is not returned to the Truckee River or its tributaries, as to timing and amount, substantially as if the wastewater had been treated and disposed of by TTSA in its existing place of disposal and by its existing method of disposal. The provisions of this paragraph shall not apply to entities treating and disposing of the wastewater from less than eight dwelling units.

WATER AUDITS AND NON-REVENUE WATER

In accordance with State regulations, the District is required to prepare a water audit for each calendar year. One purpose of the water audit is to identify water losses within the water distribution system. **Table 4-4** gives a summary of water losses for the 2015-2024 period as determined by this water audit process. It should be noted that the audit is a separate requirement from the UWMP. The water audit submittal date is October 1 of the following calendar year and water audit for 2025 has not been completed yet.

Table 4-4. Water Audit Loss Reporting, 2015-2024

Year	Volume of Water Loss, millions of gallons
2015	345.2
2016	325.3
2017	296.5
2018	296.6
2019	317.2
2020	366.3
2021	388.2
2022	351.3
2023	423.0
2024	323.7

The California State Water Resources Control Board has developed performance standards for non-revenue water (NRW). These performance standards are based upon specific water system characteristics and are different for each water system throughout the state. The standards for the District's Truckee System are given in **Table 4-5**. The District recognizes the need to reduce its NRW and intends to continue its efforts in the areas of water main replacement, leak detection surveys and leak repairs.

Table 4-5. Truckee System Water Loss Performance Standards

Real Water Loss Standard	23.5 gpscd
Number of Connections	13,763
Actual Volume of Real Loss	263.1 MG
Real Loss Per Unit	52.4 gpscd
Apparent Water Loss Standard	2.3 gpscd
Number of Connections	13,763
Actual Volume of Apparent Loss	60.6 MG
Apparent Loss Per Unit	12.1 gpscd

gpscd = gallons per service connection per day

WATER DEMAND FOR LOW-INCOME HOUSING

The current Town of Truckee Housing Element was adopted on August 13, 2019. According to that document, there is a need for 1,182 low-income housing units. This demand is included in the existing and future water demands described earlier in this section.

The Town of Truckee is working on an update to the Housing Element with adoption of the final document currently expected in the summer of 2027.

SECTION 5

SBX7-7 BASELINES AND TARGETS

SECTION 5
SB X7-7 BASELINE, TARGETS AND 2020 COMPLIANCE

The Water Conservation Act of 2009, also known as the SB X7-7, set a goal of reducing statewide urban water use by 20 percent by the year 2020. Each retail urban water supplier is required to determine water use during its baseline period and target water use for the years 2015 and 2020 in order to help the State achieve the 20 percent reduction.

BASELINE WATER USAGE CALCULATION

SB X7-7 requires calculation of per capita water usage for a continuous 10-year period ending no earlier than December 31, 2004 and no later than December 31, 2010.

As discussed in Section 2, the District acquired the Donner Lake Water System in May 2001 and the Glenshire Water System in February 2002. The District does not have accurate records regarding production and water usage in the Donner Lake area for early 2001 and prior years. Additionally, the District does not have accurate historical data regarding population in different parts of Truckee for 2001.

Therefore, the nine-year period of 2002 to 2010 is utilized for the baseline calculation. The District has accurate data for this time period and the water system service area during this time more closely matches the Town of Truckee limits and its corresponding population estimates. The baseline water usage is 407 gallons per capita per day (gpcd) as documented in **Table 5-1**.

It should be noted that the baseline water usage value is significantly higher than the 243 gpcd baseline established by the Department of Water Resources for the North Lahontan region. One main reason for this difference is that the calculation methodology does not adjust for the part-time population in the Truckee area. It only considers the permanent population. As noted in Section 2, the Town of Truckee has estimated that about half of the housing stock in the Truckee area is occupied on a part time basis. This part-time population can easily lead to a doubling of the number of people served at any given time, along with a significant increase in water demand. Additionally, there are numerous part-time occupancy properties that are equipped with timer-controlled irrigation systems. These properties exert an irrigation demand even though there is no corresponding population.

DEMAND REDUCTION TARGET CALCULATION

SB X7-7 requires that a water supplier develop a year 2020 water use target and a year 2015 interim target using one of four methods. These targets are intended to meet the goal of reducing statewide per capita water consumption by 20 percent by the year 2020, as established by the California Legislature.

As defined in SB X7-7, there are four allowable methods for determining the 2020 target. The District has selected Method 1, which is "Eighty percent of the water supplier's baseline per capita water use." Therefore, the District's water demand targets are:

2015: 407 x 90% = 367 gpcd

2020: 407 x 80% = 326 gpcd

Table 5-1. Calculation of Baseline Per Capita Water Usage

Baseline Year		Service Area Population	Gross Water Use (millions of gallons)	Daily Per Capita Water Use (GPCD)
10 to 15 Year Baseline GPCD				
Year 1	2002	14,583	2,307	433
Year 2	2003	14,784	2,272	421
Year 3	2004	15,098	2,505	455
Year 4	2005	15,448	2,271	403
Year 5	2006	15,651	2,457	430
Year 6	2007	15,837	2,526	437
Year 7	2008	16,085	2,396	408
Year 8	2009	16,230	2,163	365
Year 9	2010	16,180	1,852	314
10-15 Year Average Baseline GPCD				407
5 Year Baseline GPCD				
Baseline Year		Service Area Population	Gross Water Use (millions of gallons)	Daily Per Capita Water Use (GPCD)
Year 1	2006	15,651	2,457	430
Year 2	2007	15,837	2,526	437
Year 3	2008	16,085	2,396	408
Year 4	2009	16,230	2,163	365
Year 5	2010	16,180	1,852	314
5 Year Average Baseline GPCD				391
2015 Compliance Year GPCD				
2015		16,205	1,384	234

SB X7-7 also requires the determination of a minimum water use reduction. This calculation is documented in **Table 5-2**.

Table 5-2. Confirmation of Minimum Reduction for 2020 Target

5 Year Baseline GPCD	Maximum 2020 Target*	Calculated 2020 Target	Confirmed 2020 Target
391	371	326	326
* Maximum 2020 Target is 95% of the 5 Year Baseline GPCD			

With the minimum water use reduction being met, demand reduction targets are calculated for the years 2015 and 2020 as shown in **Table 5-3.**

Table 5-3. Calculation of 2015 Interim Target GPCD

Confirmed 2020 Target	10-15 year Baseline GPCD	2015 Interim Target GPCD
326	407	367

There have not been any significant changes to the District's service area since 2002 and the baselines and targets described above remain unchanged from the District's 2010 and 2015 UWMPs.

SB X7-7 COMPLIANCE

Total water usage during the year 2020 was 1,712 million gallons. As noted in **Table 2-1**, the current service area population is estimated at 16,642. Therefore:

1,712,000,000 gallons ÷ 365 days ÷ 16,642 = 282 gpcd

The District's 2020 water usage is below the target value of 326 gpcd and the District is in compliance with SB X7-7.

It should be noted that the population values for 2015 and 2020 used in this section differ slightly from the population values given in the discussion of SBX7-7 Baseline, Targets and 2020 Compliance in the District's 2020 Urban Water Management Plan. As discussed in Section 2, the California Department of Finance (CDOF) revised population estimates for the period of 2011-2020 based upon the 2020 Census. The calculations given in this section are based upon the revised CDOF values.

SECTION 6

WATER SYSTEM SUPPLIES

SECTION 6
WATER SYSTEM SUPPLIES

This section provides a discussion of the available water supplies to meet the existing and future water demands through buildout of the District's service area.

MARTIS VALLEY GROUNDWATER BASIN

The District currently obtains its all of its water supply through the pumping of groundwater from the Martis Valley Groundwater Basin (MVGB). The MVGB is a multiple aquifer system consisting of basin-fill sedimentary units and interlayered basin-fill volcanic units. Detailed information regarding geology of the MVGB can be found in a number of sources, including:

- Availability of Ground Water. Prepared for the Truckee Donner Public Utility District by Hydro-Search Inc. Reno, Nevada. February 1975.

- Truckee and Vicinity Ground-Water Resource Evaluation. Prepared for Dart Resorts Inc. by Hydro-Search Inc. Reno, Nevada. April 1980.

- Ground-Water Management Plan, Phase 1, Martis Valley Ground-Water Basin, Basin No. 6-67, Nevada and Placer Counties. Prepared for the Truckee Donner Public Utility District by Hydro-Search Inc. Reno, Nevada. January 1995.

- Ground Water Resource Evaluation. Prepared For The Truckee Donner Public Utility District by Nimbus Engineers. Reno, Nevada. November 2000.

- Ground Water Availability In The Martis Valley Ground Water Basin, Nevada and Placer Counties, California. Prepared for the Truckee Donner Public Utility District, Placer County Water Agency and Northstar Community Services District by Nimbus Engineers. Reno, Nevada. March 2001.

- Supplemental Report to California's Groundwater – Bulletin 118, Update 2003. Prepared by the California Department of Water Resources. Sacramento, California. October 2003.

- Martis Valley Groundwater Management Plan. Prepared for the Truckee Donner Public Utility District, Placer County Water Agency and Northstar Community Services District by Brown and Caldwell and Balance Hydrologics, Reno, Nevada, April 2013.

- Martis Valley Groundwater Basin Sustainable Groundwater Management Act Alternative Submittal. Prepared for the Truckee Donner Public Utility District, Placer County Water Agency, Northstar Community Services District, Town of Truckee, Nevada County and Placer County by GEI Consultants, Rancho Cordova, California. December 2016.

- Martis Valley Groundwater Plan 5-Year Update, Summary Report for the Groundwater Management Plan Update Martis Valley Groundwater Basin, and the Martis Valley Groundwater Basin Annual Report Water Year 2025. Prepared for the Truckee Donner

Public Utility District, Placer County Water Agency, and Northstar Community Services District by GEI Consultants, Rancho Cordova, California. June - July 2025.

The California Department of Water Resources has not determined that the MVGB is being overdrafted and there are not any known instances of subsidence or contamination of the MVGB. In accordance with the ***Martis Valley Groundwater Management Plan***, annual reports covering water years from 2016 through 2025 have been prepared. These reports further document that that MVGB is not being overdrafted. The MVGB is currently unadjudicated and none of the groundwater users has expressed a desire to have the basin adjudicated.

QUANTITY OF GROUNDWATER IN THE MARTIS VALLEY BASIN

A number of studies have been conducted to investigate and quantify the amount of water available in the MVGB. As knowledge regarding the geologic characteristics of the MVGB has improved over the years, the estimates of available water have been refined and therefore, the most recent studies are considered to have the best information regarding water availability.

The 1975 study by Hydro-Search estimated annual recharge to the MVGB at 18,200 acre-feet per year (AFY) with a total subsurface storage volume of 1,050,000 acre-feet. The 1975 study also concluded that 13,000 AFY was available for consumptive uses. The 1980 and 1995 studies were essentially updates of the 1975 study and provided additional information regarding the MVGB. However, a new evaluation of groundwater availability was not conducted as part of those efforts.

The 2001 study represented the first reconsideration of the MVGB water availability since the 1975 study. This 2001 study concluded that total subsurface storage volume is 484,000 acre-feet, with an annual recharge of 29,165 AFY. Additional water is recharged to the upper layer of the MVGB by the Tahoe-Truckee Sanitation Agency's (TTSA's) wastewater treatment plant. This 2001 study concluded that the sustainable yield of the MVGB is 24,000 AFY.

In 2002, a study entitled ***Independent Appraisal of Martis Valley Ground Water Availability, Nevada and Placer Counties*** was conducted by Kennedy/Jenks Consultants. This study agreed with the sustainable yield estimate of 24,000 AFY by Nimbus Engineers in 2001. The Kennedy/Jenks study also concluded that the 24,000 AFY likely underestimates the amount of water available on a sustainable basis since the 2001 Nimbus study underestimated both basin recharge and ground water discharge to tributary streams.

In April 2003, a study conducted by InterFlow Hydrology and Cordilleran Hydrology entitled ***Measurement of Ground Water Discharge to Streams Tributary to the Truckee River in Martis Valley, Nevada and Placer Counties, California*** examined the issue of ground water discharge to tributary streams and concluded that about 34,000 AFY of water is available on a sustainable basis.

In 2016, in support of the ***Martis Valley Groundwater Basin Sustainable Groundwater Management Act Alternative Submittal***, GEI Consultants performed a water budget analysis of the MVGB. This work estimated a sustainable yield of about 22,000 AFY.

As noted above, the MVGB is unadjudicated and will likely remain unadjudicated in the future. Therefore, it is reasonable to assume that, at a minimum, the 22,000 AFY (7,168 million gallons) of water cited in the GEI Consultants study is available to support development in Truckee and the surrounding areas.

RELIABILITY OF THE WATER SUPPLY

The great majority of groundwater basin recharge results from snowfall and snowmelt during the winter period. Summer thunderstorms can produce high intensity rainfall events of short duration. However, these storms do not make a significant contribution to basin recharge. **Figure 6-1** shows historic snowfall and snowpack data at Donner Summit for the period of 1879-2025 as measured by the Central Sierra Snow Laboratory. As shown in this graph snowfall (and corresponding basin recharge) can vary significantly from year to year. The driest single year occurred in 2015 with total snowfall of about 11 feet. The 3-year period with the minimum snowfall occurred in 2013-2015 with a total of about 45 feet.

The 2016 water budget analysis determined that inflows to the MVGB average about 578,800 AFY (188,000 million gallons) and outflows average about 564,300 AFY. Considering the large amount of water in storage in relation to the projected buildout demand, one year (or even five years) of below average precipitation and basin recharge would not have a significant impact upon the water supply. Therefore, the 22,000 AFY (7,168 million gallons) noted above also considered the 5-year minimum water supply.

IMPACT OF CLIMATE CHANGE ON GROUNDWATER BASIN RECHARGE

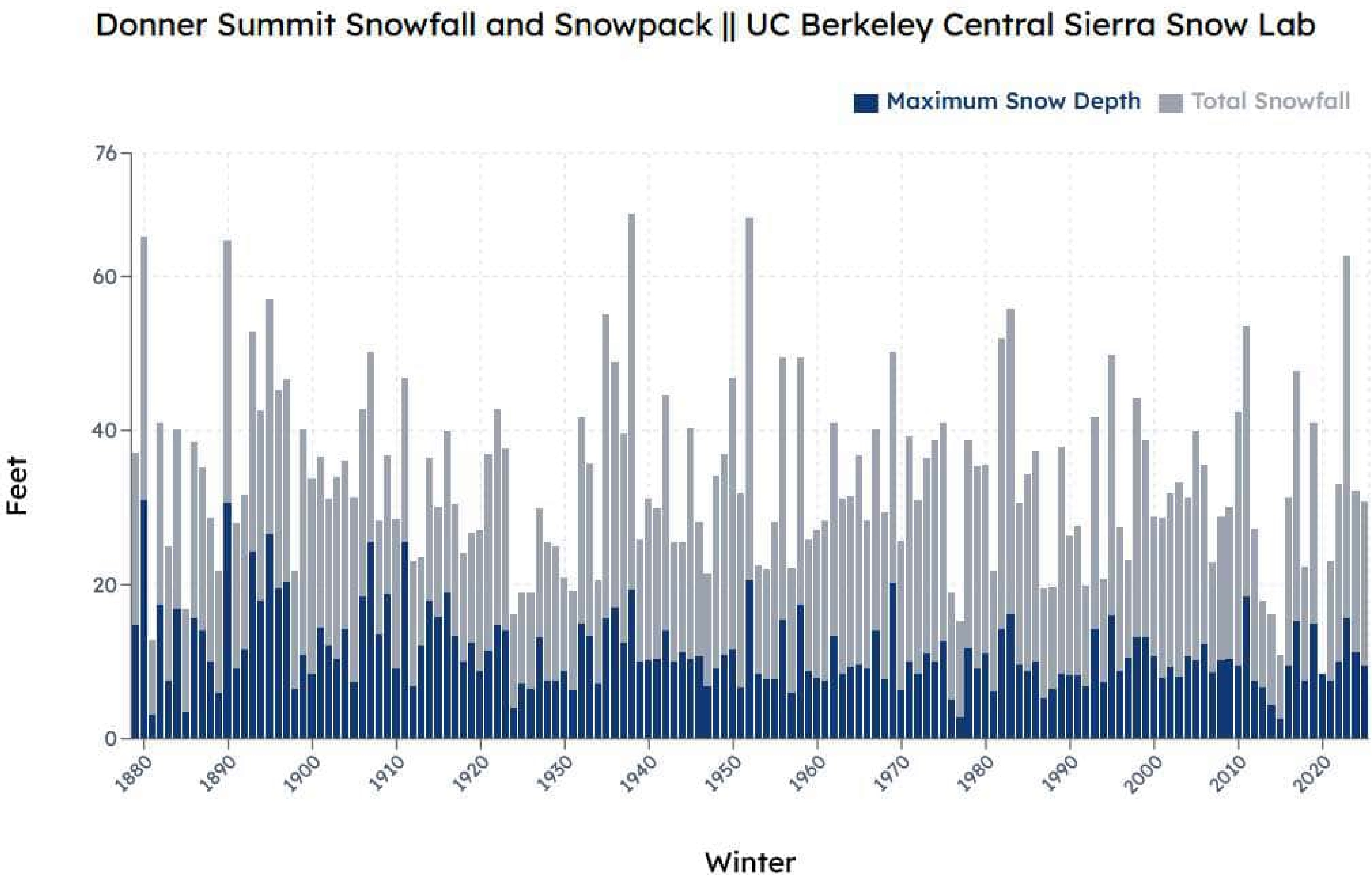
In December 2015, the United States Bureau of Reclamation published a document entitled the ***Truckee Basin Study***. This study examined the potential impact of climate change throughout the entire Truckee River basin from south of Lake Tahoe in California, through the Martis Valley, and ending in Pyramid Lake in Nevada.

In regards to groundwater recharge in the Martis Valley, the climate change analysis projected about a 10% increase in groundwater recharge under the warmer-wetter scenario and about a 25% decrease in groundwater recharge in the hotter-drier scenario by the end of the century. Given the uncertainty associated with these climate change projections, and the fact that current groundwater withdrawals are still significantly below the sustainable yield, the previously identified 22,000 AFY is used with no adjustments. While a 25% decrease in basin recharge would be significant, the associated sustainable yield is still well above the projected buildout demands and it would be manageable given the long time frame. The District will continue to monitor the situation and work with other users of the basin to conduct additional studies as necessary.

WATER SUPPLY QUALITY

As noted in the District's ***2025 Water Quality Report***, all water supplied to potable water customers is in compliance with State and Federal regulations. In the past, the District operated a treatment system at the Northside well to remove excess levels of arsenic. That treatment system is currently in a stand-by mode and the District has been able to comply with the arsenic MCL through a combination of operational changes, well pump modifications and more frequent water quality testing. The quality of the existing sources has been consistent and the District does not anticipate any future changes in the quality of its existing sources.

Figure 6-1


Donner Summit Snowfall and Snowpack || UC Berkeley Central Sierra Snow Lab
Maximum Snow Depth
Total Snowfall
76
60
40
20
0
Feet
1880
1890
1900
1910
1920
1930
1940
1950
1960
1970
1980
1990
2000
2010
2020
Winter

GROUNDWATER WITHDRAWALS

The major producers of water in the MVGB are the District, the Northstar Community Services District, five golf courses and Teichert Aggregates. There are also a number of small wells supporting individual residences along with some other uses such as the Martis Creek Campground and the TNT Materials concrete plant.

For 2025, withdrawals from the MVGB by the District totaled 1,318 million gallons for potable water purposes and an additional 237 million gallons of raw water for irrigation and construction water purposes. Historic groundwater pumping by the District is summarized in **Table 6-1**. Total groundwater withdrawals from the MVGB for 2025 for all users are estimated at 2,704 million gallons. This data is summarized in **Table 6-2**.

Table 6-1. Groundwater Volume Pumped by the District

Groundwater Type	Location or Basin Name	2021	2022	2023	2024	2025
Alluvial Basin	Martis Valley	1,715	1,579	1,535	1,620	1,555
TOTAL (millions of gallons)		1,715	1,579	1,535	1,620	1,555

Table 6-2. Volume Pumped from the Martis Valley Groundwater Basin in 2025

Entity	Treatment	Estimated Withdrawal (millions of gallons)	Data Source/Notes
Former PCWA Zone 4	Potable	174	Eric Martin, NCSD, March 2026
Northstar CSD	Potable	52	Eric Martin, NCSD, March 2026
TDPUD	Potable	1,318	
TDPUD – Golf Course Irrigation	Non-Potable	236	
TDPUD – Construction Water	Non-Potable	1	
Tahoe Donner Golf Course	Non-Potable	79	Estimated based on 2022-2024 TROA Annual Reports
Ponderosa Golf Course	Non-Potable	22	Estimated based on 2022-2024 TROA Annual Reports
Martis Camp Golf Course	Non-Potable	115	Estimated based on 2022-2024 TROA Annual Reports
Lahontan Golf Course	Non-Potable	94	Estimated based on 2022-2024 TROA Annual Reports
Schaeffer's Mill Golf Course	Non-Potable	66	Estimated based on 2022-2024 TROA Annual Reports
Northstar Ski Area Snowmaking	Non-Potable	77	Estimated based on 2022-2024 TROA Annual Reports
Individual Wells		70	Estimated based on 2022-2024 TROA Annual Reports
State & Federal		21	Antonucci, 2001
Total (millions of gallons)		2,325	

EXISTING PRODUCTION CAPACITY IN RELATION TO PROJECTED DEMANDS

The current maximum day potable water demand for the Truckee System is 6.95 mgd. It is anticipated that this maximum day potable water demand will increase to 8.1 mgd and 9.3 mgd by the years 2030 and 2035, respectively. Average day potable water demand will increase from 3.95 mgd currently to 4.3 mgd in the year 2030 and 5.0 mgd in the year 2035. The anticipated growth in maximum day potable water demand is shown graphically in **Figure 6-2.**

The District currently operates 10 potable water wells. The total capacity of these wells is about 9,935 gpm (14.3 mgd). The overall system potable water production capacity is adequate to serve projected demands through the year 2055. However, the firm capacity of these existing facilities will be exceeded in the year 2042, since a failure of Airport Well would leave a production capacity of only 10.9 mgd.

WASTEWATER AND RECYCLED WATER

The District does not provide either wastewater collection or treatment to customers within its service area. The great majority of the District's water customers are served by a centralized wastewater collection system owned by the Truckee Sanitary District (TSD). This TSD maintained system collects the wastewater and conveys it to the Tahoe-Truckee Sanitation Agency's (TTSA) regional water reclamation plant.

The remainder of the District's water customers is not served by centralized wastewater collection and treatment. Water customers in the Olympic Heights, Prosser Heights, Prosser Lakeview, Ponderosa Palisades and Martiswoods areas are served by individual septic tank and leachfield systems. TSD also provides wastewater conveyance service for portions of Placer County outside of the District's service area.

All wastewater collected by TSD is conveyed to the TTSA Water Reclamation Plant for treatment. The TTSA plant has a peak capacity of 9.6 mgd and treats wastewater from the entire Truckee/North Lake Tahoe area within the state of California. During 2025, TSD conveyed about 607 million gallons of wastewater to the treatment plant. About 80 percent of TSD's current total wastewater flow is generated within the District's water service territory. No data is available to quantify the amount of wastewater treated by individual septic tank and leachfield systems.

The treatment process at the TTSA plant involves full tertiary treatment including phosphorus and nitrogen removal. Treated effluent is discharged into the uppermost layer of the groundwater aquifer using subsurface percolation. Sludge generated by the wastewater treatment process is conveyed to either Orient Farms in Gerlach, Nevada, or the Lockwood Regional Landfill for disposal. During 2025, the TTSA plant processed about 1,205 million gallons of wastewater.

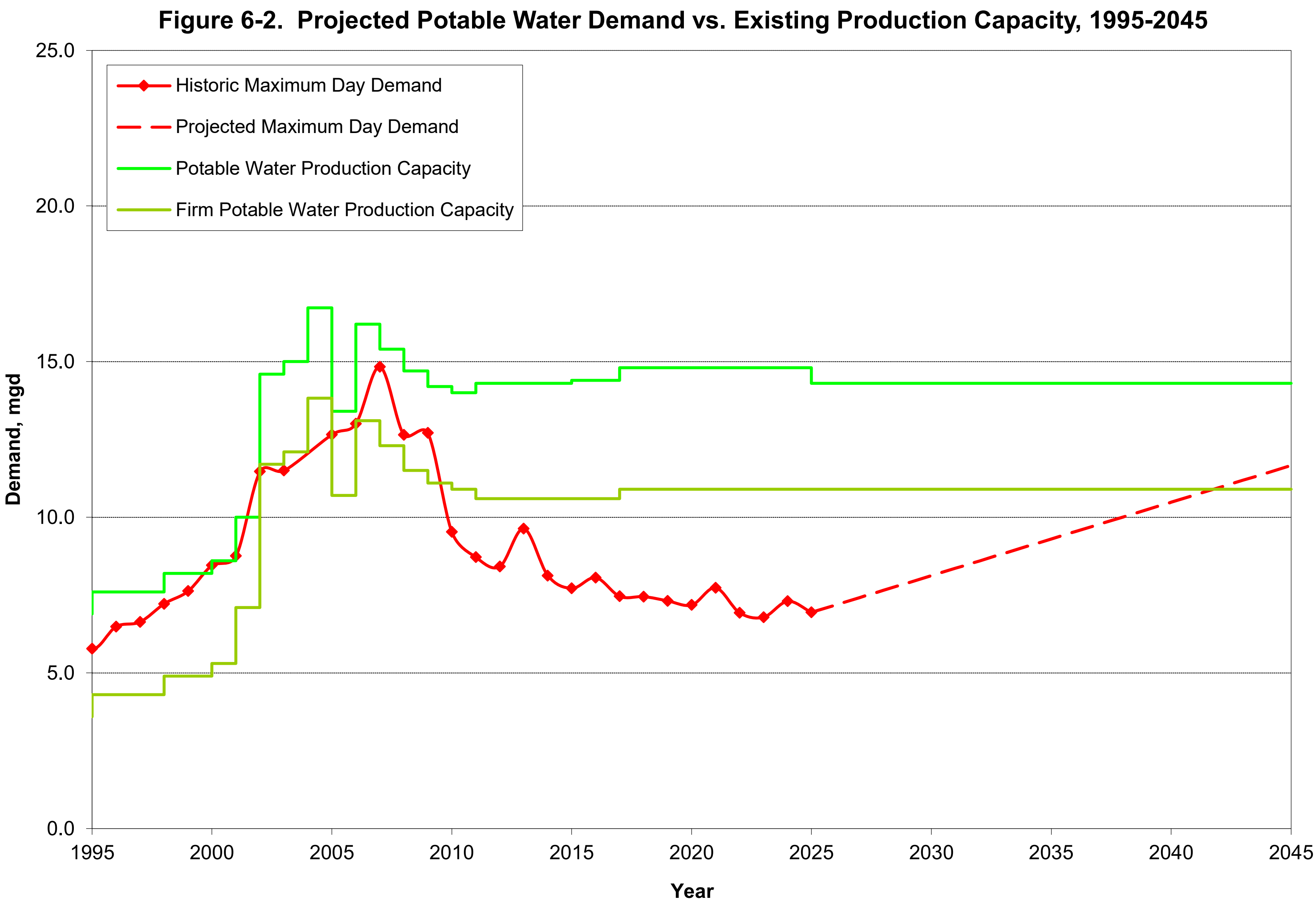


Figure 6-2. Projected Potable Water Demand vs. Existing Production Capacity, 1995-2045
Historic Maximum Day Demand
Projected Maximum Day Demand
Potable Water Production Capacity
Firm Potable Water Production Capacity
Demand, mgd
Year
0.0
5.0
10.0
15.0
20.0
25.0
1995
2000
2005
2010
2015
2020
2025
2030
2035
2040
2045

FUTURE WATER SUPPLIES

Currently, the District uses groundwater as its sole source of supply. In the past, a number of local springs were utilized. Their use was discontinued due to the limited capacity and need for more extensive treatment as required by the Surface Water Treatment Rule. Construction of a surface water treatment plant to utilize surface water from Donner Lake was undertaken by a developer in the early 1970s, but was halted due to political issues and questions regarding the status of water rights.

The District does not currently use recycled water and does not anticipate using recycled water in the future as discussed in Section 4. The use of surface water, either through a treatment plant or wells with filtration, requires that a number of technical, legal and environmental issues be investigated and addressed.

There is sufficient groundwater available to meet the District's needs at buildout conditions and the District anticipates that groundwater will remain its main supply source. Importation of water from other areas, water transfers and water exchanges have not been investigated since they are unnecessary. Similarly, the use of desalinated water has not been investigated. Considering that the Truckee area is about 200 miles from the ocean, the use of desalination is considered extremely unpractical.

BUILDOUT WATER DEMANDS

As discussed in Section 4, buildout potable water demand for the Truckee System is estimated to be 2,832 million gallons per year. An additional 240 million gallons per year of non-potable water demand is also expected. When other users of the MVGB are considered, total withdrawals at buildout conditions are estimated to be 4,295 million gallons as noted in **Table 6-3**.

With a total water supply of at least 22,000 AFY (7,168 million gallons), there is adequate water supply to meet the projected buildout conditions. There are 484,000 acre-feet (157,701 million gallons) of water in storage in the MVGB. The projected total demand of 4,295 million gallons at buildout is equal to about three percent of the capacity of the MVGB and there is adequate water to provide for over 36 years worth of demand even if no recharge of the basin were to occur.

ADDITIONAL POTABLE WATER PRODUCTION CAPACITY

The available production capacity is sufficient to meet current demands. Based upon the projected growth, the potable water production facilities will be unable to meet projected maximum day demands in the year 2055. However, the firm capacity will be exceeded in 2042. Based on the 10.9 mgd of available firm capacity, an additional 0.8 mgd of production capacity is needed over the next 20 years to meet projected demands and to provide adequate firm capacity to the system.

For the purposes of water supply planning, it is assumed that new wells will have a capacity of 850 gpm each. Therefore, it is expected that one new water supply well will be needed in the period of 2040 to 2045, with two more wells required to meet buildout conditions. These wells should be constructed as growth and increases in water demand dictate. **Figure 6-3** gives the relationship of projected demand to the recommended water production improvements. If the capacity of new wells differs significantly from the assumed 850 gpm value, the recommendations given herein should be adjusted accordingly.

Table 6-3. Anticipated Martis Valley Groundwater Basin Withdrawals at Buildout

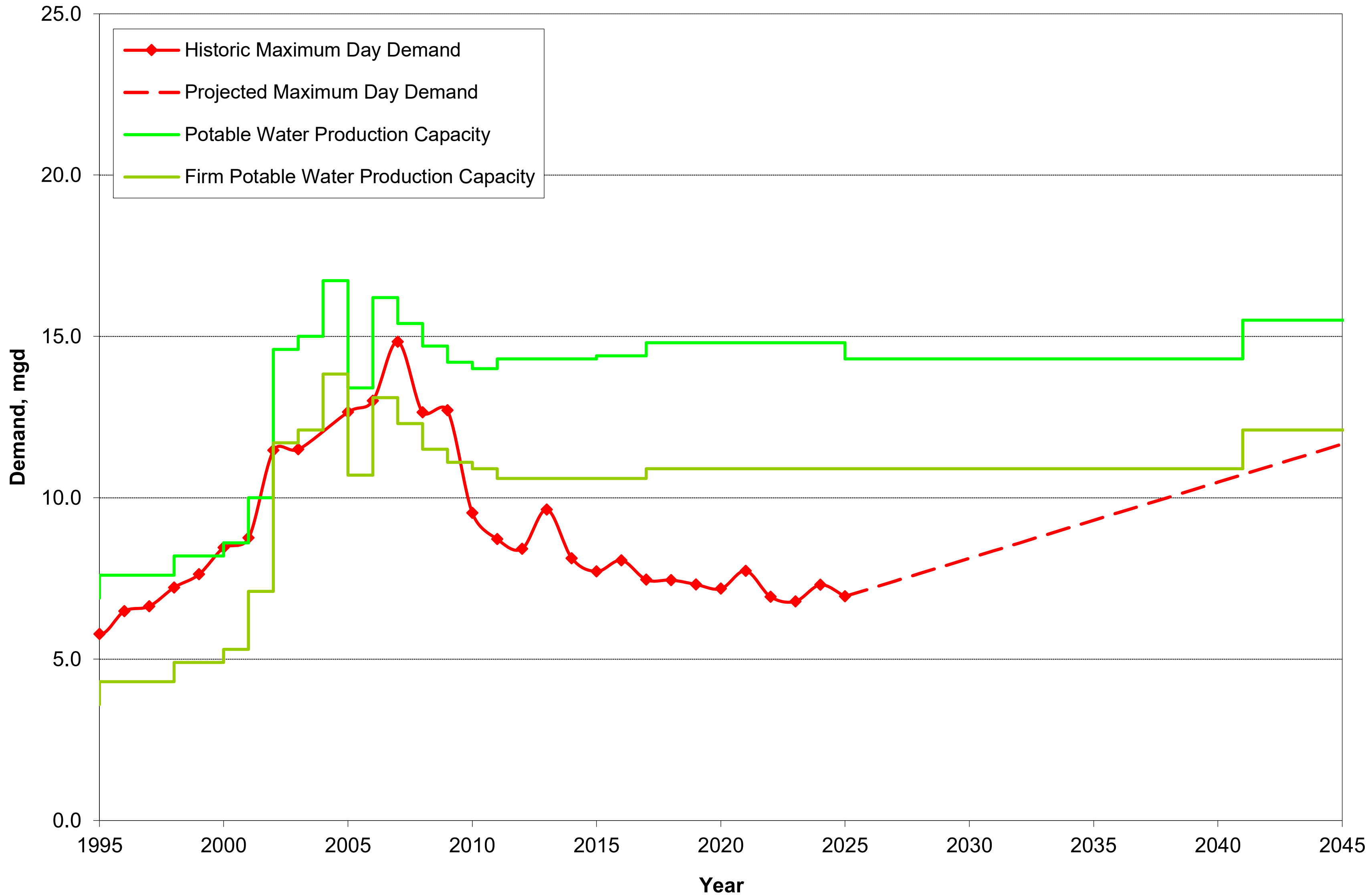
Entity	Treatment	Estimated Withdrawal (millions of gallons)	Data Source/Notes
Former PCWA Zone 4	Potable	261	PCWA 2010 UWMP
Northstar CSD	Potable	391	Eric Martin, NCSD, March 2026
TDPUD	Potable	2,832	
TDPUD – Golf Course Irrigation	Non-Potable	240	
Tahoe Donner Golf Course	Non-Potable	80	Estimated based on 2022-2024 TROA Annual Reports
Ponderosa Golf Course	Non-Potable	25	Estimated based on data from TDRPD
Martis Camp Golf Course	Non-Potable	115	Estimated based on 2022-2024 TROA Annual Reports
Lahontan Golf Course	Non-Potable	100	Estimated based on 2022-2024 TROA Annual Reports
Schaeffer's Mill Golf Course	Non-Potable	75	Estimated based on 2022-2024 TROA Annual Reports
Northstar Ski Area Snowmaking	Non-Potable	80	Estimated based on 2022-2024 TROA Annual Reports
Individual Wells		75	Estimated based on 2022-2024 TROA Annual Reports
State & Federal		21	Antonucci, 2001
Total (millions of gallons)		4,295	

In 2002 and 2003, the District drilled a number of exploration wells in order to identify locations for future groundwater wells. As a result of this exploration well program, the District acquired four well sites. The Prosser Village Well was constructed in 2004 and the Old Greenwood Well was constructed in 2006 at two of these sites.

The Fibreboard Well was constructed in 2009 at the third site. The water produced by this well exceeds the MCL for arsenic and is considered non-potable water. However, this water is perfectly suited for irrigation purposes and supplies water to the Gray's Crossing and Old Greenwood golf courses. This well allowed for the removal of about 1.3 mgd of maximum day demand from the potable water system.

There is one remaining well site where property rights have been secured by the District. Additional investigations using the finite element model developed by Brown and Caldwell should be conducted to provide information regarding behavior of the groundwater basin. Once this work is completed, the District should have sufficient information to identify additional well sites and can investigate the drilling of additional test wells.

Figure 6-3. Projected Potable Water Demand vs. Proposed Production Capacity, 1995-2045



It should also be noted that some of the existing wells may be reaching the end of their useful lives towards the year 2030. Production from the wells should be monitored over time and redevelopment of existing wells may be necessary to maintain an adequate water supply. Of particular concern is the long-term viability of the existing Airport Well. The existing wellhole and casing are not completely vertical and there is a significant offset in the casing. As a result of this offset, the well shaft experiences accelerated wear and requires replacement every four years.

WATER SYSTEM ENERGY USAGE

Water suppliers are required to report the amount of energy utilized in the production, treatment and conveyance of water to customers. If possible, energy usage should be broken down into five categories:

- Extraction and diversion
- Raw water storage
- Raw water conveyance
- Water treatment
- Water distribution

Considering that the District pumps water from the MVGB directly into the distribution system, the raw water storage and raw water conveyance categories are not applicable. All water treatment (which is only disinfection) occurs at the well head and the energy used for this purpose cannot be distinguished from the energy used by the wells to pump water. The energy usage for the year 2025 is summarized in **Table 6-4**. The District does not have any hydropower generation within its water system.

Table 6-4. 2025 Energy Usage

	Extraction and Diversion	Water Distribution	Total
Volume of water (mil. gallons)	1,318	1,318	1,318
Energy usage (kWh)	3,199,128	1,986,179	5,185,307
Energy Intensity (kWh/mil. Gallons)	2,427	1,507	3,934

SECTION 7

WATER SHORTAGE CONTINGENCY PLANNING

SECTION 7
WATER SHORTAGE CONTINGENCY PLANNING

The effective management of water supply shortages is an important responsibility of water agencies. Shortages may be caused by drought, failures of major water supply facilities, natural disasters, or other adverse conditions. Therefore, it is necessary to have an effective management program to mitigate water supply shortages.

As described in Section 6, the District uses groundwater as its sole source of supply. The Martis Valley Groundwater Basin has a storage volume of about 484,000 acre-feet (157,701 million gallons) and is able support annual withdrawals of at least 22,000 acre-feet (7,168 million gallons) per year. Based upon current withdrawals of about 7,136 acre-feet (2,325 million gallons) per year, there is over 67 years of water supply available even if there was zero recharge of the groundwater basin. A five-year minimum supply of 22,000 AFY has been assumed.

The most likely cause of a water supply shortage would be the failure of a major water supply facility such as a well, pump station or transmission pipeline. Such an occurrence could be caused by a number of factors including earthquake, fire or major equipment failure. As a result, water supply shortages are expected to be somewhat short in duration (days or possibly weeks), but may occur without any warning. The District's water system consists of five major components: control valve stations, groundwater wells, pipelines, pump stations and storage tanks. In May 2004, the District completed a ***Vulnerability Assessment*** that identified the number of customers that would be impacted by major failure of a given facility. In conjunction with the ***Vulnerability Assessment***, the District periodically updates its Emergency Response Plan which identifies actions to be taken in the event of a major failure of a given facility.

The District is a participant in the ***Nevada County Local Hazard Mitigation Plan***, which was most recently updated in December 2024. Action items identified for the District involved forest fuel reductions to be undertaken by the District's Electric Department. These items are an acknowledgement of the community's vulnerability to a wildfire.

Historically, the water supply system has been most impacted by power outages. In response, the District has installed permanently-mounted diesel-powered backup generators at 20 pump station sites and three wells. The three wells have a combined capacity of about 7.1 mgd. All of the facilities with permanently-mounted generators are equipped with automatic transfer switches and the generators will activate in the event of a power outage. The District has installed external generator connections and manual transfer switches at all of its pump stations and well sites without a permanently-mounted generator. The District currently owns three large trailer-mounted portable generators that can be mobilized to any of the District's pump facilities in the event of a power outage.

CURRENT WATER SHORTAGE CONTINGENCY PLAN

On June 2, 2021, the District adopted Ordinance 2021-01 which describes the District's current Water Shortage Contingency Plan (WSCP) to be implemented in the event of a water supply or drought emergency. A copy of this ordinance (which includes the WSCP) can be found in Appendix D.

In 2025, the WSCP was reviewed. It was determined that the WSCP is current and that no updates are required.

POTENTIAL FINANCIAL IMPACTS OF A WATER SHORTAGE

In 2009, the District retained HDR to perform a water rate study and assist in the development of the District's new metered rate structure. This new rate structure became effective in January of 2010. One of the major objectives in developing this new rate structure was to closely match the District's variable revenue stream with its variable expenses and to match its fixed revenue stream with its fixed expenses. About 85 percent of the Water Department's expenses are fixed and do not vary with the amount of water sold to customers. The remaining 15 percent of expenses is for the costs of pumping and treatment and will vary with customer usage.

HDR performed water rate study updates in 2013, 2015, 2020 and 2025. Water rates were adjusted based upon these studies but the basic concept of matching variable revenues with variable expenses and fixed revenues with fixed expenses was maintained.

In October 2014, the District implemented Stage 2 of its Water Shortage Contingency Plan. This was followed by the implementation of Stage 4 in June 2015. These actions were taken in response to mandates issued by the State of California. The District had adequate water supplies and was not experiencing a water shortage during this entire period.

For 2015, the financial impact of these actions was a reduction in revenue of about $172,500 for decreased water sales. This was about two percent of budgeted water sales revenue. There was corresponding reduction in operational expenses of about $197,000. This was about four percent of budgeted operational expenses. The District also incurred an additional $120,000 in expenses mainly related to increased public education efforts and increased labor for customer notification and customer service. These costs were covered by a reduction in planned capital expenditures and the use of reserves.

In the event that a prolonged Stage 5 conservation requirement (50 percent reduction in water usage) was imposed for a significant length of time (a number of months), the District would expect to see a revenue reduction of about six percent. Similar to 2015, there would be additional costs associated with public education, customer notification and customer service. There would also be a corresponding reduction in operational expenses associated with less water being treated and pumped to customers. Any remaining differences between revenue and expenses would likely be covered through the use of reserves. The District would then have to evaluate its overall financial situation during the next annual budget cycle. At that time, the District would review whether rate adjustments were necessary to ensure the financial stability of the Water Department.

In the event of a major water supply facility failure, unforeseen expenses can be expected. District staff and/or outside contractors may be required to work overtime and weekends to repair the damaged facility, install a temporary facility or adjust system operations in order to maintain water service to District customers. Similar to a drought-related water shortage, it is expected that the immediate cost impacts would be covered through the use of reserve funds. The District would then review its financial situation once the facility has been repaired.

ADDITIONAL INFORMATION

The California Water Code (CWC) describes the requirements elements of an Urban Water Management Plan. The information presented in the following tables is required by the CWC, but does not correspond to the discussions presented previously. The numbering of these tables is based upon a template published by the California Department of Water Resources.

Submittal Table 7-2 Retail: Normal Year Supply and Use Comparison Water Code Section 10635 (a)					
	2030 (MG)	2035 (MG)	2040 (MG)	2045 (MG)	2050 (MG)
Supply totals (autofill from Submittal Table 6-9 R)	5,945	5,945	5,945	5,945	0
Use totals (autofill from Submittal Table 4-2 R)	1,796	2,038	2,278	2,519	0
Surplus/(shortfall)	4,149	3,907	3,667	3,426	0
OPTIONAL Planned WSCP Actions					
WSCP - supply augmentation benefit	0	0	0	0	0
WSCP - use reduction savings benefit	0	0	0	0	0
Revised Surplus/(shortfall)	4,149	3,907	3,667	3,426	0
DWR NOTES : Units of measure (AF, CCF, MG) must remain consistent throughout the UWMP as reported in Submittal Table 2-3.					
NOTES:					

Submittal Table 7-3 Retail: Single Dry Year Supply and Use Comparison Water Code Section 10635(a)					
	2030 (MG)	2035 (MG)	2040 (MG)	2045 (MG)	2050 (MG)
Supply totals	5,945	5,945	5,945	5,945	0
Use totals	1,796	2,038	2,278	2,519	
Surplus/(shortfall)	4,149	3,907	3,667	3,426	0
OPTIONAL Planned WSCP Actions					
WSCP - supply augmentation benefit	0	0	0	0	0
WSCP - use reduction savings benefit	0	0	0	0	0
Revised Surplus/(shortfall)	4,149	3,907	3,667	3,426	0
DWR NOTES : Units of measure (AF, CCF, MG) must remain consistent throughout the UWMP as reported in Submittal Table 2-3.					
NOTES					

Submittal Table 7-4 Retail: Multiple Dry Years Supply and Use Comparison Water Code Section 10635(a)						
		2030 (MG)	2035 (MG)	2040 (MG)	2045 (MG)	2050 (MG)
First year	Supply totals	5,945	5,945	5,945	5,945	
	Use totals	1,796	2,038	2,278	2,519	
	Surplus/(shortfall)	4,149	3,907	3,667	3,426	0
	OPTIONAL Planned WSCP Actions					
	WSCP - supply augmentation benefit	0	0	0	0	
	WSCP - use reduction savings benefit	0	0	0	0	
	Revised Surplus/(shortfall)	4,149	3,907	3,667	3,426	
Second year	Supply totals	5,945	5,945	5,945	5,945	
	Use totals	1,796	2,038	2,278	2,519	
	Surplus/(shortfall)	4,149	3,907	3,667	3,426	0
	OPTIONAL WSCP Actions					
	WSCP - supply augmentation benefit	0	0	0	0	
	WSCP - use reduction savings benefit	0	0	0	0	
	Revised Surplus/(shortfall)	4,149	3,907	3,667	3,426	
Third year	Supply totals	5,945	5,945	5,945	5,945	
	Use totals	1,796	2,038	2,278	2,519	
	Surplus/(shortfall)	4,149	3,907	3,667	3,426	0
	OPTIONAL Planned WSCP Actions					
	WSCP - supply augmentation benefit	0	0	0	0	
	WSCP - use reduction savings benefit	0	0	0	0	
	Revised Surplus/(shortfall)	4,149	3,907	3,667	3,426	
Fourth year	Supply totals	5,945	5,945	5,945	5,945	
	Use totals	1,796	2,038	2,278	2,519	
	Surplus/(shortfall)	4,149	3,907	3,667	3,426	0
	OPTIONAL Planned WSCP Actions					
	WSCP - supply augmentation benefit	0	0	0	0	
	WSCP - use reduction savings benefit	0	0	0	0	
	Revised Surplus/(shortfall)	4,149	3,907	3,667	3,426	
Fifth year	Supply totals	5,945	5,945	5,945	5,945	
	Use totals	1,796	2,038	2,278	2,519	
	Surplus/(shortfall)	4,149	3,907	3,667	3,426	0
	OPTIONAL Planned WSCP Actions					
	WSCP - supply augmentation benefit	0	0	0	0	
	WSCP - use reduction savings benefit	0	0	0	0	
	Revised Surplus/(shortfall)	4,149	3,907	3,667	3,426	
DWR NOTES: Units of measure (AF, CCF, MG) must remain consistent throughout the UWMP as reported in Submittal Table 2-3.						
NOTES:						

Submittal Table 7-5 Retail: Five-Year Drought Risk Assessment Water Code Section 10635(b)(3)	
2026	Total
Total Water Use (MG)	1,606
Total Supplies (MG)	5,945
Surplus/Shortfall w/o WSCP Action	4,339
OPTIONAL Planned WSCP Actions (use reduction and supply augmentation)	
WSCP - supply augmentation benefit (MG)	0
WSCP - use reduction savings benefit (MG)	0
Revised Surplus/(shortfall)	4,339
2027	Total
Total Water Use (MG)	1,654
Total Supplies (MG)	5,945
Surplus/Shortfall w/o WSCP Action	4,291
OPTIONAL Planned WSCP Actions (use reduction and supply augmentation)	
WSCP - supply augmentation benefit (MG)	0
WSCP - use reduction savings benefit (MG)	0
Revised Surplus/(shortfall)	4,291
2028	Total
Total Water Use (MG)	1,701
Total Supplies (MG)	5,945
Surplus/Shortfall w/o WSCP Action	4,244
OPTIONAL Planned WSCP Actions (use reduction and supply augmentation)	
WSCP - supply augmentation benefit (MG)	0
WSCP - use reduction savings benefit (MG)	0
Revised Surplus/(shortfall)	4,244
2029	Total
Total Water Use (MG)	1,749
Total Supplies (MG)	5,945
Surplus/Shortfall w/o WSCP Action	4,196
OPTIONAL Planned WSCP Actions (use reduction and supply augmentation)	
WSCP - supply augmentation benefit (MG)	0
WSCP - use reduction savings benefit (MG)	0
Revised Surplus/(shortfall)	4,196
2030	Total
Total Water Use (MG)	1,796
Total Supplies (MG)	5,945
Surplus/Shortfall w/o WSCP Action	4,149
OPTIONAL Planned WSCP Actions (use reduction and supply augmentation)	
WSCP - supply augmentation benefit (MG)	0
WSCP - use reduction savings benefit (MG)	0
Revised Surplus/(shortfall)	4,149
DWR NOTES: Units of measure (AF, CCF, MG) must remain consistent throughout the UWMP as reported in Submittal Table 2-3.	
NOTES:	

SECTION 8

WATER DEMAND MANAGEMENT MEASURES

SECTION 8
WATER DEMAND MANAGEMENT MEASURES

Demand management, or water conservation, is frequently the lowest-cost resource available to a water agency. The goals of the District's water conservation program are to reduce demand for water at peak times, demonstrate continued commitment to appropriate demand management measures (DMMs), and to ensure a reliable future water supply.

The California Water Code requires that an Urban Water Management Plan discuss DMMs in seven areas:

- Water waste prevention ordinances
- Metering
- Conservation pricing
- Public education and outreach
- Programs to assess and manage distribution system real loss
- Water conservation program coordination and staffing support
- Other demand management measures that have a significant impact on water use as measured in gallons per capita per day, including innovative measures, if implemented

WATER WASTE PREVENTION ORDINANCES

The District's Codes and Policies contain a provision whereby the District may disconnect water service to a customer that is found to be wasting water. Section 5.07.03.1 reads as follows:

> **5.07.03 Disconnection of Electric and/or Water Service by the District**
> 5.07.03.1 | With Notice the District may disconnect Electric or Water Service for any one or more of the reasons contained in this Section. Except as otherwise specifically provided here, Public Utilities Code Sections 16481, 16481.1, 16482, 16482.1, and 16483, and any subsequent amendments thereto, shall apply regarding any disconnect of Service. Except for a disconnect qualifying under Section 5.07.03.2(E), water billings will continue.
>
> 5.07.03.1(A) Non-payment of Bills - The District may disconnect or refuse service if a Customer has not paid their bill for Electric or Water Service rendered, reconnection charges, and/or cash deposit as required by the District. Refer to Section 5.07.01.7 Termination for Non-Payment.
>
> 5.07.03.1(A)(1) Default on Amortization or Payment Agreements – The District may disconnect Electric or Water Service if a Customer has failed to meet the terms of said agreement.
>
> 5.07.03.1(A)(2) Negligent or wasteful use of water, as determined by the District.
>
> 5.07.03.1(A)(3) Where a Customer receives Electric and/or Water Service at more than one location and the Bill or charges for Service at any one location is not paid prior to delinquency, Electric and/or Water Service at all locations may be disconnected.
>
> 5.07.03.1(A)(4) Failure to provide documents or payment as requested by a Notice to Comply. Requested items may include, but are not limited to, service applications, signed payment agreement and payment by cash or money order for an item returned by the bank.

The District does not have any direct prohibitions on specific types of water usage and does not have an ordinance banning water softeners. Hardness and TDS levels in the District's water supply are low and the District is not aware of any water softeners installed by customers.

The Town of Truckee has also adopted water efficient landscape standards as required by California AB 1881. These requirements are given in Section 18.40.060 of the Town of Truckee Development Code.

WATER METERING

In 2010, the District began reading all of its existing water meters as required by AB 2572. As of January 1, 2026, all customer accounts are equipped with a water meter. The District has implemented volume-based billing for those customers equipped with a meter. For residential customers, the volume-based rate has a two-tier inclining block structure. For commercial customers, the volume-based rate has a single tier. There is no usage allowance for either customer class and all water used is billed to the customer.

CONSERVATION PRICING

As discussed above, the District has implemented volume-based billing for all customers. For residential customers, the volume-based rate has a two-tier inclining block structure consistent with the requirements of Proposition 218. For commercial customers, the volume-based rate has a single tier. There is no usage allowance for either customer class and all water used is billed to the customer. The District's water rates are based on cost of service as determined by an outside, expert consulting firm.

PUBLIC EDUCATION AND OUTREACH

The District conducts public education and information programs on water conservation through a number of means:

- **Water Conservation Education/Handouts:** The District has developed water conservation information packets and brochures for community-wide distribution. Charts and handouts are also available that determine how much water is needed to water grasses Spring through Fall.

- **Print Advertising:** The District has developed a print ad series on Water Wise Landscaping practices that is published in local newspapers (Sierra Sun, Moonshine Ink, etc).

- **School Education Programs**: The District funds the purchase of landscape water conservation educational materials that are distributed to local children through the Tahoe-Truckee Unified School District. In recent years, the District has partnered with the Sierra Watershed Education Partnership (SWEP) and the Truckee High School 'Envirolution Club' to distribute water-saving measures and information to every elementary school and middle school child in the District's territory through an innovative, and award winning, 'Trashion Show' format. The 'Trashion Shows' are general assembly presentations by the Envirolution Club members who make fashion outfits out of garbage and recycled materials with each outfit delivering an interpretive message on living sustainably (including water conservation).

- **Demonstration Garden:** The District maintains a demonstration garden at its main office complex. The garden showcases ideas for creating a water-efficient garden and landscape plan using native and drought tolerant plants, bunch grass meadow replacements for lawns, hardscaping/mulching techniques, and water efficient irrigation. The District has also posted information and links regarding efficient landscaping on its web site. The District also collaborated on the creation of a native species demonstration garden at Truckee High School.

- **Water-Wise Gardening Web-Based Resource**: In conjunction with the demonstration gardens, a web-based resource has been developed. This resource details the garden design, plant and material lists, gardening techniques, and other information intended to assist customers in conserving water for landscaping.

- **Landscaping and Irrigation Seminars:** In cooperation with local landscapers and nurseries, the District conducts periodic seminars on landscaping and irrigation practices appropriate for the local climate.

PROGRAMS TO ASSESS AND MANAGE DISTRIBUTION SYSTEM REAL LOSS
The District conducts a number of programs to identify and reduce water system losses:

- The District has an active leak repair program. Any reported or suspected leaks are verified by testing the water for chlorine residual. The leak is then excavated and repaired.

- For a number of years, the District retained an outside contractor to perform distribution system leak surveys. In 2022, the District contracted with Asterra to perform a satellite-based L-band synthetic aperture radar analysis of the service area.

- The District has purchased a number of remote leak detection correlators. These correlators perform leak detection measurements on a daily basis and report the location of potential leaks within the deployment area. The District has implemented a program whereby these correlators are moved on a periodic basis to areas where leaking pipelines are suspected.

- The District has an ongoing pipeline replacement program. Each Summer, the District awards one or more construction contracts for the replacement or rehabilitation of existing water pipelines that are in poor condition.

- The District has installed water meters and pressure monitors on all of its wells and pump stations. It is currently working on installing water meters at control valve stations. Once these metering and monitor devices are installed, the District conducts area-specific mass-balances on a monthly basis to identify areas of concern. This information is used to set priorities for the field technician assigned to leak detection surveys.

WATER CONSERVATION PROGRAM COORDINATION AND STAFFING SUPPORT

The District has a Conservation Department consisting of a Senior Conservation Analyst and a Conservation Customer Service Specialist that manage both energy and water conservation programs. The department is supported by the Customer Service Department who also educate and deliver programs. The Senior Conservation Analyst serves as the Water Conservation Coordinator.

OTHER DEMAND MANAGEMENT MEASURES

The District conducts a number of other water conservation programs. These include:

- **Residential Ultra-Low-Flush Toilet Replacement Program:** The District offers a $100 rebate to those customers that replace an existing older toilet with a new toilet that uses 1.28 gallons per flush (GPF). A rebate of $125 for is offered for a 1.1 GPF or dual-flush toilet. Customers are required to provide the District with evidence that the old toilet has been removed from service and disposed of.

  The District has also created a partnership with a local plumbing supply company (Sierra Mountain Pipe and Supply) where customers can bring their old toilet to the store and exchange it for a new water efficient replacement at no cost. There are two options available for direct exchange, or the customer may apply the $100-$125 value towards the purchase of a more expensive toilet.

- **Water Leak Repair Rebate:** With early implementation of the automated meter reading system, the District has been able to identify leaks on customer-owned piping. The District has developed procedures for notifying customers by telephone or letter depending upon the severity of the leak.

  The District has a Customer Leak Repair Rebate program to encourage customers to repair leaks on the customer-side of the meter. The District offers a rebate of up to $300 as an incentive towards repair of these leaks. To qualify for this rebate, customers must have received prior notification from the District regarding the leak, they must provide documentation regarding the leak itself and the cost to repair it, and the District must verify that the leak has been corrected.

- **Residential Plumbing Retrofit:** Upon request, the District provides to its customers, at no charge, the following water conservation devices:

  - Low-flow showerheads
  - Faucet aerators
  - Sprinkler/rainfall measurement gauges
  - Low-flow outside hose nozzles

  For a number of years, the District also has sponsored a booth at the annual Truckee Day event in early June. The District distributes water conservation literature, low-flow showerheads and sprinkler/rainfall measurement gauges at this booth along with information regarding the District's electricity conservation programs. The District has also maintained a table at ‘Truckee Thursdays. This is a weekly event held in downtown Truckee during the summer to promote the local merchants and other local events.

- **Large Landscape Conservation Programs and Incentives:** The District distributes sprinkler/rainfall measurement gauges free of charge. Upon request of the property owner, the District will also make recommendations regarding landscaping and plants that are appropriate to the local climate. The District’s primary mechanism for landscape initiatives is through educations with emphasis on the Patricia S. Sutton conservation garden and on-going engagement is local landscape supply companies and customers.

WATER CONSERVATION DMM EFFECTIVENESS

As discussed in Section 4, there has been a decreasing trend in potable water production over the past 15 years. As discussed in Section 5, the District has met its water demand reduction requirements under SB X7-7.

The District intends to continue the DMMs and programs described above. In addition, the District will continue to identify additional water conservation programs and implement these programs when they are cost effective.

APPENDIX A

TEXT OF THE URBAN WATER MANAGEMENT PLANNING ACT

Urban Water Management Planning Act

This section contains information extracted from Water Code Division 6, *Conservation, Development, and Utilization of State Water Resources*, Part 2.6, *Urban Water Management Planning*. Click on any section header below to read Water Code directly at the California Legislative Information website.

Chapter 1. General Declaration and Policy, Sections 10610–10610.4

Section 10610.

This part shall be known and may be cited as the "Urban Water Management Planning Act."

Section 10610.2.

(a) The Legislature finds and declares all of the following:

  (1) The waters of the state are a limited and renewable resource subject to ever-increasing demands.

  (2) The conservation and efficient use of urban water supplies are of statewide concern; however, the planning for that use and the implementation of those plans can best be accomplished at the local level.

  (3) A long-term, reliable supply of water is essential to protect the productivity of California's businesses and economic climate, and increasing long-term water conservation among Californians, improving water use efficiency within the state's communities and agricultural production, and strengthening local and regional drought planning are critical to California's resilience to drought and climate change.

  (4) As part of its long-range planning activities, every urban water supplier should make every effort to ensure the appropriate level of reliability in its water service sufficient to meet the needs of its various categories of customers during normal, dry, and multiple dry water years now and into the foreseeable future, and every urban water supplier should collaborate closely with local land-use authorities to ensure water demand forecasts are consistent with current land-use planning.

  (5) Public health issues have been raised over a number of contaminants that have been identified in certain local and imported water supplies.

  (6) Implementing effective water management strategies, including groundwater storage projects and recycled water projects, may require

specific water quality and salinity targets for meeting groundwater basins water quality objectives and promoting beneficial use of recycled water.

(7) Water quality regulations are becoming an increasingly important factor in water agencies' selection of raw water sources, treatment alternatives, and modifications to existing treatment facilities.

(8) Changes in drinking water quality standards may also impact the usefulness of water supplies and may ultimately impact supply reliability.

(9) The quality of source supplies can have a significant impact on water management strategies and supply reliability.

(b) This part is intended to provide assistance to water agencies in carrying out their long-term resource planning responsibilities to ensure adequate water supplies to meet existing and future demands for water.

Section 10610.4.

The Legislature finds and declares that it is the policy of the state as follows:

(a) The management of urban water demands and efficient use of water shall be actively pursued to protect both the people of the state and their water resources.

(b) The management of urban water demands and efficient use of urban water supplies shall be a guiding criterion in public decisions.

(c) Urban water suppliers shall be required to develop water management plans to achieve the efficient use of available supplies and strengthen local drought planning.

Chapter 2. Definitions, Sections 10611–10618

Section 10611.

Unless the context otherwise requires, the definitions of this chapter govern the construction of this part.

Section 10611.3.

"Customer" means a purchaser of water from a water supplier who uses the water for municipal purposes, including residential, commercial, governmental, and industrial uses.

Section 10611.5.

"Demand management" means those water conservation measures, programs, and incentives that prevent the waste of water and promote the reasonable and efficient use and reuse of available supplies.

Section 10612.

"Drought risk assessment" means a method that examines water shortage risks based on the driest five-year historic sequence for the agency's water supply, as described in subdivision (b) of Section 10635.

Section 10613.

"Efficient use" means those management measures that result in the most effective use of water so as to prevent its waste or unreasonable use or unreasonable method of use.

Section 10614.

"Person" means any individual, firm, association, organization, partnership, business, trust, corporation, company, public agency, or any agency of such an entity.

Section 10615.

"Plan" means an urban water management plan prepared pursuant to this part. A plan shall describe and evaluate sources of supply, reasonable and practical efficient uses, reclamation and demand management activities. The components of the plan may vary according to an individual community or area's characteristics and its capabilities to efficiently use and conserve water. The plan shall address measures for residential, commercial, governmental, and industrial water demand management as set forth in Article 2 (commencing with Section 10630) of Chapter 3. In addition, a strategy and time schedule for implementation shall be included in the plan.

Section 10616.

"Public agency" means any board, commission, county, city and county, city, regional agency, district, or other public entity.

Section 10616.5.

"Recycled water" means the reclamation and reuse of wastewater for beneficial use.

Section 10617.

"Urban water supplier" means a supplier, either publicly or privately owned, providing water for municipal purposes either directly or indirectly to more than 3,000 customers or supplying more than 3,000 acre-feet of water annually. An urban water supplier includes a supplier or contractor for water, regardless of the basis of right, which distributes or sells for ultimate resale to customers. This part applies only to water supplied from public water systems subject to Chapter 4 (commencing with Section 116275) of Part 12 of Division 104 of the Health and Safety Code.

Section 10617.5.

"Water shortage contingency plan" means a document that incorporates the provisions detailed in subdivision (a) of Section 10632 and is subsequently adopted by an urban water supplier pursuant to this article.

Section 10618.

"Water supply and demand assessment" means a method that looks at current year and one or more dry year supplies and demands for determining water shortage risks, as described in Section 10632.1.

Chapter 3. Urban Water Management Plans

Article 1. General Provisions, Sections 10620–10621

Section 10620.

(a) Every urban water supplier shall prepare and adopt an urban water management plan in the manner set forth in Article 3 (commencing with Section 10640).

(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.

(c) An urban water supplier indirectly providing water shall not include planning elements in its water management plan as provided in Article 2 (commencing with Section 10630) that would be applicable to urban water suppliers or public agencies directly providing water, or to their customers, without the consent of those suppliers or public agencies.

(d)

(1) An urban water supplier may satisfy the requirements of this part by participation in areawide, regional, watershed, or basinwide urban water

management planning where those plans will reduce preparation costs and contribute to the achievement of conservation, efficient water use, and improved local drought resilience.

(2) Notwithstanding paragraph (1), each urban water supplier shall develop its own water shortage contingency plan, but an urban water supplier may incorporate, collaborate, and otherwise share information with other urban water suppliers or other governing entities participating in an areawide, regional, watershed, or basinwide urban water management plan, an agricultural management plan, or groundwater sustainability plan development.

(3) Each urban water supplier shall 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.

(e) The urban water supplier may prepare the plan with its own staff, by contract, or in cooperation with other governmental agencies.

(f) An urban water supplier shall describe in the plan water management tools and options used by that entity that will maximize resources and minimize the need to import water from other regions.

Section 10621.

(a) Each urban water supplier shall update its plan at least once every five years on or before July 1, in years ending in six and one, incorporating updated and new information from the five years preceding each update.

(b) Every urban water supplier required to prepare a plan pursuant to this part shall, at least 60 days before the public hearing on the plan required by Section 10642, notify any city or county within which the supplier provides water supplies that the urban water supplier will be reviewing the plan and considering amendments or changes to the plan. The urban water supplier may consult with, and obtain comments from, any city or county that receives notice pursuant to this subdivision.

(c) An urban water supplier regulated by the Public Utilities Commission shall include its most recent plan and water shortage contingency plan as part of the supplier's general rate case filings.

(d) The amendments to, or changes in, the plan shall be adopted and filed in the manner set forth in Article 3 (commencing with Section 10640).

(e) Each urban water supplier shall update and submit its 2015 plan to the department by July 1, 2016.

(f) Each urban water supplier shall update and submit its 2020 plan to the department by July 1, 2021.

Article 2. Contents of Plans, Sections 10630–10634

Section 10630.

It is the intention of the Legislature, in enacting this part, to permit levels of water management planning commensurate with the numbers of customers served and the volume of water supplied, while accounting for impacts from climate change.

Section 10630.5.

Each plan shall include a simple lay description of how much water the agency has on a reliable basis, how much it needs for the foreseeable future, what the agency's strategy is for meeting its water needs, the challenges facing the agency, and any other information necessary to provide a general understanding of the agency's plan.

Section 10631.

A plan shall be adopted in accordance with this chapter that shall do all of the following:

(a) Describe the service area of the supplier, including current and projected population, climate, and other social, economic, and demographic factors affecting the supplier's water management planning. The projected population estimates shall be based upon data from the state, regional, or local service agency population projections within the service area of the urban water supplier and shall be in five-year increments to 20 years or as far as data is available. The description shall include the current and projected land uses within the existing or anticipated service area affecting the supplier's water management planning. Urban water suppliers shall coordinate with local or regional land use authorities to determine the most appropriate land use information, including, where appropriate, land use information obtained from local or regional land use authorities, as developed pursuant to Article 5 (commencing with Section 65300) of Chapter 3 of Division 1 of Title 7 of the Government Code.

(b) Identify and quantify, to the extent practicable, the existing and planned sources of water available to the supplier over the same five-year increments described in subdivision (a), providing supporting and related information, including all of the following:

   (1) A detailed discussion of anticipated supply availability under a normal water year, single dry year, and droughts lasting at least five years, as well as more frequent and severe periods of drought, as described in the

drought risk assessment. For each source of water supply, consider any information pertinent to the reliability analysis conducted pursuant to Section 10635, including changes in supply due to climate change.

(2) When multiple sources of water supply are identified, a description of the management of each supply in correlation with the other identified supplies.

(3) For any planned sources of water supply, a description of the measures that are being undertaken to acquire and develop those water supplies.

(4) If groundwater is identified as an existing or planned source of water available to the supplier, all of the following information:

(A) The current version of any groundwater sustainability plan or alternative adopted pursuant to Part 2.74 (commencing with Section 10720), any groundwater management plan adopted by the urban water supplier, including plans adopted pursuant to Part 2.75 (commencing with Section 10750), or any other specific authorization for groundwater management for basins underlying the urban water supplier's service area.

(B) A description of any groundwater basin or basins from which the urban water supplier pumps groundwater.

(C) For basins that a court or the board has adjudicated the rights to pump groundwater, a copy of the order or decree adopted by the court or the board and a description of the amount of groundwater the urban water supplier has the legal right to pump under the order or decree. For a basin that has not been adjudicated, information as to whether the department has identified the basin as a high- or medium-priority basin in the most current official departmental bulletin that characterizes the condition of the groundwater basin, and a detailed description of the efforts being undertaken by the urban water supplier to coordinate with groundwater sustainability agencies or groundwater management agencies listed in subdivision (c) of Section 10723 to maintain or achieve sustainable groundwater conditions in accordance with a groundwater sustainability plan or alternative adopted pursuant to Part 2.74 (commencing with Section 10720).

(D) A detailed description and analysis of the location, amount, and sufficiency of groundwater pumped by the urban water supplier for the past five years. The description and analysis shall be based on information that is reasonably available, including, but not limited to, historic use records.

(E) A detailed description and analysis of the amount and location of groundwater that is projected to be pumped by the urban water supplier. The description and analysis shall be based on information that is reasonably available, including, but not limited to, historic use records.

(c) Describe the opportunities for exchanges or transfers of water on a short-term or long-term basis.

(d)

(1) For an urban retail water supplier, quantify, to the extent records are available, past and current water use, over the same five-year increments described in subdivision (a), and projected water use, based upon information developed pursuant to subdivision (a), identifying the uses among water use sectors, including, but not necessarily limited to, all of the following:

(A) Single-family residential.

(B) Multifamily.

(C) Commercial.

(D) Industrial.

(E) Institutional and governmental.

(F) Landscape.

(G) Sales to other agencies.

(H) Saline water intrusion barriers, groundwater recharge, or conjunctive use, or any combination thereof.

(I) Agricultural.

(J) Distribution system water loss.

(2) The water use projections shall be in the same five-year increments described in subdivision (a).

(3)

(A) The distribution system water loss shall be quantified for each of the five years preceding the plan update, in accordance with rules adopted pursuant to Section 10608.34.

(B) The distribution system water loss quantification shall be reported in accordance with a worksheet approved or developed by the department through a public process. The water loss quantification worksheet shall be based on the water system balance methodology developed by the American Water Works Association.

(C) In the plan due July 1, 2021, and in each update thereafter, data shall be included to show whether the urban retail water supplier met the distribution loss standards enacted by the board pursuant to Section 10608.34.

(4)

(A) Water use projections, where available, shall display and account for the water savings estimated to result from adopted codes, standards, ordinances, or transportation and land use plans identified by the urban water supplier, as applicable to the service area.

(B) To the extent that an urban water supplier reports the information described in subparagraph (A), an urban water supplier shall do both of the following:

(i) Provide citations of the various codes, standards, ordinances, or transportation and land use plans utilized in making the projections.

(ii) Indicate the extent that the water use projections consider savings from codes, standards, ordinances, or transportation and land use plans. Water use projections that do not account for these water savings shall be noted of that fact.

(a) Provide a description of the supplier's water demand management measures. This description shall include all of the following:

(1)

(A) For an urban retail water supplier, as defined in Section 10608.12, a narrative description that addresses the nature and extent of each water demand management measure implemented over the past five years. The narrative shall describe the water demand management measures that the supplier plans to implement to achieve its water use targets pursuant to Section 10608.20.

(B) The narrative pursuant to this paragraph shall include descriptions of the following water demand management measures:

(i) Water waste prevention ordinances.

(ii) Metering.

(iii) Conservation pricing.

(iv) Public education and outreach.

(v) Programs to assess and manage distribution system real loss.

(vi) Water conservation program coordination and staffing support.

(vii) Other demand management measures that have a significant impact on water use as measured in gallons per capita per day, including innovative measures, if implemented.

(2) For an urban wholesale water supplier, as defined in Section 10608.12, a narrative description of the items in clauses (ii), (iv), (vi), and (vii) of subparagraph (B) of paragraph (1), and a narrative description of its distribution system asset management and wholesale supplier assistance programs.

(f) Include a description of all water supply projects and water supply programs that may be undertaken by the urban water supplier to meet the total projected water use, as established pursuant to subdivision (a) of Section 10635. The urban water supplier shall include a detailed description of expected future projects and programs that the urban water supplier may implement to increase the amount of the water supply available to the urban water supplier in normal and single-dry water years and for a period of drought lasting five consecutive water years. The description shall identify specific projects and include a description of the increase in water supply that is expected to be available from each project. The description shall include an estimate with regard to the implementation timeline for each project or program.

(g) Describe the opportunities for development of desalinated water, including, but not limited to, ocean water, brackish water, and groundwater, as a long-term supply.

(h) An urban water supplier that relies upon a wholesale agency for a source of water shall provide the wholesale agency with water use projections from that agency for that source of water in five-year increments to 20 years or as far as data is available. The wholesale agency shall provide information to the urban water supplier for inclusion in the urban water supplier's plan that identifies and quantifies, to the extent practicable, the existing and planned sources of water as required by subdivision (b), available from the wholesale agency to the urban water supplier over the same five- year increments, and during various water-year types in accordance with subdivision (f). An urban water supplier may rely upon water supply information provided by the wholesale agency in fulfilling the plan informational requirements of subdivisions (b) and (f).

Section 10631.1.

(a) The water use projections required by Section 10631 shall include projected water use for single-family and multifamily residential housing needed for lower income households, as defined in Section 50079.5 of the Health and Safety Code, as identified in the housing element of any city, county, or city and county in the service area of the supplier.

(b) It is the intent of the Legislature that the identification of projected water use for single-family and multifamily residential housing for lower income households will assist a supplier in complying with the requirement under

Section 65589.7 of the Government Code to grant a priority for the provision of service to housing units affordable to lower income households.

Section 10631.2.

(a) In addition to the requirements of Section 10631, an urban water management plan shall include any of the following information that the urban water supplier can readily obtain:

(1) An estimate of the amount of energy used to extract or divert water supplies.

(2) An estimate of the amount of energy used to convey water supplies to the water treatment plants or distribution systems.

(3) An estimate of the amount of energy used to treat water supplies.

(4) An estimate of the amount of energy used to distribute water supplies through its distribution systems.

(5) An estimate of the amount of energy used for treated water supplies in comparison to the amount used for nontreated water supplies.

(6) An estimate of the amount of energy used to place water into or withdraw from storage.

(7) Any other energy-related information the urban water supplier deems appropriate.

(b) The department shall include in its guidance for the preparation of urban water management plans a methodology for the voluntary calculation or estimation of the energy intensity of urban water systems. The department may consider studies and calculations conducted by the Public Utilities Commission in developing the methodology.

(c) The Legislature finds and declares that energy use is only one factor in water supply planning and shall not be considered independently of other factors.

Section 10632.

(a) Every urban water supplier shall prepare and adopt a water shortage contingency plan as part of its urban water management plan that consists of each of the following elements:

(1) The analysis of water supply reliability conducted pursuant to Section 10635.

(2) The procedures used in conducting an annual water supply and demand assessment that include, at a minimum, both of the following:

(A) The written decision making process that an urban water supplier will use each year to determine its water supply reliability.

(B) The key data inputs and assessment methodology used to evaluate the urban water supplier's water supply reliability for the current year and one dry year, including all of the following:

(i) Current year unconstrained demand, considering weather, growth, and other influencing factors, such as policies to manage current supplies to meet demand objectives in future years, as applicable.

(ii) Current year available supply, considering hydrological and regulatory conditions in the current year and one dry year. The annual supply and demand assessment may consider more than one dry year solely at the discretion of the urban water supplier.

(iii) Existing infrastructure capabilities and plausible constraints.

(iv) A defined set of locally applicable evaluation criteria that are consistently relied upon for each annual water supply and demand assessment.

(v) A description and quantification of each source of water supply.

(3)

(A) Six standard water shortage levels corresponding to progressive ranges of up to 10, 20, 30, 40, and 50 percent shortages and greater than 50 percent shortage. Urban water suppliers shall define these shortage levels based on the suppliers' water supply conditions, including percentage reductions in water supply, changes in groundwater levels, changes in surface elevation or level of subsidence, or other changes in hydrological or other local conditions indicative of the water supply available for use. Shortage levels shall also apply to catastrophic interruption of water supplies, including, but not limited to, a regional power outage, an earthquake, and other potential emergency events.

(B) An urban water supplier with an existing water shortage contingency plan that uses different water shortage levels may comply with the requirement in subparagraph (A) by developing and including a cross- reference relating its existing categories to the six standard water shortage levels.

(4) Shortage response actions that align with the defined shortage levels and include, at a minimum, all of the following:

(A) Locally appropriate supply augmentation actions.

(B) Locally appropriate demand reduction actions to adequately respond to shortages.

(C) Locally appropriate operational changes.

(D) Additional, mandatory prohibitions against specific water use practices that are in addition to state- mandated prohibitions and appropriate to the local conditions.

(E) For each action, an estimate of the extent to which the gap between supplies and demand will be reduced by implementation of the action.

(5) Communication protocols and procedures to inform customers, the public, interested parties, and local, regional, and state governments, regarding, at a minimum, all of the following:

(A) Any current or predicted shortages as determined by the annual water supply and demand assessment described pursuant to Section 10632.1.

(B) Any shortage response actions triggered or anticipated to be triggered by the annual water supply and demand assessment described pursuant to Section 10632.1.

(C) Any other relevant communications.

(6) For an urban retail water supplier, customer compliance, enforcement, appeal, and exemption procedures for triggered shortage response actions as determined pursuant to Section 10632.2.

(7)

(A) A description of the legal authorities that empower the urban water supplier to implement and enforce its shortage response actions specified in paragraph (4) that may include, but are not limited to, statutory authorities, ordinances, resolutions, and contract provisions.

(B) A statement that an urban water supplier shall declare a water shortage emergency in accordance with Chapter 3 (commencing with Section 350) of Division 1.

(C) A statement that an urban water supplier shall coordinate with any city or county within which it provides water supply services for the possible proclamation of a local emergency, as defined in Section 8558 of the Government Code.

(8) A description of the financial consequences of, and responses for, drought conditions, including, but not limited to, all of the following:

(A) A description of potential revenue reductions and expense increases associated with activated shortage response actions described in paragraph (4).

(B) A description of mitigation actions needed to address revenue reductions and expense increases associated with activated shortage response actions described in paragraph (4).

(C) A description of the cost of compliance with Chapter 3.3 (commencing with Section 365) of Division 1.

(9) For an urban retail water supplier, monitoring and reporting requirements and procedures that ensure appropriate data is collected, tracked, and analyzed for purposes of monitoring customer compliance and to meet state reporting requirements.

(10) Reevaluation and improvement procedures for systematically monitoring and evaluating the functionality of the water shortage contingency plan in order to ensure shortage risk tolerance is adequate and appropriate water shortage mitigation strategies are implemented as needed.

(b) For purposes of developing the water shortage contingency plan pursuant to subdivision (a), an urban water supplier shall analyze and define water features that are artificially supplied with water, including ponds, lakes, waterfalls, and fountains, separately from swimming pools and spas, as defined in subdivision (a) of Section 115921 of the Health and Safety Code.

(c) The urban water supplier shall make available the water shortage contingency plan prepared pursuant to this article to its customers and any city or county within which it provides water supplies no later than 30 days after adoption of the water shortage contingency plan.

Section 10632.1.

An urban water supplier shall conduct an annual water supply and demand assessment pursuant to subdivision (a) of Section 10632 and, on or before July 1 of each year, submit an annual water shortage assessment report to the department with information for anticipated shortage, triggered shortage response actions, compliance and enforcement actions, and communication actions consistent with the supplier’s water shortage contingency plan. An urban water supplier that relies on imported water from the State Water Project or the Bureau of Reclamation shall submit its annual water supply and demand assessment within 14 days of receiving its final allocations, or by July 1 of each year, whichever is later.

Section 10632.2.

An urban water supplier shall follow, where feasible and appropriate, the prescribed procedures and implement determined shortage response actions in its water shortage contingency plan, as identified in subdivision (a) of Section 10632, or reasonable alternative actions, provided that descriptions of the alternative actions are submitted with the annual water shortage assessment report pursuant to Section 10632.1. Nothing in this section prohibits an urban water supplier from taking actions not specified in its water shortage contingency plan, if needed, without having to formally amend its urban water management plan or water shortage contingency plan.

Section 10632.3.

It is the intent of the Legislature that, upon proclamation by the Governor of a state of emergency under the California Emergency Services Act (Chapter 7 (commencing with Section 8550) of Division 1 of Title 2 of the Government Code) based on drought conditions, the board defer to implementation of locally adopted water shortage contingency plans to the extent practicable.

Section 10632.5.

(a) In addition to the requirements of paragraph (3) of subdivision of Section 10632, beginning January 1, 2020, the plan shall include a seismic risk assessment and mitigation plan to assess the vulnerability of each of the various facilities of a water system and mitigate those vulnerabilities.

(b) An urban water supplier shall update the seismic risk assessment and mitigation plan when updating its urban water management plan as required by Section 10621.

(c) An urban water supplier may comply with this section by submitting, pursuant to Section 10644, a copy of the most recent adopted local hazard mitigation plan or multihazard mitigation plan under the federal Disaster Mitigation Act of 2000 (Public Law 106- 390) if the local hazard mitigation plan or multihazard mitigation plan addresses seismic risk.

Section 10633.

The plan shall provide, to the extent available, information on recycled water and its potential for use as a water source in the service area of the urban water supplier. The preparation of the plan shall be coordinated with local water, wastewater, groundwater, and planning agencies that operate within the supplier’s service area, and shall include all of the following:

(a) A description of the wastewater collection and treatment systems in the supplier’s service area, including a quantification of the amount of wastewater collected and treated and the methods of wastewater disposal.

(b) A description of the quantity of treated wastewater that meets recycled water standards, is being discharged, and is otherwise available for use in a recycled water project.

(c) A description of the recycled water currently being used in the supplier’s service area, including, but not limited to, the type, place, and quantity of use.

(d) A description and quantification of the potential uses of recycled water, including, but not limited to, agricultural irrigation, landscape irrigation, wildlife habitat enhancement, wetlands, industrial reuse, groundwater recharge, indirect potable reuse, and other appropriate uses, and a determination with regard to the technical and economic feasibility of serving those uses.

(e) 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 pursuant to this subdivision.

(f) A description of actions, including financial incentives, 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.

(g) A plan for optimizing the use of recycled water in the supplier's service area, including actions to facilitate the installation of dual distribution systems, to promote recirculating uses, to facilitate the increased use of treated wastewater that meets recycled water standards, and to overcome any obstacles to achieving that increased use.

Section 10634.

The plan shall include information, to the extent practicable, relating to the quality of existing sources of water available to the supplier over the same five-year increments as described in subdivision (a) of Section 10631, and the manner in which water quality affects water management strategies and supply reliability.

Article 2.5. Water Service Reliability, Section 10635

Section 10635.

(a) Every urban water supplier shall include, as part of its urban water management plan, an assessment of the reliability of its water service to its customers during normal, dry, and multiple dry water years. This water supply and demand assessment shall compare the total water supply sources available to the water supplier with the long-term total projected water use over the next 20 years, in five-year increments, for a normal water year, a single dry water year, and a drought lasting five consecutive water years. The water service reliability assessment shall be based upon the information compiled pursuant to Section 10631, including available data from state, regional, or local agency population projections within the service area of the urban water supplier.

(b) Every urban water supplier shall include, as part of its urban water management plan, a drought risk assessment for its water service to its customers as part of information considered in developing the demand management measures and water supply projects and programs to be included in the urban water management plan. The urban water supplier may conduct an interim update or updates to this drought risk assessment within the five-year cycle of its urban water management plan update. The drought risk assessment shall include each of the following:

(1) 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 five consecutive water years, starting from the year following when the assessment is conducted.

(2) A determination of the reliability of each source of supply under a variety of water shortage conditions. This may include a determination that a particular source of water supply is fully reliable under most, if not all, conditions.

(3) A comparison of the total water supply sources available to the water supplier with the total projected water use for the drought period.

(4) 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.

(c) The urban water supplier shall provide that portion of its urban water management plan prepared pursuant to this article to any city or county within which it provides water supplies no later than 60 days after the submission of its urban water management plan.

(d) Nothing in this article is intended to create a right or entitlement to water service or any specific level of water service.

(e) Nothing in this article is intended to change existing law concerning an urban water supplier’s obligation to provide water service to its existing customers or to any potential future customers.

Article 3. Adoption and Implementation of Plans, Sections 10640–10645

Section 10640.

(a) Every urban water supplier required to prepare a plan pursuant to this part shall prepare its plan pursuant to Article 2 (commencing with Section 10630). The supplier shall likewise periodically review the plan as required by Section 10621, and any amendments or changes required as a result of that review shall be adopted pursuant to this article.

(b) Every urban water supplier required to prepare a water shortage contingency plan shall prepare a water shortage contingency plan pursuant to Section 10632. The supplier shall likewise periodically review the water shortage contingency plan as required by paragraph (10) of subdivision (a) of

Section 10632 and any amendments or changes required as a result of that review shall be adopted pursuant to this article.

Section 10641.

An urban water supplier required to prepare a plan or a water shortage contingency plan may consult with, and obtain comments from, any public agency or state agency or any person who has special expertise with respect to water demand management methods and techniques.

Section 10642.

Each urban water supplier shall encourage the active involvement of diverse social, cultural, and economic elements of the population within the service area prior to and during the preparation of both the plan and the water shortage contingency plan. Prior to adopting either, the urban water supplier shall make both the plan and the water shortage contingency plan available for public inspection and shall hold a public hearing or hearings thereon. Prior to any of these hearings, notice of the time and place of the hearing shall be published within the jurisdiction of the publicly owned water supplier pursuant to Section 6066 of the Government Code. The urban water supplier shall provide notice of the time and place of a hearing to any city or county within which the supplier provides water supplies. Notices by a local public agency pursuant to this section shall be provided pursuant to Chapter 17.5 (commencing with Section 7290) of Division 7 of Title 1 of the Government Code. A privately owned water supplier shall provide an equivalent notice within its service area. After the hearing or hearings, the plan or water shortage contingency plan shall be adopted as prepared or as modified after the hearing or hearings.

Section 10643.

An urban water supplier shall implement its plan adopted pursuant to this chapter in accordance with the schedule set forth in its plan.

Section 10644.

(a)

(1) An urban water supplier shall submit to the department, the California State Library, and any city or county within which the supplier provides water supplies a copy of its plan no later than 30 days after adoption. Copies of amendments or changes to the plans shall be submitted to the department, the California State Library, and any city or county within which the supplier provides water supplies within 30 days after adoption.

(2) The plan, or amendments to the plan, submitted to the department pursuant to paragraph (1) shall be submitted electronically and shall

include any standardized forms, tables, or displays specified by the department.

(b) If an urban water supplier revises its water shortage contingency plan, the supplier shall submit to the department a copy of its water shortage contingency plan prepared pursuant to subdivision (a) of Section 10632 no later than 30 days after adoption, in accordance with protocols for submission and using electronic reporting tools developed by the department.

(c)

(1)

(A) Notwithstanding Section 10231.5 of the Government Code, the department shall prepare and submit to the Legislature, on or before July 1, in the years ending in seven and two, a report summarizing the status of the plans and water shortage contingency plans adopted pursuant to this part. The report prepared by the department shall identify the exemplary elements of the individual plans and water shortage contingency plans. The department shall provide a copy of the report to each urban water supplier that has submitted its plan and water shortage contingency plan to the department. The department shall also prepare reports and provide data for any legislative hearings designed to consider the effectiveness of plans and water shortage contingency plans submitted pursuant to this part.

(B) The department shall prepare and submit to the board, on or before September 30 of each year, a report summarizing the submitted water supply and demand assessment results along with appropriate reported water shortage conditions and the regional and statewide analysis of water supply conditions developed by the department. As part of the report, the department shall provide a summary and, as appropriate, urban water supplier specific information regarding various shortage response actions implemented as a result of annual supplier-specific water supply and demand assessments performed pursuant to Section 10632.1.

(C) The department shall submit the report to the Legislature for the 2015 plans by July 1, 2017, and the report to the Legislature for the 2020 plans and water shortage contingency plans by July 1, 2022.

(2) A report to be submitted pursuant to subparagraph (A) of paragraph (1) shall be submitted in compliance with Section 9795 of the Government Code.

(d) The department shall make available to the public the standard the department will use to identify exemplary water demand management measures.

Section 10645.

(a) Not later than 30 days after filing a copy of its plan with the department, the urban water supplier and the department shall make the plan available for public review during normal business hours.

(b) Not later than 30 days after filing a copy of its water shortage contingency plan with the department, the urban water supplier and the department shall make the plan available for public review during normal business hours.

Chapter 4. Miscellaneous Provisions, Sections 10650–10657

Section 10650.

Any actions or proceedings, other than actions by the board, to attack, review, set aside, void, or annul the acts or decisions of an urban water supplier on the grounds of noncompliance with this part shall be commenced as follows:

(a) An action or proceeding alleging failure to adopt a plan or a water shortage contingency plan shall be commenced within 18 months after that adoption is required by this part.

(b) Any action or proceeding alleging that a plan or water shortage contingency plan, or action taken pursuant to either, does not comply with this part shall be commenced within 90 days after filing of the plan or water shortage contingency plan or an amendment to either pursuant to Section 10644 or the taking of that action.

Section 10651.

In any action or proceeding to attack, review, set aside, void, or annul a plan or a water shortage contingency plan, or an action taken pursuant to either by an urban water supplier on the grounds of noncompliance with this part, the inquiry shall extend only to whether there was a prejudicial abuse of discretion. Abuse of discretion is established if the supplier has not proceeded in a manner required by law or if the action by the water supplier is not supported by substantial evidence.

Section 10652.

The California Environmental Quality Act (Division 13 (commencing with Section 21000) of the Public Resources Code) does not apply to the preparation and adoption of plans pursuant to this part or to the implementation of actions taken pursuant to Section 10632. Nothing in this part shall be interpreted as exempting from the California Environmental Quality Act any project that would significantly affect water supplies for fish and wildlife, or any project for implementation of the plan, other than projects implementing Section 10632, or any project for expanded or additional water supplies.

Section 10653.

The adoption of a plan shall satisfy any requirements of state law, regulation, or order, including those of the board and the Public Utilities Commission, for the preparation of water management plans, water shortage contingency plans, or conservation plans; provided, that if the board or the Public Utilities Commission requires additional information concerning water conservation, drought response measures, or financial conditions to implement its existing authority, nothing in this part shall be deemed to limit the board or the commission in obtaining that information. The requirements of this part shall be satisfied by any urban water demand management plan that complies with analogous federal laws or regulations after the effective date of this part, and which substantially meets the requirements of this part, or by any existing urban water management plan which includes the contents of a plan required under this part.

Section 10654.

An urban water supplier may recover in its rates the costs incurred in preparing its urban water management plan, its drought risk assessment, its water supply and demand assessment, and its water shortage contingency plan and implementing the reasonable water conservation measures included in either of the plans.

Section 10655.

If any provision of this part or the application thereof to any person or circumstances is held invalid, that invalidity shall not affect other provisions or applications of this part which can be given effect without the invalid provision or application thereof, and to this end the provisions of this part are severable.

Section 10656.

An urban water supplier is not eligible for a water grant or loan awarded or administered by the state unless the urban water supplier complies with this part.

Section 10657.

The department may adopt regulations regarding the definitions of water, water use, and reporting periods, and may adopt any other regulations deemed necessary or desirable to implement this part. In developing regulations pursuant to this section, the department shall solicit broad public participation from stakeholders and other interested persons.

APPENDIX B

WATER CONSERVATION ACT OF 2009

Water Conservation Act of 2009 (SB X7-7)

This section contains information extracted from Water Code Division 6, *Conservation, Development, and Utilization of State Water Resources*, *Part 2.55, Sustainable Water Use And Demand Reduction*. Click on any section header below to read Water Code directly at the California Legislative Information website.

Chapter 1. General Declarations and Policy, Sections 10608–10608.8

Section 10608.

The Legislature finds and declares all of the following:

(a) Water is a public resource that the California Constitution protects against waste and unreasonable use.

(b) Growing population, climate change, and the need to protect and grow California's economy while protecting and restoring our fish and wildlife habitats make it essential that the state manage its water resources as efficiently as possible.

(c) Diverse regional water supply portfolios will increase water supply reliability and reduce dependence on the Delta.

(d) Reduced water use through conservation provides significant energy and environmental benefits, and can help protect water quality, improve streamflows, and reduce greenhouse gas emissions.

(e) The success of state and local water conservation programs to increase efficiency of water use is best determined on the basis of measurable outcomes related to water use or efficiency.

(f) Improvements in technology and management practices offer the potential for increasing water efficiency in California over time, providing an essential water management tool to meet the need for water for urban, agricultural, and environmental uses.

(g) The Governor has called for a 20 percent per capita reduction in urban water use statewide by 2020.

(h) The factors used to formulate water use efficiency targets can vary significantly from location to location based on factors including weather, patterns of urban and suburban development, and past efforts to enhance water use efficiency.

(i) Per capita water use is a valid measure of a water provider's efforts to reduce urban water use within its service area. However, per capita water use is less useful for measuring relative water use efficiency between different water providers. Differences in weather, historical patterns of urban and suburban development, and density of housing in a particular location need to be considered when assessing per capita water use as a measure of efficiency.

Section 10608.4.

It is the intent of the Legislature, by the enactment of this part, to do all of the following:

(a) Require all water suppliers to increase the efficiency of use of this essential resource.

(b) Establish a framework to meet the state targets for urban water conservation identified in this part and called for by the Governor.

(c) Measure increased efficiency of urban water use on a per capita basis.

(d) Establish a method or methods for urban retail water suppliers to determine targets for achieving increased water use efficiency by the year 2020, in accordance with the Governor's goal of a 20- percent reduction.

(e) Establish consistent water use efficiency planning and implementation standards for urban water suppliers and agricultural water suppliers.

(f) Promote urban water conservation standards that are consistent with the California Urban Water Conservation Council's adopted best management practices and the requirements for demand management in Section 10631.

(g) Establish standards that recognize and provide credit to water suppliers that made substantial capital investments in urban water conservation since the drought of the early 1990s.

(h) Recognize and account for the investment of urban retail water suppliers in providing recycled water for beneficial uses.

(i) Require implementation of specified efficient water management practices for agricultural water suppliers.

(k) Support the economic productivity of California's agricultural, commercial, and industrial sectors.

(l) Advance regional water resources management.

Section 10608.8.

(a)

(1) Water use efficiency measures adopted and implemented pursuant to this part or Part 2.8 (commencing with Section 10800) are water conservation measures subject to the protections provided under Section 1011.

(2) Because an urban agency is not required to meet its urban water use target until 2020 pursuant to subdivision (b) of Section 10608.24, an urban retail water supplier's failure to meet those targets shall not establish a violation of law for purposes of any state administrative or judicial proceeding prior to January 1, 2021. Nothing in this paragraph limits the use of data reported to the department or the board in litigation or an administrative proceeding. This paragraph shall become inoperative on January 1, 2021.

(3) To the extent feasible, the department and the board shall provide for the use of water conservation reports required under this part to meet the requirements of Section 1011 for water conservation reporting.

(b) This part does not limit or otherwise affect the application of Chapter 3.5 commencing with Section 11340), Chapter 4 (commencing with Section 11370), Chapter 4.5 (commencing with Section 11400), and Chapter 5 (commencing with Section 11500) of Part 1 of Division 3 of Title 2 of the Government Code.

(c) This part does not require a reduction in the total water used in the agricultural or urban sectors, because other factors, including, but not limited to, changes in agricultural economics or population growth may have greater effects on water use. This part does not limit the economic productivity of California's agricultural, commercial, or industrial sectors.

(d) The requirements of this part do not apply to an agricultural water supplier that is a party to the Quantification Settlement Agreement, as defined in subdivision (a) of Section 1 of Chapter 617 of the Statutes of 2002, during the period within which the Quantification Settlement Agreement remains in effect. After the expiration of the Quantification Settlement Agreement, to the extent conservation water projects implemented as part of the Quantification Settlement Agreement remain in effect, the conserved water created as part of those projects shall be credited against the obligations of the agricultural water supplier pursuant to this part.

Chapter 2. Definitions, Section 10608.12

Section 10608.12.

Unless the context otherwise requires, the following definitions govern the construction of this part:

(a) "Affordable housing" has the same meaning as defined in Section 34191.30 of the Health and Safety Code.

(b) "Agricultural water supplier" means a water supplier, either publicly or privately owned, providing water to 10,000 or more irrigated acres, excluding recycled water. "Agricultural water supplier" includes a supplier or contractor for water, regardless of the basis of right, that distributes or sells water for ultimate resale to customers. “Agricultural water supplier” does not include the department.

(c) “Base daily per capita water use” means any of the following:

(1) The urban retail water supplier’s estimate of its average gross water use, reported in gallons per capita per day and calculated over a continuous 10-year period ending no earlier than December 31, 2004, and no later than December 31, 2010.

(2) For an urban retail water supplier that meets at least 10 percent of its 2008 measured retail water demand through recycled water that is delivered within the service area of an urban retail water supplier or its urban wholesale water supplier, the urban retail water supplier may extend the

(3) calculation described in paragraph (1) up to an additional five years to a maximum of a continuous 15-year period ending no earlier than December 31, 2004, and no later than December 31, 2010.

(4) For the purposes of Section 10608.22, the urban retail water supplier’s estimate of its average gross water use, reported in gallons per capita per day and calculated over a continuous five-year period ending no earlier than December 31, 2007, and no later than December 31, 2010.

(d) Baseline commercial, industrial, and institutional water use” means an urban retail water supplier’s base daily per capita water use for commercial, industrial, and institutional users.

(e) “CII water use” means water used by commercial water users, industrial water users, institutional water users, and large landscape water users.

(f) “Commercial water user” means a water user that provides or distributes a product or service.

(g) “Common area” means that portion of a common interest development or of a property owned or managed by a homeowners’ association or a community service organization or similar entity that is not assigned or allocated to the exclusive use of the occupants of an individual dwelling unit within the property.

(h) “Common interest development” has the same meaning as in Section 4100 of the Civil Code.

(i) “Community service organization or similar entity” has the same meaning as in Section 4110 of the Civil Code.

(j) “Community space” means an area designated by a property owner or a governmental agency to accommodate human foot traffic for civic, ceremonial, or other community events or social gatherings

(k) Compliance daily per capita water use" means the gross water use during the final year of the reporting period, reported in gallons per capita per day.

(l) "Disadvantaged community" means a community with an annual median household income that is less than 80 percent of the statewide annual median household income.

(m) "Functional turf" means a ground cover surface of turf located in a recreational use area or community space. Turf enclosed by fencing or other barriers to permanently preclude human access for recreation or assembly is not functional turf.

(n) "Gross water use" means the total volume of water, whether treated or untreated, entering the distribution system of an urban retail water supplier, excluding all of the following:

   (1) Recycled water that is delivered within the service area of an urban retail water supplier or its urban wholesale water supplier.

   (2) The net volume of water that the urban retail water supplier places into long-term storage.

   (3) The volume of water the urban retail water supplier conveys for use by another urban water supplier.

   (4) The volume of water delivered for agricultural use, except as otherwise provided in subdivision (f) of Section 10608.24.

(o) "Homeowners' association" means an "association" as defined in Section 4080 of the Civil Code.

(p) "Industrial water user" means a water user that is primarily a manufacturer or processor of materials as defined by the North American Industry Classification System code sectors 31 to 33, inclusive, or an entity that is a water user primarily engaged in research and development.

(q) "Institutional water user" means a water user dedicated to public service. This type of user includes, among other users, higher education institutions, schools, courts, churches, hospitals, government facilities, and nonprofit research institutions.

(r) "Interim urban water use target" means the midpoint between the urban retail water supplier's base daily per capita water use and the urban retail water supplier's urban water use target for 2020.

(s) "Large landscape" means a nonresidential landscape as described in the performance measures for CII water use adopted pursuant to Section 10609.10.

(t) "Locally cost effective" means that the present value of the local benefits of implementing an agricultural efficiency water management practice is greater than or equal to the present value of the local cost of implementing that measure.

(u) “Nonfunctional turf” means any turf that is not functional turf, and includes turf located within street rights-of-way and parking lots.

(v) “Performance measures” means actions to be taken by urban retail water suppliers that will result in increased water use efficiency by CII water users. Performance measures may include, but are not limited to, educating CII water users on best management practices, conducting water use audits, and preparing water management plans. Performance measures do not include process water.

(w) “Potable reuse” means direct potable reuse, indirect potable reuse for groundwater recharge, and reservoir water augmentation as those terms are defined in Section 13561.

(x) “Potable water” means water that is suitable for human consumption.

(y) “Process water” means water used by industrial water users for producing a product or product content or water used for research and development. Process water includes, but is not limited to, continuous manufacturing processes, and water used for testing, cleaning, and maintaining equipment. Water used to cool machinery or buildings used in the manufacturing process or necessary to maintain product quality or chemical characteristics for product manufacturing or control rooms, data centers, laboratories, clean rooms, and other industrial facility units that are integral to the manufacturing or research and development process is process water. Water used in the manufacturing process that is necessary for complying with local, state, and federal health and safety laws, and is not incidental water, is process water. Process water does not mean incidental water uses.

(z) “Public water system” has the same meaning as defined in Section 116275 of the Health and Safety Code.

(aa) “Recreational use area” means an area designated by a property owner or a governmental agency to accommodate human foot traffic for recreation, including, but not limited to, sports fields, golf courses, playgrounds, picnic grounds, or pet exercise areas. This recreation may be either formal or informal.

(ab) “Recycled water” means recycled water, as defined in subdivision (n) of Section 13050.

(ac) “Regional water resources management” means sources of supply resulting from watershed-based planning for sustainable local water reliability or any of the following alternative sources of water:

(1) The capture and reuse of stormwater or rainwater.

(2) The use of recycled water.

(3) The desalination of brackish groundwater.

(4) The conjunctive use of surface water and groundwater in a manner that is consistent with the safe yield of the groundwater basin.

(ad) “Reporting period” means the years for which an urban retail water supplier reports compliance with the urban water use targets.

(ae) “Turf” has the same meaning as defined in Section 491 of Title 23 of the California Code of Regulations

(af) “Urban retail water supplier” means a water supplier, either publicly or privately owned, that directly provides potable municipal water to more than 3,000 end users or that supplies more than 3,000 acre-feet of potable water annually at retail for municipal purposes.

(ag) “Urban water supplier” has the same meaning as defined in Section 10617.

(ah) “Urban water use objective” means an estimate of aggregate efficient water use for the previous year based on adopted water use efficiency standards and local service area characteristics for that year, as described in Section 10609.20.

(ai) “Urban water use target” means the urban retail water supplier’s targeted future daily per capita water use.

(aj) “Urban wholesale water supplier” means a water supplier, either publicly or privately owned, that provides more than 3,000 acre- feet of water annually at wholesale for potable municipal purposes.

Chapter 2.5. Nonfunctional Turf

Section 10608.14.

(a) The use of potable water for the irrigation of nonfunctional turf located on commercial, industrial, and institutional properties, other than a cemetery, and on properties of homeowners’ associations, common interest developments, and community service organizations or similar entities is prohibited as of the following dates:

(1) All properties owned by the Department of General Services, beginning January 1, 2027.

(2) All properties owned by local governments, local or regional public agencies, and public water systems, except those specified in paragraph (5), beginning January 1, 2027.

(3) All other institutional properties and all commercial and industrial properties, beginning January 1, 2028.

(4) All common areas of properties of homeowners' associations, common interest developments, and community service organizations or similar entities, beginning January 1, 2029.

(5) All properties owned by local governments, local public agencies, and public water systems in a disadvantaged community, beginning January 1, 2031, or the date upon which a state funding source is made available to fund conversion of nonfunctional turf on these properties to climate-appropriate landscapes, whichever is later.

(b) Notwithstanding subdivision (a), the use of potable water is not prohibited by this section to the extent necessary to ensure the health of trees and other perennial nonturf plantings, or to the extent necessary to address an immediate health and safety need.

(c) The board may, upon a showing of good cause for reasons including economic hardship, critical business need, and potential impacts to human health or safety, postpone a compliance deadline in subdivision (a) by up to three years for certain persons, institutions, and businesses, and may create a form to be used for compliance certification to the board by property owners.

(d) Public water systems shall, by no later than January 1, 2027, revise their regulations, ordinances, or policies governing water service to include the requirements of subdivisions (a) and (b), as revised by the board pursuant to subdivision (c), and shall communicate the requirements to their customers on or before that date.

(e)

(1) An owner of commercial, industrial, or institutional property with more than 5,000 square feet of irrigated area other than a cemetery shall certify to the board, commencing June 30, 2030, and every three years thereafter through 2039, that their property is in compliance with the requirements of this chapter.

(2) An owner of a property with more than 5,000 square feet of irrigated common area that is a homeowners' association, common interest development, or community service organization or similar entity shall certify to the board, commencing June 30, 2031, and every three years thereafter through 2040, that their property is in compliance with the requirements of this chapter.

(f) Noncompliance by a person or entity with this chapter or regulations adopted thereunder shall be subject to civil liability and penalties set forth in Section 1846, or to civil liability and penalties imposed by an urban retail water supplier pursuant to a locally adopted ordinance or policy.

(g)

(1) A public water system, city, county, or city and county may enforce the provisions of this chapter.

(2) To avoid duplication of enforcement, any entity identified in paragraph (1) that is not a retail public water system shall notify the retail public water system 30 days prior to enforcement of the provisions of this chapter against a property served by such system.

(3) Nothing in paragraph (2) shall preclude enforcement by any entity identified in paragraph (1) once adequate notice is given.

(h) The department shall, when using funds appropriated for water conservation for turf replacement, prioritize financial assistance for nonfunctional turf replacement to public water systems serving disadvantaged communities and to owners of affordable housing.

(i) The department shall utilize the saveourwater.com internet website and outreach campaign to provide information and resources on converting nonfunctional turf to native vegetation.

(j) The Governor's Office of Business and Economic Development shall support small and minority-owned businesses that provide services that advance compliance with this chapter.

Chapter 3. Urban Retail Water Suppliers, Sections 10608.16–10608.44

Section 10608.16.

(a) The state shall achieve a 20-percent reduction in urban per capita water use in California on or before December 31, 2020.

(1) The state shall make incremental progress towards the state target specified in subdivision (a) by reducing urban per capita water use by at least 10 percent on or before December 31, 2015.

Section 10608.20.

(a)

(1) Each urban retail water supplier shall develop urban water use targets and an interim urban water use target by July 1, 2011. Urban retail water suppliers may elect to determine and report progress toward achieving these targets on an individual or regional basis, as provided in subdivision (a) of Section 10608.28, and may determine the targets on a fiscal year or calendar year basis.

(2) It is the intent of the Legislature that the urban water use targets described in paragraph (1) cumulatively result in a 20-percent reduction from the baseline daily per capita water use by December 31, 2020.

(b) An urban retail water supplier shall adopt one of the following methods for determining its urban water use target pursuant to subdivision (a):

(1) Eighty percent of the urban retail water supplier's baseline per capita daily water use.

(2) The per capita daily water use that is estimated using the sum of the following performance standards:

(A) For indoor residential water use, 55 gallons per capita daily water use as a provisional standard. Upon completion of the department's 2017 report to the Legislature pursuant to Section 10608.42, this standard may be adjusted by the Legislature by statute.

(B) For landscape irrigated through dedicated or residential meters or connections, water efficiency equivalent to the standards of the Model Water Efficient Landscape Ordinance set forth in Chapter 2.7 (commencing with Section 490) of Division 2 of Title 23 of the California Code of Regulations, as in effect the later of the year of the landscape's installation or 1992. An urban retail water supplier using the approach specified in this subparagraph shall use satellite imagery, site visits, or other best available technology to develop an accurate estimate of landscaped areas.

(C) For commercial, industrial, and institutional uses, a 10- percent reduction in water use from the baseline commercial, industrial, and institutional water use by 2020.

(3) Ninety-five percent of the applicable state hydrologic region target, as set forth in the state's draft 20x2020 Water Conservation Plan (dated April 30, 2009). If the service area of an urban water supplier includes more than one hydrologic region, the supplier shall apportion its service area to each region based on population or area.

(4) A method that shall be identified and developed by the department, through a public process, and reported to the Legislature no later than December 31, 2010. The method developed by the department shall identify per capita targets that cumulatively result in a statewide 20-percent reduction in urban daily per capita water use by December 31, 2020. In developing urban daily per capita water use targets, the department shall do all of the following:

(A) Consider climatic differences within the state.

(B) Consider population density differences within the state.

(C) Provide flexibility to communities and regions in meeting the targets.

(D) Consider different levels of per capita water use according to plant water needs in different regions.

(E) Consider different levels of commercial, industrial, and institutional water use in different regions of the state.

(F) Avoid placing an undue hardship on communities that have implemented conservation measures or taken actions to keep per capita water use low.

(c) If the department adopts a regulation pursuant to paragraph (4) of subdivision (b) that results in a requirement that an urban retail water supplier achieve a reduction in daily per capita water use that is greater than 20 percent by December 31, 2020, an urban retail water supplier that adopted the method described in paragraph (4) of subdivision (b) may limit its urban water use target to a reduction of not more than 20 percent by December 31, 2020, by adopting the method described in paragraph (1) of subdivision (b).

(d) The department shall update the method described in paragraph (4) of subdivision (b) and report to the Legislature by December 31, 2014. An urban retail water supplier that adopted the method described in paragraph (4) of subdivision (b) may adopt a new urban daily per capita water use target pursuant to this updated method.

(e) An urban retail water supplier shall include in its urban water management plan due in 2010 pursuant to Part 2.6 (commencing with Section 10610) the 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.

(f) When calculating per capita values for the purposes of this chapter, an urban retail water supplier shall determine population using federal, state, and local population reports and projections.

(g) An urban retail water supplier may update its 2020 urban water use target in its 2015 urban water management plan required pursuant to Part 2.6 (commencing with Section 10610).

(h)

(1) The department, through a public process and in consultation with the California Urban Water Conservation Council, shall develop technical methodologies and criteria for the consistent implementation of this part, including, but not limited to, both of the following:

(A) Methodologies for calculating base daily per capita water use, baseline commercial, industrial, and institutional water use, compliance daily per capita water use, gross water use, service area population, indoor residential water use, and landscaped area water use.

(B) Criteria for adjustments pursuant to subdivisions (d) and (e) of Section 10608.24.

(2) The department shall post the methodologies and criteria developed pursuant to this subdivision on its internet website, and make written copies available, by October 1, 2010. An urban retail water supplier shall use the methods developed by the department in compliance with this part.

(h)

(1) The department shall adopt regulations for implementation of the provisions relating to process water in accordance with Section 10608.12, subdivision (e) of Section 10608.24, and subdivision (d) of Section 10608.26.

(2) The initial adoption of a regulation authorized by this subdivision is deemed to address an emergency, for purposes of Sections 11346.1 and 11349.6 of the Government Code, and the department is hereby exempted for that purpose from the requirements of subdivision (b) of Section 11346.1 of the Government Code. After the initial adoption of an emergency regulation pursuant to this subdivision, the department shall not request approval from the Office of Administrative Law to readopt the regulation as an emergency regulation pursuant to Section 11346.1 of the Government Code.

(j)

(1) An urban retail water supplier is granted an extension to July 1, 2011, for adoption of an urban water management plan pursuant to Part 2.6 (commencing with Section 10610) due in 2010 to allow the use of technical methodologies developed by the department pursuant to paragraph (4) of subdivision (b) and subdivision (h). An urban retail water supplier that adopts an urban water management plan due in 2010 that does not use the methodologies developed by the department pursuant to subdivision (h) shall amend the plan by July 1, 2011, to comply with this part.

(2) An urban wholesale water supplier whose urban water management plan prepared pursuant to Part 2.6 (commencing with Section 10610) was due and not submitted in 2010 is granted an extension to July 1, 2011, to permit coordination between an urban wholesale water supplier and urban retail water suppliers.

Section 10608.22.

Notwithstanding the method adopted by an urban retail water supplier pursuant to Section 10608.20, an urban retail water supplier's per capita daily water use reduction shall be no less than 5 percent of base daily per capita water use as defined in paragraph (3) of subdivision (c) of Section 10608.12. This section does not apply to an urban retail water supplier with a base daily per capita water use at or below 100 gallons per capita per day.

Section 10608.24.

(a) Each urban retail water supplier shall meet its interim urban water use target by December 31, 2015.

(b) Each urban retail water supplier shall meet its urban water use target by December 31, 2020.

(c) An urban retail water supplier's compliance daily per capita water use shall be the measure of progress toward achievement of its urban water use target.

(d)

(1) When determining compliance daily per capita water use, an urban retail water supplier may consider the following factors:

(A) Differences in evapotranspiration and rainfall in the baseline period compared to the compliance reporting period.

(B) Substantial changes to commercial or industrial water use resulting from increased business output and economic development that have occurred during the reporting period.

(C) Substantial changes to institutional water use resulting from fire suppression services or other extraordinary events, or from new or expanded operations, that have occurred during the reporting period.

(2) If the urban retail water supplier elects to adjust its estimate of compliance daily per capita water use due to one or more of the factors described in paragraph (1), it shall provide the basis for, and data supporting, the adjustment in the report required by Section 10608.40.

(e) When developing the urban water use target pursuant to Section 10608.20, an urban retail water supplier that has a substantial percentage of industrial water use in its service area may exclude process water from the calculation of gross water use to avoid a disproportionate burden on another customer sector.

(f)

(1) An urban retail water supplier that includes agricultural water use in an urban water management plan pursuant to Part 2.6 (commencing with Section 10610) may include the agricultural water use in determining

gross water use. An urban retail water supplier that includes agricultural water use in determining gross water use and develops its urban water use target pursuant to paragraph (2) of subdivision (b) of Section 10608.20 shall use a water efficient standard for agricultural irrigation of 100 percent of reference evapotranspiration multiplied by the crop coefficient for irrigated acres.

(2) An urban retail water supplier, that is also an agricultural water supplier, is not subject to the requirements of Chapter 4 (commencing with Section 10608.48), if the agricultural water use is incorporated into its urban water use target pursuant to paragraph (1).

Section 10608.26.

(a) In complying with this part, an urban retail water supplier shall conduct at least one public hearing to accomplish all of the following:

(1) Allow community input regarding the urban retail water supplier's implementation plan for complying with this part.

(2) Consider the economic impacts of the urban retail water supplier's implementation plan for complying with this part.

(3) Adopt a method, pursuant to subdivision (b) of Section 10608.20, for determining its urban water use target.

(b) In complying with this part, an urban retail water supplier may meet its urban water use target through efficiency improvements in any combination among its customer sectors. An urban retail water supplier shall avoid placing a disproportionate burden on any customer sector.

(c) For an urban retail water supplier that supplies water to a United States Department of Defense military installation, the urban retail water supplier's implementation plan for complying with this part shall consider the conservation of that military installation under federal Executive Order 13514.

(d)

(1) Any ordinance or resolution adopted by an urban retail water supplier after the effective date of this section shall not require existing customers as of the effective date of this section, to undertake changes in product formulation, operations, or equipment that would reduce process water use, but may provide technical assistance and financial incentives to those customers to implement efficiency measures for process water. This section shall not limit an ordinance or resolution adopted pursuant to a declaration of drought emergency by an urban retail water supplier.

(2) This part shall not be construed or enforced so as to interfere with the requirements of Chapter 4 (commencing with Section 113980) to Chapter 13 (commencing with Section 114380), inclusive, of Part 7 of

Division 104 of the Health and Safety Code, or any requirement or standard for the protection of public health, public safety, or worker safety established by federal, state, or local government or recommended by recognized standard setting organizations or trade associations.

Section 10608.28.

(a) An urban retail water supplier may meet its urban water use target within its retail service area, or through mutual agreement, by any of the following:

(1) Through an urban wholesale water supplier.

(2) Through a regional agency authorized to plan and implement water conservation, including, but not limited to, an agency established under the Bay Area Water Supply and Conservation Agency Act (Division 31 (commencing with Section 81300)).

(3) Through a regional water management group as defined in Section 10537.

(4) By an integrated regional water management funding area.

(5) By hydrologic region.

(6) Through other appropriate geographic scales for which computation methods have been developed by the department.

(b) A regional water management group, with the written consent of its member agencies, may undertake any or all planning, reporting, and implementation functions under this chapter for the member agencies that consent to those activities. Any data or reports shall provide information both for the regional water management group and separately for each consenting urban retail water supplier and urban wholesale water supplier.

Section 10608.32.

All costs incurred pursuant to this part by a water utility regulated by the Public Utilities Commission may be recoverable in rates subject to review and approval by the Public Utilities Commission, and may be recorded in a memorandum account and reviewed for reasonableness by the Public Utilities Commission.

Section 10608.34.

(a)

(1) On or before January 1, 2017, the department shall adopt rules for all of the following:

(A) The conduct of standardized water loss audits by urban retail water suppliers in accordance with the method adopted by the American Water Works Association in the third edition of Water Audits and Loss

Control Programs, Manual M36 and in the Free Water Audit Software, version 5.0.

(B) The process for validating a water loss audit report prior to submitting the report to the department. For the purposes of this section, “validating” is a process whereby an urban retail water supplier uses a technical expert to confirm the basis of all data entries in the urban retail water supplier’s water loss audit report and to appropriately characterize the quality of the reported data. The validation process shall follow the principles and terminology laid out by the American Water Works Association in the third edition of Water Audits and Loss Control Programs, Manual M36 and in the Free Water Audit Software, version 5.0. A validated water loss audit report shall include the name and technical qualifications of the person engaged for validation.

(C) The technical qualifications required of a person to engage in validation, as described in subparagraph (B).

(D) The certification requirements for a person selected by an urban retail water supplier to provide validation of its own water loss audit report.

(E) The method of submitting a water loss audit report to the department.

(2) The department shall update rules adopted pursuant to paragraph (1) no later than six months after the release of subsequent editions of the American Water Works Association’s Water Audits and Loss Control Programs, Manual M36. Except as provided by the department, until the department adopts updated rules pursuant to this paragraph, an urban retail water supplier may rely upon a subsequent edition of the American Water Works Association’s Water Audits and Loss Control Programs, Manual M36 or the Free Water Audit Software.

(b)

(1) On or before October 1 of each year until October 1, 2023, each urban retail water supplier reporting on a calendar year basis shall submit a completed and validated water loss audit report for the previous calendar year or the previous fiscal year as prescribed by the department pursuant to subdivision (a).

(2) On or before January 1 of each year until January 1, 2024, each urban retail water supplier reporting on a fiscal year basis shall submit a completed and validated water loss audit report for the previous fiscal year as prescribed by the department pursuant to subdivision (a).

(3) On or before January 1, 2024, and on or before January 1 of each year thereafter, each urban retail water supplier shall submit a completed and

validated water loss audit report for the previous calendar year or previous fiscal year as part of the report submitted to the department pursuant to subdivision (a) of Section 10609.24 and as prescribed by the department pursuant to subdivision (a).

(4) Water loss audit reports submitted on or before October 1, 2017, may be completed and validated with assistance as described in subdivision (c).

(c) Using funds available for the 2016–17 fiscal year, the board shall contribute up to four hundred thousand dollars ($400,000) towards procuring water loss audit report validation assistance for urban retail water suppliers.

(d) Each water loss audit report submitted to the department shall be accompanied by information, in a form specified by the department, identifying steps taken in the preceding year to increase the validity of data entered into the final audit, reduce the volume of apparent losses, and reduce the volume of real losses.

(e) At least one of the following employees of an urban retail water supplier shall attest to each water loss audit report submitted to the department:

(1) The chief financial officer.

(2) The chief engineer.

(3) The general manager.

(f) The department shall deem incomplete and return to the urban retail water supplier any final water loss audit report found by the department to be incomplete, not validated, unattested, or incongruent with known characteristics of water system operations. A water supplier shall resubmit a completed water loss audit report within 90 days of an audit being returned by the department.

(g) The department shall post all validated water loss audit reports on its internet website in a manner that allows for comparisons across water suppliers. The department shall make the validated water loss audit reports available for public viewing in a timely manner after their receipt.

(h) Using available funds, the department shall provide technical assistance to guide urban retail water suppliers' water loss detection programs, including, but not limited to, metering techniques, pressure management techniques, condition-based assessment techniques for transmission and distribution pipelines, and utilization of portable and permanent water loss detection devices.

(i) No earlier than January 1, 2019, and no later than July 1, 2020, the board shall adopt rules requiring urban retail water suppliers to meet performance standards for the volume of water losses. In adopting these rules, the board shall employ full life-cycle cost accounting to evaluate the costs of meeting the performance standards. The board may consider establishing a minimum allowable water loss threshold that, if reached and maintained by an urban water supplier, would exempt the urban water supplier from further water loss reduction requirements.

Section 10608.35.

(a) The department, in coordination with the board, shall conduct necessary studies and investigations and make a recommendation to the Legislature, by January 1, 2020, on the feasibility of developing and enacting water loss reporting requirements for urban wholesale water suppliers.

(b) The studies and investigations shall include an evaluation of the suitability of applying the processes and requirements of Section 10608.34 to urban wholesale water suppliers.

(c) In conducting necessary studies and investigations and developing its recommendation, the department shall solicit broad public participation from stakeholders and other interested persons.

Section 10608.36.

Urban wholesale water suppliers shall include in the urban water management plans required pursuant to Part 2.6 (commencing with Section 10610) an assessment of their present and proposed future measures, programs, and policies to help achieve the water use reductions required by this part.

Section 10608.40.

Urban water retail suppliers shall report to the department on their progress in meeting their urban water use targets as part of their urban water management plans submitted pursuant to Section 10631. The data shall be reported using a standardized form developed pursuant to Section 10608.52.

Section 10608.42.

(a) The department shall review the 2015 urban water management plans and report to the Legislature by July 1, 2017, on progress towards achieving a 20-percent reduction in urban water use by December 31, 2020. The report shall include recommendations on changes to water efficiency standards or urban water use targets to achieve the 20- percent reduction and to reflect updated efficiency information and technology changes.

(b) A report to be submitted pursuant to subdivision (a) shall be submitted in compliance with Section 9795 of the Government Code.

Section 10608.43.

The department, in conjunction with the California Urban Water Conservation Council, by April 1, 2010, shall convene a representative task force consisting of academic experts, urban retail water suppliers, environmental organizations, commercial water users, industrial water users, and institutional water users to develop alternative best management practices for commercial, industrial, and institutional users and an assessment of the potential statewide water use efficiency improvement in the commercial, industrial, and institutional sectors that would result from implementation of these best management practices. The taskforce, in conjunction with the department, shall submit a report to the Legislature by April 1, 2012, that shall include a review of multiple sectors within commercial, industrial, and institutional users and that shall recommend water use efficiency standards for commercial, industrial, and institutional users among various sectors of water use. The report shall include, but not be limited to, the following:

(a) Appropriate metrics for evaluating commercial, industrial, and institutional water use.

(b) Evaluation of water demands for manufacturing processes, goods, and cooling.

(c) Evaluation of public infrastructure necessary for delivery of recycled water to the commercial, industrial, and institutional sectors.

(d) Evaluation of institutional and economic barriers to increased recycled water use within the commercial, industrial, and institutional sectors.

(e) Identification of technical feasibility and cost of the best management practices to achieve more efficient water use statewide in the commercial, industrial, and institutional sectors that is consistent with the public interest and reflects past investments in water use efficiency.

Section 10608.44.

Each state agency shall reduce water use at facilities it operates to support urban retail water suppliers in meeting the target identified in Section 10608.16.

Chapter 5. Sustainable Water Management, Section 10608.50

Section 10608.50.

(a) The department, in consultation with the board, shall promote implementation of regional water resources management practices through increased incentives and removal of barriers consistent with state and federal law. Potential changes may include, but are not limited to, all of the following:

(1) Revisions to the requirements for urban and agricultural water management plans.

(2) Revisions to the requirements for integrated regional water management plans.

(3) Revisions to the eligibility for state water management grants and loans.

(4) Revisions to state or local permitting requirements that increase water supply opportunities, but do not weaken water quality protection under state and federal law.

(5) Increased funding for research, feasibility studies, and project construction.

(6) Expanding technical and educational support for local land use and water management agencies.

(b) No later than January 1, 2011, and updated as part of the California Water Plan, the department, in consultation with the board, and with public input, shall propose new statewide targets, or review and update existing statewide targets, for regional water resources management practices, including, but not limited to, recycled water, brackish groundwater desalination, and infiltration and direct use of urban stormwater runoff.

Chapter 6. Standardized Data Collection, Section 10608.52

Section 10608.52.

(a) The department, in consultation with the board, the California Bay-Delta Authority or its successor agency, the State Department of Public Health, and the Public Utilities Commission, shall develop a single standardized water use reporting form to meet the water use information needs of each agency, including the needs of urban water suppliers that elect to determine and report progress toward achieving targets on a regional basis as provided in subdivision (a) of Section 10608.28.

(b) At a minimum, the form shall be developed to accommodate information sufficient to assess an urban water supplier’s compliance with conservation targets pursuant to Section 10608.24 and an agricultural water supplier’s compliance with implementation of efficient water management practices pursuant to subdivision (a) of Section 10608.48. The form shall accommodate reporting by urban water suppliers on an individual or regional basis as provided in subdivision (a) of Section 10608.28.

Chapter 7. Funding Provisions, Sections 10608.56–10608.60

Section 10608.56.

(a) On and after July 1, 2016, an urban retail water supplier is not eligible for a water grant or loan awarded or administered by the state unless the supplier complies with this part.

(b) On and after July 1, 2013, an agricultural water supplier is not eligible for a water grant or loan awarded or administered by the state unless the supplier complies with this part.

(c) Notwithstanding subdivision (a), the department shall determine that an urban retail water supplier is eligible for a water grant or loan even though the supplier has not met the per capita reductions required pursuant to Section 10608.24, if the urban retail water supplier has submitted to the department for approval a schedule, financing plan, and budget, to be included in the grant or loan agreement, for achieving the per capita reductions. The supplier may request grant or loan funds to achieve the per capita reductions to the extent the request is consistent with the eligibility requirements applicable to the water funds.

(d) Notwithstanding subdivision (b), the department shall determine that an agricultural water supplier is eligible for a water grant or loan even though the supplier is not implementing all of the efficient water management practices described in Section 10608.48, if the agricultural water supplier has submitted to the department for approval a schedule, financing plan, and budget, to be included in the grant or loan agreement, for implementation of the efficient water management practices. The supplier may request grant or loan funds to implement the efficient water management practices to the extent the request is consistent with the eligibility requirements applicable to the water funds.

(e) Notwithstanding subdivision (a), the department shall determine that an urban retail water supplier is eligible for a water grant or loan even though the supplier has not met the per capita reductions required pursuant to Section 10608.24, if the urban retail water supplier has submitted to the department for approval documentation demonstrating that its entire service area qualifies as a disadvantaged community.

(f) The department shall not deny eligibility to an urban retail water supplier or agricultural water supplier in compliance with the requirements of this part and Part 2.8 (commencing with Section 10800), that is participating in a multiagency water project, or an integrated regional water management plan, developed pursuant to Section 75026 of the Public Resources Code, solely on the basis that one or more of the agencies participating in the project or plan is not implementing all of the requirements of this part or Part 2.8 (commencing with Section 10800).

Section 10608.60.

(a) It is the intent of the Legislature that funds made available by Section 75026 of the Public Resources Code should be expended, consistent with Division 43 (commencing with Section 75001) of the Public Resources Code and upon appropriation by the Legislature, for grants to implement this part. In the allocation of funding, it is the intent of the Legislature that the department give consideration to disadvantaged communities to assist in implementing the requirements of this part.

(b) It is the intent of the Legislature that funds made available by Section 75041 of the Public Resources Code, should be expended, consistent with Division 43 (commencing with Section 75001) of the Public Resources Code and upon appropriation by the Legislature, for direct expenditures to implement this part.

Chapter 9. Urban Water Use Objectives and Water Use Reporting, Sections 10609–10609.38

Section 10609.

(a) The Legislature finds and declares that this chapter establishes a method to estimate the aggregate amount of water that would have been delivered the previous year by an urban retail water supplier if all that water had been used efficiently. This estimated aggregate water use is the urban retail water supplier’s urban water use objective. The method is based on water use efficiency standards and local service area characteristics for that year. By comparing the amount of water actually used in the previous year with the urban water use objective, local urban water suppliers will be in a better position to help eliminate unnecessary use of water; that is, water used in excess of that needed to accomplish the intended beneficial use.

(b) The Legislature further finds and declares all of the following:

  (1) This chapter establishes standards and practices for the following water uses:

    (A) Indoor residential use.

    (B) Outdoor residential use.

    (C) CII water use.

    (D) Water losses.

(E) Other unique local uses and situations that can have a material effect on an urban water supplier's total water use.

(2) This chapter further does all of the following:

(A) Establishes a method to calculate each urban water use objective.

(B) Considers recycled water quality in establishing efficient irrigation standards.

(C) Requires the department to provide or otherwise identify data regarding the unique local conditions to support the calculation of an urban water use objective.

(D) Provides for the use of alternative sources of data if alternative sources are shown to be as accurate as, or more accurate than, the data provided by the department.

(E) Requires annual reporting of the previous year's water use with the urban water use objective.

(F) Provides a bonus incentive for the amount of potable recycled water used the previous year when comparing the previous year's water use with the urban water use objective, of up to 10 percent of the urban water use objective.

(3) This chapter requires the department and the board to solicit broad public participation from stakeholders and other interested persons in the development of the standards and the adoption of regulations pursuant to this chapter.

(4) This chapter preserves the Legislature's authority over long- term water use efficiency target setting and ensures appropriate legislative oversight of the implementation of this chapter by doing all of the following:

(A) Requiring the Legislative Analyst to conduct a review of the implementation of this chapter, including compliance with the adopted standards and regulations, accuracy of the data, use of alternate data, and other issues the Legislative Analyst deems appropriate.

(B) Stating legislative intent that the director of the department and the chairperson of the board appear before the appropriate Senate and Assembly policy committees to report on progress in implementing this chapter.

(C) Providing one-time-only authority to the department and board to adopt water use efficiency standards, except as explicitly provided in this chapter. Authorization to update the standards shall require separate legislation.

(c) It is the intent of the Legislature that the following principles apply to the development and implementation of long-term standards and urban water use objectives:

(1) Local urban retail water suppliers should have primary responsibility for meeting standards-based water use targets, and they shall retain the flexibility to develop their water supply portfolios, design and implement water conservation strategies, educate their customers, and enforce their rules.

(2) Long-term standards and urban water use objectives should advance the state's goals to mitigate and adapt to climate change.

(3) Long-term standards and urban water use objectives should acknowledge the shade, air quality, and heat-island reduction benefits provided to communities by trees through the support of water-efficient irrigation practices that keep trees healthy.

(4) The state should identify opportunities for streamlined reporting, eliminate redundant data submissions, and incentivize open access to data collected by urban and agricultural water suppliers.

Section 10609.2.

(a) The board, in coordination with the department, shall adopt long-term standards for the efficient use of water pursuant to this chapter on or before June 30, 2022.

(b) Standards shall be adopted for all of the following:

(1) Outdoor residential water use.

(2) Outdoor irrigation of landscape areas with dedicated irrigation meters in connection with CII water use.

(3) A volume for water loss.

(c) When adopting the standards under this section, the board shall consider the policies of this chapter and the proposed efficiency standards' effects on local wastewater management, developed and natural parklands, and urban tree health. The standards and potential effects shall be identified by May 30, 2022. The board shall allow for public comment on potential effects identified by the board under this subdivision.

(d) The long-term standards shall be set at a level designed so that the water use objectives, together with other demands excluded from the long-term standards such as CII indoor water use and CII outdoor water use not connected to a dedicated landscape meter, would exceed the statewide conservation targets required pursuant to Chapter 3 (commencing with Section 10608.16).

(e) The board, in coordination with the department, shall adopt by regulation variances recommended by the department pursuant to Section 10609.14 and guidelines and methodologies pertaining to the calculation of an urban retail water supplier's urban water use objective recommended by the department pursuant to Section 10609.16.

Section 10609.4.

(a)

(1) Until January 1, 2025, the standard for indoor residential water use shall be 55 gallons per capita daily.

(2) Beginning January 1, 2025, and until January 1, 2030, the standard for indoor residential water use shall be 47 gallons per capita daily.

(3) Beginning January 1, 2030, the standard for indoor residential water use shall be 42 gallons per capita daily.

(b)

(1) The department, in coordination with the board, shall conduct necessary studies and investigations to assess and quantify the economic benefits and impacts of the 2030 indoor residential use standard on water, wastewater, and recycled water systems and shall include saturation end-use studies. The studies and investigations shall build on the standards and potential effects identified pursuant to subdivision (c) of Section 10609.2 and shall also consider, and as appropriate incorporate, other regional and statewide studies that quantify the impacts on water, wastewater, and recycled water systems, and evaluate the long-term effects of telework. To facilitate these studies and investigations, the board may request necessary and relevant information from wastewater agencies, including monthly influent flow, actions taken to reassess treatment processes, and the impact of the implementation of this chapter on wastewater operations, maintenance, and capital investment. The department, in coordination with the board, shall summarize the findings of these studies and investigations in a report to the Legislature on or before October 1, 2028. The report shall be submitted in compliance with Section 9795 of the Government Code.

(2) If the department, in coordination with the board, determines that the 2030 indoor residential use standard is likely to unduly impact affordability of water and wastewater services, the department and the board may jointly recommend to the Legislature an alternate date on which the 2030 indoor residential use standard shall take effect. This determination shall be made using at least two years of data reflecting application of the 2025 indoor residential use standard.

(3) Based upon the studies and investigations conducted pursuant to paragraph (1), the department shall consider whether to recommend, for adoption by the board, additional variances to accommodate unique challenges related to residential indoor water use pursuant to Section 10609.2. Variance options may include, but are not limited to, stranded assets, impacts on disadvantaged communities, impacts to environmental flows, or adverse impacts to wastewater or recycled water operations.

(4) The studies, investigations, and report described in paragraph (1) shall include timely and inclusive collaboration with, and input from, a broad group of stakeholders, including, but not limited to, environmental groups, experts in indoor plumbing, water, wastewater, and recycled water agencies.

(c) An urban retail water supplier shall not be subject to enforcement pursuant to this chapter solely for failing to meet the indoor residential use standard.

Section 10609.6.

(a)

(1) The department, in coordination with the board, shall conduct necessary studies and investigations and recommend, no later than October 1, 2021, standards for outdoor residential use for adoption by the board in accordance with this chapter.

(2)

(A) The standards shall incorporate the principles of the model water efficient landscape ordinance adopted by the department pursuant to the Water Conservation in Landscaping Act (Article 10.8 (commencing with Section 65591) of Chapter 3 of Division 1 of Title 7 of the Government Code).

(B) The standards shall apply to irrigable lands.

(C) The standards shall include provisions for swimming pools, spas, and other water features. Ornamental water features that are artificially supplied with water, including ponds, lakes, waterfalls, and fountains, shall be analyzed separately from swimming pools and spas.

(b) The department shall, by January 1, 2021, provide each urban retail water supplier with data regarding the area of residential irrigable lands in a manner that can reasonably be applied to the standards adopted pursuant to this section.

(c) The department shall not recommend standards pursuant to this section until it has conducted pilot projects or studies, or some combination of the two, to ensure that the data provided to local agencies are reasonably accurate for the

APPENDIX C

MARTIS VALLEY GROUNDWATER MANAGEMENT PLAN

Consulting
Engineers and
Scientists

Martis Valley Groundwater Management Plan
5-Year Update
Nevada and Placer Counties, California

July 11, 2025

Prepared for:

Truckee Donner Public Utility District

On behalf of Truckee Donner Public Utility District, Northstar Community Service District, and Placer County Water Agency collectively referred to as the MVGB Agencies.

TRUCKEE DONNER PUBLIC UTILITY DISTRICT
SUMMARY REPORT – MARTIS VALLEY GROUNDWATER BASIN

GEI Certifications and Seals

This report and analysis was prepared by the following GEI Consultants Inc. professional geologists. Report sections contained herein based on available data and were prepared by:

Date: July 11, 2025

Sean Storey
Geologist-In-Training No. 812

Date: July 11 2025

Richard W. Shatz
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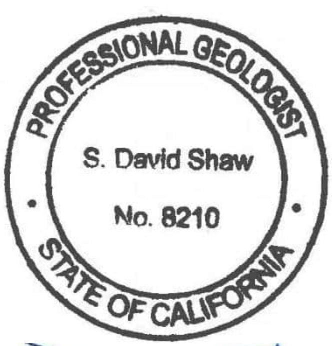
C.H.G. No. 84

This report and analysis was reviewed by the following Balance Hydrologics, Inc. professional geologist for technical accuracy and surface water data.



Date: November 26, 2024

David Shaw
Professional Geologist No. 8210

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Record of Revisions

Identification	Date	Description of Issued and/or Revision
GEI Consultants	11/15/2024	Draft 5-Year Update
GMP Partners	11/27/2024	Revisions and group discussion comments
GEI Consultants	5/8/2025	Revisions and additions based upon complete revisions and data.
GEI Consultants	5/22/2025	Final Review Document
GEI Consultants	6/10/2025	Final Document
GEI Consultants	7/11/2025	Public Comments incorporated

Acronyms and Abbreviations

AB 3030	Assembly Bill 3030
ac-ft/yr	acre-feet per year
Basin	Martis Valley Groundwater Basin
BMOs	Basin Management Objectives
CASGEM	California Statewide Groundwater Elevation Monitoring
cfs	cubic feet per second
CWC	California Water Code
DDW	Division of Drinking Water
DOI	U.S. Department of the Interior
DRI	Desert Research Institute
DWR	California Department of Water Resources
DWSAP	Drinking Water Source Assessment Program
GAMA	Groundwater Ambient Monitoring and Assessment
GCM	general circulation model
GMP	Groundwater Management Plan
gpm	gallons per minute
GSFLOW	Ground-water and Surface-water Flow Model
IRWMP	Integrated Regional Water Management Plan
LGA	Local Groundwater Assistance
LLNL	Lawrence Livermore National Laboratory
LRWQCB	Lahontan Regional Water Quality Control Board
LUST	leaking underground storage tank
MCL	Maximum Contaminant Level
mgd	million gallons per day
MODFLOW	Modular Three-Dimensional Finite-Difference Groundwater Flow Model
msl	mean sea level
MVGB	Martis Valley Groundwater Basin
NCSD	Northstar Community Services District
NOAA	National Oceanic and Atmospheric Association
PCWA	Placer County Water Agency
PRMS	Precipitation Runoff Modeling System
PUC	Public Utilities Commission
Reclamation	Bureau of Reclamation
SB	Senate Bill
SWG	Stakeholder Working Group
SWRCB	State Water Resources Control Board
TDPUD	Truckee Donner Public Utility District
TMWA	Truckee Meadows Water Authority
TROA	Truckee River Operating Agreement
T-TSA	Tahoe-Truckee Sanitation Agency

USACE	United States Army Corps of Engineers
USFS	United State Forest Service
USGS	United States Geologic Survey
UZF	Unsaturated Zone Flow

1. Introduction

In 1992, the State Legislature enacted the California Groundwater Management Act through Assembly Bill 3030 (AB 3030) to encourage local public agencies to adopt plans to manage groundwater resources within their jurisdictions. Provisions were created in the California Water Code (CWC) Sections 10750 et.seq. to manage the safe production, quality, and proper storage of groundwater and AB 3030 codified voluntary components of a Groundwater Management Plan (GMP). In 2002, Senate Bill 1938 (SB 1938) was signed into law which amended the CWC with required components of a GMP for any public agency seeking State funds administered through the California Department of Water Resources (DWR) for groundwater projects. In 2003, DWR published Bulletin 118 – Update 2003, California's Groundwater which includes seven recommended components of a GMP.

This GMP includes the following components: the partner agencies' authority, physical setting including groundwater conditions, management goals and Basin Management Objectives (BMOs), and GMP implementation activities.

1.1. Purpose of the Groundwater Management Plan

The Truckee Donner Public Utility District (TDPUD), Northstar Community Services District (NCSD), and Placer County Water Agency (PCWA) have voluntarily partnered to develop the Martis Valley GMP, a collaborative planning tool that assists the partner agencies with efforts to ensure long term quality and availability of shared groundwater resources in the Martis Valley Groundwater Basin (MVGB). This GMP is a "living document" that includes an overall goal, BMOs, and implementation actions that will be periodically updated to reflect changes in groundwater management and progress in meeting its goal and objectives.

The purpose of the Martis Valley GMP is to improve the understanding and management of the groundwater resource in Martis Valley, while providing a framework for the partner agencies to align policy and implement effective and sustainable groundwater management programs.

This GMP is not:

- *mandatory,*
- *regulatory,*
- *an enforcement effort, or*
- *land use or zoning ordinances*

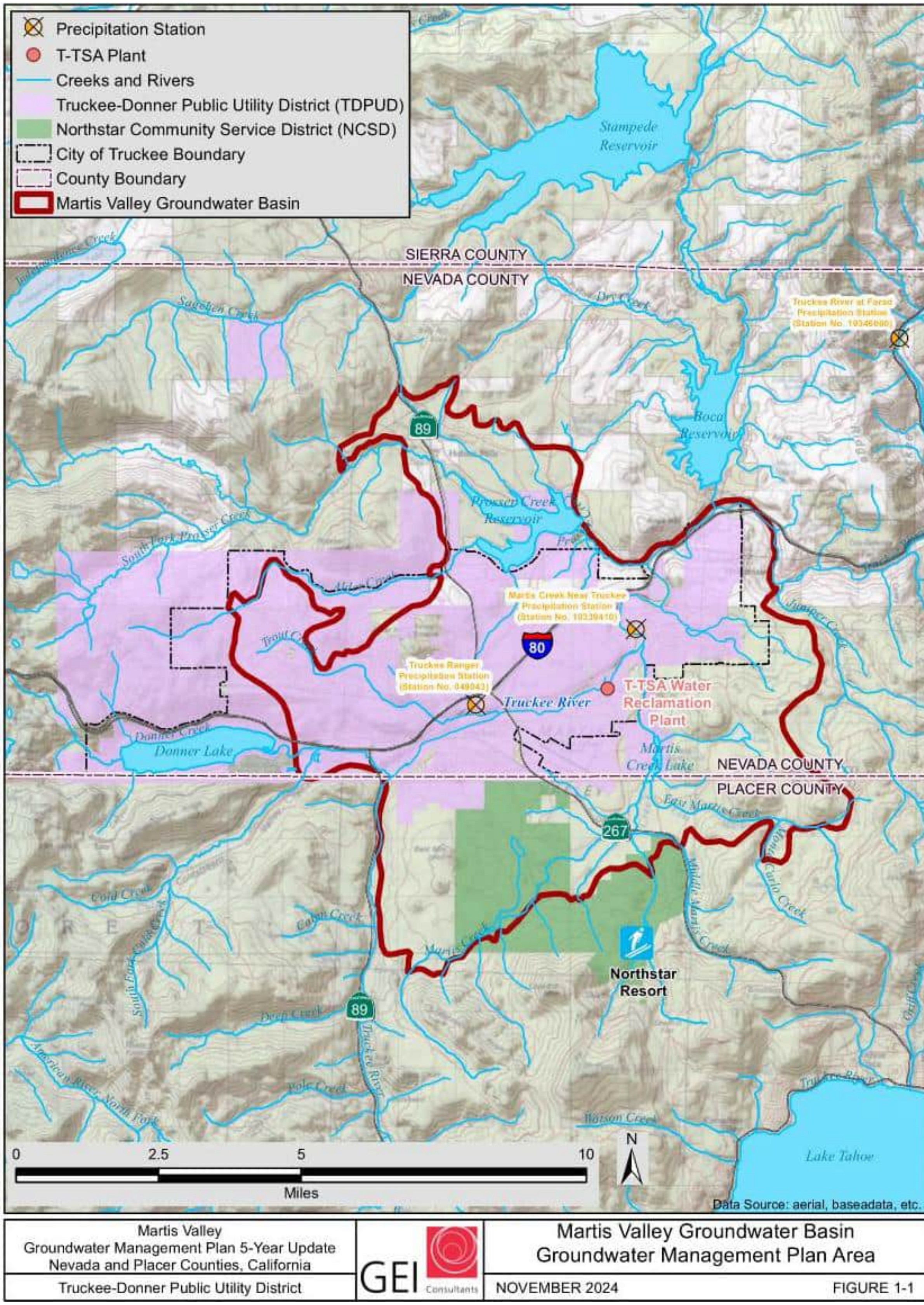
Older groundwater management plans by TDPUD (1995), PCWA (1998), and TDPUD, NCSD and PCWA (2013) are herein updated by this GMP which has been designed to meet the requirements set by SB 1938, addresses the voluntary and recommended components included in AB 3030, as well as address recommendations outlined in Bulletin 118-2003. The area covered by the Martis Valley GMP, as shown in Figure 1-1, includes each partner agencies' jurisdictional boundaries within Nevada and Placer Counties.

1.2. Groundwater Management Plan Authority and Administration

Each partner agency is an authorized groundwater management agency within the meaning of CWC § 10753 (a). In April of 2011, each partner agency adopted respective resolutions of intent to develop a GMP; the resolutions are included as Appendix A.

Beginning January 1, 2015, a new plan shall not be adopted and an existing plan shall not be renewed, except if the basin is prioritized as a low or very low priority basin CWC § 10750.1 (a and b). In 2018, DWR re-evaluated the Basin and changed its priority to very low priority. The MVGB Agencies recognize the importance of groundwater management and have voluntarily continued to implement the 2013 GMP and manage the groundwater resources in the Basin.

Figure 1-1. Groundwater Management Plan Area



1.3. Groundwater Management Plan Development Process

During the course of preparing the 2013 GMP, various entities were involved in developing, approving, and adopting the GMP. In addition to the partner agencies, a Stakeholder Working Group (SWG) was created to provide local knowledge, data and information, opinions, and review and comment on material prepared by the GMP team. The SWG was comprised of representatives of Federal, State, and local governments, environmental and special interest groups, and local land use interests. The partner agencies followed the five main steps for the development of the GMP, as defined under CWC §10753.2 through 10753.6. The five steps are described below and are illustrated on Figure 1-2.

Except as otherwise provided in CWC § 10753 (d), the process for developing and adopting a revised GMP shall be the same as the process for developing and adopting a new GMP. Documentation of the steps the partner agencies' actions is provided with each of the steps below.

Unless the annual monitoring report indicates that updates to the GMP are necessary, the period for adopting a new or revised GMP will be every 10 years or as needed.

A SWG meetings and a public meeting was held with the partner agencies during GMP update development. SWG members and the agency represented are presented in Table 1-1.

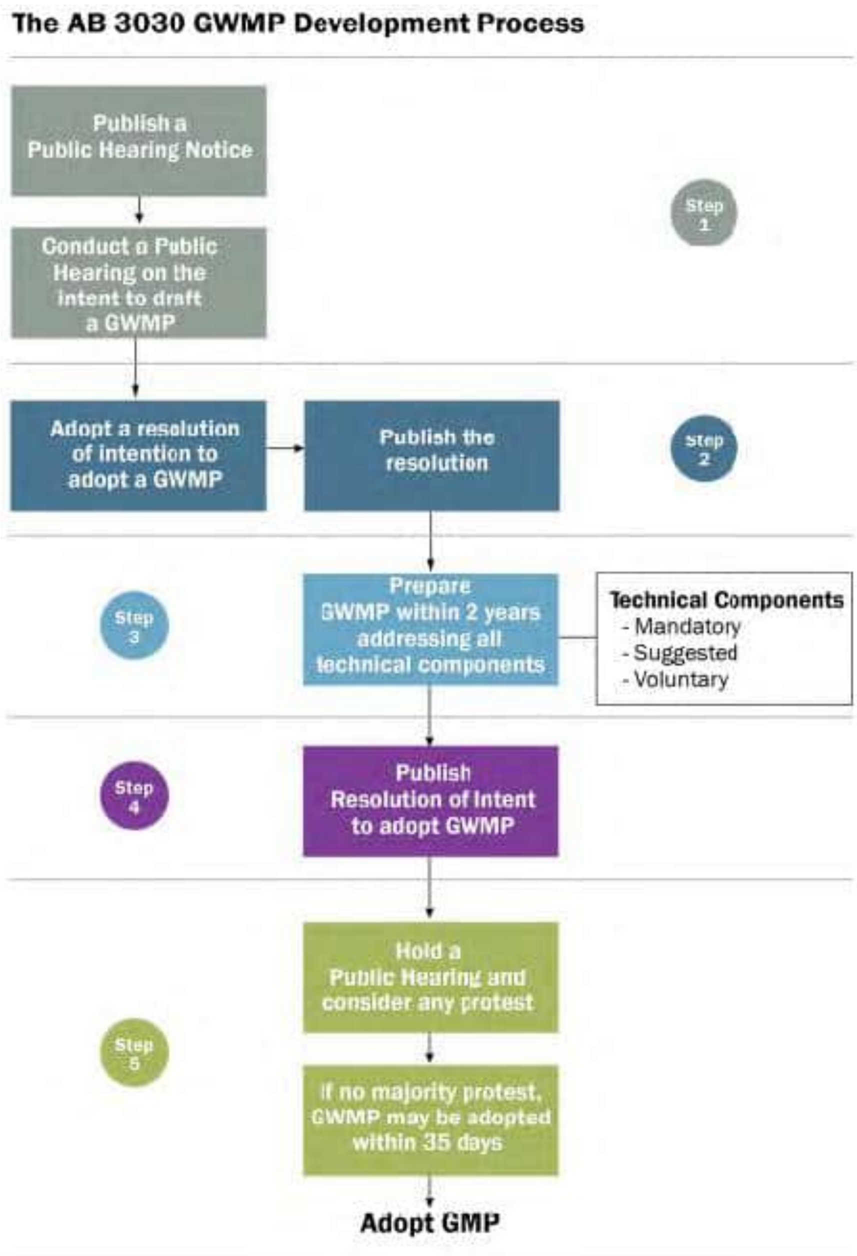
Table 1-1. Stakeholder Working Group Members

Working Group Participant	Representing
Jen Callaway	Town of Truckee
Jan Zabriskie	Town of Truckee
Becky Bucar	Town of Truckee
Scott Bower	Martis Camp
Amy Irani	Nevada County
Michelle Prestowitz	Truckee River Watershed Council
Christina Hanson	Placer County
Jared Deck	Placer County
Richard Anderson	Trout Unlimited
Tom Scott	CA Dept of Water Resources – TROA Division
Barrett Kasssa	CA Dept of Water Resources – Regional CASGEM
Richard Pallante	Tahoe Truckee Sanitation Agency
Jonathan Cook Fisher	United States Forest Service – Truckee District
Jerusha Hall	Vail Resorts
John Marlin	Schaffer's Mill
Rick Stephens	Lahontan
Hayes Parzybok	Tahoe Mountain Club
Annie Rosenfeld	Tahoe Donner Association
John Shaffer	Truckee Donner Rec and Parks District
Alexis Ollar	Mountain Area Preservation

Step 1 – Provide public notification of a hearing on whether or not to adopt a resolution of intention to draft a GMP and subsequently complete a hearing on whether or not to adopt a resolution of intention to draft a GMP. For future GMP updates, notification shall include the attempt to directly contact all stakeholder working group agencies/organizations. Following the hearing, draft a resolution of intention to draft a GMP. The agencies provided public notification and held their respective hearings in February 2025. Copies of newspaper notifications are included in Appendix A.

Step 2 – Adopt a resolution of intention to draft a GMP and publish the resolution of intention in accordance with public notification. The partner agencies' adopted their respective resolutions of intention to update a GMP in June 2025. The resolutions are included as Appendix A.

Figure 1-2. Groundwater Management Plan Development Process



Step 3 – Prepare a draft GMP within two years of resolution of intention adoption. For future GMP updates, at the initiation of the update process, seek to understand the concerns of stakeholders through one or more meetings. Provide to the public a written statement describing the manner in which interested parties may participate in developing the GMP. The agencies provided notification and held one SWG meetings where meeting attendees gave input on the GMP goal, BMOs, and implementation actions. The agencies also held a public meeting on June 3, 2025 to receive public input. Both meetings were attended by staff from GEI Consultants who prepared this report.

Step 4 – Provide public notification of a hearing on whether or not to update the GMP, followed by holding a hearing on whether or not to adopt the GMP. Public notices of the scheduled hearings were provided in the Auburn Journal and the Sierra Sun newspapers and proof of publications are included in **Appendix B.**

Step 5 – The plan may be adopted within 35 days after the completion of Step 4 above if protests are received for less than 50 percent of the assessed value of property in the plan area. If protests are received for greater than 50 percent of the assessed value of the property in the plan area, the plan will not be adopted. Public comments were received during the public comment period. In June 2025, each partner agency adopted the Martis Valley GMP and their respective resolutions are included in Appendix B.

Groundwater Management Goal

The GMP's goal provides the overarching purpose of the GMP, is used to identify the desired outcome of GMP implementation, is general in nature, and does not include quantitative components:

The goal of the Martis Valley GMP is to ensure long term quality and availability of groundwater in the Martis Valley Groundwater Basin.

1.4. Basin Management Objectives

The BMOs provide more specific direction to the GMP; they are generally protective of the groundwater resource and the environment, and each BMO identifies a distinct portion of the overarching goal which provides specific areas for focus. Summarized below are six primary areas that are emphasized and embodied in the BMO's that support the GMP goal:

1. **Manage groundwater to maintain established and planned uses**.

   Because the MVGB is the primary source of water to multiple users under separate jurisdictions, this objective encourages the partner agencies to pursue management of groundwater that is within their jurisdiction in order to protect existing uses.

2. **Manage groundwater use within the provisions of the Truckee River Operating Agreement**.

   The Truckee-Carson-Pyramid Lake Water Rights Settlement Act (Settlement Act), Public Law 101-618 (1990), established entitlements to the waters of Lake Tahoe, the Truckee River and its tributaries and how the storage reservoirs of the Truckee River are operated. Section 205 of the Settlement Act directs the Secretary of the Department of the Interior (DOI) to negotiate an operating agreement for the operation of Truckee River reservoirs, between California, Nevada, Truckee Meadows Water Authority (as the successor to Sierra Pacific Power Company), Pyramid Tribe, and the United States. The operating agreement is known as the Truckee River Operating Agreement (TROA) and was implemented December 1, 2015, effectively establishing the interstate allocation and the reporting requirements. TROA also includes a maximum depletion requirement for the Truckee River Basins, including Martis Valley. Depletion refers to the amount of water that is used or consumed but is not ultimately replenished into the watershed's streams or groundwater aquifers through percolation, treatment, etc. California's total annual allocation from surface and groundwater sources within the Lake Tahoe Basin is 23,000 acre-feet. The total annual allocation from the Truckee River Basin sources for use in California is 32,000 acre-feet, of which no more than 10,000 acre-feet can be from surface water sources. Additionally, the calculated annual depletion within the Truckee River Basin must not exceed 17,600 acre-feet, as determined by depletion calculations prescribed in TROA.

This objective documents the partner agencies' commitment to continue to comply with provisions of the TROA. Some provisions in TROA apply to groundwater and water wells within the Truckee River Basin (which includes the Martis Valley) to address potential adverse impacts to surface water.

3. **Collaborate and cooperate with groundwater users and stakeholders in the MVGB.**

   Collaborating and sharing information and resources with other groundwater users in the MVGB helps promote GMP goals. This objective encourages the partner agencies to reach out to other groundwater users within the MVGB.

4. **Protect groundwater quantity and quality.**

   Groundwater performs an integral function in a watershed, one of which is satisfying water supply needs. Improving the understanding of the groundwater basin is a critical step in protecting and sustaining the Martis Valley groundwater supply.

5. **Pursue and use the best available science and technology to inform the decision-making process.**

   Science and technology continue to develop new tools that may improve the understanding of the MVGB. This objective encourages the partner agencies to take actions that work with the best available science to help make informed agency decisions.

6. **Consider the environment and participate in the stewardship of groundwater resources.**

   The partner agencies are dedicated to stewardship of groundwater resources and this BMO ensures that stewardship is part of the GMP.

1.5. Plan Components

Required GMP components and their location in the GMP are summarized in Table 1-2, Voluntary GMP components and their location in the GMP are summarized in Table 1-3, and recommended GMP components and their location in the GMP are summarized in Table 1-4.

Table 1-2. Required Components and Associated Report Section

Category Required	GMP Components Required Components: (10753.7.)	Report Section
1	Establish Basin Management Objectives (BMOs)	1.5
2	Include components relating to the monitoring and management of groundwater levels, groundwater quality, and inelastic land subsidence	3.4
3	Include components relating to changes in surface flow and surface water quality that directly affect groundwater levels or quality or are caused by groundwater pumping in the basin	3.2
4	Include description of how recharge areas identified in the GMP substantially contribute to the replenishment of the groundwater basin	2.9
5	Prepare a GMP that enables the partner agencies to work cooperatively with other public entities whose service area falls within the plan area and overlies the groundwater basin	3.1 3.4
6	Prepare a map that details the area of the groundwater basin, the area subject to the GMP, and the boundaries of other local agencies that overlie the basin	1.1
7	Prepare a map identifying the recharge areas for the groundwater basin	2.9
8	Adopt monitoring protocols that detect changes in groundwater levels, groundwater quality, inelastic land subsidence, and surface water flow or quality that affects groundwater or groundwater pumping that affects surface water flow or quality	3.4
9	If the GMP area includes areas outside a groundwater basin as defined in Bulletin 118, the partner agencies will use the required components, and geologic and hydrologic principles appropriate for the area	Throughout GMP

Table 1-3. Voluntary Components and Associated Report Section

Category Required	GMP Components Required Components: (10753.8.)	Report Section
1	Control of saline intrusion	3.1
2	Identification and management of wellhead protection	3.4
3	Regulation of the migration of contaminated groundwater	3.1 3.2
4	Administration of a well abandonment and well destruction program	3.1
5	Mitigation of conditions of overdraft	3.1
6	Replenishment of groundwater extracted by water producers	3.1
7	Monitoring of groundwater levels and storage	3.4
8	Facilitating conjunctive use operations	3.1
9	Identification of well construction policies	3.4
10	Construction and operation by the partner agencies of groundwater contamination cleanup, recharge, storage, conservation, water recycling, and extraction projects	3.1 3.2
11	Development of relationships with State and Federal regulatory agencies	3.1 3.2 3.5
12	Review of land use plans and coordination with land use planning agencies to assess activities that create a reasonable risk of groundwater contamination	3.4

Table 1-4. Recommended Components and Associated Report Section

Category Required	GMP Components Recommended Components (From Bulletin 118-2003)	Report Section
1	Document public involvement and ability of the public to participate in development of the GMP, this may include a Technical Advisory Committee (Stakeholder Working Group)	1.3
2	Establish an advisory committee of stakeholders within the plan area that will help guide the development and implementation of the GMP and provide a forum for the resolution of controversial issues	1.3 3.1
3	Describe the area to be managed under the GMP including: • The physical structure of the aquifer system • A summary of available historical data and issues of concern related to groundwater levels, groundwater quality, inelastic land subsidence, and surface water flow or quality that effects groundwater or groundwater pumping that effects surface water flow or quality • A general discussion of historical and projected water demands and supplies	2
4	Establish management objectives (MOs) for the groundwater basin subject to the GMP	1.5
5	Describe the GMP's monitoring program	3.4
6	Describe efforts to coordinate with land use, zoning, or water management planning agencies or activities	3.4
7	Create a summary of monitoring locations with frequency of wells monitored	Appendix C
8	Provide periodic reports summarizing groundwater conditions and management activities including: • A summary of monitoring results, with a discussion of historical trends • A summary of management actions during the period covered by the report • A discussion of whether actions are achieving progress towards meeting BMOs • A summary of proposed management actions for the future • A summary of any GMP changes that occurred during the period covered by the report • A summary of actions taken	3.1
9	Provide for the periodic re-evaluation of the entire plan by the managing entity	3.1

1.6. Area Covered by the GMP

The Martis Valley GMP includes the service areas of the TDPUD, PCWA, and NCSD that overlay and extend beyond the MVGB boundary, as well as the Nevada and Placer County portion of the MVGB. It is important to note that at the time of GMP development, there were no other agencies within the Placer County portion of the MVGB that fall within the service area of another local agency, water corporation regulated by the Public Utility Commission (PUC), or mutual water company without the agreement of the overlying agency, as defined in the CWC (CWC § 10750.7(a)). Figure 1-1 shows the Martis Valley GMP area.

1.7. Public Outreach and Education

The partner agencies developed a Public Outreach Plan to guide development of the GMP Update. Public outreach included working with the existing Stakeholder Working Group to provide input on GMP update, two informative public meetings, and publicly noticed public hearings (Appendix A) on the intent to update and adopt the GMP. For future GMP updates, the Public Outreach Plan shall be shared with the stakeholders at a meeting as described in Section 1.3.

Groundwater Model

The partner agencies collaborated with the U.S. Bureau of Reclamation (Reclamation) and their subcontractor, Desert Research Institute (DRI), to develop an integrated watershed-groundwater model in conjunction with the Martis Valley 2013 GMP. The geologic investigation conducted and documented in Section 2 of this report has been used to develop a geologic framework database, which was used to guide the conceptual and numerical model components for the hydrogeology components (groundwater model) of the integrated watershed model. The integrated watershed model was under development in parallel with the 2013 GMP.

The integrated watershed model is comprised of a Precipitation Runoff Modeling System (PRMS) and Modular Three-Dimensional Finite-Difference Groundwater Flow Model (MODFLOW) coupled together using an Unsaturated Zone Flow (UZF) package. PRMS is used to model surface water within the watershed, whereas MODFLOW is used to model groundwater within the MVGB. The UZF model package is a kinematic wave vadose zone model used to simulate the interaction between surface water and groundwater. Each model was calibrated separately, and then calibrated together over a 10-year period using a coupled ground-water and surface-water Flow Model (GSFLOW). Predictive model simulations were performed using multiple general circulation model (GCM) projections of precipitation and temperature to estimate the influence of future climate on water resources within the MVGB. Calibration targets for fully coupled, GSFLOW model included head values measured from wells, meadow, and spring locations, streamflow's, measured snow depth, and remotely sensed snow cover.

The integrated model's model domain covered the entire Martis Valley Watershed, which includes the MVGB, as well as the watersheds that contribute surface water to the region, including Lake Tahoe. The model grid's cells are 300 by 300 meters in size. DRI used the PRMS component of the integrated modeling tool to estimate groundwater recharge across the MVGB and is discussed in more detail in Section 2.9.

1.8. Document Organization

The Martis Valley GMP is organized into the following sections:

- Section 2 Physical Setting: describes the physical setting of Martis Valley including items such as geologic setting, land use, water sources, and well infrastructure
- Section 3 Plan Implementation: discusses the implementation actions included in the Martis Valley GMP
- Section 4 References
- Appendices

2. Physical Setting

The MVGB is located in the transition zone between the Sierra Nevada and the Basin and Range Geomorphic Provinces, east of the Sierra Nevada crest and part of the larger Tahoe-Truckee River Basin of California and Nevada. Martis Valley is the principal topographic feature within the MVGB. The surrounding landscape is mountainous, underlain by volcanic and, to some extent, granitic bedrock, with apparent faulting and some portions that have been glaciated. A significant portion of the land within the MVGB boundary is privately owned with some areas managed as forest, open space and/or for recreation by special districts or agencies, including the U.S. Forest Service. This section of the GMP characterizes the physical setting of the MVGB, including: topography, climate, surface water hydrology, geology, hydrogeology, and water use.

2.1. Topography

The MVGB encompasses roughly 57 square miles, and lies within the Middle Truckee River Watershed. Elevations of the valley floor range from 5,700 to 5,900 feet above mean sea level (msl). The valley is accented by hills rising above the valley floor and mountains to the south and east of the valley. High points within or immediately adjacent to the MVGB include Bald Mountain at an elevation of 6,760 feet and Alder Hill at 6,733 feet, located on the western margin of the MVGB, and Lookout Mountain at 8,104 feet and Mt. Pluto at 8,617 feet, located on its the southern fringe. Martis Peak, further to the east, is at 8,742 feet. Figure 2-1 illustrates the MVGB location and topography.

2.2. Climate

The Tahoe-Truckee region experiences warm and dry summers, and cold, wet and snowy winters. Elevation and rain shadow play major roles in the spatial distribution of temperature and precipitation. Precipitation is highest at upper elevations in the western portion of the basin, toward the Sierra Crest, and decreases with elevation in the eastern portion of the basin (Figure 2-2). Mean annual precipitation (as snow water equivalent) ranges from approximately 30 inches below 6,500 feet to over 45 inches above 6,500 feet. Precipitation falls mostly as snow between October and April, though runoff and streamflow also responds to periodic mid-winter rain-on-snow events. Annual peak streamflow typically occurs during spring snowmelt in May or June. A small proportion of the total annual precipitation falls during brief thunderstorms in the summer months. The mean annual precipitation, as recorded at the USFS Truckee Ranger Station No. 049043 near the center of the watershed, for the period 1904 through 2023, is 29.78 inches. However, since about 2000, there appears to be more dry years and fewer wet years with more extreme precipitation events. The average for the last 20 years is less than the long-term average at about 28.08 inches. Average monthly precipitation is shown in Figure 2-3 for the period 2004 through 2023. This period was selected as potentially being more representative of current climate conditions. Monthly precipitation records are available that extend back to 1935. Average temperatures range from daily lows of 15°F in December and January to daily highs of 78°F in July, as recorded at SNOTEL Station Truckee #2 (1904 through 2023). In the last twenty years those same temperatures in December and January rose to 24°F and in July 80°F (2004 through 2023).

Figure 2-1. Groundwater Basin Location and Physiography

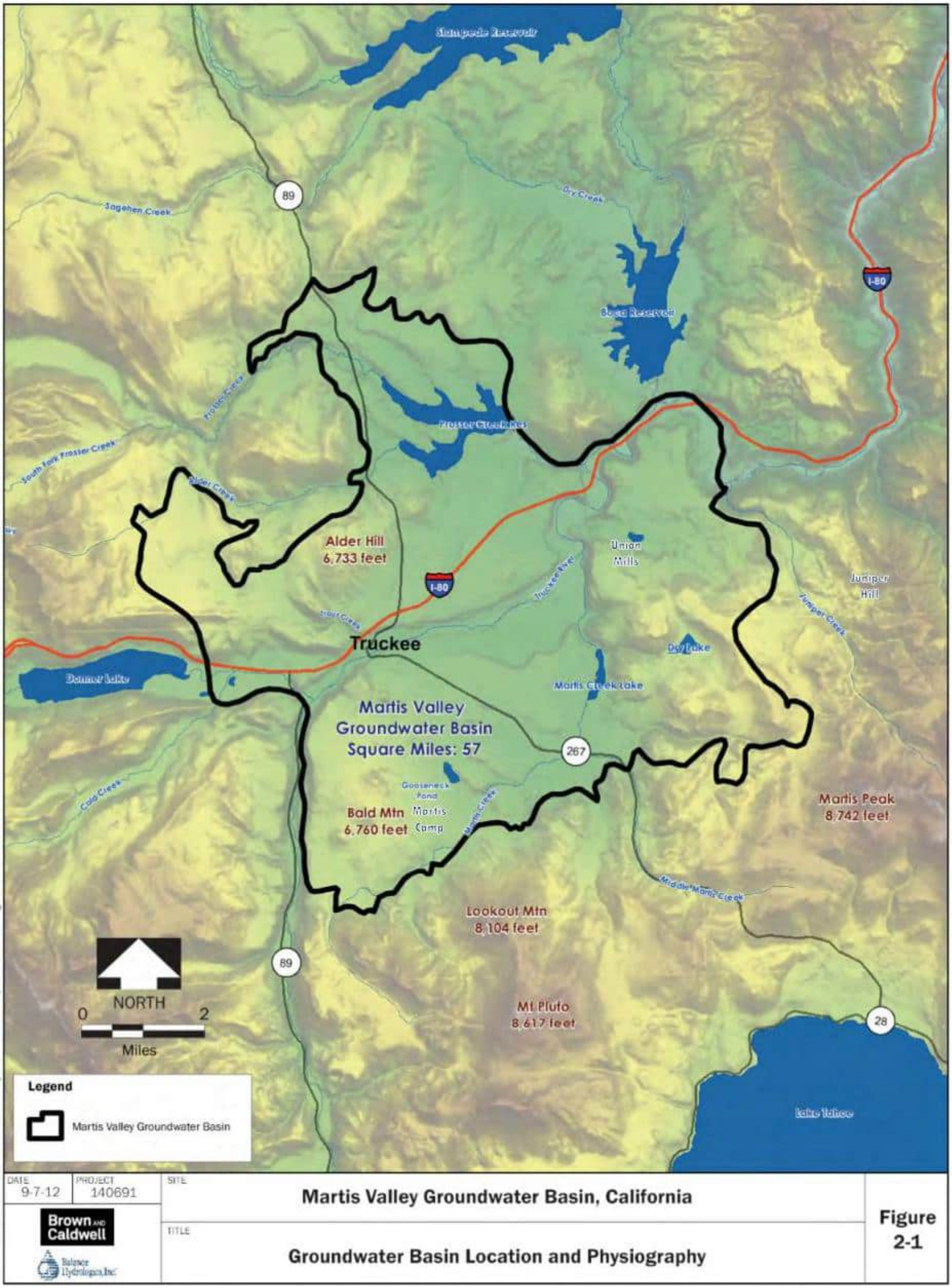


Figure 2-2. Mean Annual Precipitation

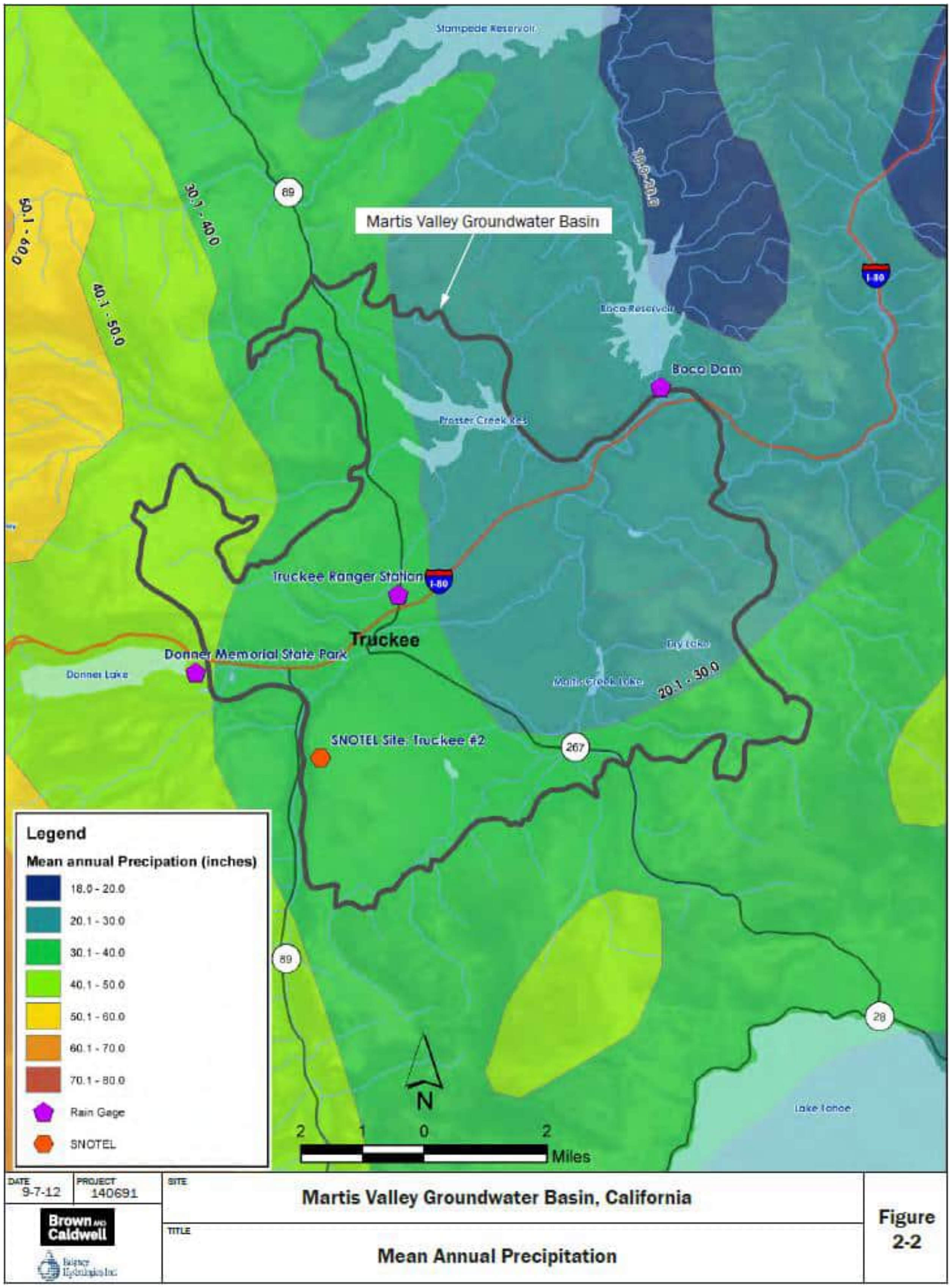
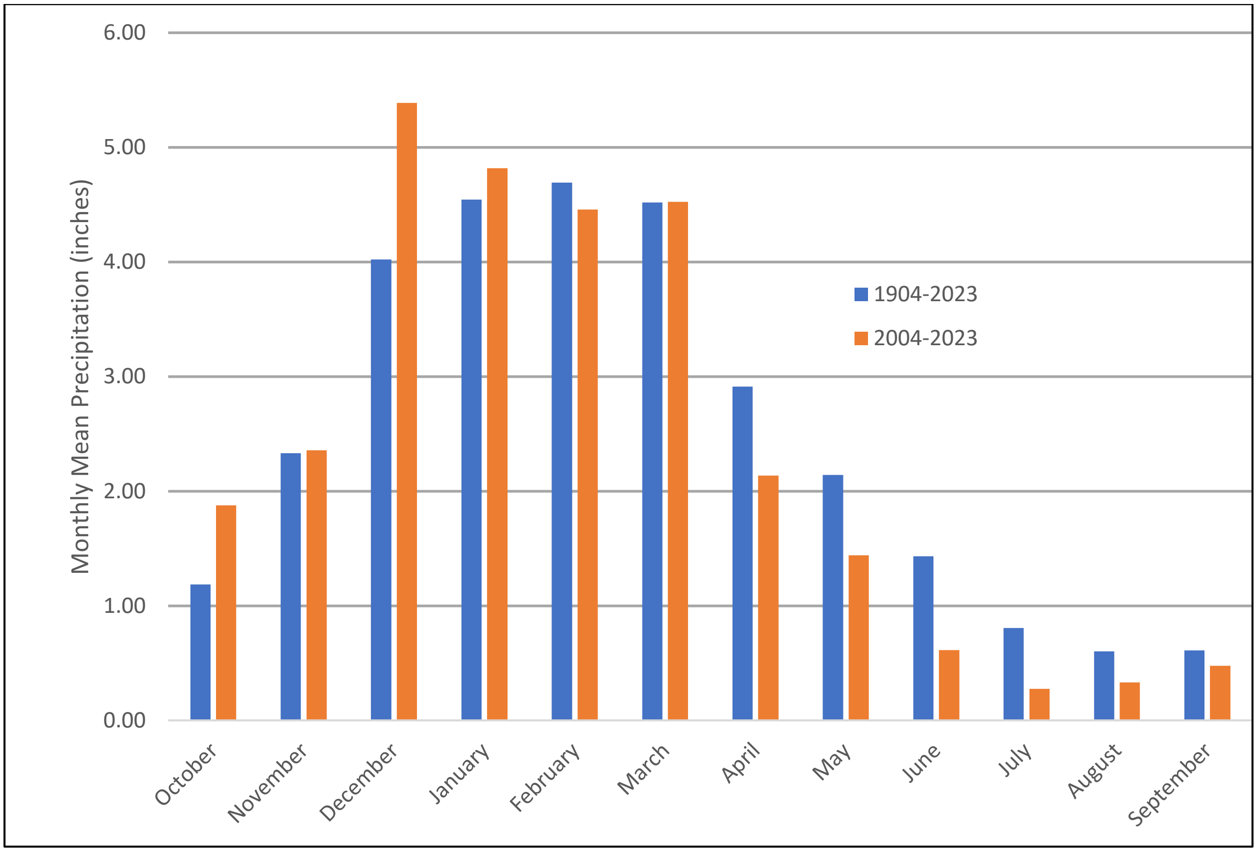


Figure 2-3. Mean Monthly Precipitation, Truckee Ranger Station

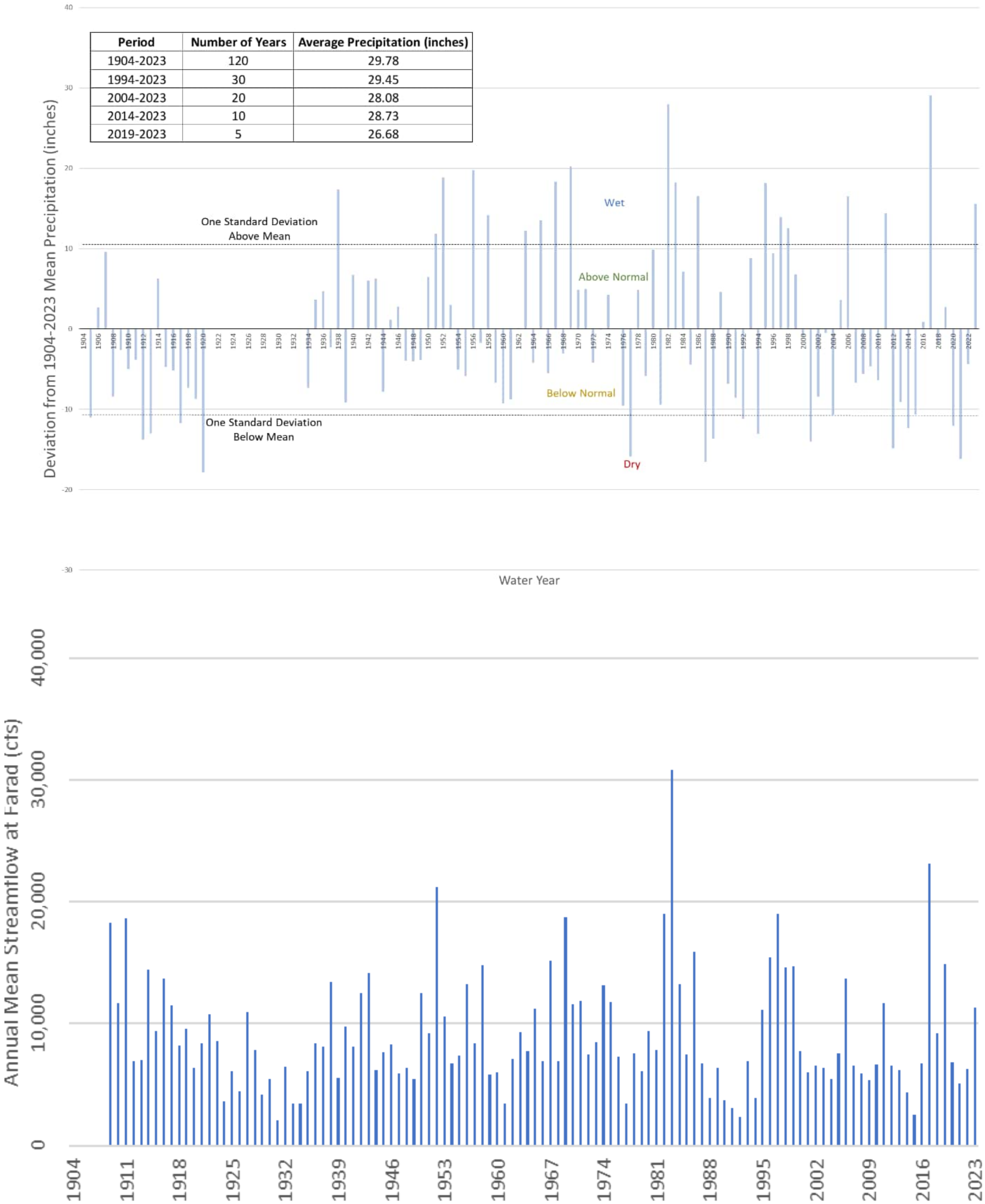


2.2.1. Climate Variability

The region experiences a wide range in climate variability. Variability is marked by periods of greater than average precipitation ('wet periods') and periods of below average precipitation or drought periods. Droughts have been historically common in the Sierra Nevada; Figure 2-4 illustrates the annual percent deviation from mean annual precipitation in Truckee and annual streamflow recorded at Farad from 1904 to 2023. The data shows that recent dry periods (periods of below average precipitation) generally have longer duration (e.g., 1987-1994, 2012-2016 and 2020-2022) than wet periods, which are typically short-lived and more extreme (e.g., 1982-1983, 2016-2017, 2018-2019, 2022-2023). This change in climate appears to have started about 2000.

The worst drought in the 110 records of recorded streamflows at Farad was from 1987 to 1994. A similar pattern is recorded in tree-ring data since 1600 (Fritts and Gordon, 1980), with longer, more extreme droughts recorded. Lindström and others (2000) have described climate changes and details of wet and dry periods over the past 10,000 years, noting evidence of several dry periods when Lake Tahoe, and Donner and Independence Lakes dropped below their natural rims for consecutive years or decades (700-500 years ago and 200-100 years ago).

Figure 2-4. Percent Deviation from Mean Annual Precipitation at the Truckee Ranger Station and Total Annual Streamflow at Farad



Period	Number of Years	Average Precipitation (inches)
1904-2023	120	29.78
1994-2023	30	29.45
2004-2023	20	28.08
2014-2023	10	28.73
2019-2023	5	26.68

2.2.2. Climate Change

The National Oceanic and Atmospheric Association (NOAA), Coats and others (2010), and Dettinger, M. (2018) predicted a future shift from snowfall to rain in the next century in this region as a result of projected increases in average, minimum, and maximum air temperatures. Associated changes in surface water hydrology include potential increases in the frequency and magnitude of major flooding, such that more water may leave the basin as runoff, rather than infiltrating and recharging groundwater resources. NOAA has also predicted that climate change may result in increased drought frequency, and generally reduced water supplies (U.S. Bureau of Reclamation, 2011).

The U.S. Bureau of Reclamation manages water supply in the Truckee River Basin (from Lake Tahoe to Pyramid Lake in Nevada) and has undertaken a number of studies to evaluate the degree to which water supply and demand may be impacted by future changes in climate. This includes the Truckee Basin Study, Basin Study Report (2015) as well as funding researchers at DRI to develop an integrated groundwater, surface water, and climate change model of the MVGB (Rajagopal, et al. 2015). While changes in average annual precipitation are uncertain, increases in temperature are likely (Reclamation, 2011b). Temperature alone has important effect of both supplies and demands—increases in temperature could amplify evaporation and evapotranspiration and diminish the portion of winter precipitation that accumulates as snow and could also cause earlier runoff.

Projections for average annual temperature is anticipated to increase by up to 5 to 6 degrees Fahrenheit by the end of the 21st century (Reclamation 2011a, 2011b). Annual precipitation may decrease slightly by the end of the 21st century. Potential increases or decreases in average annual precipitation would directly influence the availability of water supplies by changing the amount of water running off as well as the amount of water recharging groundwater resources (Rajagopal, et al. 2015).

2.3. Surface Water Hydrology

The Truckee River bisects the MVGB, with several tributaries upstream, within, and downstream of the MVGB. This section provides a brief discussion of the flow regimes of the Truckee River and the primary tributaries within the MVGB. Watershed areas are based on data available from CalAtlas, but sub-watersheds shown have been modified in places for consistency with other regional studies, including the Water Quality Assessment and Modeling of the California portion of the Truckee River Basin (McGraw and others, 2001), the Truckee River Water Quality Monitoring Plan (Nichols Engineers, 2008), the Martis Watershed Assessment (Shaw and others, 2012).

2.3.1. Truckee River

The Middle Truckee River[1] flows out of Lake Tahoe at Tahoe City with a number of tributaries contributing streamflow upstream of Martis Valley, including Bear, Squaw, Deer, Pole, Silver, and Cabin Creeks. The Truckee River then enters the MVGB near the junction of State Highway 89 and Interstate 80,

[1] Definitions of the Upper, Middle, and Lower Truckee River vary among numerous published studies. The definition used in this report of the “Middle Truckee River” definition used in this report conforms to nomenclature used by the California Lahontan Regional Water Quality Control Board, but differs from that used by the U.S. Bureau of Reclamation.

flows west to east across Martis Valley before exiting the basin near Boca, just upstream of its confluence with the Little Truckee River. Main tributaries within Martis Valley are Donner, Cold[2], Trout, Martis and Prosser Creeks (Figure 2-5). Below Boca, the Truckee River descends into the Truckee Canyon before flowing through Reno and Sparks, Nevada, and terminating at Pyramid Lake.

Streamflow from Lake Tahoe, Donner Lake, Martis Creek, and Prosser Creek is controlled by major dams or impoundments, with the timing of releases and streamflows guided by a number of court decrees, agreements, and regulations that govern the flow rate from California to Nevada. These streamflow rates are known as 'Floriston Rates' and measured at Farad, California just upstream of the State line. The Truckee River is currently operated according to the Truckee River Operating Agreement (USBOR, 2008). The Truckee River falls under the jurisdiction of TROA, which is further discussed in Section 3.2.

[2] Though it is not a direct tributary to the Truckee River, Cold Creek flows into Donner Creek below Donner Lake, approximately 1.5 miles upstream of the confluence with the Truckee River, and therefore accounts for a significant portion of the unregulated flow into the MVGB.

Figure 2-5. Hydrography and Long-term Monitoring Stations

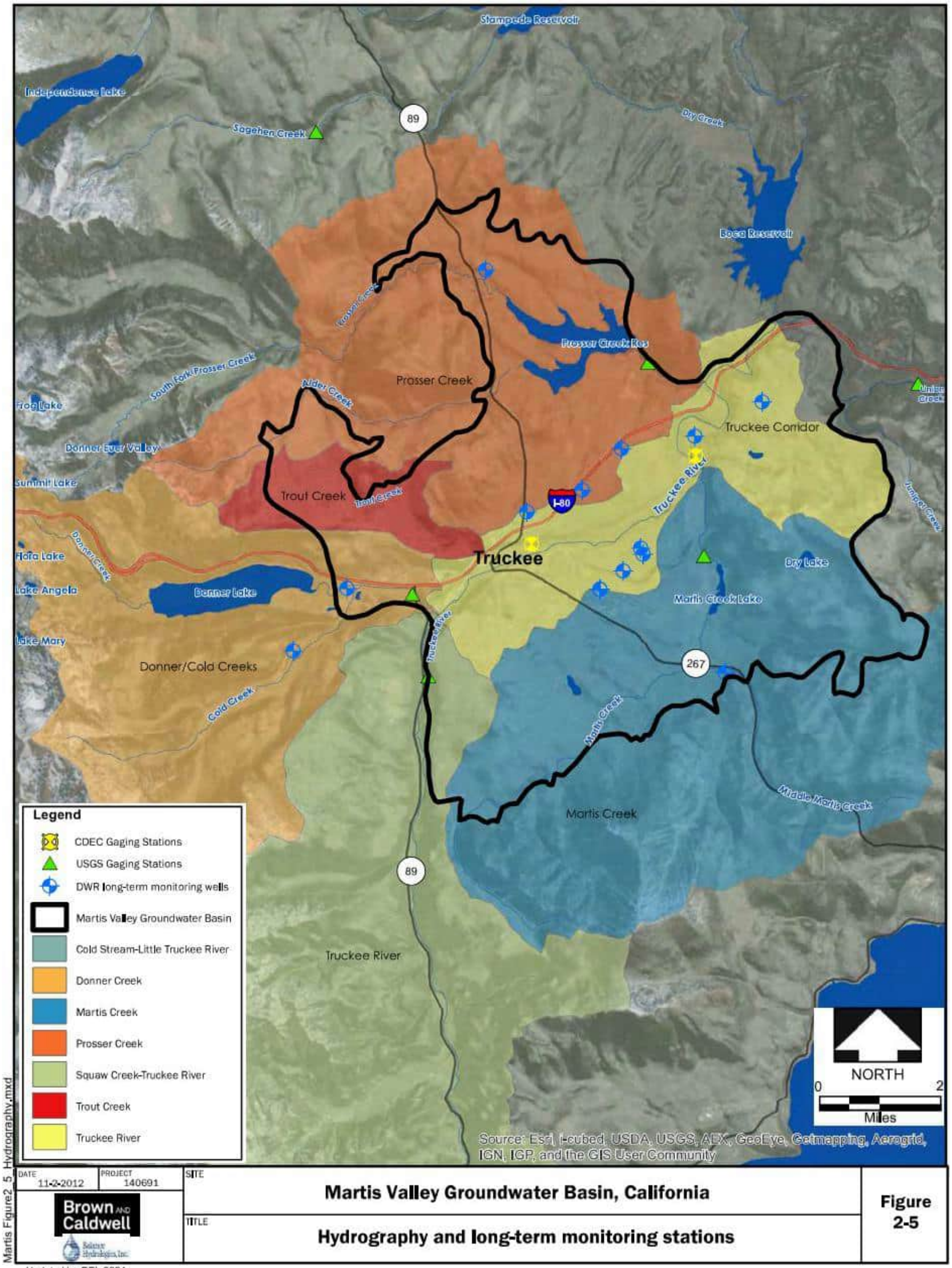


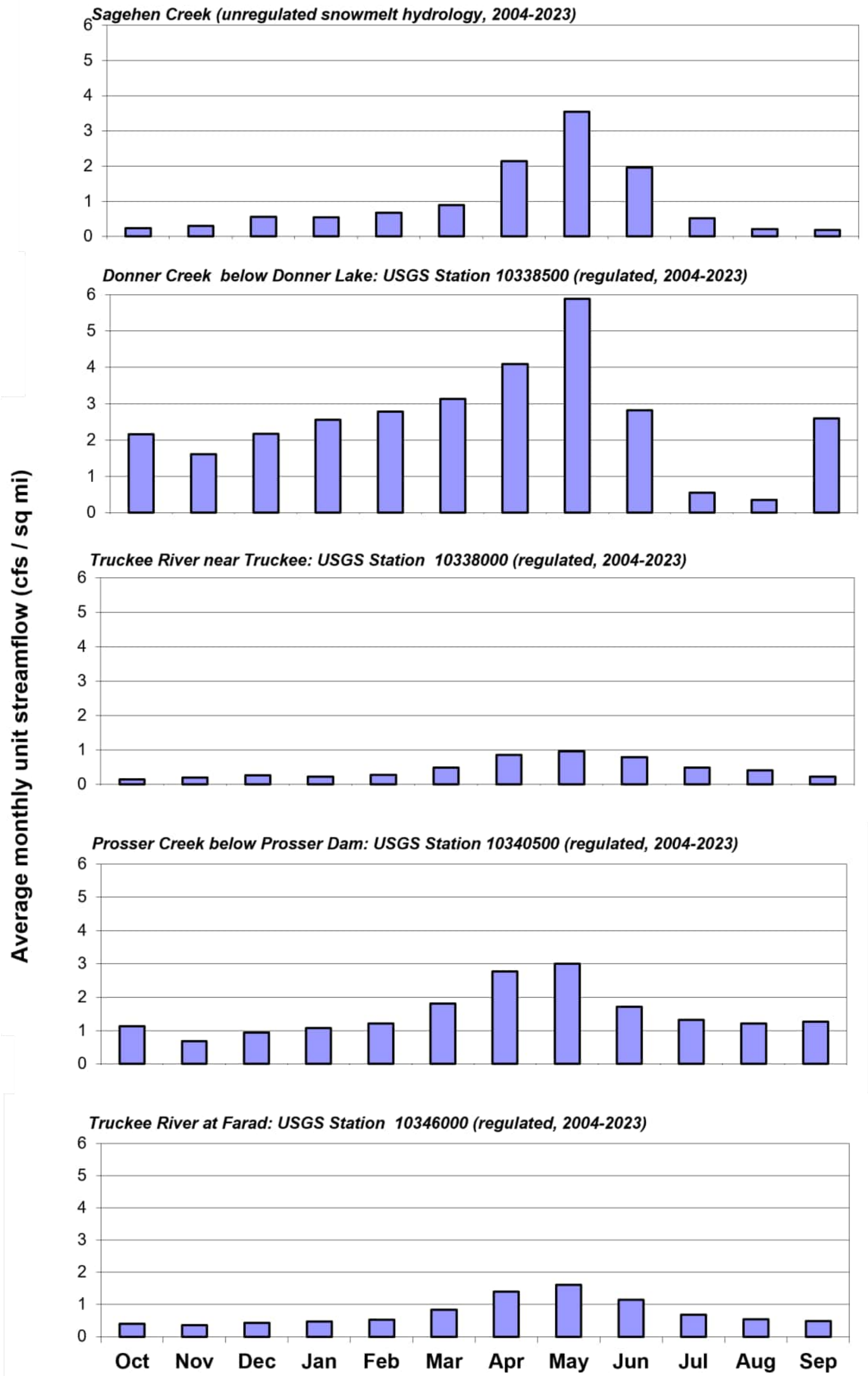
Table 2-1 summarizes historical monthly and average annual flow of the Truckee River and its tributaries, and Figure 2-6 correspondingly shows the average monthly streamflow at a number of gaging stations in the Truckee Basin. This data illustrates how the regulation of streamflows in the Truckee Basin alters the timing of discharge. Unregulated streams in this region tend to experience seasonal low flows in the late summer and early fall, with the bulk of total annual runoff occurring as snowmelt in May and June. This pattern is illustrated by monthly streamflow data collected at Sagehen Creek, an unregulated watershed approximately 5 miles north of the MVGB. In contrast, streams in the MVGB tend to have the total annual streamflow more uniformly distributed during the year, due to timed releases from the various impoundments.

Table 2-1. Average Monthly Streamflow on the Truckee River and Select Tributaries (2004-2023)

	Sagehen Creek	Donner Creek below Donner Lake	Truckee River near Truckee	Prosser Creek below Prosser Dam	Martis Creek below Martis Dam	Truckee River at Boca	Truckee River at Farad	Truckee River Below Martis Creek
USGS Station ID	10343500	10338500	10338000	10340500	10339400	10344505	10346000	10339410
Watershed Size (sq mi)	10.5	14.3	553.0	52.9	39.9	873	932	639
Period of record	2004-2023	2004-2023	2004-2023	2004-2023	2004-2023	2004-2023	2004-2023	2016-2023
				(cfs)				
Oct	3	31	79	60	7	341	378	119
Nov	3	23	114	36	8	308	338	224
Dec	6	31	150	50	17	364	402	272
Jan	6	37	129	57	26	390	439	286
Feb	7	40	156	64	30	446	493	371
Mar	9	45	268	96	49	711	774	647
Apr	23	59	474	147	70	1190	1,300	1250
May	37	84	530	159	50	1340	1,500	1220
Jun	21	40	437	91	20	917	1,070	840
Jul	6	8	273	70	7	554	639	325
Aug	2	5	227	64	5	459	508	230
Sept	2	37	123	67	5	415	457	157
Mean annual (cfs)	10	37	247	80	24	620	692	495
Mean annual (ac-ft)	7,469	26,488	178,662	57,978	17,661	448,558	500,623	358,424

Note: Table updated by Balance Hydrologic November 2024; cfs: cubic feet per second; ac-ft: acre-feet; sq mi = square mile
Source: U.S. Geological Survey; U.S. Army Corps of Engineers.

Figure 2-6. Mean Monthly Streamflow in the Middle Truckee River Watershed (2004-2023)



Note: Figure updated by Balance Hydrologic November 2024

2.3.2. Martis Creek

Martis Creek generally flows from south to north in the southern portion of the groundwater basin, with four named tributaries - Martis, West, Middle, and East Martis Creeks comprising the majority of its 42.7 square-mile watershed. Martis Creek Dam was completed in 1972 in order to provide storage for flood control, recreation, and potential water supply (USACE, 1985). Shortly following construction, seepage was observed in the dam face, posing a significant failure risk. As a result, the reservoir has rarely been filled to capacity, and is now maintained at a minimum pool elevation located entirely within the boundaries of the MVGB. The maximum outlet capacity of the dam is 580 cubic feet per second (cfs) prior to spilling and 4,640 cfs at maximum spilling capacity. The United States Army Corps of Engineers (USACE) currently operates the dam in a ‘gates wide open’ position, such that minimal regulation or disruptions in the timing of streamflow occurs under most circumstances.

The United States Geologic Survey (USGS) maintained a streamflow gaging station on Martis Creek between Martis Dam and the Truckee River from October 1959 through September 2010 and transferred the gage to the USACE in October 2010. Since Martis Dam was constructed in 1972, these data have been used by the USACE, along with Martis Reservoir water level data and stage-storage information, to develop a record of inflow to Martis Reservoir. Daily reservoir inflow indicates average annual runoff into and out of the reservoir to be on the order of 19,630 acre-feet (about 27 cfs).

Placer County operates streamflow gaging stations on lower West Martis Creek (since 2012), Middle Martis Creek (since 2015) and upper West Martis Creek (since 2020) for the purposes of calculating pollutant loadings as part of the Truckee River Water Quality Monitoring Program (Nichols Consulting Engineers, 2008). Data from these stations are reported annually and available in PDF format on the Placer County website as most recently described in the 2023 Annual Monitoring Report (CDM-Smith, 2024).

2.3.3. Donner and Cold Creeks

Donner Lake has a watershed area of approximately 14.3 square miles, all of which lies west of the MVGB boundary. The lake discharges into Donner Creek near the western boundary of the groundwater basin, and then flows toward the east and into the Truckee River (Figure 2-5). A dam was constructed at the lake outlet in 1928 (Berris and others, 2001) allowing for a reservoir capacity of 9,500 ac-ft. The Donner Lake dam is operated by the Nevada Energy (formerly Sierra Pacific Power Company), with a typical release season to provide flood control space from September 1 to November 15. TDPUD holds rights to 990 acre-feet in Donner Lake (TDPUD, 2021). The USGS has maintained a streamflow station on Donner Creek below Donner Lake (Station 10338500) since 1931. Average annual streamflow is 25,794 acre-feet (35.9 cfs), and Figure 2-6 illustrates the effect of dam operations on the timing of streamflow during the year.

2.3.3.1. Cold Creek

Cold Creek has a watershed area of approximately 12.5 square miles and flows from Coldstream Canyon into Donner Creek in the western portion of the groundwater basin. The confluence of these streams historically migrated across the Coldstream Canyon alluvial fan, but now both channels area confined by transportation infrastructure and historical aggregate mining operations. Cold Creek is the largest unregulated watershed that flows into the MVGB; with a runoff regime typical of a snowmelt-dominated system, with peak flows in May and June and low flows in the late summer and early fall.

A streamflow gage was installed on Cold Creek by Balance Hydrologics for the Truckee River Watershed Council in October, 2010 and operated until September 30, 2014 (Hastings and Shaw, 2014). Cold Creek is the only significant tributary to Donner Creek between USGS gaging station 10338000 (Donner Creek at Donner Lake) and 10338700 (Donner Creek at Highway 89), therefore, historical streamflow estimates are made by calculating the difference in streamflow between these stations. Based on these data, average annual streamflow from Cold Creek for the period from 2004 to 2023 is approximately 26,982 ac-ft (37.3 cfs).

2.3.4. Trout Creek

With a watershed area of approximately 5 square miles, Trout Creek is the only other unregulated stream (besides Cold Creek) which flows into the MVGB. The headwaters of Trout Creek are located within the Tahoe-Donner residential subdivision, part of the Town of Truckee and largely within the boundaries of the MVGB. The runoff regime is predominately snow-melt dominated, but with portions of the watershed covered with impervious surfaces such as roads and rooftops, rainfall events result in slightly more runoff and less infiltration and recharge from this watershed compared to others. A streamflow gage on Trout Creek was installed in January 2011 for the Truckee River Watershed Council and discontinued in July 2014 (Hastings and Shaw, 2014), so long-term streamflow statistics are not available.

2.3.5. Prosser Creek

Prosser Creek's approximately 32 square-mile watershed area includes Alder Creek and lies largely outside the MVGB. Prosser Creek Reservoir however, is entirely within the groundwater basin and is operated by the U.S. Bureau of Reclamation for water supply and flood control under the conditions provided in TROA. The reservoir provides up to 20,000 acre-feet of storage for flood control but is capable of storing as much as 29,800 acre-feet for flood control, recreation, and improvement of fishery flows in the Truckee River (Hastings and others, 2022).

2.3.6. Reservoir releases for flood control typically occur between September 1 and October 31 (Berris and others, 2001), as reflected in the pattern of average monthly flows depicted in Figure 2-6. Truckee Corridor

The Truckee Corridor includes intervening areas that do not drain to the tributaries mentioned above. This includes the Union Creek sub-watershed, which encompasses much of the Glenshire subdivision in the eastern portion of the MVGB, as well as urban and open space areas within the Town of Truckee.

2.3.7. Other Impoundments

A number of small impoundments are located within the boundaries of the MVGB, including Union Mills Pond in the Glenshire subdivision, Dry Lake adjacent to the Waddle Ranch Preserve, and Gooseneck

Reservoir, near the Lahontan Golf Club. Though originally constructed for cattle-grazing and/or millpond operations, these impoundments are now managed primarily for open space, recreational/aesthetic, or wildlife purposes.

2.4. Geology

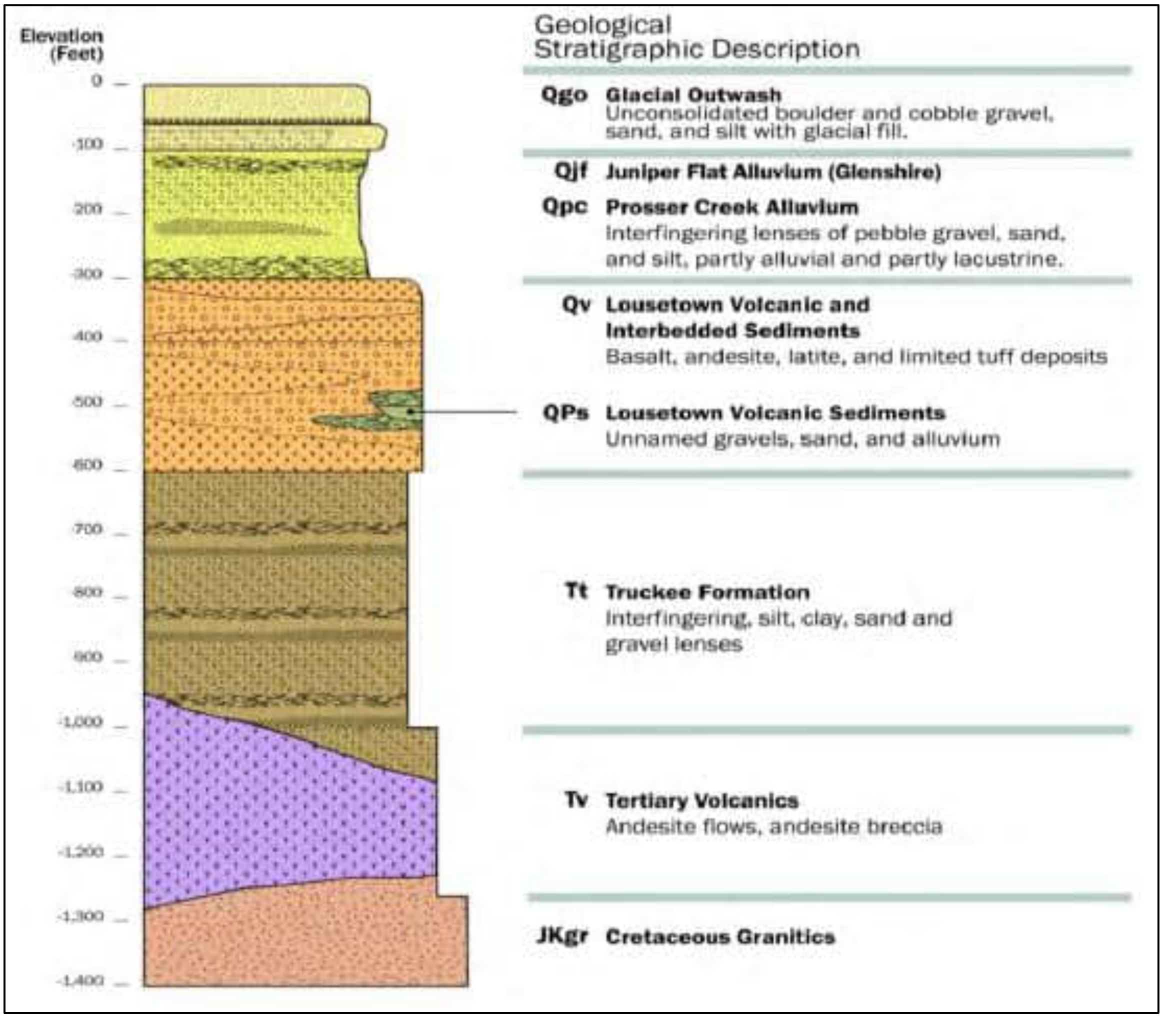
The Martis Valley is located in the Sierra Nevada physiographic region, which is composed primarily of igneous and metamorphic rocks, with sedimentary rocks in its valleys. The MVGB's complex geology is dominated by sedimentary deposits left by glaciations, volcanic rocks, and faulting. A component of the Martis GMP was the development of geologic cross-sections to improve the understanding of MVGB geology and stratigraphy.

2.4.1. Geologic Database Development

Approximately 200 well logs obtained from the DWR, TDPUD, PCWA, NCSD, and the Tahoe-Truckee Sanitation Agency (T-TSA) were interpreted to better understand depths and thicknesses of the various geologic formations comprising the MVGB. The filtered geologic and selected well data were entered into an ESRI ArcGIS Geodatabase, a spatially-referenced database. The benefit of the Geodatabase allowed a visual representation of the geologic data and was also used as the geologic framework for the DRI groundwater model that provides consistency between the GMP geologic interpretation and the groundwater model.

The geochronology and stratigraphic relationships of water-bearing formations was based on Birkeland's (1961; 1963; 1964) work, as well as subsequent investigations by Latham (1985), and Hydro-Search (1995), and mapping published by Saucedo (2005) and Melody (2009). The stratigraphic relationships, lithologies, and formation locations described in these studies, as well as through field observations, formed the basis for the designation of the primary hydrostratigraphic units, as displayed in Figure 2-7. Figure 2-8 shows the approximate locations of wells (available through 2013) used to develop the geologic database.

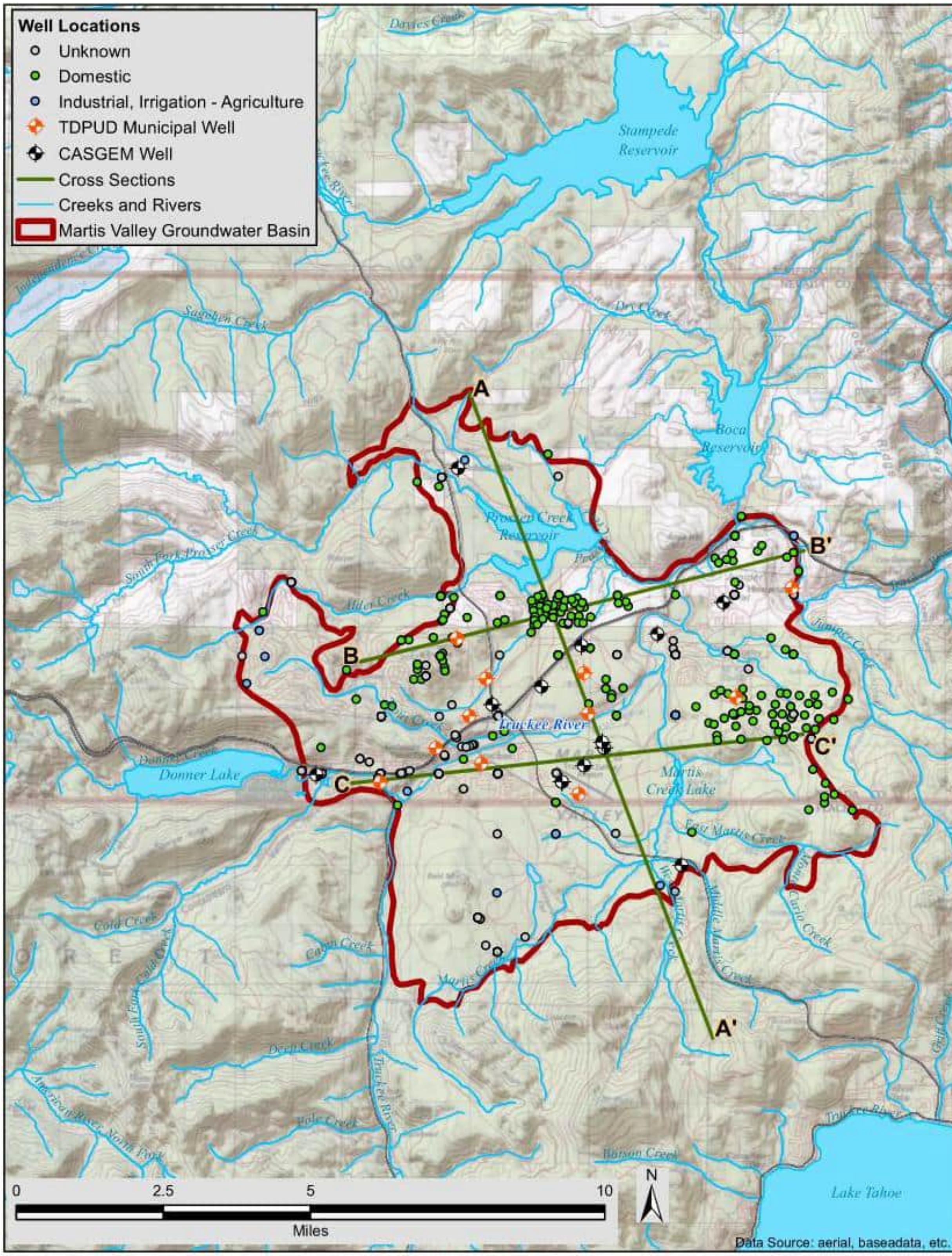
Figure 2-7. Stratigraphic Column showing Primary Hydrostratigraphic Units



Stratigraphic interpretations shown in Figure 2-7 and in Section 2.4.3 (below) are consistent with published geologic maps of the basin (Birkeland, 1961; 1963; Saucedo, 2005; Melody, 2009), and delineate four primary water-bearing stratigraphic units that make up the aquifer, and underlying rocks that are considered to be relatively water-limited (see Figure 2-9). The primary units shown in Figure 2-7 include a number of subunits mapped by previous investigators and shown on Figure 2-9 and noted in parenthesis with the descriptions below. When available, information regarding potentially confining (fine grained) or water-bearing (coarse) subunits are also delineated. Following well log interpretation, three representative geologic cross-sections were located and developed. Figure 2-9 shows the cross-section locations; Figure 2-10 shows cross-section A-A'; Figure 2-11 shows cross-section B-B', and Figure 2-12 shows cross-section C-C'.

It should be noted that Figure 2-9, a geologic map of the MVGB and surrounding areas, is based on published geologic mapping by Saucedo (2005), Melody (2009), and Saucedo and Wagner (1992). The Saucedo and Wagner (2009) mapping was completed at a statewide scale and is therefore, less precise than other portions of the map and geological cross-sections. Accordingly, portions of the geologic map in Figure 2-9 do not correspond to the more detailed geological mapping and cross-sections.

Figure 2-8. Well Locations



Martis Valley Groundwater Management Plan 5-Year Update Nevada and Placer Counties, California	GEI Consultants	Martis Valley Groundwater Basin Well Locations
Truckee-Donner Public Utility District		NOVEMBER 2024 FIGURE 2-8

Figure 2-9. Geology and Cross-section Locations

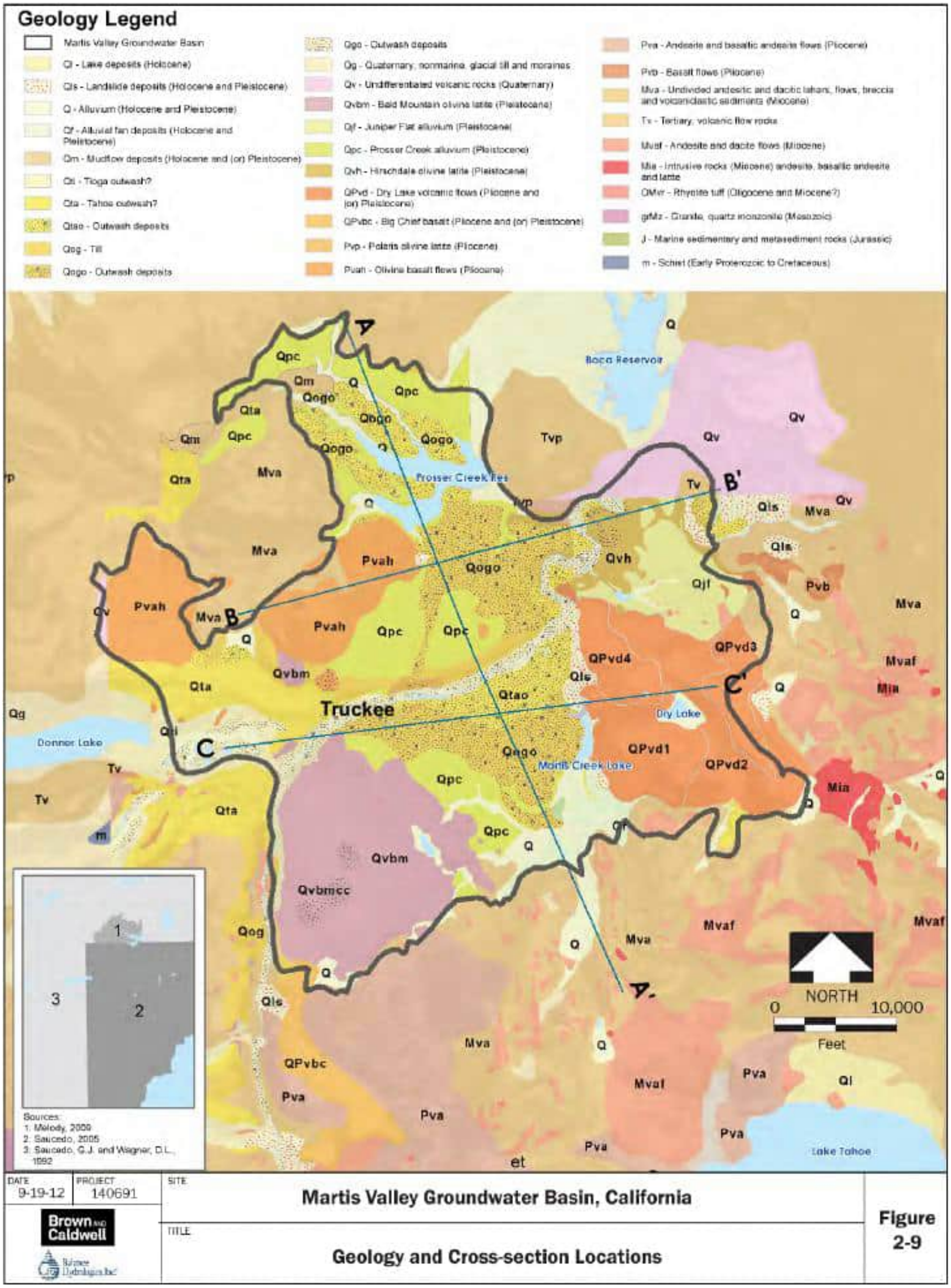


Figure 2-10. Cross-section A-A'

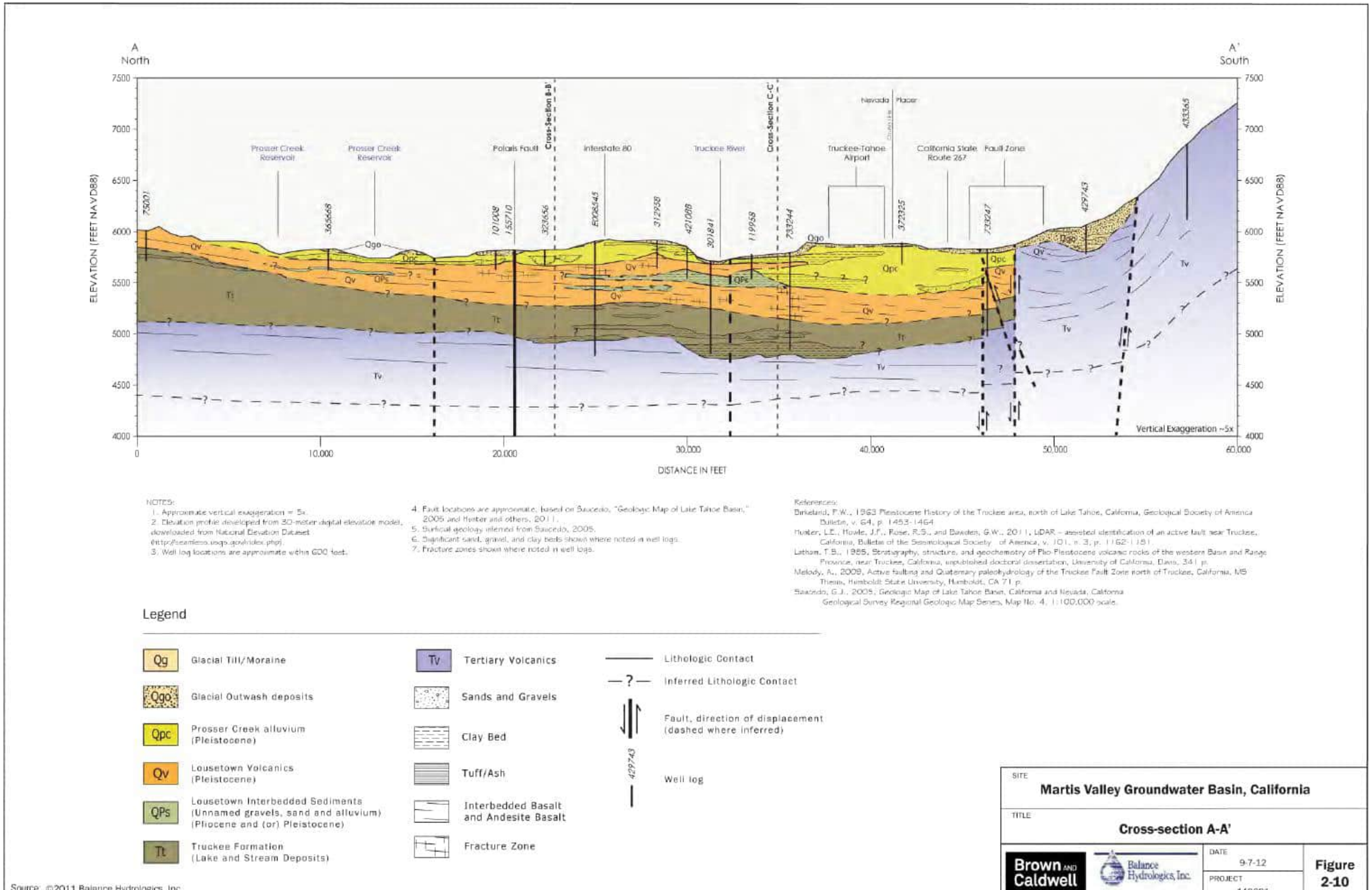


Figure 2-11. Cross-section B-B’

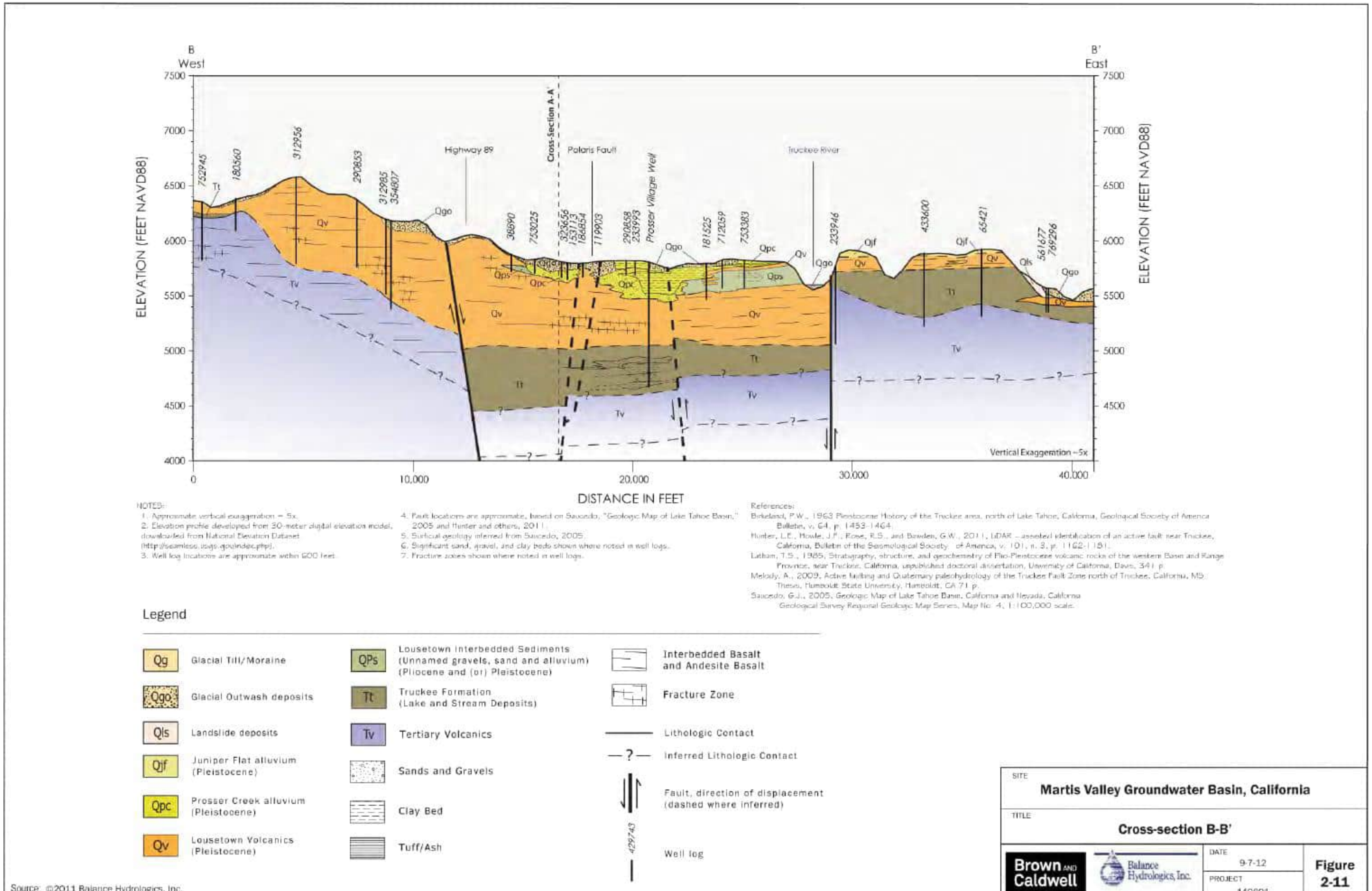
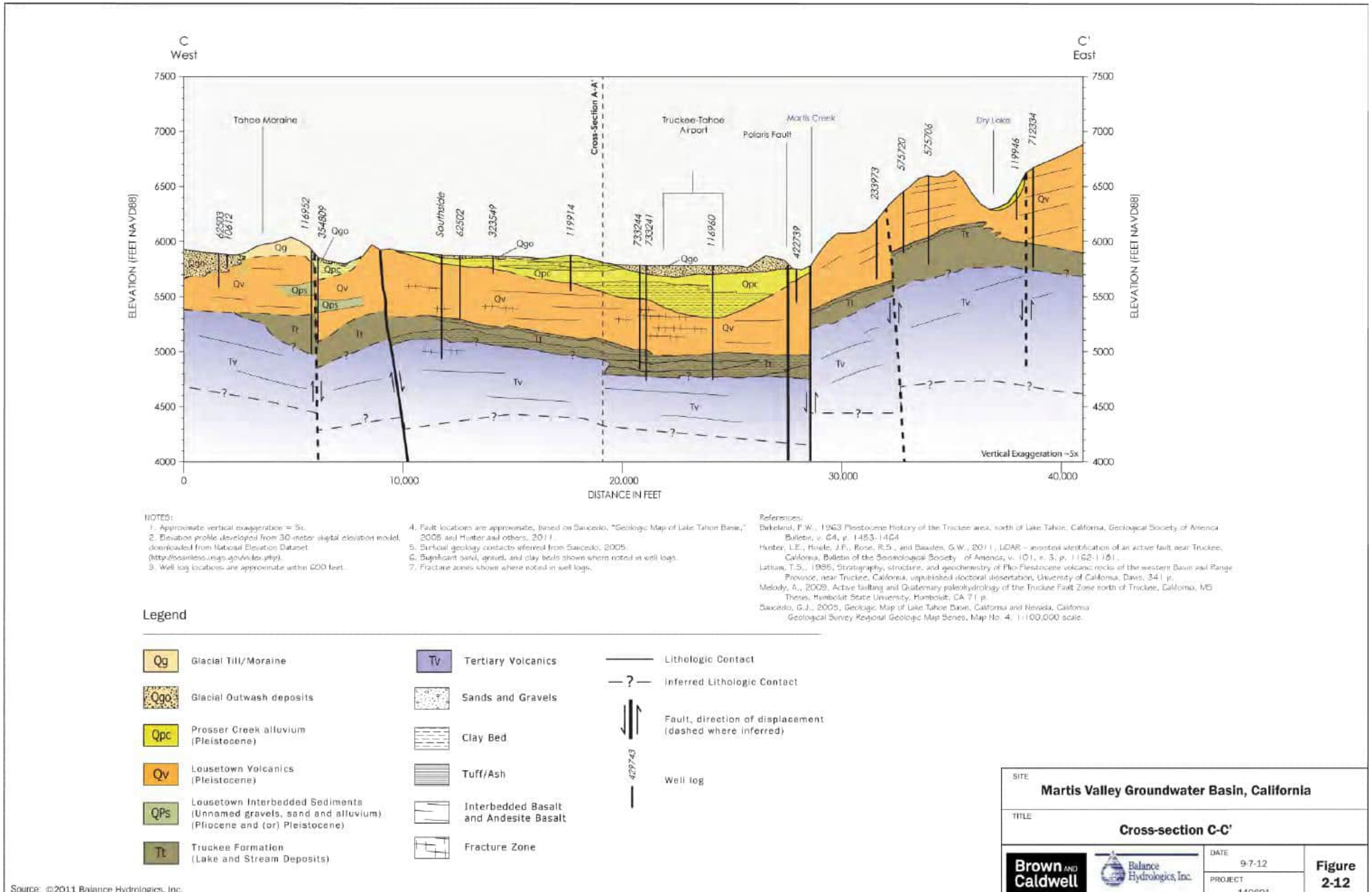


Figure 2-12. Cross-section C-C'



2.4.2. Stratigraphy

The uplift along the faults that created the MVGB probably began during the late Pliocene and into the early Pleistocene, with relatively low-permeability Tertiary volcanics forming the bottom of the basin (considered basement rocks in this report). Prior to and throughout the middle Pliocene, the sedimentary material of the Truckee Formation was deposited in the MVGB, directly overlying andesite tuff breccias, andesite flows, and intrusive rocks of Tertiary age. Following deformation, the general topography of the Martis Valley was probably somewhat similar to today's topography (Birkeland, 1963), with the Truckee River flowing out of the MVGB near where it does today, cutting a canyon through the pre-Pleistocene rocks of the Carson Range.

During the Pleistocene, a series of volcanic flows occurred in the regional Truckee area. At least 20 distinct flows have been recognized (Birkeland, 1961), mostly (but not exclusively) consisting of fine-grained latites and basalts, and are noted as being fairly local in extent. Flows found in the MVGB include the Dry Lake Flows (QPvd), the Bald Mountain olivine latite (Qvbm), Alder Hill Basalt, Polaris olivine latite, and Hirschdale olivine latite. Collectively, these units are referred to as Lousetown volcanics (Qv) based on Birkeland's (1963) correlation to other Lousetown flows in the Carson Range. Also included within the in the Lousetown Formation are interbedded Lousetown sediments (Qps); fluvial (stream) and lacustrine (lake) deposits accumulating, and thereby raising land surface elevation, in the valley between flow events.

As volcanic activity waned, one of the last flows, the Hirschdale Olivine Latite, flowed across the Truckee River Canyon, damming the basin and causing widespread sediment accumulation and deposition of the Prosser Creek Alluvium (Qpc), a partly-lacustrine and partly fluvial sedimentary unit (Birkeland, 1963). Brown (2010) has subdivided the Prosser Formation into Upper, Middle, and Lower Members. For geodatabase development purposes, interbedded Lousetown sediments are defined as being capped by volcanics, while the Prosser Formation is not. It is recognized however, that the lower Prosser Formation may have been deposited concurrently with the interbedded Lousetown sediments, and in some cases, may be correlated to these upper sediments where capping volcanics pinch out laterally.

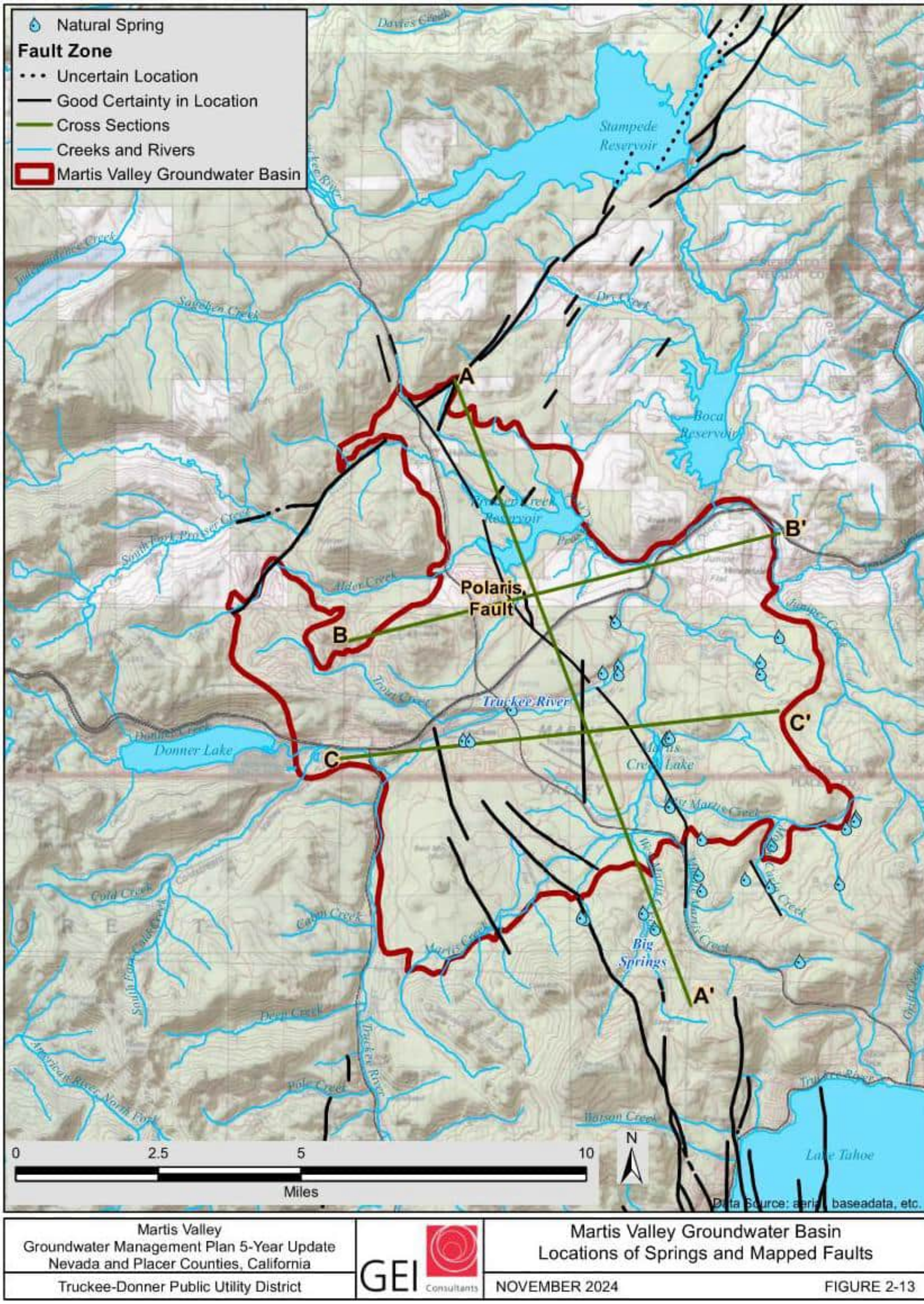
During this same period, Juniper Flat alluvium was being deposited in the Glenshire area with sediment derived from the paleo-Juniper Creek watershed and alluvium derived from the west.

The Prosser Formation and volcanics in other areas are capped by glacial deposits, derived from glacial advances and retreats during a number of glacial episodes (Birkeland, 1961). In the MVGB, most of the deposits consist of glacial outwash deposits of varying age (Qgo). The outwash deposits consist of loose and unconsolidated boulder, cobble, gravel, and sand. In the vicinity of the Truckee River, three distinct outwash deposits (Qogo, Qtao, and Qti) are apparent and form terraces along the course of the river (Birkeland, 1961). A number of glacial moraines were also deposited, and are visible today in the vicinity of Donner Lake, the Tahoe-Donner residential neighborhood, and the Gateway Neighborhood of Truckee.

2.4.3. Structure

The MVGB lies within the Truckee Basin, a structural trough formed at the boundary of the Sierra Nevada and Basin and Range Geomorphic Provinces. Tectonics in this zone are complex and include active right-lateral (strike-slip) shear associated with the Pacific-North American Plate boundary and North Walker Lane Belt, as well as extensional (normal) faulting associated with the Basin and Range Province. The uplift along the faults that created the basin probably began during the late Pliocene and into the early Pleistocene (Birkeland, 1963), while right-lateral faulting is inferred to have occurred into the Holocene (Melody, 2009; Brown, 2010; Hunter and others, 2011). Most recently, the Polaris Fault has been mapped as an active North-South Holocene fault across the center of the MVGB. It is unknown if all of the faults in the MVGB are acting as a barrier to groundwater flow. A subsidiary fault associated with and parallel to the Polaris Fault has been demonstrated by groundwater elevation differences (30-40 feet) to be at least a partial barrier to groundwater flow in the valley (InterFlow Hydrology, 2014). Identified faults are shown in Figure 2-13.

Figure 2-13. Locations of Springs and Mapped Faults



2.5. Groundwater Occurrence and Movement

The geologic units described above are interlayered, with complex spatial relationships, and as such, the occurrence and movement of groundwater within and between these units is variable. For this report, the low-permeability Miocene (Tertiary) volcanic rocks are considered the bottom of the MVGB. This section discusses where groundwater occurs, groundwater and surface water interaction, and water levels over time.

2.5.1. Water-bearing Units and Properties

The Truckee Formation (Tt) is composed of interlayered silts, sands, and clays, and therefore has variable groundwater availability. Well driller's logs document sands and gravels within the Truckee Formation in the center of the basin, near the Truckee Tahoe Airport, at depths of approximately 900 to 1,000 feet, and from 200 to 700 feet in the southern portion of the basin near Shaffer's Mill and Lahontan Golf Clubs. Well yields in the Truckee Formation range from 280 gallons per minute (gpm) in the eastern portion of the basin (Hydro-Search, 1995) to more than 1,000 gpm in faulted areas underlying the Bald Mountain volcanics in the southwestern portions of the MVGB (Herzog, 2001).

Water is found along faults and fractures within the Lousetown volcanics (Qv), though portions of the volcanic flows are massive and unfractured. Figure 2-14a is a photo of a Lousetown volcanic outcrop and illustrates the range of fracture concentrations that can occur in this unit. In most cases, water encountered in this fractured system is pressurized, rising to a static level several hundred feet higher than where initially encountered, suggesting the presence of confining units above these fracture zones. The higher initial groundwater levels are indicative of groundwater recharge entering the fractures at much higher elevations than where a boring has intersected them. The confining unit(s) are not well defined or apparently continuous across the Basin. The confining unit(s) maybe unfractured Lousetown volcanic layers, Lousetown Interbedded Sediments (clay or ash layers) or Prosser Creek alluvium. The cross-sections, shown on Figures 2-9 through 2-11 do not show this confining unit to be continuous across the entire Basin.

Wells located in the southern portion of the groundwater basin have been found to be artesian, or flowing, along fractures interpreted as faults (Herzog and Whitford, 2001), with yields ranging from approximately 250 to 1,000 gpm. A number of distinct fault blocks are present in this area, with unique and heterogeneous aquifer properties where faults serve as barriers to groundwater flow (ECO:LOGIC, 2006; ECO:LOGIC, 2007; Bugenig, 2007; 2006; Peck and Herzog, 2008). Groundwater discharge areas in the form of seeps and springs are also found within these areas and along the periphery of the MVGB (Figure 2-13), including thermal springs in the vicinity of the recently-mapped Polaris Fault (Hunter and others, 2011).

The Prosser Formation overlies the Lousetown volcanics. The Prosser Formation (Qpc) includes interlayered silts, sands, and clays and has variable water bearing capacity. Figure 2-14b shows an outcrop of the Prosser Formation, where coarser materials such as sand and gravel are present, and moderate groundwater yields may be encountered. Water-bearing portions of the Prosser Formation may also be hydrologically connected to overlying glacial outwash and potentially surface water bodies as well. Fine grained materials such as silts and clays may locally produce confining conditions in the underlying Lousetown volcanics. Well yields in these coarse grained alluvial sediments typically range from 12 to 100 gpm, though larger-diameter production wells have estimated yields as high as 500 gpm according to State well driller's logs (DWR).

Hydraulic properties of the glacial moraines contrast sharply with those of the glacial outwash deposits; the moraines consist of poorly-sorted clay to boulder-size materials, while the glacial outwash deposits are primarily well-sorted sands and gravels. As a result, the glacial outwash tends to transmit water relatively easily, while moraines are typically water-limited.

Figure 2-14a. Lousetown Volcanic Outcrop

Figure 2-15. Prosser Formation Outcrop Underlying Glacial Outwash

2.5.2. *Surface-Groundwater Interaction*

Generalized groundwater flow directions were inferred by Hydro-Search (1995) and were based on static water levels reported in State well drillers reports and DWR's long-term well monitoring data and indicated groundwater flow directions are toward the Truckee River. The Truckee River is the topographic low in the Basin and as long as groundwater elevations are above the riverbed, groundwater would discharge to the river.

A more detailed surface water and groundwater interaction study (Interflow Hydrology, 2003) was completed for the TDPUD for tributaries to the Truckee River. The Interflow Hydrology study provides estimates of the magnitude of stream losses and gains to and from groundwater across the Martis Valley during summer 2002, in the middle of a multi-year dry period. Observations made during the course of the study showed Martis Creek to be a 'gaining stream' (receiving groundwater discharge) across the Lahontan Golf Club, upstream of Martis Valley; West Martis Creek was found to be a 'losing stream' as it enters Martis Valley, recharging groundwater between the Northstar Golf Course and its confluence with Martis Creek; and Middle Martis Creek showed no loss or gain across the valley floor. Groundwater discharge in the form of springs generally support perennial flows in Lower East Martis and Dry Lake Creeks, as well as from the hillside adjacent to Martis Reservoir.

Interflow Hydrology (2003) computed a basic water balance based on late season low flow measurements in the watershed and found that in October 2002, total streamflow losses across the Martis Valley floor were on the order of 0.65 cfs (approximately 9% of the total baseflow into the MVGB from Martis Creek), while losses at Martis Creek Lake were on the order of 1.55 cfs (approximately 29% of the total flow at that point). Evaporation and evapotranspiration by plants were not measured as part of the study; however, these data suggest that the Martis Valley floor potentially serves as a groundwater recharge area during the late summer and fall months.

Beginning in 2023, NCSD began working with the Truckee River Watershed Council to evaluate surface water and groundwater interaction in southern portions of the MVGB, with a goal of detailing the spatial and temporal variation in surface and groundwater interaction in the vicinity of NCSD production wells. This work is in progress and uses the best available science (implementing BMO #5) including multiple lines of evidence to evaluate these interactions, including: comparison of general chemistry and isotopes in surface and groundwater, depth-to-water interpolation and mapping of surface water that is interconnected with groundwater, and synoptic streamflow measurements along Prosser, West Martis, Middle Martis, and East Martis Creeks to identify losing and gaining reaches.

In addition, Interflow Hydrology (2003) identified groundwater recharge occurring where Prosser Creek enters the MVGB, just upstream of Prosser Reservoir. All other tributaries, including Cold, Donner, and Trout Creeks were concluded to be supported by groundwater discharge.

2.5.3. Groundwater Levels

Groundwater levels have been generally stable in the Martis Valley with some declines occurring in specific regions. Figure 2-15 presents groundwater level monitoring data throughout much of the MVGB since 1990 in a single set of hydrographs. This graph shows that overall groundwater levels have been stable in the MVGB, including during the drought of the early 1990s, and the wet years of the late 1990s.

Groundwater levels are measured by the partner agencies and DWR and are reported to the California Statewide Groundwater Elevation Monitoring (CASGEM) program. Historically, groundwater level measurements were taken in the spring and fall. In 2017, the MVGB Agencies voluntarily implemented monthly monitoring of groundwater levels for all wells in the CASGEM program, implementing BMO #5. This proactive move to monthly monitoring was, in part, to investigate and address uncertainties in seasonal variations. Monthly groundwater measurements illustrated that peak summer-time groundwater pumping temporarily lowers groundwater levels below the previous fall measurements, as would be expected, but are not depleting reserves, even with decreased precipitation within the last 20 years.

Figure 2-16 shows the locations of the 13 monitoring wells and selected respective hydrographs. The hydrographs indicate that groundwater is locally variable in the MVGB, as levels may decline in some wells and rise in other wells over the same period of time. These data suggest that there may be several water-bearing zones in the MVGB that may or not be hydraulically connected. The hydrographs also provides the following well specific information:

- Well 17N16E11F001M (northeast of downtown Truckee) experienced a nearly 50-foot rise in water level in the late 1990s, and then declined steadily over the following decade before rising again in 2011 and continuing until winter of 2022 when water levels reached record heights. This rise coincides with above-average precipitation and streamflow (Figure 2-4).
- Levels in Well 17N17E29B001M (Northstar) was relatively steady throughout the early monitoring period until summer 2007, when seasonal fluctuations began to occur due to

development and groundwater production. Water levels had declined between 2007 and 2012 but recovered close to pre-development levels in 2017 and has remained consistent in recovery and use since then.

- Groundwater levels in well 17N17E05D001M (Truckee River east of Truckee) have increased steadily over the period of record, rising over 10 feet from 1990 to 2012, and has remained consistent to present at these levels with wet and dry periods showing temporary rises and declines.
- In well 17N1E17F002M (Donner Creek area), groundwater levels fluctuated seasonally but generally remained constant year to year) and have increased slightly over time to present.
- In the nested wells 17N16E13K001M (deep) and 17N16E13K003M (shallow), water levels in both wells were matching until late 2003, at which time a divergence occurred causing water levels in the deep well to rise significantly, while water levels in the shallow dropped slightly. This divergence and slow increase of groundwater levels continued until December 2022 when the water levels within the deeper well dropped to pre-2003 levels and shallow well rose simultaneously to match with identical groundwater measurements. These water levels will be tracked and acted upon if needed.
- TH-Fibreboard and TH-Martis Valley wells have seen fluctuations based on the type of water year and has risen slightly overall. TH-Prosser Village has seen these same fluctuations, but groundwater levels have declined on average over the same period, likely due to complications with the nearby Polaris fault to the west.
- Groundwater levels in well 18N17E33L001M had been consistent up until 2019 when levels started to decline slowly during the 2020 and 2021 drought period and has not recovered to pre-2019 levels.

Figure 2-16. Water Levels in Long-term Groundwater Monitoring Wells

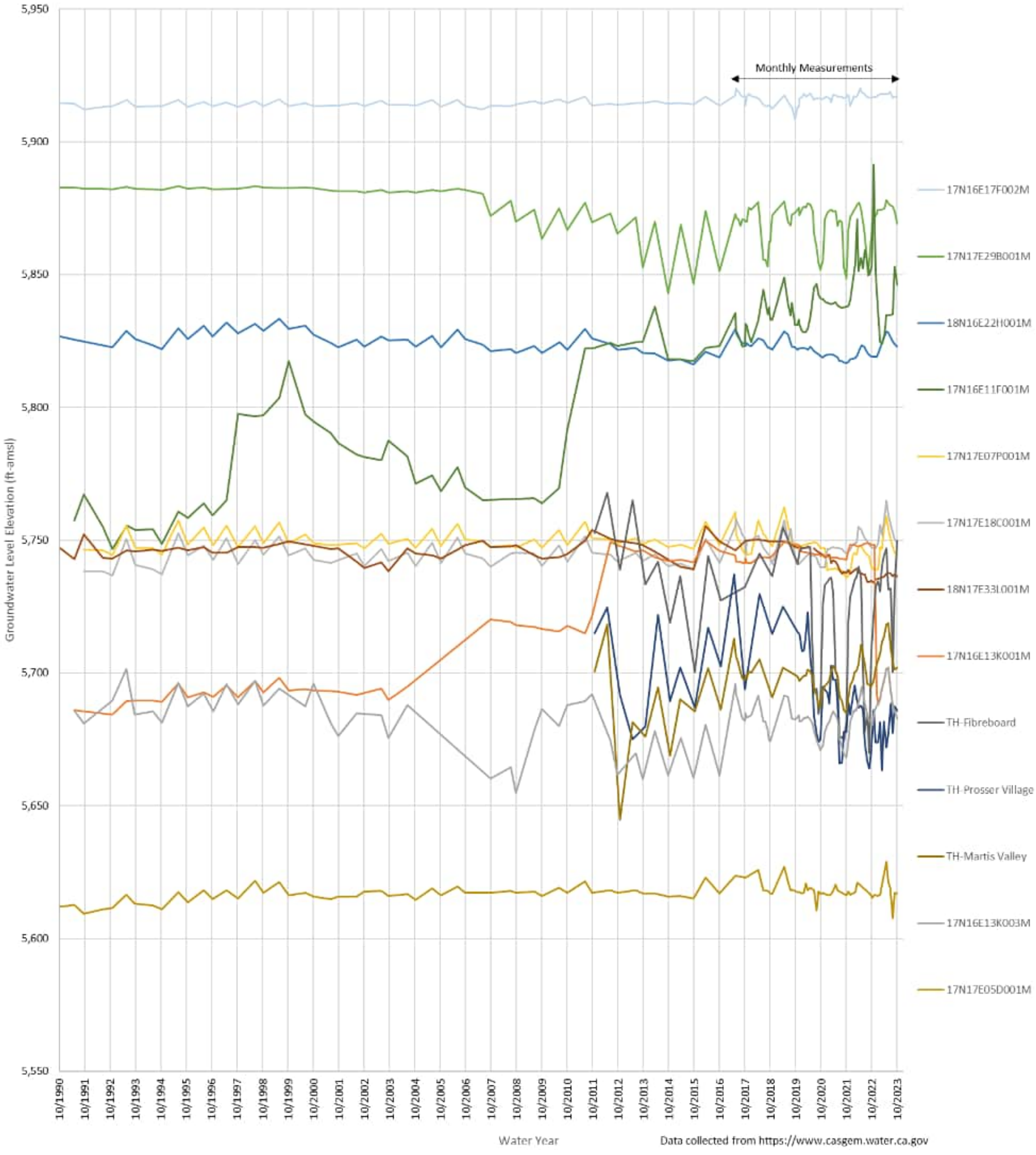
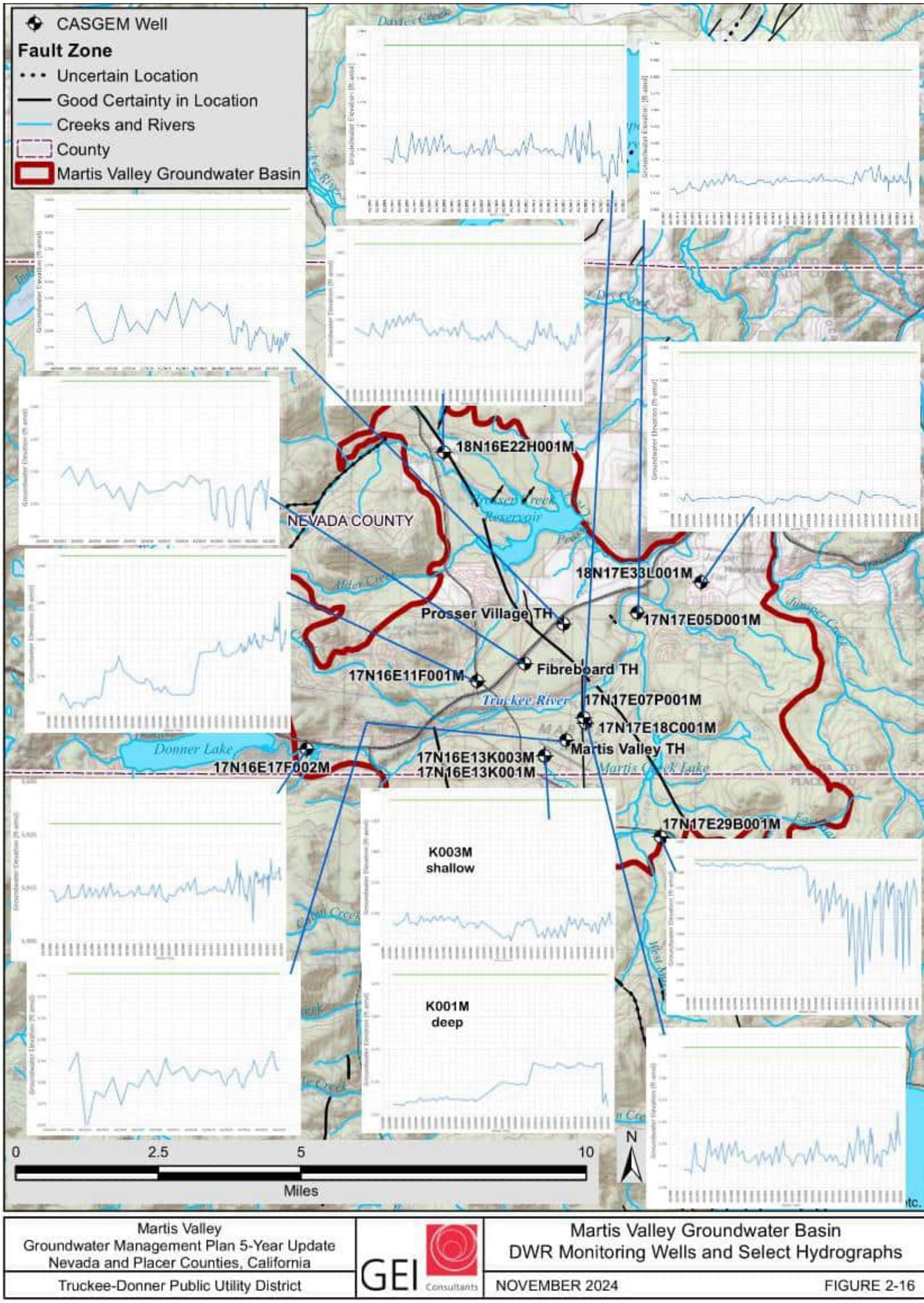


Figure 2-16. Monitoring Wells and Select Hydrographs



Source: DWR 2024

2.5.4. Land Subsidence

Permanent land subsidence can occur when groundwater is removed by pumpage or drainage due to irreversible compression of aquitard materials. The potential for subsidence is low because there are no regionally continuous clay units which act as aquitards and the groundwater levels, for the most part have remained stable. No indications of land subsidence have been reported in the documents reviewed as part of this evaluation.

2.6. Groundwater Well Infrastructure

TDPUD, NCSD, hundreds of domestic pumpers, and a number of golf courses rely on groundwater in the MVGB for drinking water and irrigation supplies. The TDPUD provides water service to portions of the Town of Truckee and adjacent unincorporated areas of Nevada and Placer Counties. The TDPUD currently has 13 active production wells for potable water service, plus three wells to serve non-potable water demands. PCWA's former Eastern Water System (Zone 4) currently includes three production wells, Wells #1, #2, and #3, to serve the Lahontan Golf Club, Shaffer's Mill Golf Club, Hopkins Ranch, and Martis Camp Residences. PCWA transferred ownership and operating responsibilities to NCSD in 2015. NCSD supplies water to residents and guests in the Northstar community, producing water from two production wells (TH-1 and TH-2). Figure 2-17 shows the general location of the well infrastructure and the groundwater level monitoring network. Table 2-2 summarizes the estimated yields and production rates associated with these wells.

Figure 2-17. Groundwater Well Infrastructure and Level Monitoring Network

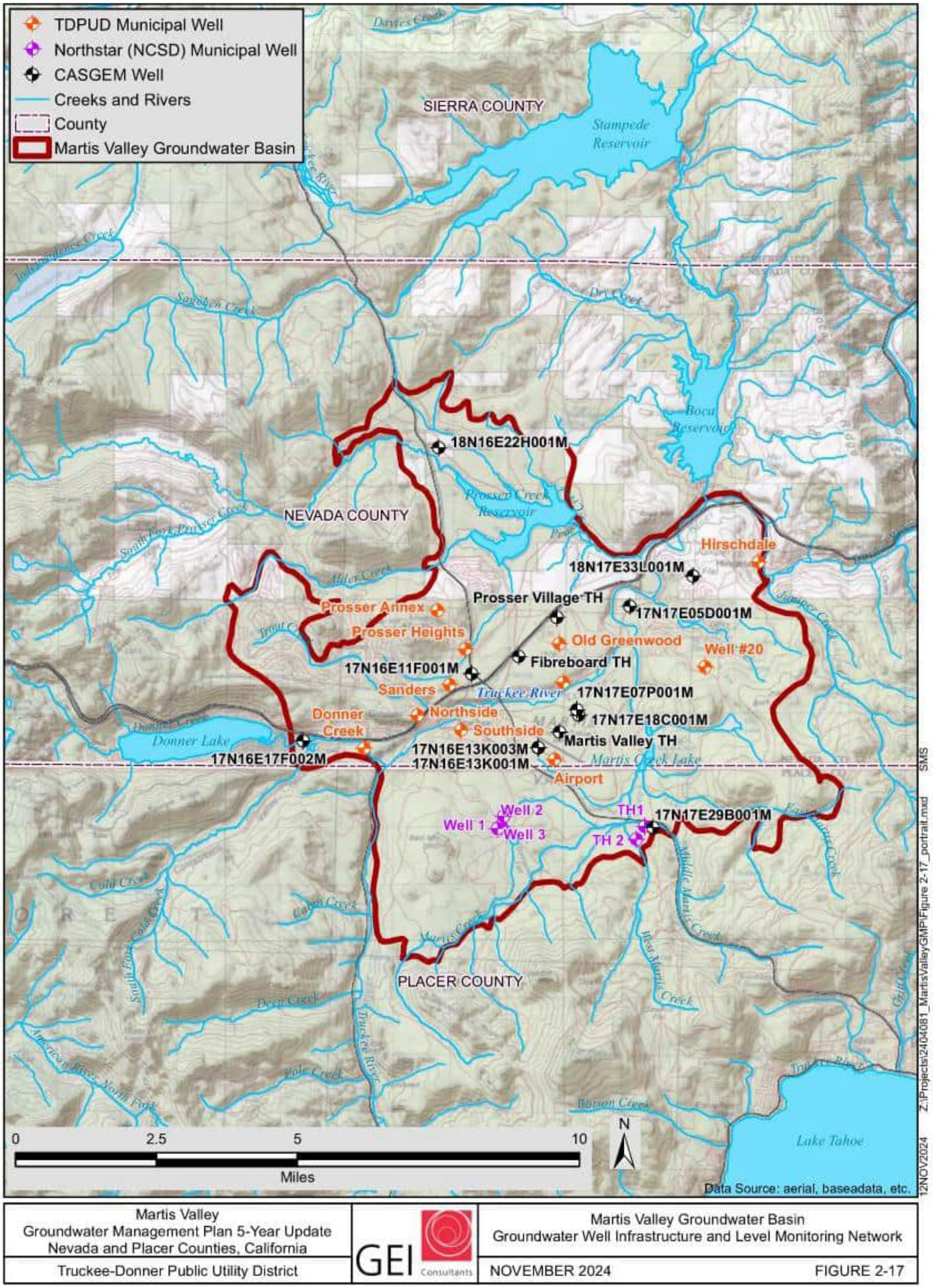


Table 2-2. Estimated Yield of Public Agency Production Wells

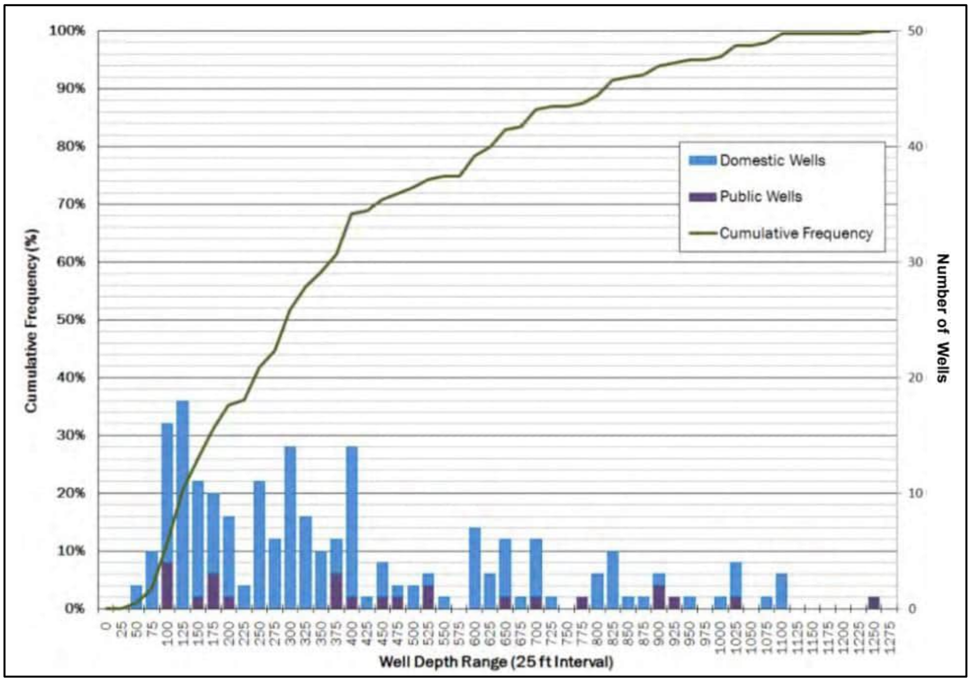
Well Name	Estimated Maximum Yield (gpm)
NCSD	
TH-2	850
TH-1	850
Well 1	1,250
Well 2	1,250
Well 3	250
TDPUD	
A Well	N/A
Airport	2,600
Glenshire Drive	1,685
Martis Valley No. 1	1,640
Northside	540
Southside No. 2	N/A
Southside No. 1 (non-potable)	258
Sanders	290
Old Greenwood	1,045
Hirschdale	35
Prosser Annex	510
Prosser Heights	430
Prosser Village	860
Well No. 20	600
Fibreboard (non-potable)	1,430
Donner Creek (non-potable)	569
Tahoe Donner GC (non-potable)	N/A

*Well Yield information from TDPUD, 2021) and provided by NCSD, N/A = No pump installed

A number of private wells are distributed across the basin, and a number of residential neighborhoods or tracts have relatively higher concentrations of wells. Martis Camp operates three irrigation wells for their own use and provides Northstar Ski Resort with water from these wells for snowmaking and irrigation purposes as well (Josh Detwiler, NCSD, pers. comm.). At higher elevations in the eastern portion of the basin, the Juniper Hills area (near Well No. 20) includes a number of estates, most of which rely on private wells drilled deep (typically 500-800 feet) into uplifted Lousetown volcanics and/or deeper volcanics. In the center of the MVGB, a high density of relatively shallow (200-300 feet deep) private wells have been drilled and are in use along Prosser Dam Road. Many of these are drilled into shallow Lousetown volcanics, while others are drilled into glacial outwash and the Prosser Formation. In the northwestern portion of the MVGB a number of homes located on Alder Hill have domestic wells drilled primarily into uplifted Lousetown volcanics and range in depth from 300 to 800 feet.

Figure 2-18 is a cumulative frequency plot derived from DWR data and shows the number of public and domestic wells drilled at various depths in the MVGB through 2013. These data show that the vast majority of domestic wells drilled in the area are relatively shallow, with 50 percent of domestic wells being installed at depths of 400 feet below ground surface or less, while the public production wells range widely in depth. About 330 wells (Domestic, Public Water Supply, Irrigation, and Agricultural) have been constructed in the Basin through 2012. Since 2012, an additional 19 domestic, and 2 public supply wells, have been constructed in the Basin.

Figure 2-17. Depth Distribution of Wells in the Martis Valley Groundwater Basin



2.7. Groundwater Quality

Groundwater quality in the MVGB is generally of good quality and is currently monitored as part of the agencies' agreements with the State Water Resources Control Board (SWRCB), Division of Drinking Water (DDW). Each agency releases an annual water quality report for their service areas in the MVGB; the 2023NCSD and 2024 TDPUD annual reports are included in Appendix D. The USGS carried out groundwater monitoring activities in the MVGB in cooperation with the SWRCB as part of the California Groundwater Ambient Monitoring and Assessment (GAMA) Program (Fram and others, 2007) and sampled 14 wells in the MVGB for a wide range of constituents during summer 2007. The concentrations of most constituents detected in these samples were below drinking-water thresholds, with some exceptions: a) concentrations of arsenic were above the Maximum Contaminant Level (MCL) in four of the 14 wells sampled, and b) manganese concentrations were elevated above the MCL in one well. Arsenic levels above the MCL have also been reported by the TDPUD.

Singleton and others (2013) used dissolved gas and isotopic tracers to estimate the age, flow pathways, and interactions between groundwater and surface water in the MVGB. Isotopic sampling results from June and September revealed that Summer samples more closely matched the signature of meteoric waters while Fall samples matched more regional, mixed-water signals indicating a shift in groundwater source between Summer and Fall in the MVGB. Results were variable but generally indicated that recharge to production wells, springs, and surface water baseflow is sustained by snowmelt of mixed or young age that recharges at lower elevations and through alluvium (rather than fractured bedrock), with minimal contributions from very recent snowmelt. Water pumped from wells tends to increase in age as wells are pumped over the course of a season. In contrast to many of the other production wells in the MVGB, NCSD's deep production well TH-2 (Well "K" in the study) consistently draws very old water, apparently from the predominately deeper aquifer. Finally, the authors pointed to the Polaris Fault as a potential source of very deep water, as indicated by the presence of mantle helium in samples from wells near the fault.

The T-TSA operates a water reclamation plant which includes the discharge of tertiary-treated effluent into glacial outwash and Prosser Formation alluvium downstream of the Town of Truckee on the south side of the Truckee River. Hydrogeologic investigations in the vicinity of the plant indicate that effluent flows laterally toward the Truckee River and Martis Creek, discharging to these water bodies after a minimum 50-day travel time (CH2MHill, 1974). DWR (2003) noted that a water quality monitoring program is in place to evaluate potential changes to ground- and surface-water quality.

Seventy-three leaking underground storage tank (LUST) cleanup sites have been identified by the SWRCB's GeoTracker database in the MVGB. Of these 73 sites, cleanup actions for 71 are documented as "completed", while two are listed as "open" with one of those considered "inactive" and the other in an "assessment & interim remedial action" status. All the sites are located in the Town of Truckee.

2.8. Land Use

Prior to the 1950s, land use in Martis Valley and the Truckee area was primarily ranching and timber related (Shaw and others, 2012). During the 1950s, 60s, and 70s, the rural ranching- and timber-based economy began shifting to more recreational and community development. Today, the primary land uses in the MVGB are residential and ski and/or golf resort related communities with commercial centers in and near downtown Truckee and at the Truckee Airport. Timber and sand and gravel mining operations still continue to operate on a seasonal basis (GEI, 2023, Shaw and others, 2012).

The Truckee population has and will rely on groundwater as its source of supply.

The Town of Truckee, in Nevada County, developed its 2040 General Plan which includes project land use changes (Town of Truckee, 2019). It includes:

- Coldstream Specific Plan – is located between Donner Lake and State Route 89, south of Interstate 80. The plan was adopted by the Town of Truckee in 2014 with mixed-use development.
- Joerger Ranch Specific Plan – is located at the intersection of State Route 267 and Brockway Road and Soaring Way near the Truckee Tahoe Airport. The Specific Plan was adopted in 2015 and amended in 2021.
- Railyard Master Plan – encompasses the eastern end of downtown Truckee. The plan was updated in 2016 and includes mixed residential and commercial land use.
- Hilltop Master Plan – was adopted in 2008 and guides mixed-use residential and commercial land use development.

Projections of population growth for the Town of Truckee from 2020 to 2040 with a projected population of about 18,500 (TDPUD UWMP, 2021). Projected build-out for the Town of Truckee would be reached sometime after year 2100 with a conservative permanent population estimate of about 28,800.

Placer County developed a Housing Element for the period of 2021 to 2029 for its General Plan. The plan showed limited residential growth. Planned/Approved infill projects will continue in the Schaffer's Mill (134 units) and Hopkins Village (40 units) (Placer County, 2021).

2.9. Groundwater Recharge

Several previous studies estimated groundwater recharge within the MVGB using water balance and empirical data, resulting in a range from 18,000 to 34,560 acre-feet per year (ac-ft/yr). Recently, DRI has developed annual groundwater recharge estimates using the physically-based PRMS. Table 2-3 summarizes previous and current studies including the study's author, year, and average annual groundwater recharge estimates.

Table 2-3. Summary of Average Annual Groundwater Recharge Estimates for the MVGB

Author	Year	Recharge (ac-ft/yr)
Hydro-Search	1974, 1980, 1995	18,000
Nimbus Engineers	2001	24,700
Kennedy/Jenks Consultants	2001	none
Interflow Hydrology, Inc. and Cordilleran Hydrology, Inc	2003	34,560
DRI, PRMS estimate	2012	32,745
DRI, modified Maxey-Eakin method	2012	35,168

DRI outlines its scientific and technical methods, including the climate data used, the PRMS method, and total recharge estimates in a Technical Note, which is included in Appendix E. PRMS simulates land surface hydrologic processes of evapotranspiration, runoff, infiltration, and interflow by balancing energy and mass budgets of the plant canopy, snowpack, and soil zone on the basis of distributed climate information. The PRMS computed recharge consists of the sum of shallow infiltrated water that discharges into the Truckee River and its tributaries as well as deep percolation of ground water to deeper aquifers with water supply wells (Rajagopal and others, 2012). DRI's study "…also applied a modified Maxey-Eakin (1949) method to estimate recharge which relates mean annual precipitation to recharge using recharge coefficients applied to precipitation amounts."

The PRMS is modeled for the years 1983 to 2011 with annual recharge estimates ranging from 12,143 ac-ft/yr (dry year) to 56,792 ac-ft/yr (wet year), with an average annual recharge estimate of 32,745 ac-ft/yr. Because annual precipitation drives recharge, the PRMS simulated recharge varies from year to year. DRI included in its Technical Note annual recharge efficiency, or the ratio of annual recharge to annual precipitation. For the MVGB, the calculated annual recharge efficiency is 18 to 26 percent.

Groundwater recharge to the MVGB occurs throughout most of the valley to some extent. Figure 2-19 shows the average annual groundwater recharge as simulated by the PRMS model, for a period of record from 1983 to 2011. Figure 2-20 shows the annual recharge for the year 1988, a dry year. Figure 2-21 shows the annual recharge for the year 1995, a wet year. The figures indirectly show where the most permeable soils occur by the amount of recharge. The figures show consistently that there is very little recharge in the eastern portion of the MVGB (orange color). The most permeable areas (green color) appear to be near Shaffer's Mill, north of Interstate 80 near the western edge of the MVGB and south of Truckee along State Route 267 corridor.

The models were also used to predict the effects of precipitation and the availability of surface water and groundwater supplies. Four simulations were run (Warmer-Drier, Hotter-Drier, Hotter-Wetter, Warmer-Wetter) were run and compared to Reference conditions. The Central Tendency is the average of these four simulations. Average annual groundwater recharge would change with changes in precipitation, however a direct comparison between Historical and Reference supply conditions cannot be made because a record of historical recharge data does not exist for the Truckee Basin. Recharge decreases in the Martis Valley under drier climates (up to 23 %) and increases under wetter climates (up to 9 %) would occur compared to the Reference supply condition. Hotter climates would also affect groundwater recharge, although to a lesser extent than precipitation changes. The Hotter-Drier climate would decrease Martis Valley groundwater recharge an additional 10 percent beyond the Warmer-Drier climate due to decreases in the extent of snowpack and a faster snowmelt season. The Central Tendency predicts about a 5 percent reduction in the average annual recharge in the Martis Valley, or about 800 acre-feet, with the Hotter-Drier conditions reducing recharge by about 2,000 acre-feet per year.

A more detailed study was developed for just the Martis Valley (Rajagopal, et al, 2015). Despite differences in the reported absolute values for recharge between the two studies, the trends identified in the Truckee Basin Study are considered valid and appropriate for describing the sensitivities of recharge to changes in climate. This additional detailed study predicted a decline in groundwater recharge likely due to the shift from snow melt to precipitation which increases runoff and decreases recharge. One of the most significant findings from this study is the potential reduction of groundwater recharge and discharge to streams, not including the capture of groundwater discharge to streams due to pumping. Even with lower precipitation recorded within the last 20 years, groundwater levels are remaining stable.

In addition to natural recharge, treated water from the T-TSA is recharged into the MVGB groundwater system through subsurface leach fields located on the south side of the Truckee River. Hydrogeologic investigations in the vicinity of the plant indicate that effluent flows laterally toward the Truckee River and Martis Creek, discharging to these water bodies after a minimum 50-day travel time. Wastewater treated by T-TSA is from the Truckee Sanitary District and North Lake Tahoe area. About 30 percent of the potable water served by TDPUD and NCSD is treated and recharged into MVGB (GEI, 2024).

Figure 2-18. Average Annual Groundwater Recharge 1983-2011

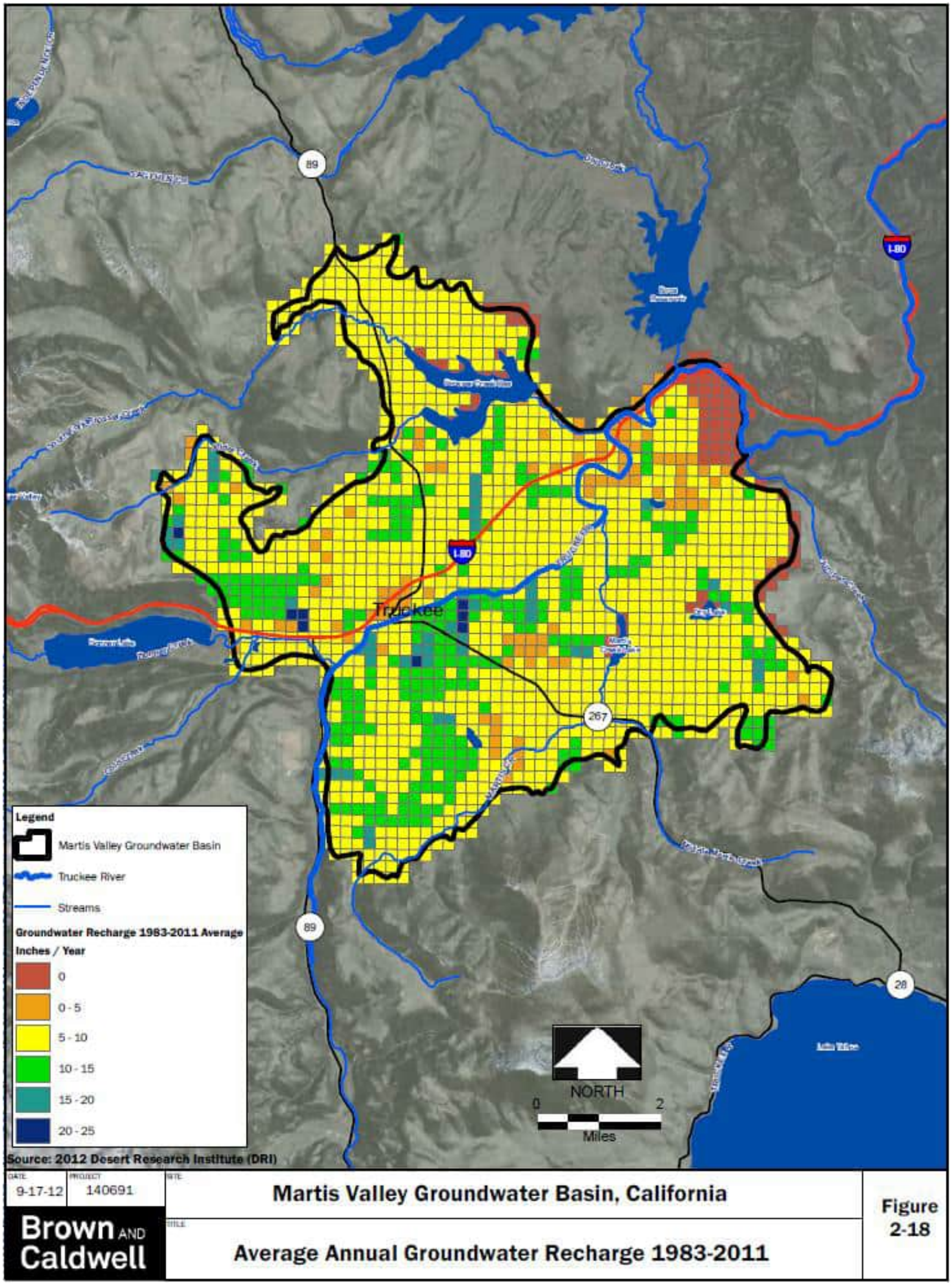


Figure 2-19. Annual Groundwater Recharge 1988

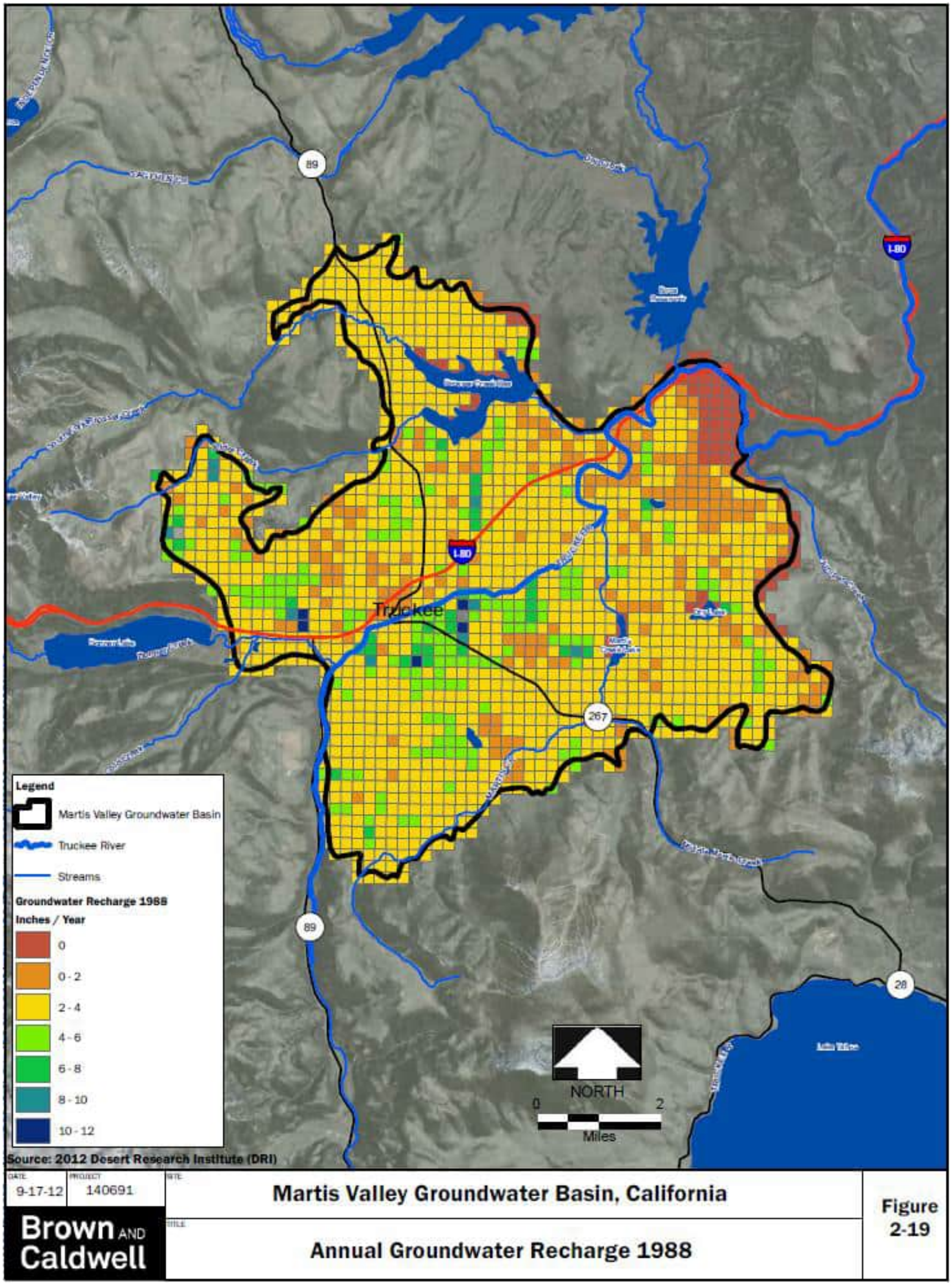
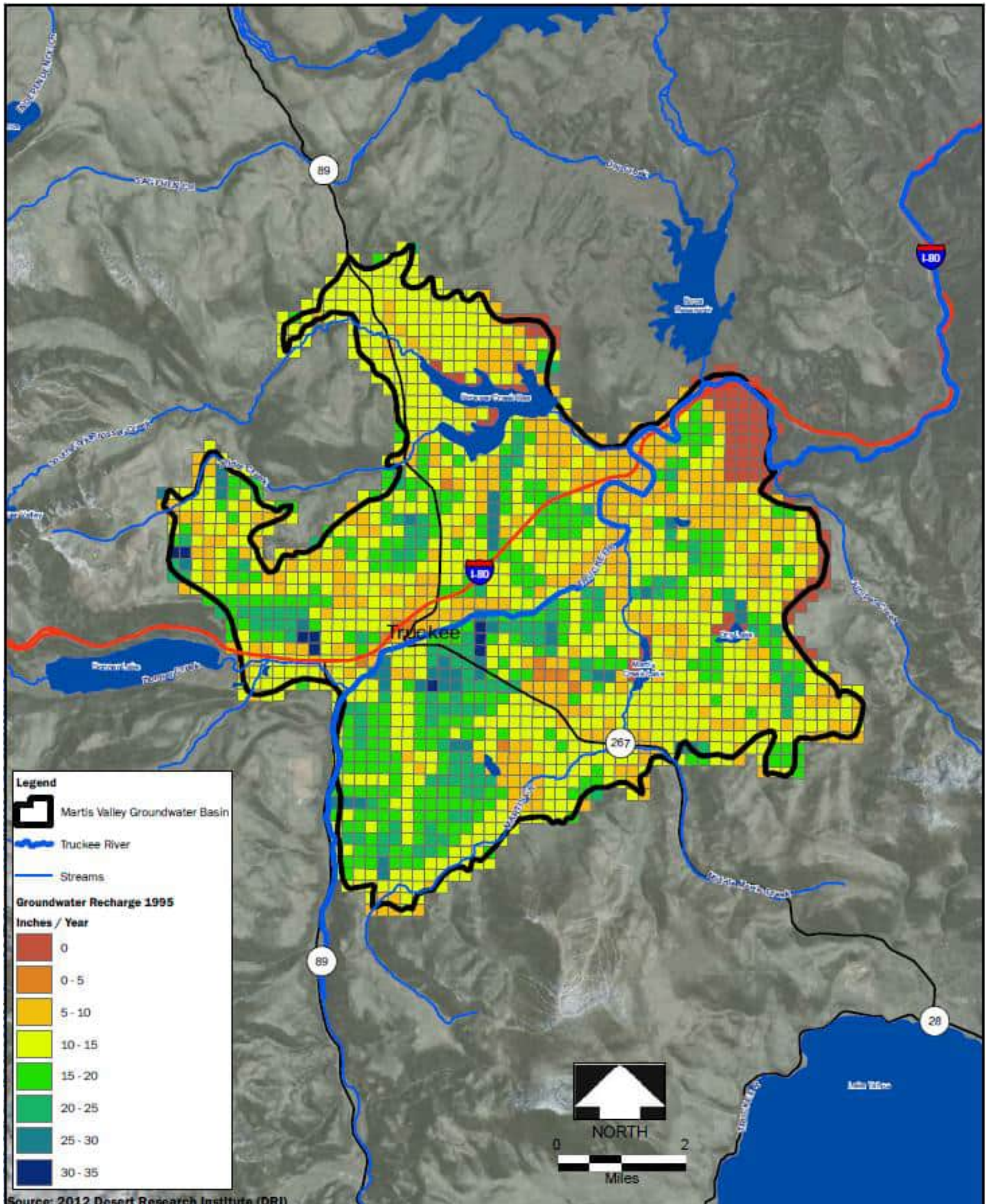


Figure 2-20. Annual Groundwater Recharge 1995



DATE 9-7-12	PROJECT 140691	SITE Martis Valley Groundwater Basin, California	Figure 2-20
Brown AND Caldwell		TITLE Annual Groundwater Recharge 1995	

2.10. Water Use

Groundwater use in the MVGB is primarily for municipal, domestic, and recreational uses. The TDPUD summarized their water supply and demand as part of 2020 Urban Water Management Plan. Average potable day demand served by the TDPUD in 2020 was reported to be 4.53 million gallons per day (mgd); 5,073 ac-ft/yr).

NCSD meets demand primarily from its Big Springs collection system, outside of the MVGB, and uses water pumped from wells TH-1 and TH-2 in the MVGB to augment this supply. Demand on the MVGB imposed by NCSD varies by year due to climatic conditions and during the 2012 through 2016 drought, the average volumes pumped by NCSD ranged from 0.11 to 0.19 mgd or 193 to 340 ac-ft/yr. In wet year 2023, the wells produced 154 ac-ft. From 2009 to 2023, production from Wells 1 through 3 (formerly PCWA owned wells and now reported by NCSD as Martis Valley wells) have increased from an average daily demand of 0.13 to 1.13 mgd (141-412 ac-ft/yr) due to development of the Schaffer's Mill and Hopkins Village developments which began construction in 2005.

Nine golf courses depend on the MVGB for irrigation supply; five are supplied by TDPUD (one uses a potable supply counted in the TDPUD production totals, as well as non-potable supply and the other three are non-potable), one is supplied by NCSD (potable), and three are supplied privately and assumed to be all non-potable. Using the partner agencies records of non-potable water pumped and supplied to the majority of the courses, the average non-potable demands range from 0.02 to 0.28 mgd (21-314 ac-ft/yr), with an average of 0.19 mgd (208 ac-ft/yr). This average demand rate of 0.19 mgd is applied to the four privately-supplied courses for an estimated production of 1,876 ac-ft/yr.

Based on the available data and summarized in Table 2-4, current annual average production from the MVGB is estimated to be approximately 7,455 ac-ft/yr. TDPUD UWMP estimates that the total withdrawals at buildout conditions including other water users in the Basin, is estimated to be 13,300 ac-ft/yr but this will not likely occur until after year 2100 (TDPUD UWMP, 2021). The sustainable yield of the Basin was estimated to be about 24,000 AF (GEI, 2016). As discussed in Section 2.9 recharge to the Basin might decrease about 800 acre-feet with the Central Tendency projections and up to 2,000 ac-ft/yr with the Hotter-Drier conditions. This could reduce the sustainable yield to 20,000 to 21,200 ac-ft/yr. At build-out the Basin would still be within its estimated sustainable yield.

Table 2-4. Five-year Average Groundwater Production

	mgd	ac-ft/yr
TDPUD		
Potable - Average (WY2019-2023)	3.79	4,950
Golf Course (non-potable) – Average (WY2019-2023)	0.02	26
NCSD		
Potable - Average (WY2019-2023)	0.48	628
Privately Supplied Golf Courses		
Total estimated non-potable production	1.43	1,876
Estimated Total Demand	**5.719**	**7,455**

3. Plan Implementation

The partner agencies are already performing many of the groundwater management activities associated with an AB 3030 GMP. Through GMP implementation, the partner agencies formalize their groundwater management goal, BMOs, and implementation actions that elaborate on both current actions and planned future actions under the GMP. As discussed in Section 1.6 and shown on Tables 1-2, 1-3, and 1-4, a number of required, voluntary, and suggested components constitute a GMP.

This chapter discusses implementation actions that are grouped under each BMO. The BMOs are fully described in Section 1.5, and are listed below:

1. Manage groundwater to maintain established and planned uses.
2. Manage groundwater use within the provisions of the Truckee River Operating Agreement.
3. Collaborate and cooperate with groundwater users and stakeholders in the Martis Groundwater Basin.
4. Protect groundwater quantity and quality.
5. Pursue and use the best available science and technology to inform the decision-making process.
6. Consider the environment and participate in the stewardship of groundwater resources.

3.1. Implementation Actions that Support BMO #1 - Manage Groundwater to Maintain Established and Planned Uses

The MVGB is the primary source of water to multiple users under separate jurisdictions. BMO #1 encourages the partner agencies to pursue management of groundwater that is within their jurisdiction in order to protect existing uses.

Implementation actions identified as falling under BMO #1 facilitate the management of groundwater in the MVGB. These implementation actions are focused on regular communication and consideration of future programs intended to protect the groundwater resource from degradation and depletion.

3.1.1. Develop and implement a summary report every five years

This action is intended to concentrate and document GMP activity, data, and management decisions into periodic reports for use by partner agencies, Stakeholders, and local planning agencies for continual groundwater management decisions and maintenance.

This implementation action provides a report every five years that summarizes groundwater conditions and management activities and presents an opportunity to update and improve the GMP as needed. The 5-year summary report will also replace the annual report for the final year of the summary period. The summary report will include:

- A summary of monitoring results with a discussion of historical trends.

- A summary of management actions during the period covered by the report.
- A discussion of whether actions are achieving progress towards meeting BMOs.
- A summary of proposed management actions for the future.
- A summary of any GMP changes that occurred during the period covered by the report.
- A summary of actions taken to coordinate with other water and land agencies and other government agencies.
- Recommendation of updates and changes to the GMP.

3.1.2. Compile an annual summary of groundwater monitoring data

This action will compile, organize and evaluate groundwater level elevation and groundwater quality monitoring data collected during the previous year. The annual summary of monitoring data will include groundwater level monitoring information from the partner agencies water level monitoring efforts, and water quality data collected by the partner agencies from production wells. The annual summary of groundwater monitoring data will be used by the agencies at the annual GMP implementation meeting described in Section 3.1.3 to evaluate the need to implement other portions of the GMP that are contingent on monitoring data. The annual summary of groundwater monitoring data for the fifth year of the summary period will be included in the 5-year summary report and will replace the annual report for that year.

3.1.3. Partner agencies to meet annually to discuss GMP implementation

This action will require the partnership agencies to meet at least once annually to discuss GMP implementation. Currently, the partner agencies meet in the Truckee area annually and GMP implementation will be added as an agenda item during this annual meeting.

3.1.4. Support TROA provisions associated with well construction, repair, modification, and destruction

The Settlement Act may eventually establish additional requirements for the siting and construction of wells drilled in the Truckee River Basin, which includes the MVGB. Section 6.E of TROA outlines Truckee River basin allocation procedures including well construction, repair, modification and destruction to address groundwater-surface water interactions within the Truckee River Basin including areas of Martis Valley. Section 204(c)(1)(B) of the Settlement Act provides that, "...all new wells drilled after the date of enactment of this title shall be designed to minimize any short-term reductions of surface streamflows to the maximum extent feasible." This implementation action supports the implementation of TROA's well construction guidelines. Coordinate with Placer and Nevada counties Environmental Health Department to be notified of permit applications in MVGB.

3.1.5. Evaluate and consider taking a position on relevant water resources-related policies, programs, and projects under consideration by local, State, and Federal agencies

Throughout the state, surface water and groundwater resource management are becoming critical components of meeting growing water supply demands. As part of this implementation action, the partner agencies will actively evaluate and consider policies, programs and projects that may impact water resources quality and/or quantity within the Martis Valley.

3.1.6. Pursue opportunities for improved groundwater basin monitoring and reporting with local, State, and Federal agencies

This implementation action prompts the partner agencies to continuously pursue opportunities and funding that may provide additional groundwater data collection and/or reporting. Groundwater monitoring is a critical component in understanding the physical condition of the groundwater basin and is further described in Section 3.3.1.

3.1.7. Evaluate the need for programs to facilitate saline intrusion control, mitigate the migration of contaminated groundwater, facilitate conjunctive use, and to mitigate overdraft

This implementation action includes evaluation of a variety of potential programs to manage groundwater within the jurisdiction of the partner agencies. As part of this action, the agencies will evaluate the need for saline intrusion controls, mitigation of the migration of contaminated groundwater, conjunctive use programs, and overdraft mitigation.

Currently, the groundwater supply in Martis Valley is not threatened by saline intrusion, contaminant plumes, or in a state of overdraft that would warrant immediate steps for mitigation. Saline intrusion is a primary concern along coastal areas with intruding sea water, which is high in Total Dissolved Solids (TDS) that may threaten fresh groundwater supplies. Saline conditions may also occur in interior basins due to industrial, agricultural or wastewater disposal activities. In the Martis Valley, groundwater monitoring (discussed under Section 3.4), will assist in identifying saline issues. Should future monitoring indicate that saline intrusion is a potential problem in the MVGB, the partner agencies will evaluate development of a saline intrusion control program.

Groundwater contamination in the MVGB falls under the jurisdiction of the Lahontan Regional Water Quality Control Board (LRWQCB). Should monitoring indicate a large scale groundwater contamination issue, the partner agencies will share knowledge of the issue and collaborate with the LRWQCB. If monitoring indicates that contaminated groundwater is migrating, the partner agencies will further collaborate with the LRWQCB to mitigate the migration, if possible, without interrupting water supply deliveries.

Conjunctive use is the management of surface water and groundwater to optimize the yield of the overall water resource. One method would be to rely primarily on surface water in wet years and groundwater in dry years. Other methods employ artificial recharge, where surface water is intentionally stored into aquifers for later use. NCSD currently manages both its spring water and groundwater supply and TDPUD currently relies solely on groundwater but maintains water rights to several springs. The partner agencies will evaluate opportunities to increase the use of conjunctive management as they arise within the MVGB.

Groundwater overdraft occurs when pumping exceeds recharge to a groundwater basin. If monitoring indicates through declining groundwater levels that groundwater overdraft is occurring, the partner agencies will consider development of programs to mitigate the groundwater overdraft.

3.1.8. Consider development of contamination cleanup, recharge, storage, conservation and water recycling projects

This implementation action includes evaluation of a variety of potential programs to manage groundwater within the jurisdiction of the partner agencies. As part of this action, the partner agencies will consider development of projects that cleanup contamination, increase groundwater recharge and storage, or increase conservation and water recycling.

The LRWQCB is responsible for developing and enforcing water quality objectives and plans that best protect the State's waters within its hydrologic area. Should monitoring indicate that contaminated groundwater is a threat to groundwater supplies, the partner agencies will consider collaborating with the LRWQCB.

During GMP implementation, opportunities may arise for the partner agencies to engage in activities related to groundwater recharge, storage, conservation and recycling. As those opportunities arise, the agencies will consider participating in projects to improve groundwater recharge, storage, conservation and recycling efforts.

3.1.9. Pursue funding sources for implementation of plan policies, programs, reporting and projects

This implementation action directs the partner agencies to pursue funds from Federal, State and other sources as they become available and are beneficial to pursue. Funding sources may include Local Groundwater Assistance (LGA) grants and Integrated Regional Water Management Planning (IRWMP) grants from DWR, grants from the California State Water Resources Control Board, various funds available through collaboration with the U.S. Bureau of the Interior, Truckee River Watershed Council, and other agencies.

3.1.10. Participate in the evaluation of relevant local projects to maintain groundwater quantity and quality

Local groups and local, State or Federal agencies may develop opportunities that seek support or assistance for projects that affect groundwater quantity and/or quality in the Martis Valley. This action directs the partner agencies to participate in relevant local projects as appropriate and reasonable.

3.1.11. Summary of BMO #1 Actions

Table 3-1 presents a summary of implementation actions to be undertaken by the partner agencies that support BMO #1 including the anticipated schedule of implementation.

Table 3-1. Summary BMO#1 Supporting Implementation Actions

	Description of Action	Implementation Schedule
1-1	Develop and implement a summary report every ten years that includes: A summary of monitoring results, with a discussion of historical trends A summary of management actions during the period covered by the report A discussion of whether actions are achieving progress towards meeting BMOs A summary of proposed management actions for the future A summary of any GMP changes that occurred during the period covered by the report A summary of actions taken to coordinate with other water and land agencies and other government agencies Review of the GMP and consider updates to the GMP	Once every ten years
1-2	Compile an annual summary of groundwater monitoring data	Annually
1-3	Partner agencies to meet annually to discuss GMP implementation	Annually
1-4	Support TROA provisions associated with well construction, repair, modification, and destruction	As Needed
1-5	Evaluate and consider taking a position on relevant water resource-related policies, programs, and projects under consideration by local, State and Federal agencies	As Needed
1-6	Pursue opportunities for improved groundwater basin monitoring and reporting with local, State, and Federal agencies	As Needed
1-7	Evaluate the need for programs to facilitate saline intrusion control, mitigate the migration of contaminated groundwater, facilitate conjunctive use, and to mitigate overdraft	As Needed
1-8	Consider development of contamination cleanup, recharge, storage, conservation and water recycling projects	As Needed
1-9	Pursue funding sources for implementation of plan policies, programs, reporting and projects	Ongoing
1-10	Participate in the evaluation of relevant local projects to maintain groundwater quantity and quality	As Needed

3.2. Implementation Actions that Support BMO #2 – Manage Groundwater within the Provisions of TROA

The Settlement Act, Public Law 101-618 (1990), established entitlements to the waters of Lake Tahoe, the Truckee River and its tributaries, and how the storage reservoirs of the Truckee River are operated. Section 205 of the Settlement Act directs the Secretary of the Department of the Interior to negotiate an operating agreement for the operation of Truckee River reservoirs, between DWR, Nevada, Truckee Meadows Water Authority (formerly Sierra Pacific Power Company and Nevada Energy), Pyramid Tribe, and the United States Bureau of Reclamation. The operating agreement is known as TROA.

Section 204(c)(1) of the Settlement Act outlines the allocation of 32,000 acre-feet of water (both surface and groundwater) to the State of California from within the Truckee River Basin. The Settlement Act may eventually establish additional requirements for the siting and construction of wells drilled in the Truckee River Basin, which includes the MVGB. Section 6.E of TROA outlines Truckee River Basin allocation procedures including surface water diversions and water accounting procedures. Article 10 of TROA identifies well construction, repair, modification and destruction to address groundwater-surface water interactions within the Truckee River Basin including areas of Martis Valley. Section 204(c)(1)(B) of the Settlement Act provides that, "...all new wells drilled after the date of enactment of this title shall be designed to minimize any short-term reductions of surface streamflows to the maximum extent feasible." Article 10 of TROA requires that new water supply wells be designed to minimize impacts to surface water and outlines siting and design processes. Wells drilled or under construction before May 1, 1996 are presumed to comply with the Settlement Act.

This BMO documents the partner agencies' commitment to continue to comply with provisions of TROA. There are provisions in TROA that apply to groundwater and water wells within the Truckee River Basin (which includes the Martis Valley) to address potential adverse impacts to surface water.

3.2.1. Continue coordination and collaboration with TROA agencies on groundwater management issues and source well development

This implementation action directs the partner agencies to coordinate and collaborate with TROA agencies as necessary to be compliant with the Settlement Act. To meet this implementation action, the agencies will continue regular contact with TROA agencies as appropriate.

3.2.2. Summary of BMO #2 Actions

Table 3-2 presents a summary of implementation actions to be undertaken by the partner agencies that support BMO #2 including the anticipated schedule of implementation.

Table 3-2. Summary BMO#2 Supporting Implementation Actions

	Description of Action	Implementation Schedule
2-1	Continue coordination and collaboration with TROA agencies on groundwater management issues and source well development	Ongoing

3.3. Implementation Actions that Support BMO #3 - Collaborate and Cooperate with Groundwater Users and Stakeholders in the Martis Valley Groundwater Basin

With one common groundwater supply it makes sense to share information and resources toward similar goals. This objective encourages the partner agencies to reach out to other agencies and groundwater users within the MVGB.

3.3.1. Formalize and institute a Stakeholder Working Group to meet at least annually or as needed on GMP implementation activities and updates

The SWG has been a key component of the GMP development process and will be continued into the implementation phase. This implementation action directs the partner agencies to continue using working groups during implementation of the GMP. The SWG will continue to work cooperatively with the partner agencies and will meet at least once a year to discuss GMP implementation.

3.3.2. Collaborate with the LRWQCB to limit the migration of contaminated groundwater and in development of large scale contamination clean up programs

This implementation action directs the partner agencies to communicate, collaborate, and coordinate with the LRWQCB on groundwater contamination issues. There are no currently identified large scale groundwater contamination issues in the Martis Valley at this time. Communication with the LRWQCB allows for collaboration in the event of the identification of groundwater contamination and collaboration with the LRWQCB on the prevention of contaminant migration.

3.3.3. Work cooperatively with local stakeholders and local, State and Federal agencies on groundwater management activities, projects, and studies

Strong relationships with Federal, State, and local agencies and stakeholders are critical in developing and implementing many of the GMP's implementation actions. The partner agencies are already working cooperatively with local stakeholders and agencies on groundwater management, as evidenced by the use of the SWG during GMP development. This implementation action directs the partner agencies to communicate and work cooperatively with local groundwater interests, and includes outreach activities aimed to educate agencies and stakeholders on groundwater management opportunities and activities in the MVGB.

3.3.4. Identify opportunities for public involvement during GMP implementation

Informing the public of GMP implementation activities increases local understanding and support of GMP activities. This implementation action encourages the partner agencies to inform and invite the public to participate in GMP implementation activities. Public information and involvement may take place in the form of a specific webpage designed to communicate GMP implementation actions, public meetings, and at agency board meetings, as well as other activities.

3.3.5. Summary of BMO #3 Actions

Table 3-3 presents a summary of implementation actions to be undertaken by the partner agencies that support BMO #3 including the anticipated schedule of implementation.

Table 3-3. Summary BMO#3 Supporting Implementation Actions

	Description of Action	Implementation Schedule
3-1	Formalize and institute a Stakeholder Working Group to meet at least annually or as needed on GMP implementation activities and updates.	Annually
3-2	Collaborate with the LRWQCB to limit the migration of contaminated groundwater and in development of large scale contamination clean up programs	As Needed
3-3	Work cooperatively with local stakeholders and local, State and Federal agencies on groundwater management activities, projects and studies	Ongoing
3-4	Identify opportunities for public involvement during plan implementation	Ongoing

3.4. Implementation Actions that Support BMO #4 – Protect Groundwater Quantity and Quality

Groundwater performs an integral function in a watershed, one of which is satisfying water supply needs. Improving the understanding of the regional supplies is a critical step in protecting and sustaining the Martis Valley groundwater supply.

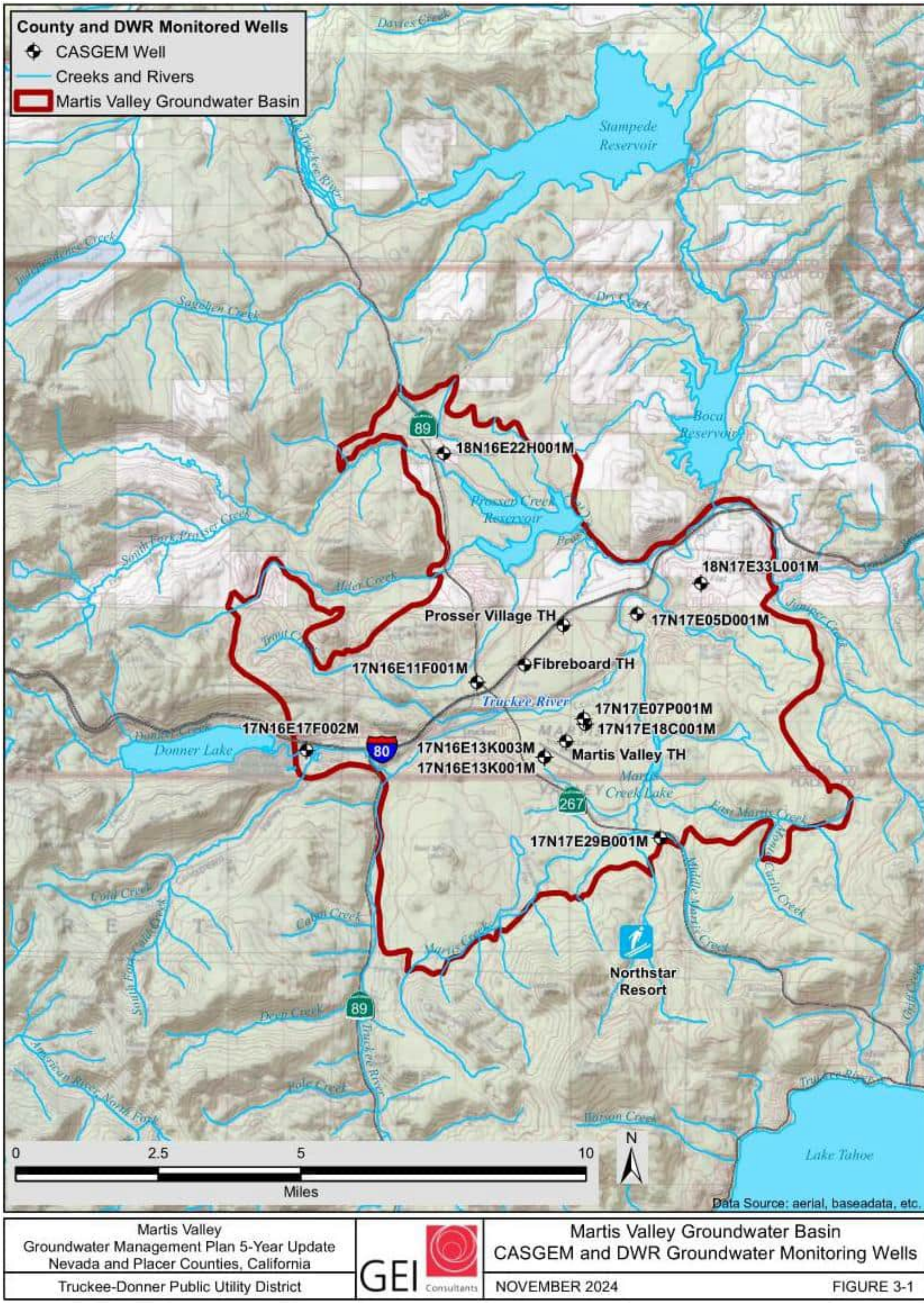
The collection, evaluation and analysis of groundwater monitoring data including water quality and water levels on a regular basis is the cornerstone in understanding the MVGB's groundwater resources and provides critical information for management decisions. Groundwater level monitoring can identify areas of overdraft, enabling appropriate management decisions and responses. Groundwater quality monitoring can help identify areas of degrading water quality, potentially identifying specific water quality issues. Ongoing groundwater monitoring provides information needed to document current conditions, assess long-term trends, and to support development and implementation of GMP components.

Groundwater data is collected by both DWR and the partner agencies on a regular basis; and by the USGS on a less regular basis. Accumulating, processing, evaluating, summarizing and reporting the available data for discussion and distribution will be required to make informed decisions regarding continued groundwater supply and demand. Additionally, surface water data is collected by local, State, and Federal agencies and is evaluated by the appropriate agency for their own purpose. These data are critical and can be used in conjunction with the accumulated groundwater data to help improve the understanding of surface water-groundwater relationships.

3.4.1. Establish and maintain a California Statewide Groundwater Elevation Monitoring compliant monitoring program

This implementation action directs the partner agencies to continue their California Statewide Groundwater Elevation Monitoring (CASGEM) compliant monitoring program (included as Appendix C). Figure 3-1 shows the locations of CASGEM monitoring wells in the MVGB. CASGEM monitoring results will be used in the annual groundwater monitoring summary prepared under implementation action 1-2.

Figure 3-1. CASGEM and DWR Groundwater Monitoring Wells



3.4.2. Continue and Encourage Water Conservation Activities and Public Education

The partner agencies currently implement significant water conservation and public outreach programs per State requirements. All three agencies hold public board meetings and maintain informative websites for public outreach purposes at the following web addresses:

- www.tdpud.org
- www.pcwa.net
- www.northstarcsd.org

This implementation action encourages the partner agencies to continue to implement conservation activities and continue public outreach activities as opportunities become available.

3.4.3. Work with local stakeholders and DWR to identify areas that may need additional groundwater level and groundwater quality monitoring based on identified data gaps or negative performance trends

Currently, groundwater is monitored by the partner agencies under CASGEM, and by DWR, who monitors a number of wells in the MVGB. DWR monitoring wells are shown in Figure 3-1. This implementation action requires the partner agencies to work with local stakeholders and DWR to identify areas in need of additional monitoring. The SWG includes representatives from DWR and California Department of Fish and Wildlife. Through the SWG, the partner agencies will be working with local stakeholders and DWR and will discuss identification of additional monitoring areas at the SWG annual meetings.

3.4.4. Coordinate with other agencies, including DWR and the USGS to identify opportunities for land subsidence monitoring

Inelastic land subsidence is caused by dewatering of aquifers and the compressing of clays. As water is removed from the aquifer, it is transported through interconnected pore spaces between grains of sand and gravel. If an aquifer has intervals of clay or silt within it, the lowered water pressure in the sand and gravel results in the slow drainage of water from the clay and silt beds. The decreased water pressure reduces the support for the clay and silt beds. Because these beds are compressible, they compact (become thinner) and the effects are seen as a lowering of the land surface. The lowering of the land surface elevation from this process is often permanent (inelastic). Recharge of the aquifer will not result in an appreciable recovery of the land-surface elevation.

The partner agencies have not developed a network of extensometers to measure inelastic land subsidence. Groundwater level monitoring indicates that groundwater levels have not been significantly lowered, a condition required for land subsidence due to groundwater extraction to occur. Additionally, the geology (Section 2.4) in the MVGB does not consist of large layers of clay to be compressed and is unlikely to experience inelastic land subsidence even if groundwater levels begin to decline. Based on a review of groundwater elevation trends over time, it can reasonably be assumed that significant land subsidence has not occurred on a regional scale due to groundwater extraction within the MVGB.

Under this implementation action, the partner agencies will coordinate with DWR and the USGS to identify opportunities for collaboration to detect land subsidence. Because inelastic land subsidence is tied to groundwater levels, the primary means for early detection include:

- Monitor and analyze groundwater levels, watching for significant declines
- Inspect wells for anecdotal evidence of subsidence during groundwater level monitoring

Monitoring groundwater levels with concurrent inspections for anecdotal evidence of subsidence is the least expensive, and least reliable, method to monitor for land subsidence. Declines in groundwater levels can be a precursor to land subsidence. Staff performing water level monitoring can inspect the monitoring well for indicators of subsidence. Anecdotal subsidence indicators include cracks in the well pad, elevation of the well casing in comparison to the ground surface, and cracks in the ground surface.

3.4.5. Evaluate the need for, and advocate for, as necessary, a wellhead protection, groundwater recharge area protection, and other programs as necessary in MVGB

Wellhead protection is a component of the Drinking Water Source Assessment and Protection (DWSAP) program administered by the DDW. The purpose of the DWSAP program is to protect groundwater sources of public drinking water supplies from contamination, thereby eliminating the need for costly treatment to meet drinking water standards. There are three major components to the DWSAP program, including: Delineation of capture zones around source wells, inventory of potential contaminating activities within protection areas, and analysis of vulnerabilities.

The partner agencies are in compliance with the DWSAP program, will work to comply with the DWSAP program into the future, and will consider supporting programs that will protect groundwater quality in the MVGB.

3.4.6. Map and share groundwater recharge zones

This GMP identifies preliminary areas of groundwater recharge in the MVGB in Section 2.9. This implementation action encourages the partner agencies to share the recharge zone maps in this GMP with local land use agencies to consider in land use decisions.

3.4.7. Provide relevant information to land use agencies regarding groundwater availability

Through GMP implementation activities, such as CASGEM monitoring, groundwater monitoring summary reports and annual meetings of the SWG, the partner agencies will develop water resources information about the MVGB. As development increases in the MVGB, local land use agencies will be faced with decisions regarding zoning and permitting. In Placer County, the Community Development Resource Agency leads development of the County's general plan and land development activities. The

Nevada County Community Development Agency is responsible for the Nevada County General Plan and zoning, and the Town of Truckee has developed its own general plan and zoning. This implementation action directs the partner agencies to communicate relevant groundwater information to the appropriate planning agencies to assist them in making informed land use decisions.

3.4.8. Summary of BMO #4 Actions

Table 3-4 presents a summary of implementation actions to be undertaken by the partner agencies that support BMO #3 including the anticipated schedule of implementation.

Table 3-4. Summary BMO#4 Supporting Implementation Actions

	Description of Action	Implementation Schedule
4-1	Establish and maintain a CASGEM compliant monitoring program	Ongoing
4-2	Continue and encourage water conservation activities and public education	Ongoing
4-3	Work with local stakeholders and DWR to identify areas that may need additional groundwater level and groundwater quality monitoring based on identified data gaps or negative performance trends	Annually
4-4	Coordinate with other agencies, including DWR, USGS and the Federal Aviation Administration to identify opportunities for land subsidence monitoring	As Needed
4-5	Evaluate the need for, and advocate for, as necessary, a wellhead protection, groundwater recharge area protection, and other programs as necessary in MVGB	As Needed
4-6	Map and share groundwater recharge zones	Ongoing
4-6	Provide relevant information to land use agencies regarding groundwater availability	As Needed

3.5. BMO #5 - Pursue and use the best available science and technology to inform the decision making process.

Science and technology continue to develop new tools that may improve our understanding of the MVGB. This objective encourages the partner agencies to take actions that work with the best available science to help make informed agency decisions.

The partner agencies have worked to develop the best groundwater science available by collaborating with the Bureau of Reclamation (Reclamation) and DRI to develop an integrated watershed-groundwater model in conjunction with the Martis Valley GMP. The geologic investigation conducted and documented in Section 2 of this report has been used to shape a bi-modal geologic framework which was used to develop the conceptual model for the hydrogeology of the subsurface components of the integrated watershed model. The integrated model was developed in parallel with the GMP and has been incorporated into this GMP update.

The integrated watershed model is comprised of a PRMS and MODFLOW coupled together using an UZF package. The PRMS is used to model surface water within the watershed, the MODFLOW is used to model groundwater within the MVGB, and UZF is a kinematic wave vadose zone model used to model the interaction between surface water and groundwater. Each model will be calibrated separately, and then calibrated together over a ten-year period using a coupled GSFLOW. Calibrations will be conducted using multiple GCM projections of precipitation and temperature to investigate the influence of future climate on water resources. Calibration targets for GSFLOW will include head values measured from wells, meadow and spring locations, streamflows, measured snow depth, and remotely sensed snow cover.

The integrated model's model domain covers the entire MVGB, and the watersheds that contribute surface water to the region up to Lake Tahoe. The model grid's cells are 300 by 300 meters in size.

The partner agencies have obtained a copy of the groundwater model component for future use.

3.5.1. Work with State and Federal agencies to attempt to secure funding for expansion of the partner agencies' monitoring grid

Increasing the number of monitoring points and frequency of monitoring provides for better long-term understanding of groundwater trends in the MVGB. Monitoring locations can be added by drilling new, dedicated monitoring wells, and by reaching agreements with well owners that have wells suitable for monitoring activities. Suitable wells will have a driller's log that describes well construction and sediments encountered, a short screened interval, a sanitary seal to prevent surface water from entering the well, and cannot be municipal supply wells.

This implementation action directs the partner agencies to collaborate with State agencies such as DWR, SWRCB, DDW, and others, as well as Federal agencies such as Reclamation, to acquire funding for improvements to the groundwater monitoring grid in the MVGB.

3.5.2. Maintain relationship with DWR for groundwater monitoring and database management activities

The partner agencies are a designated monitoring entity under DWR's CASGEM program. DWR staff have been an integral part of the SWG during GMP development and their contribution in the SWG is anticipated during GMP implementation.

This implementation action directs the partner agencies to continue to maintain a collaborative relationship with DWR for monitoring and database management activities in the MVGB. A continued relationship with DWR benefits the GMP by continuing the monitoring of long-term monitoring wells (especially those with long periods of records) and ensures that DWR groundwater expertise is involved during plan implementation activities through the SWG.

3.5.3. Identify opportunities for collecting water quality monitoring data

The purpose of water quality monitoring as a GMP implementation action is to assess regional trends in water quality that may be caused by changes in groundwater-related activities. For example, groundwater pumping may induce groundwater flow from deeper aquifers or hard rock areas that are less desirable, such as water with a high mineral content or arsenic. Groundwater quality monitoring from a basin-wide perspective is focused on information that is indicative of overall groundwater basin conditions and not focused on individual anthropogenic contaminants. Localized anthropogenic groundwater quality contaminants fall under the jurisdiction of the LRWCQB.

Groundwater quality is currently monitored as part of the agencies' agreements with DDW. Each agency releases an annual water quality report for their service areas in the MVGB and maintains databases of water quality information. Partner agency annual water quality reports are included in Appendix D.

Additional opportunities exist to collect groundwater quality information by collaborating with other State and Federal programs, such as the USGS funded California Groundwater Ambient Monitoring and Assessment Special Studies Program (GAMA). The 2007 GAMA study collected water quality data in the MVGB from 52 groundwater wells. The GAMA fact sheet for the MVGB is included in Appendix D.

Another example of how the partner agencies optimize collaboration opportunities occurred in February, 2012. The partner agencies teamed with Lawrence Livermore National Laboratory (LLNL) to conduct a water aging study to help improve the understanding of how the MVGB functions. The LLNL study is funded by the GAMA Special Studies Program. Results of the LLNL study will supplement and validate the DRI integrated Martis Valley surface-groundwater model.

This implementation action encourages the partner agencies to continue to identify opportunities, both within the agencies' operations and by collaborating with State and Federal agencies to improve groundwater quality data collection in the MVGB. Data collected for GMP implementation will be focused on identifying long-term water quality trends as they are related to groundwater use.

3.5.4. Use and consider updating the hydrologic model to improve understanding of groundwater in the MVGB

The implementation action directs the partner agencies to use the groundwater model component of the integrated watershed model to improve local hydrogeologic understanding within the MVGB. This may be achieved by revising the future regional groundwater model to include the following:

- Development of a focused MVGB hydrogeologic conceptual model;
- Refinement of the numerical groundwater model grid size and model extent;
- Revisions to numerical groundwater model layering and parameterization to reflect updates in the conceptual model; and,
- Establishment of appropriate stress periods and time scales for transient model simulations.

Incorporation of these revisions to the DRI-developed groundwater model will improve the tool so that it can be used to characterize groundwater flow patterns originating from key recharge zones; to quantify potential impacts on groundwater resources resulting from localized extractions; and to evaluate current and future impacts on base flows within the Truckee River as a result of groundwater pumping within the MVGB.

3.5.5. *Seek new tools, technology, and information that may improve the understanding of the water resources in the MVGB and watershed*

The partner agencies strive to have the best possible understanding of water resources in the MVGB and prepare reports on water resources such as urban water management plans, water shortage contingency plans, water supply analyses, and water master plans in accordance to State requirements.

This implementation action directs the partner agencies to actively seek out tools, technology, and compiled information in order to improve the understanding of water resources in the MVGB. The agencies will share and compare their water resources planning documents to identify similarities and differences. Additionally the agencies will continue to be proactive in looking for methods, approaches, and analysis that improves understanding of water in the MVGB.

3.5.6. *Summary of BMO #5 Actions*

Table 3-5 presents a summary of implementation actions to be undertaken by the partner agencies that support BMO #5 including the anticipated schedule of implementation.

Table 3-5. Summary BMO#5 Supporting Implementation Actions

	Description of Action	Implementation Schedule
5-1	Work with State and Federal agencies to attempt to secure funding for expansion of the Partner Agencies monitoring grid	Ongoing
5-2	Maintain relationship with DWR for groundwater monitoring and database management activities	Ongoing
5-3	Identify opportunities for collecting water quality monitoring data	As Available
5-4	Use and consider updating the hydrologic model to improve understanding of groundwater in the MVGB	Ongoing
5-5	Seek new tools, technology, and information that may improve the understanding of the water resources in the MVGB and watershed	Ongoing
5-6	Use the best available data to inform and link agency interdependent planning documents (i.e. urban water management plans, water shortage contingency plans, water supply analyses, and water master plans)	Ongoing

3.6. Implementation Actions that Support BMO #6 - Consider the environment and participate in the stewardship of groundwater resources

The partner agencies are dedicated stewards of the Martis Valley groundwater resources. The partner agencies' mission statements reflect the importance of managing their respective agencies in an environmentally sound manner, such as minimizing negative impacts of operations on the environment. This BMO directs the partner agencies to continue their leadership in the stewardship of the groundwater, watershed and natural infrastructure.

3.6.1. Consider local, State, or Federal riparian, surface water, or surface water-groundwater interaction investigations, studies or programs in the MVGB

This implementation action directs the partner agencies to consider existing and future studies and investigations of riparian habitat, surface water, and surface-groundwater interaction investigations. Wetlands and riparian areas play an important role in protecting water quality and reducing adverse water quality impacts (EPA, 2005). This implementation action, while not solely focused on pollution prevention, may address issues with such through traditional point sources and non-point sources. Many pollutants are delivered to surface waters and to groundwater from diffuse sources, such as urban runoff, agricultural runoff, and atmospheric deposition of contaminants. Pollution of surface water can impact groundwater quality and conversely pollution of groundwater can impact surface water. The agencies will evaluate the need to consider studies, guidance documents, and programs that investigate the linkages between ground and surface waters.

3.6.2. Continue support and collaboration with local groups that identify, coordinate, or implement projects that support the overall sustainability of the MVGB

This implementation action directs the partner agencies to support and collaborate with local groups that improve sustainability in the MVGB.

The partner agencies will continue support and collaboration with groups and agency members of the SWG, and through public involvement and outreach, identify additional groups to include in GMP implementation.

3.6.3. Summary of BMO #6 Actions

Table 3-6 presents a summary of implementation actions to be undertaken by the partner agencies that support BMO #3 including the anticipated schedule of implementation.

Table 3-6. Summary BMO#6 Supporting Implementation Actions

	Description of Action	Implementation Schedule
6-1	Consider local, State, or Federal riparian, surface water, or surface water/groundwater interaction investigations, studies or programs in the MVGB.	As Needed
6-2	Continue support and collaboration with local groups that identify, coordinate, or implement projects that support the overall sustainability of the MVGB.	Ongoing

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Appendix A – Resolutions of Intent to Adopt a Groundwater Management Plan

Resolution No. 2025-02

Notice of Intent to Update the Current Martis Valley Groundwater Management Plan

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WHEREAS, in 2013, the Board of Directors of the Truckee Donner Public Utility District (District) duly adopted the 2013 Martis Valley Groundwater Management Plan (GMP) in collaboration with Northstar Community Services District (NCSD) and Placer County Water Agency (PCWA); and

WHEREAS, In 2014, the State of California implemented the Sustainable Groundwater Management Act (SGMA) which applied to Medium and High Priority basins of which the Martis Valley Groundwater Basin was categorized as Medium Priority by the California Department of Water Resources (DWR); and

WHEREAS, in 2014 the District, NCSD, and PCWA agreed to stop the implementation of the GMP and take the steps necessary to comply with SGMA; and

WHEREAS, in 2019, DWR conducted the five-year review of basin status, and the Martis Valley Groundwater Basin was reprioritized to Very Low and was no longer required to comply with SGMA; and

WHEREAS, in 2019, the District, NCSD, and PCWA agreed that the GMP was a good framework for local watershed stewardship and basin management and voluntarily restarted implementation of the GMP; and

WHEREAS, in 2024, the District, NCSD, and PCWA agreed to conduct a 5-year update of the GMP and follow the public process and notification required by DWR when updating a GMP which includes notification when intending to update a GMP and notification when intending to adopt an updated GMP; and

WHEREAS, on January 15, 2025, the Board of Directors of the District took action to set a public hearing for February 5, 2025 at 6:00 p.m. or soon thereafter at the District's regularly scheduled board meeting for the intent to update the current Martis Valley Groundwater Management Plan; and

WHEREAS, on January 17, 2025 and January 24, 2025, the District advertised the public hearing in the Sierra Sun.

NOW, THEREFORE, BE IT RESOLVED by the Board of Directors of the Truckee Donner Public Utility District as follows:

1. The District intends to update the current Martis Valley Groundwater Management Plan.

2. The District shall publish the notice of intent Resolution 2025-01 twice in the Sierra Sun and shall have one meeting with the existing Martis Valley Groundwater Management Plan stakeholder working group and one meeting with the public during the update of the current Martis Valley Groundwater Management Plan.

3. Certified copies of this Resolution are to be forwarded to the California Department of Water Resources within 30 days of adoption.

PASSED AND ADOPTED by the Board of Directors of the Truckee Donner Public Utility District at a meeting held within the District on February 5, 2025 by the following roll call vote:

AYES: Murrell, Randall, Laliotis, Finn
NOES: None
ABSENT: Bender

TRUCKEE DONNER PUBLIC UTILITY DISTRICT

Signed by:
Christa Finn
A1F5DD2E6BFC4EC...
By____
Christa Finn, President

ATTEST:

Signed by:
Martina Rochefort
4A979F9597B04E9...
____
Martina Rochefort, District Clerk

Sierra Sun

See Proof on Next Page

AFFIDAVIT OF PUBLICATION

Customer Account #:
Reference: 8CD07 MARTIS VALLEY GROUNDWATER MANAGEMENT PL
Legal Account
Allison McEneaney
11570 Donner Pass Road

State of Florida, County of Orange, ss:

Justin Mattos, being first duly sworn, deposes and says: That (s)he is a duly authorized signatory of Column Software, PBC, duly authorized agent of The Sierra Sun now is, and during all times herein named, was a corporation duly organized and existing under the laws of the State of California, and now is, and during all times herein named was the printer of **The Sierra Sun**, a newspaper of general circulation, as defined by section 6000 of the Government Code of the State of California, printed and published daily (Sundays excepted) in the City of Truckee, County of Nevada, State of California, and that affiant is the principal clerk of said Nevada County Publishing Co.
That the printed advertisement hereto annexed was published in the said The Sierra Sun, for the full required period of **2** time(s) commencing on **Jan. 17, 2025,** and ending on **Jan. 24, 2025,** all days inclusive.

PUBLICATION DATES:

Jan. 17, 2025

Jan. 24, 2025

I certify, under penalty of perjury, the forgoing is true and correct.

(Signed) Justin Mattos

JESSICA GORDON-THOMPSON
Notary Public - State of Florida
Commission # HH301656
Expires on August 17, 2026

VERIFICATION

State of Florida
County of Orange

Subscribed in my presence and sworn to before me on this: 01/27/2025

Notary Public
Notarized remotely online using communication technology via Proof.

PUBLIC HEARING
NOTICE OF TRUCKEE DONNER PUD
BOARD OF DIRECTORS ON THE DISTRICT'S
INTENT TO UPDATE THE CURRENT MARTIS
VALLEY GROUNDWATER MANAGEMENT PLAN

Notice is hereby given: the Board of Directors of the Truckee Donner Public Utility District will hold a public hearing on February 5, 2025, at 6:00 PM or soon thereafter at the regularly scheduled Board meeting, to receive comment(s) on TDPUD's notice of intent to update the current Martis Valley Groundwater Management Plan. Additional information is available on the web site tdpud.org, or at the District office.

Interested parties are invited to express their views during the meeting in written or oral form, or to submit written views prior to the time of the public hearing at the District office or by mail.

Steven Poncelet, PIO & Strategic Affairs
TRUCKEE DONNER PUBLIC UTILITY DISTRICT
11570 Donner Pass Road
Truckee, CA 96161
(530) 587-3896

Published: January 17, 24, 2025

N·C·S·D
Northstar Community Services District
900 Northstar Drive, Truckee, CA 96161
P: 530.562.0747 • F: 530.562.1505 • www.northstarcsd.org

BOARD OF DIRECTORS
NORTHSTAR COMMUNITY SERVICES DISTRICT

RESOLUTION NO. 25-02

NOTICE OF INTENT TO UPDATE THE CURRENT MARTIS VALLEY GROUNDWATER MANAGEMENT PLAN

WHEREAS, in 2013, the Board of Directors of the Northstar Community Services District (District) duly adopted the 2013 Martis Valley Groundwater Management Plan (GMP) in collaboration Truckee Donner Public Utility District (TDPUD) and Placer County Water Agency (PCWA); and

WHEREAS, In 2014, the State of California implemented the Sustainable Groundwater Management Act (SGMA) which applied to Medium and High Priority basins of which the Martis Valley Groundwater Basin was categorized as Medium Priority by the California Department of Water Resources (DWR); and

WHEREAS, in 2014 the District, TDPUD, and PCWA agreed to stop the implementation of the GMP and take the steps necessary to comply with SGMA; and

WHEREAS, in 2019, DWR conducted the five-year review of basin status, and the Martis Valley Groundwater Basin was reprioritized to Very Low and was no longer required to comply with SGMA; and

WHEREAS, in 2019, the District, TDPUD, and PCWA agreed that the GMP was a good framework for local watershed stewardship and basin management and voluntarily restarted implementation of the GMP; and

WHEREAS, in 2024, the District, TDPUD, and PCWA agreed to conduct a 5-year update of the GMP and follow the public process and notification required by DWR when updating a GMP which includes notification when intending to update a GMP and notification when intending to adopt an updated GMP; and

WHEREAS, on January 15, 2025, the Board of Directors of the District took action to set a public hearing for February 19, 2025 at 9:00 a.m. or soon thereafter at the District's regularly scheduled board meeting for the intent to update the current Martis Valley Groundwater Management Plan; and

WHEREAS, on January 24, 2025 and January 31, 2025, the District advertised the public hearing in the Sierra Sun.

NOW, THEREFORE, BE IT RESOLVED by the Board of Directors of the Northstar Community Services District as follows:

1. The District intends to update the current Martis Valley Groundwater Management Plan.

2. The District shall publish the notice of intent Resolution 25-02 twice in the Sierra Sun and shall have one meeting with the existing Martis Valley Groundwater Management Plan stakeholder working group

and one meeting with the public during the update of the current Martis Valley Groundwater Management Plan.

3. Certified copies of this Resolution are to be forwarded to the California Department of Water Resources within 30 days of adoption.

PASSED AND ADOPTED on February 19, 2025, by the following roll call vote:

AYES: Brown, Forni, Ives, Radanovich, Witherspoon

NOES: NONE

ABSENT: NONE

Warren Brown
President, Board of Directors

ATTEST:

Julie Zangara
Secretary of the Board

Sierra Sun

See Proof on Next Page

AFFIDAVIT OF PUBLICATION

Customer Account #:
Reference: Notice of Public Hearing - GMP
Legal Account
Julie Zangara
900 Northstar Drive

State of Florida, County of Orange, ss:

Jesse Sassaman, being first duly sworn, deposes and says: That (s)he is a duly authorized signatory of Column Software, PBC, duly authorized agent of The Sierra Sun now is, and during all times herein named, was a corporation duly organized and existing under the laws of the State of California, and now is, and during all times herein named was the printer of **The Sierra Sun**, a newspaper of general circulation, as defined by section 6000 of the Government Code of the State of California, printed and published daily (Sundays excepted) in the City of Truckee, County of Nevada, State of California, and that affiant is the principal clerk of said Nevada County Publishing Co.
That the printed advertisement hereto annexed was published in the said The Sierra Sun, for the full required period of **2** time(s) commencing on **Jan. 24, 2025,** and ending on **Jan. 31, 2025,** all days inclusive.

PUBLICATION DATES:

Jan. 24, 2025

Jan. 31, 2025

I certify, under penalty of perjury, the forgoing is true and correct.

Jesse Sassaman

(Signed)______________________________

JESSICA GORDON-THOMPSON
Notary Public - State of Florida
Commission # HH301656
Expires on August 17, 2026

NOTARY PUBLIC · STATE OF FLORIDA

VERIFICATION

State of Florida
County of Orange

Subscribed in my presence and sworn to before me on this: 02/03/2025

J. Ro

Notary Public
Notarized remotely online using communication technology via Proof.

Northstar Community Services District
Notice of Public Hearing

Notice is hereby given: the Board of Directors of the Northstar Community Services District (NCSD) will hold a Public Hearing on February 19, 2025, at 9:00 AM or shortly thereafter at the regularly scheduled meeting of the Board of Directors, to receive comments on NCSD's Notice of Intent to Update the current Martis Valley Groundwater Management Plan. Additional information is available at northstarcsd.org, or at the District office.

Interested parties are invited to express their views during the meeting in written or oral form, or to submit written views prior to the time of the public hearing at the District office or by mail.

Joshua Detwiler, Technical Program Administrator
Northstar Community Services District
900 Northstar Drive
Truckee, CA 96161
(530) 550-6123

Published: January 24, 31, 2025

RESOLUTION 25-07 OF THE BOARD OF DIRECTORS OF THE
PLACER COUNTY WATER AGENCY
NOTICE OF INTENT TO UPDATE THE CURRENT
MARTIS VALLEY GROUNDWATER MANAGEMENT PLAN

WHEREAS, in 2013, the Board of Directors of the Placer County Water Agency (Agency) duly adopted the 2013 Martis Valley Groundwater Management Plan (GMP) in collaboration with the Truckee Donner Public Utility District (TDPUD) and the Northstar Community Services District (NCSD), hereinafter referred to as "Partners"; and

WHEREAS, In 2014, the State of California enacted the Sustainable Groundwater Management Act (SGMA) which required Medium and High Priority basins to develop a Groundwater Sustainability Plan (GSP); and

WHEREAS, in 2019, the California Department of Water Resources (DWR) reprioritized the Martis Valley Groundwater Basin to Very Low and no longer required to comply with SGMA; and

WHEREAS, although a GSP was no longer required, the Partners agreed to reestablish the Martis Valley GMP framework for local watershed stewardship and basin management and voluntarily restarted implementation of the Martis Valley GMP; and

WHEREAS, the 2019 Martis Valley GMP recommended five-year updates, and in 2024 the Partners agreed to complete a comprehensive update of the plan; and

WHEREAS, the Partners intend to conduct a public process to update the Martis Valley GMP which will include one Stakeholder Working Group meeting and one public meeting to review the study with the community and key stakeholders; and

WHEREAS, to fully comply with the California Water Code, the Agency must follow a formal process to publicly notice and hold a hearing to consider its intent to update a GMP; and

WHEREAS, on February 6, 2025 the Board took action to set a public hearing for March 6, 2025, at 2:00 p.m. or soon thereafter at the Agency's regularly scheduled board meeting for the intent to update the current Martis Valley GMP; and

WHEREAS, the public hearing scheduled for March 6, 2025, was properly noticed in advance in the Auburn Journal and the Sierra Sun consistent with Gov't Code 6066.

NOW BE IT RESOLVED THAT:

1. The Board hereby finds and determines that the foregoing recitals are true and correct; and

2. The Agency intends to update the current Martis Valley Groundwater Management Plan; and

3. The Board directs staff to publish this Resolution of Intent to Update the Martis Valley Groundwater Management Plan in the Auburn Journal and Sierra Sun in the same manner that notice for the hearing was published; and

4. The Board directs staff to submit certified copies of this Resolution to the California Department of Water Resources within 30 days of adoption.

This Resolution was duly adopted at a meeting of the Board of Directors of the Placer County Water Agency held on the 6th day of March 2025, by the following vote on roll call:

AYES: Primo Santini, III, Chris Wilson, Joshua Alpine, and Vice Chair Graham "Gray" Allen

NOES: none

ABSTAINED: none

ABSENT: Chair Robert Dugan

Signed and approved by me after its adoption this 6th day of March 2025.

Graham L Allen

Vice Chair of the Board
Placer County Water Agency

ATTEST:

Lori Young

Clerk to the Board

CERTIFICATION
The foregoing instrument is a correct copy of the original on file at the Placer County Water Agency, Auburn, California.

ATTEST: Lori Young
Print Name: Lori Young
Clerk to the Board of Directors
Date: March 6, 2025

119881

PUBLIC NOTICE

119881

NOTICE OF PUBLIC HEARING BEFORE THE BOARD OF DIRECTORS OF THE PLACER COUNTY WATER AGENCY ON A RESOLUTION OF INTENTION TO UPDATE THE CURRENT MARTIS VALLEY GROUNDWATER MANAGEMENT PLAN

NOTICE IS HEREBY GIVEN that the Board of Directors of the Placer County Water Agency (PCWA) will hold a public hearing on Thursday, March 6, 2025, at 2:00 p.m., or as soon thereafter as it can be heard, at the PCWA Business Center, 144 Ferguson Road, Auburn, California, for the purpose of considering whether to adopt a resolution of intention to update the current Martis Valley Groundwater Management Plan for purposes of implementing the updated plan and groundwater management program.

Additional information can be obtained from PCWA's Office of the General Manager, at (530) 823-4850 or the address noted above. All persons interested in this subject should attend the hearing at which oral and written presentations may be made. After the hearing, which may be continued by the Board as necessary, the Board will consider for adoption a resolution of intention to update the Martis Valley Groundwater Management Plan.

Dated: February 6, 2025
Lori Young
Clerk to the Board
Placer County Water Agency
PUBLISHED IN THE AUBURN JOURNAL, FEBRUARY 08, 15, 2025

The above space is reserved for Court/County Filed Date Stamp

PROOF OF PUBLICATION (2015.5 C.C.P.)

STATE OF CALIFORNIA
County of Placer

I am a citizen of the United States and employed by a publication in the County aforesaid. I am over the age of eighteen years, and not a party to the mentioned matter. I am the principal clerk of **The Auburn Journal**, a newspaper of general circulation, in the **City of Auburn**, which is printed and published in the **County of Placer**. This newspaper has been judged a newspaper of general circulation by the Superior Court of the State of California, in and for the **County of Placer**, on the date of May 26, 1952 (Case Number 17407). The notice, of which the attached is a printed copy (set in type not smaller than nonpareil) has been published in each regular and entire issue of said newspaper and not in any supplement thereof on the following dates, to-wit:

FEBRUARY 08, 15, 2025

I certify, under penalty of perjury, that the foregoing is true and correct.

Christine Werner

CHRISTINE WERNER

Dated in Auburn, California

FEBRUARY 15, 2025

PROOF OF PUBLICATION
AUBURN JOURNAL
1030 High Street
Auburn, CA 95603
P.O. Box 5910
Auburn, CA 95604

Sierra Sun

See Proof on Next Page

AFFIDAVIT OF PUBLICATION

Customer Account #:
Reference: 8CD07 Public Hearing on a Resolution of Inte
Legal Account
Lori Young
PO Box 6570

State of Florida, County of Broward, ss:

Rachel Cozart, being first duly sworn, deposes and says: That (s)he is a duly authorized signatory of Column Software, PBC, duly authorized agent of The Sierra Sun now is, and during all times herein named, was a corporation duly organized and existing under the laws of the State of California, and now is, and during all times herein named was the printer of **The Sierra Sun**, a newspaper of general circulation, as defined by section 6000 of the Government Code of the State of California, printed and published daily (Sundays excepted) in the City of Truckee, County of Nevada, State of California, and that affiant is the principal clerk of said Nevada County Publishing Co.
That the printed advertisement hereto annexed was published in the said The Sierra Sun, for the full required period of **2** time(s) commencing on **Feb. 7, 2025,** and ending on **Feb. 14, 2025,** all days inclusive.

PUBLICATION DATES:

Feb. 7, 2025

Feb. 14, 2025

I certify, under penalty of perjury, the forgoing is true and correct.

Rachel Cozart
(Signed)________________________________

SHERI SMITH
Notary Public - State of Florida
Commission # HH289383
Expires on May 31, 2026

VERIFICATION

State of Florida
County of Broward

Subscribed in my presence and sworn to before me on this: 02/19/2025

S Smith
____
Notary Public
Notarized remotely online using communication technology via Proof.

NOTICE OF PUBLIC HEARING BEFORE THE BOARD OF DIRECTORS OF THE PLACER COUNTY WATER AGENCY ON A RESOLUTION OF INTENTION TO UPDATE THE CURRENT MARTIS VALLEY GROUNDWATER MANAGEMENT PLAN

NOTICE IS HEREBY GIVEN that the Board of Directors of the Placer County Water Agency (PCWA) will hold a public hearing on Thursday, March 6, 2025, at 2:00 p.m., or as soon thereafter as it can be heard, at the PCWA Business Center, 144 Ferguson Road, Auburn, California, for the purpose of considering whether to adopt a resolution of intention to update the current Martis Valley Groundwater Management Plan for purposes of implementing the updated plan and groundwater management program.

Additional information can be obtained from PCWA's Office of the General Manager, at (530) 823-4850 or the address noted above. All persons interested in this subject should attend the hearing at which oral and written presentations may be made. After the hearing, which may be continued by the Board as necessary, the Board will consider for adoption a resolution of intention to update the Martis Valley Groundwater Management Plan.

Dated: February 6, 2025

Lori Young
Clerk to the Board
Placer County Water Agency

Published: February 7, 14, 2025

Appendix B – Resolutions Adopting the Groundwater Management Plan

Resolution No. 2025-15

Adoption of the Updated Martis Valley Groundwater Management Plan

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WHEREAS, in 2013, the Board of Directors of the Truckee Donner Public Utility District (District) duly adopted the 2013 Martis Valley Groundwater Management Plan (GMP) in collaboration with Northstar Community Services District (NCSD) and Placer County Water Agency (PCWA); and

WHEREAS, In 2014, the State of California implemented the Sustainable Groundwater Management Act (SGMA) which applied to Medium and High Priority basins of which the Martis Valley Groundwater Basin was categorized as Medium Priority by the California Department of Water Resources (DWR); and

WHEREAS, in 2014 the District, NCSD, and PCWA agreed to stop the implementation of the GMP and take the steps necessary to comply with SGMA; and

WHEREAS, in 2019, DWR conducted the five-year review of basin status, and the Martis Valley Groundwater Basin was reprioritized to Very Low and was no longer required to comply with SGMA; and

WHEREAS, in 2019, the District, NCSD, and PCWA agreed that the GMP was a good framework for local watershed stewardship and basin management and voluntarily restarted implementation of the GMP; and

WHEREAS, in 2024, the District, NCSD, and PCWA agreed to conduct a 5-year update of the GMP and follow the public process and notification required by DWR when updating a GMP which includes notification when intending to update a GMP and notification when intending to adopt an updated GMP; and

WHEREAS, on January 15, 2025, the Board of Directors of the District took action to set a public hearing for February 5, 2025 at 6:00 p.m. or soon thereafter at the District's regularly scheduled board meeting for the intent to update the current Martis Valley Groundwater Management Plan; and

WHEREAS, on January 17, 2025 and January 24, 2025, the District advertised the public hearing in the Sierra Sun.

WHEREAS, on February 5, 2025, the Board of Directors of the District held a public hearing for the intent to update the current Martis Valley Groundwater Management Plan and took action adopting Resolution 2025-02 for the intent to update the current Martis Valley Groundwater Management Plan; and

WHEREAS, the District, NCSD, and PCWA have updated the GMP and associated reports; and

WHEREAS, on May 21, 2025, the Board of Directors of the District took action to set a public hearing for June 18, 2025 at 6:00 p.m. or soon thereafter at the District's regularly scheduled board meeting for the intent to adopt the updated Martis Valley Groundwater Management Plan; and

WHEREAS, on May 30, 2025 and June 6, 2025, the District advertised the public hearing in the Sierra Sun; and

WHEREAS, on June 3, 2025 the District, NCSD, and PCWA held a Stakeholder Working Group and public meeting to present and receive input on the updated GMP; and

WHEREAS, on June 18, 2025 the District held a public hearing for the intent to adopt the updated Martis Valley Groundwater Management Plan; and

NOW, THEREFORE, BE IT RESOLVED by the Board of Directors of the Truckee Donner Public Utility District as follows:

1. The District hereby adopts the updated Martis Valley Groundwater Management Plan in substantially the form presented at the meeting.

2. Certified copies of this Resolution are to be forwarded to the California Department of Water Resources along with the adopted updated Martis Valley Groundwater Management Plan.

PASSED AND ADOPTED by the Board of Directors of the Truckee Donner Public Utility District at a meeting held within the District on June 18, 2025 by the following vote:

AYES: **Murrell, Randall, Bender, Laliotis, Finn**
NOES: **none**
ABSENT: **none**
ABSTAIN: **none**

TRUCKEE DONNER PUBLIC UTILITY DISTRICT

Signed by:
Christa Finn
A1F5DD2E6BFC4EC...

By________________________________
Christa Finn, President

ATTEST:

Signed by:
Brian Wright, General Manager
77918AE063C74F8...

Christa Finn's signature line is above; Brian Wright, General Manager

Sierra Sun

See Proof on Next Page

AFFIDAVIT OF PUBLICATION

Customer Account #:
Reference: 8CD06 - PH - Martis GMP Intent to Adopt
Legal Account
Allison McEneaney
11570 Donner Pass Road

State of Florida, County of Orange, ss:

Ankit Sachdeva, being first duly sworn, deposes and says: That (s)he is a duly authorized signatory of Column Software, PBC, duly authorized agent of The Sierra Sun now is, and during all times herein named, was a corporation duly organized and existing under the laws of the State of California, and now is, and during all times herein named was the printer of **The Sierra Sun**, a newspaper of general circulation, as defined by section 6000 of the Government Code of the State of California, printed and published daily (Sundays excepted) in the City of Truckee, County of Nevada, State of California, and that affiant is the principal clerk of said Nevada County Publishing Co.
That the printed advertisement hereto annexed was published in the said The Sierra Sun, for the full required period of **2** time(s) commencing on **May. 30, 2025,** and ending on **Jun. 6, 2025,** all days inclusive.

PUBLICATION DATES:

May. 30, 2025

Jun. 6, 2025

I certify, under penalty of perjury, the forgoing is true and correct.

Ankit Sachdeva

(Signed)________________________________

JESSICA GORDON-THOMPSON
Notary Public - State of Florida
Commission # HH301656
Expires on August 17, 2026

NOTARY PUBLIC • STATE OF FLORIDA

VERIFICATION

State of Florida
County of Orange

Subscribed in my presence and sworn to before me on this: 06/10/2025

____
Notary Public
Notarized remotely online using communication technology via Proof.

PUBLIC HEARING
NOTICE OF TRUCKEE DONNER PUD BOARD OF DIRECTORS
ON THE DISTRICT'S INTENT TO ADOPT AN UPDATED MARTIS VALLEY
GROUNDWATER MANAGEMENT PLAN

Notice is hereby given: the Board of Directors of the Truckee Donner Public Utility District will hold a public hearing on June 18, 2025, at 6:00 PM or soon thereafter at the regularly scheduled Board meeting, to receive comment(s) on TDPUD's notice of intent to adopt an updated Martis Valley Groundwater Management Plan. Additional information is available on the web site tdpud.org, or at the District office.

Interested parties are invited to express their views during the meeting in written or oral form, or to submit written views prior to the time of the public hearing at the District office or by mail.

Steven Poncelet, PIO & Strategic Affairs
TRUCKEE DONNER PUBLIC UTILITY DISTRICT
11570 Donner Pass Road
Truckee, CA 96161
(530) 587-3896

Published: May 30, June 6, 2025

N·C·S·D
Northstar Community Services District
900 Northstar Drive, Truckee, CA 96161
P: 530.562.0747 • F: 530.562.1505 • www.northstarcsd.org

BOARD OF DIRECTORS
NORTHSTAR COMMUNITY SERVICES DISTRICT

RESOLUTION NO. 25-05

TO UPDATE THE MARTIS VALLEY GROUNDWATER MANAGEMENT PLAN

WHEREAS, in 2013, the Board of Directors of the Northstar Community Services District (District) duly adopted the 2013 Martis Valley Groundwater Management Plan (GMP) in collaboration Truckee Donner Public Utility District (TDPUD) and Placer County Water Agency (PCWA); and

WHEREAS, In 2014, the State of California implemented the Sustainable Groundwater Management Act (SGMA) which applied to Medium and High Priority basins of which the Martis Valley Groundwater Basin was categorized as Medium Priority by the California Department of Water Resources (DWR); and

WHEREAS, in 2014 the District, TDPUD, and PCWA agreed to stop the implementation of the GMP and take the steps necessary to comply with SGMA; and

WHEREAS, in 2019, DWR conducted the five-year review of basin status, and the Martis Valley Groundwater Basin was reprioritized to Very Low and was no longer required to comply with SGMA; and

WHEREAS, in 2019, the District, TDPUD, and PCWA agreed that the GMP was a good framework for local watershed stewardship and basin management and voluntarily restarted implementation of the GMP; and

WHEREAS, in 2024, the District, TDPUD, and PCWA agreed to conduct a 5-year update of the GMP and follow the public process and notification required by DWR when updating a GMP which includes notification when intending to update a GMP and notification when intending to adopt an updated GMP; and

WHEREAS, on January 15, 2025, the Board of Directors of the District took action to set a public hearing for February 19, 2025 at 9:00 a.m. or soon thereafter at the District's regularly scheduled board meeting for the intent to update the current Martis Valley Groundwater Management Plan; and

WHEREAS, on January 24, 2025 and January 31, 2025, the District advertised the public hearing in the Sierra Sun.

WHERAS, on February 19, 2025, the Board of Directors of the District held a public hearing at 9:00 a.m. and passed Resolution 25-02: Notice of Intent to Update the Current Martis Valley Groundwater Management Plan; and

WHEREAS, on May 21, 2025, the Board of Directors of the District took action to set a public hearing for June 18, 2025 at 9:00 a.m. or soon thereafter at the District's regularly scheduled board meeting to consider adoption of the update to the current Martis Valley Groundwater Management Plan; and

WHEREAS, on May 30, 2025 and June 6, 2025, the District advertised the public hearing in the Sierra Sun.

WHEREAS, on June 3, 2025 at 3:00 p.m., a Martis Valley Groundwater Basin Stakeholder Working Group meeting was held to present the proposed updated Groundwater Management Plan.

WHEREAS, on June 3, 2025 at 6:00 p.m., a public meeting was held to present the proposed updated Groundwater Management Plan.

NOW, THEREFORE, BE IT RESOLVED by the Board of Directors of the Northstar Community Services District as follows:

1. The District hereby adopts the updated Martis Valley Groundwater Management Plan.

2. Certified copy of this Resolution is to be forwarded to the California Department of Water Resources along with the adopted updated Martis Valley Groundwater Management Plan.

PASSED AND ADOPTED on June 18, 2025, by the following roll call vote:

AYES: BROWN, FORNI, IVES, RADANOVICH

NOES: NONE

ABSENT: WITHERSPOON

Warren Brown
President, Board of Directors

ATTEST:

Julie Zangara
Secretary of the Board

See Proof on Next Page

AFFIDAVIT OF PUBLICATION

Customer Account #:
Reference: Notice of Public Hearing
Legal Account
Julie Zangara
900 Northstar Drive

State of Florida, County of Orange, ss:

Edmar Corachia, being first duly sworn, deposes and says: That (s)he is a duly authorized signatory of Column Software, PBC, duly authorized agent of The Sierra Sun now is, and during all times herein named, was a corporation duly organized and existing under the laws of the State of California, and now is, and during all times herein named was the printer of **The Sierra Sun**, a newspaper of general circulation, as defined by section 6000 of the Government Code of the State of California, printed and published daily (Sundays excepted) in the City of Truckee, County of Nevada, State of California, and that affiant is the principal clerk of said Nevada County Publishing Co.
That the printed advertisement hereto annexed was published in the said The Sierra Sun, for the full required period of **2** time(s) commencing on **Jun. 6, 2025,** and ending on **Jun. 13, 2025,** all days inclusive.

PUBLICATION DATES:

Jun. 6, 2025

Jun. 13, 2025

I certify, under penalty of perjury, the forgoing is true and correct.

Edmar Corachia

(Signed)__________________________________

NOTARY PUBLIC · STATE OF FLORIDA

JESSICA GORDON-THOMPSON
Notary Public - State of Florida
Commission # HH301656
Expires on August 17, 2026

VERIFICATION

State of Florida
County of Orange

Subscribed in my presence and sworn to before me on this: 06/13/2025

Notary Public
Notarized remotely online using communication technology via Proof.

Northstar Community Services District
Notice of Public Hearing

Notice is hereby given: the Board of Directors of the Northstar Community Services District (NCSD) will hold a Public Hearing on June 18, 2025, at 9:00 AM or shortly thereafter at the regularly scheduled meeting of the Board of Directors, to receive comments on NCSD's Notice of Intent to Adopt an updated Martis Valley Groundwater Management Plan. Additional information is available at northstarcsd.org, or at the District office.

Interested parties are invited to express their views during the meeting in written or oral form, or to submit written views prior to the time of the public hearing at the District office or by mail.

Joshua Detwiler, Technical Program Administrator
Northstar Community Services District
900 Northstar Drive
Truckee, CA 96161
(530) 550-6123

Published: June 6, 13, 2025

123180

PUBLIC NOTICE

123180

NORTHSTAR COMMUNITY SERVICES DISTRICT
NOTICE OF PUBLIC HEARING

Notice is hereby given The Board of Directors of Northstar Community Services District will hold a Public Hearing on June 18, 2025, at 9:00 A.M. or shortly thereafter at the regularly scheduled meeting of the Board of Directors, to receive comments on the NCSD's Notice of Intent to Adopt an update to the Martis Valley Groundwater Management Plan. Additional information is available at northstarcsd.org, or at the District office.

Interested parties are invited to express their views during the public hearing in written or oral form, or to submit written views prior to the time of the public hearing at the District office or by mail. Written correspondence may be addressed to Josh Detwiler, Technical Program Administrator, Northstar Community Services District, 900 Northstar Drive, Truckee, CA 96161.

PUBLISHED IN AUBURN JOURNAL ON JUNE 04, 2025

The above space is reserved for Court/County Filed Date Stamp

PROOF OF PUBLICATION
(2015.5 C.C.P.)

STATE OF CALIFORNIA
County of Placer

I am a citizen of the United States and employed by a publication in the County aforesaid. I am over the age of eighteen years, and not a party to the mentioned matter. I am the principal clerk of **The Auburn Journal**, a newspaper of general circulation, in the **City of Auburn**, which is printed and published in the **County of Placer**. This newspaper has been judged a newspaper of general circulation by the Superior Court of the State of California, in and for the **County of Placer**, on the date of May 26, 1952 (Case Number 17407). The notice, of which the attached is a printed copy (set in type not smaller than nonpareil) has been published in each regular and entire issue of said newspaper and not in any supplement thereof on the following dates, to-wit:

JUNE 04, 2025

I certify, under penalty of perjury, that the foregoing is true and correct.

Christine Werner

CHRISTINE WERNER

Dated in Auburn, California

JUNE 04, 2025

PROOF OF PUBLICATION
AUBURN JOURNAL
1030 High Street
Auburn, CA 95603
P.O. Box 5910
Auburn, CA 95604

RESOLUTION 25-15 OF THE BOARD OF DIRECTORS OF THE
PLACER COUNTY WATER AGENCY
ADOPTION OF THE UPDATED MARTIS VALLEY GROUNDWATER MANAGEMENT PLAN

WHEREAS, in 2013, the Board of Directors of the Placer County Water Agency (Agency) duly adopted the 2013 Martis Valley Groundwater Management Plan (GMP) in collaboration with the Truckee Donner Public Utility District (TDPUD) and the Northstar Community Services District (NCSD), hereinafter referred to as "Partners"; and

WHEREAS, In 2014, the State of California enacted the Sustainable Groundwater Management Act (SGMA) which required Medium and High Priority basins to develop a Groundwater Sustainability Plan (GSP); and

WHEREAS, in 2019, the California Department of Water Resources (DWR) reprioritized the Martis Valley Groundwater Basin to Very Low and no longer required to comply with SGMA; and

WHEREAS, although a GSP was no longer required, the Partners agreed to reestablish the Martis Valley GMP framework for local watershed stewardship and basin management and voluntarily restarted implementation of the Martis Valley GMP; and

WHEREAS, the 2019 Martis Valley GMP recommended five-year updates, and in 2024 the Partners agreed to complete a comprehensive update; and

WHEREAS, on March 6, 2025, the Agency Board of Directors held a public hearing and adopted Resolution 2025-07 for the intent to update the current Martis Valley GMP; and

WHEREAS, the Agency, TDPUD, and NCSD have updated the Martis Valley GMP and associated reports; and

WHEREAS, on June 3, 2025, the Agency, TDPUD, and NCSD held a Stakeholder Working Group and public meeting to present and receive input on the updated Martis Valley GMP; and

WHEREAS, on July 3, 2025, the Board of Directors took action to set a public hearing for August 7, 2025, for the intent to adopt the updated Martis Valley GMP; and

WHEREAS, on August 7, 2025, the Agency held a public hearing for the intent to adopt the updated Martis Valley GMP; and

WHEREAS, the public hearing scheduled for August 7, 2025, was properly noticed in advance in the Auburn Journal and the Sierra Sun consistent with Gov't Code 6066.

NOW BE IT RESOLVED THAT:

1. The Board hereby finds and determines that the foregoing recitals are true and correct; and

2. The Board hereby adopts the updated Martis Valley Groundwater Management Plan in substantially the form presented at the meeting; and

3. The Board directs staff to submit certified copies of this Resolution along with the adopted updated Martis Valley Groundwater Management Plan to the California Department of Water Resources.

This Resolution was duly adopted at a meeting of the Board of Directors of the Placer County Water Agency held on the 7th day of August 2025, by the following vote on roll call:

AYES: Graham "Gray" Allen, Primo Santini, III, Christ Wilson, Joshua Alpine,
Chair Robert Dugan

NOES: none

ABSTAINED: none

ABSENT: none

Signed and approved by me after its adoption this 7th day of August 2025.

Robert Dugan, Chair of the Board
Placer County Water Agency

ATTEST:

Vibeke Figueroa

Vibeke Figueroa
Deputy Clerk to the Board

Sierra Sun

See Proof on Next Page

AFFIDAVIT OF PUBLICATION

Customer Account #:
Reference: 8CD06 - Intent to Adopt an Updated MVGMP
Legal Account
Lori Young
PO Box 6570

State of Florida, County of Orange, ss:

Edmar Corachia, being first duly sworn, deposes and says: That (s)he is a duly authorized signatory of Column Software, PBC, duly authorized agent of The Sierra Sun now is, and during all times herein named, was a corporation duly organized and existing under the laws of the State of California, and now is, and during all times herein named was the printer of **The Sierra Sun**, a newspaper of general circulation, as defined by section 6000 of the Government Code of the State of California, printed and published daily (Sundays excepted) in the City of Truckee, County of Nevada, State of California, and that affiant is the principal clerk of said Nevada County Publishing Co.
That the printed advertisement hereto annexed was published in the said The Sierra Sun, for the full required period of **2** time(s) commencing on **Jul. 11, 2025,** and ending on **Jul. 18, 2025,** all days inclusive.

PUBLICATION DATES:

Jul. 11, 2025

Jul. 18, 2025

I certify, under penalty of perjury, the forgoing is true and correct.

Edmar Corachia

(Signed)________________________________

PAMELA BAEZ
Notary Public - State of Florida
Commission # HH 186700
Expires on October 14, 2025

NOTARY PUBLIC • STATE OF FLORIDA •

VERIFICATION

State of Florida
County of Orange

Subscribed in my presence and sworn to before me on this: 07/18/2025

____
Notary Public
Notarized remotely online using communication technology via Proof.

PUBLIC HEARING
NOTICE OF THE BOARD OF DIRECTORS OF THE PLACER COUNTY WATER AGENCY ON THE AGENCY'S INTENT TO ADOPT AN UPDATED MARTIS VALLEY GROUNDWATER MANAGEMENT PLAN

NOTICE IS HEREBY GIVEN that the Board of Directors of the Placer County Water Agency (PCWA) will hold a public hearing on **Thursday, August 7, 2025, at 2:00 p.m.**, or as soon thereafter as it can be heard, at the PCWA Business Center, 144 Ferguson Road, Auburn, California, to receive comment(s) on PCWA's notice of intent to adopt an updated Martis Valley Groundwater Management Plan.

Additional information can be found at https://docs.pcwa.net/mvgmp-update-2025 or obtained from PCWA's Office of the General Manager, at (530) 823-4860 or the address noted above. All persons interested in this subject should attend the hearing at which oral and written presentations may be made. After the hearing, which may be continued by the Board as necessary, the Board will consider a resolution to adopt the updated Martis Valley Groundwater Management Plan.

Lori Young
Clerk to the Board
Placer County Water Agency

Dated: July 8, 2025

Published: July 11, 18, 2025

Appendix C – CASGEM Monitoring Plan

Martis Valley Groundwater Monitoring Program

California Statewide Groundwater Elevation Monitoring (CASGEM)

Placer County Water Agency

Truckee Donner Public Utilities District

Northstar Community Services District

December 2011

Revised July 12, 2012

TABLE OF CONTENTS

APPENDICES

1.0 INTRODUCTION

This Martis Valley (MV) Groundwater Monitoring Program (Monitoring Program) report serves to describe the activities related to the monitoring of groundwater elevations in the MV area, as shown on **Figure 1-1**.

The elevation data gathered as part of this program will be included as part of the California Statewide Groundwater Elevation Monitoring (CASGEM) Program recently adopted by the California Department of Water Resources (DWR) as part of their mandated monitoring requirements under Senate Bill (SB) 6[1] of the State Water Code. This report strongly encourages the reader to review and understand the full text of the CASGEM Well Monitoring Guidelines, attached as **Appendix A**.

This Monitoring Program pulls together the efforts completed to date in the identification of existing and future well monitoring sites that satisfy the local and state requirements for a monitored groundwater basin. In addition, the Monitoring Program prepares the MV groundwater users to initiate a semi-annual monitoring event, which started with its first measurements in fall of 2011. Placer County Water Agency (PCWA), Truckee Donner Public Utilities District (TDPUD), and Northstar Community Services District (NCSD) are the three partners in MV area, in which their respective services areas are presented in Figure 1-1.

All field forms and measurement methods are included herein for the sole purpose of providing monitoring staff with easy access to printing and using these forms as part of their monitoring activities. The MV Monitoring Program report is a living document subject to change over time as more information is collected on the wells, and as technologies change to provide the best measurement of groundwater levels and water quality, and as more wells become available.

[1] SB 6 requires collaboration between local monitoring parties, or entities, and DWR to collect groundwater elevations statewide and that this information is made available to the public. SB 6 provides that:

- Local parties may assume responsibility for monitoring and reporting groundwater elevations.
- DWR work cooperatively with local Monitoring Entities to achieve monitoring programs that demonstrate seasonal and long-term trends in groundwater elevations.
- DWR accept and review prospective Monitoring Entity submittals, then determine the designated Monitoring Entity, notify the Monitoring Entity, and make that information available to the public.
- DWR perform groundwater elevation monitoring in basins where no local party has agreed to perform the monitoring functions.
- If local parties (for example, counties) do not volunteer to perform the groundwater monitoring functions, and DWR assumes those functions, then those parties become ineligible for water grants or loans from the State.

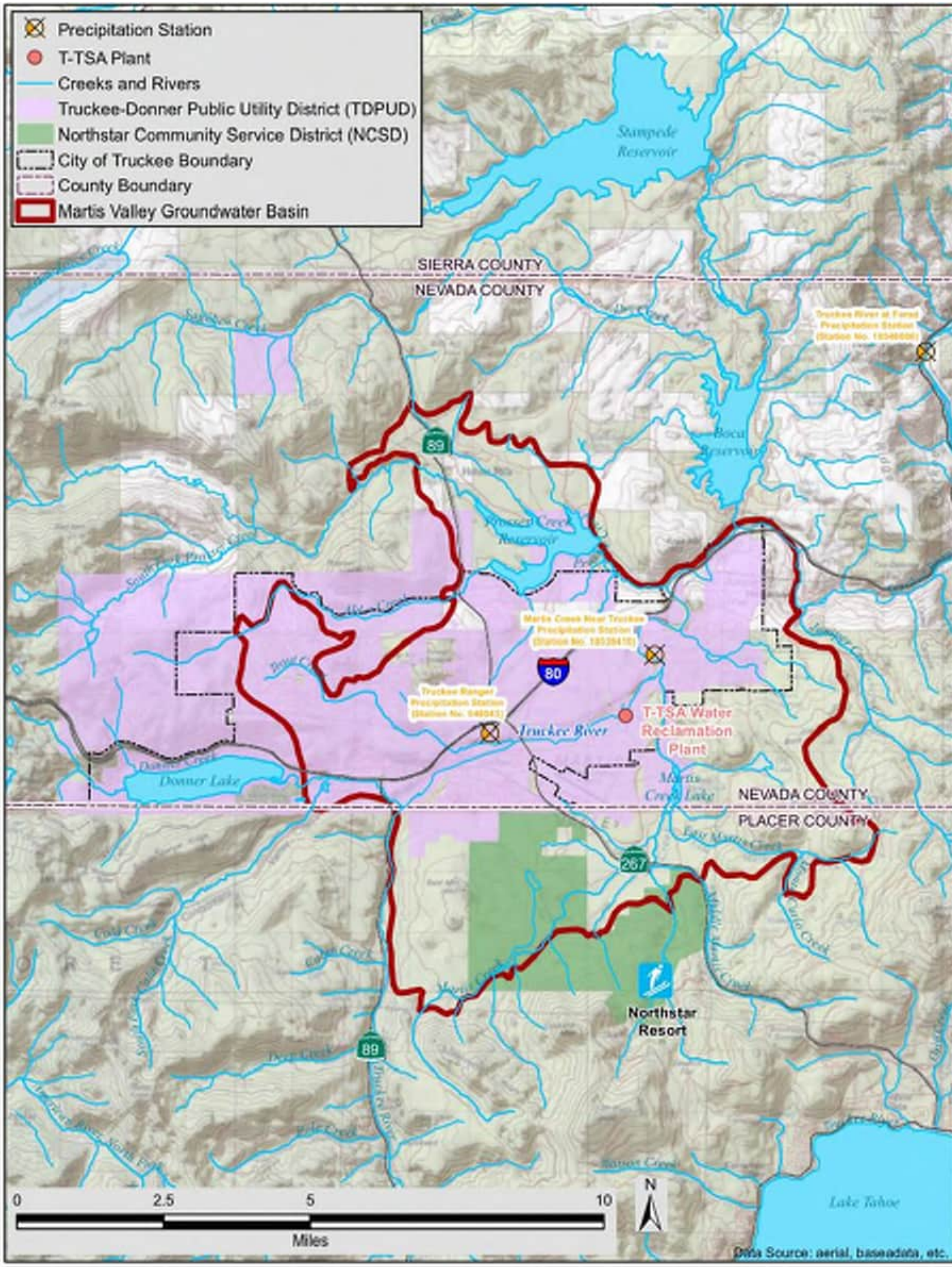


FIGURE 1-1. MAP OF GROUNDWATER BASIN TO BE MONITORED

1.1 ORGANIZATION OF REPORT

The Monitoring Program will be described in the sections summarized below:

- **Section 1. Introduction** – An initial summary of the report's contents and goals while highlighting the reasons for the Monitoring Program.

- **Section 2. Background** – A brief understanding of the groundwater aquifer is provided to ensure a minimum level of understanding by field staff of the conditions taking place below the ground.

- **Section 3. Monitoring Network** – Criteria for selection of monitoring wells is described and the current list of wells to be monitored is provided.

- **Section 4. Monitoring Equipment and Preparation** – Each monitoring event requires an inventory of the equipment that will be taken out into the field and to have staff trained to conduct the measurement and interface with the well owners.

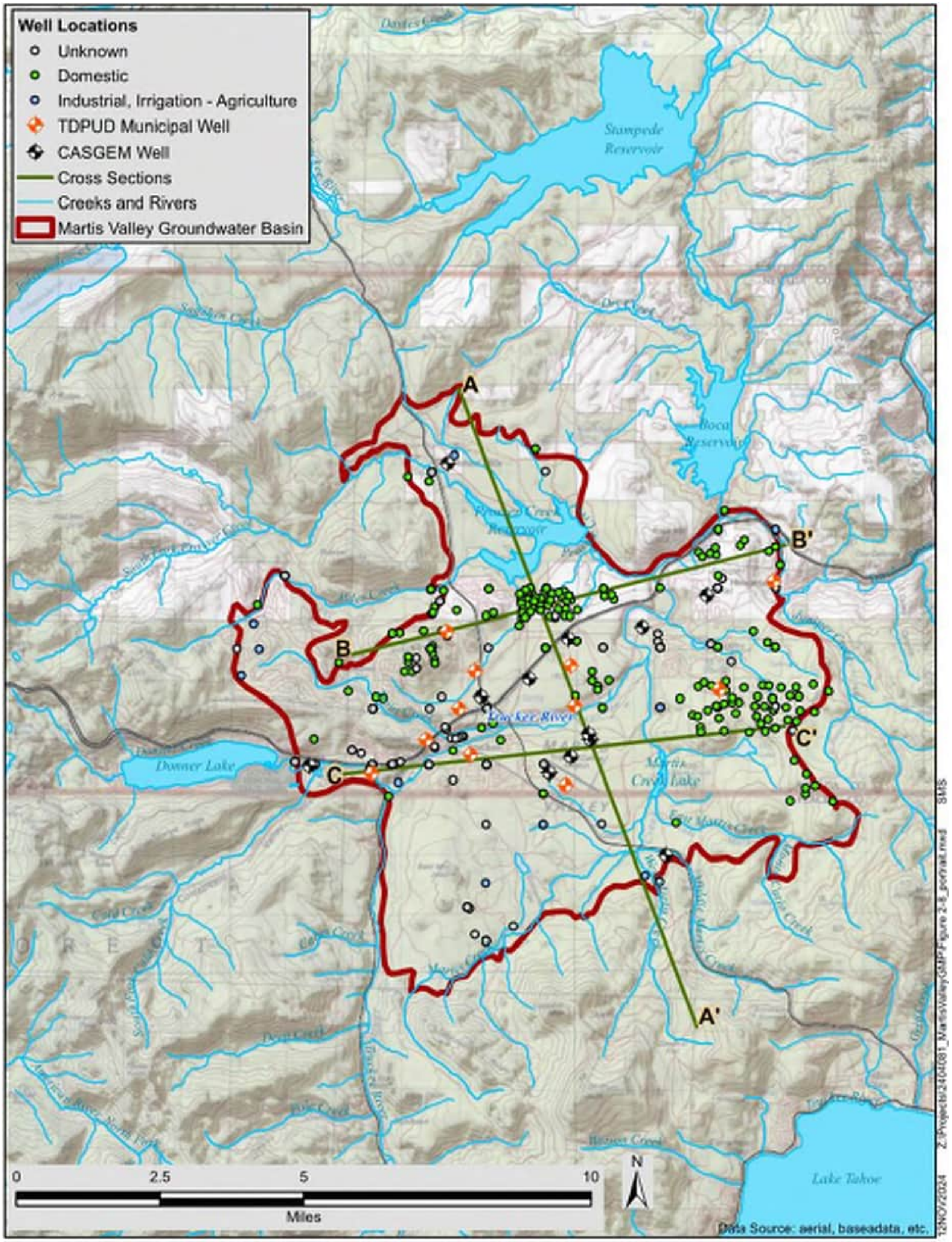
- **Section 5. Depth-to-Groundwater Procedures and Frequency of Monitoring and Reporting** – The resolution of measurement data is described with a brief discussion of the pros and cons of high and low sampling frequency.

- **Section 6. Recording of Monitoring Data, Data Management and the CASGEM Requirements** – Once data is brought back from the field (and laboratory); all data will need to be uploaded to the State. DWR will allow batch uploading and downloading using the CASGEM database and graphical user interface.

2.0 BACKGROUND

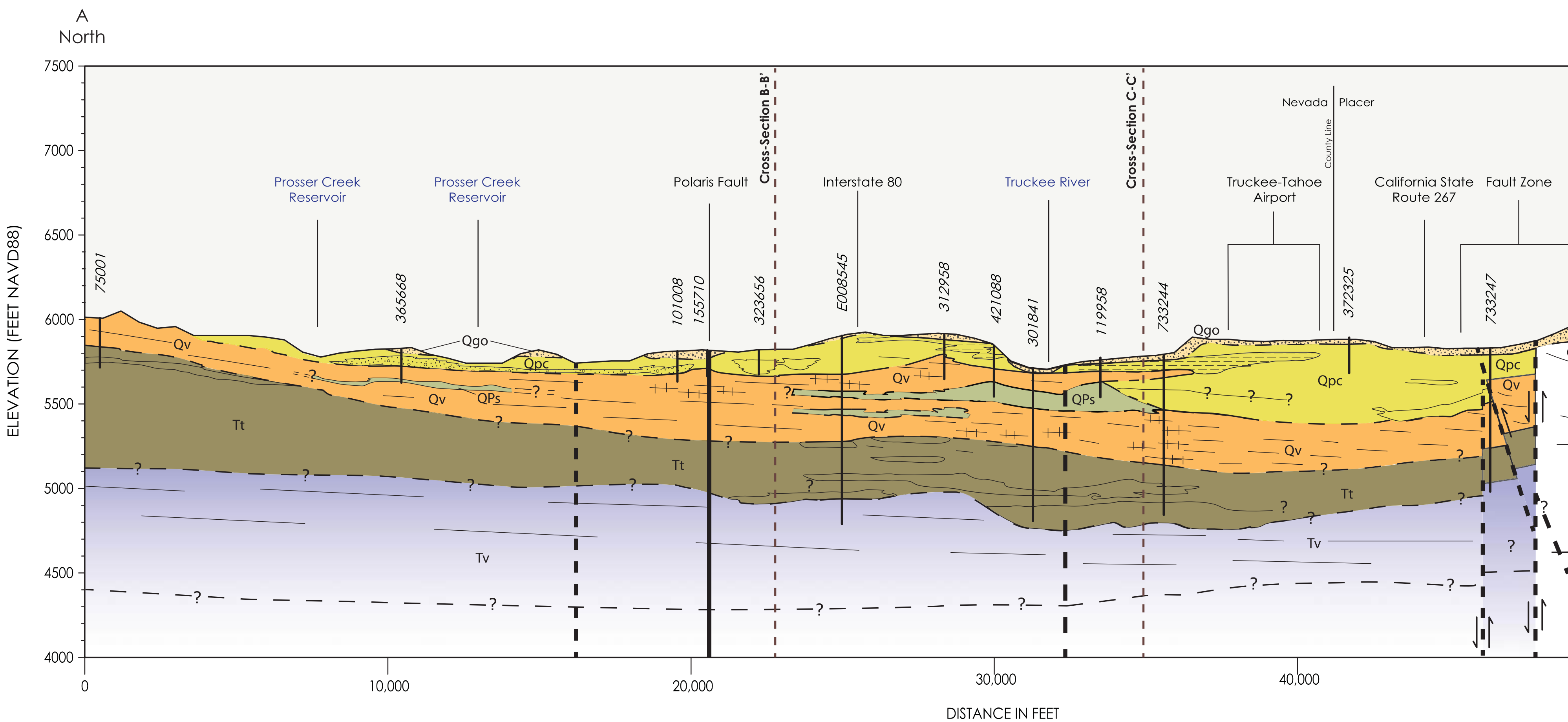
This section briefly describes the MV groundwater basin. The MV basin is located beneath the Truckee River, near Truckee, CA, in which the Truckee River crosses the basin from south to east in a shallow, incised channel. Principal tributaries to the Truckee River are Donner Creek, Martis Creek, and Prosser Creek. Major surface water storage reservoirs include Donner Lake, Martis Creek Lake, and Prosser Creek Reservoir. State driller logs required as part of the well construction process provide the lithology (i.e., soil types and thickness) to characterize the water-bearing formations.

Figure 1 delineates the MV groundwater basin along with overlying geography and the alignment of three basin cross sections. These cross sections are presented in **Plates 1, 2, and 3**. The geological formations in the MV basin include basement rocks, sedimentary deposits, and volcanic deposits. The two types of basement rock in this region are Cretaceous-Jurassic plutonic/metamorphic rocks and Miocene volcanic units. Plutonic/metamorphic rocks appear east of the basin and Miocene volcanic units which ranges from andesite to basalt appear adjacent to the basin. These basement rocks contain a very small portion of the groundwater. Sedimentary deposits which include stream/lake deposits and alluvial material provide storage for groundwater. Volcanic deposits include basaltic andesite lava, tuff breccia and volcaniclastic deposits, and also provide storage for groundwater. Municipal and private wells in the basin primarily extract from the Prosser Creek Alluvium and Truckee Formation, with some Shallow wells also extracting from Outwash Deposits.



Cross Section Locations

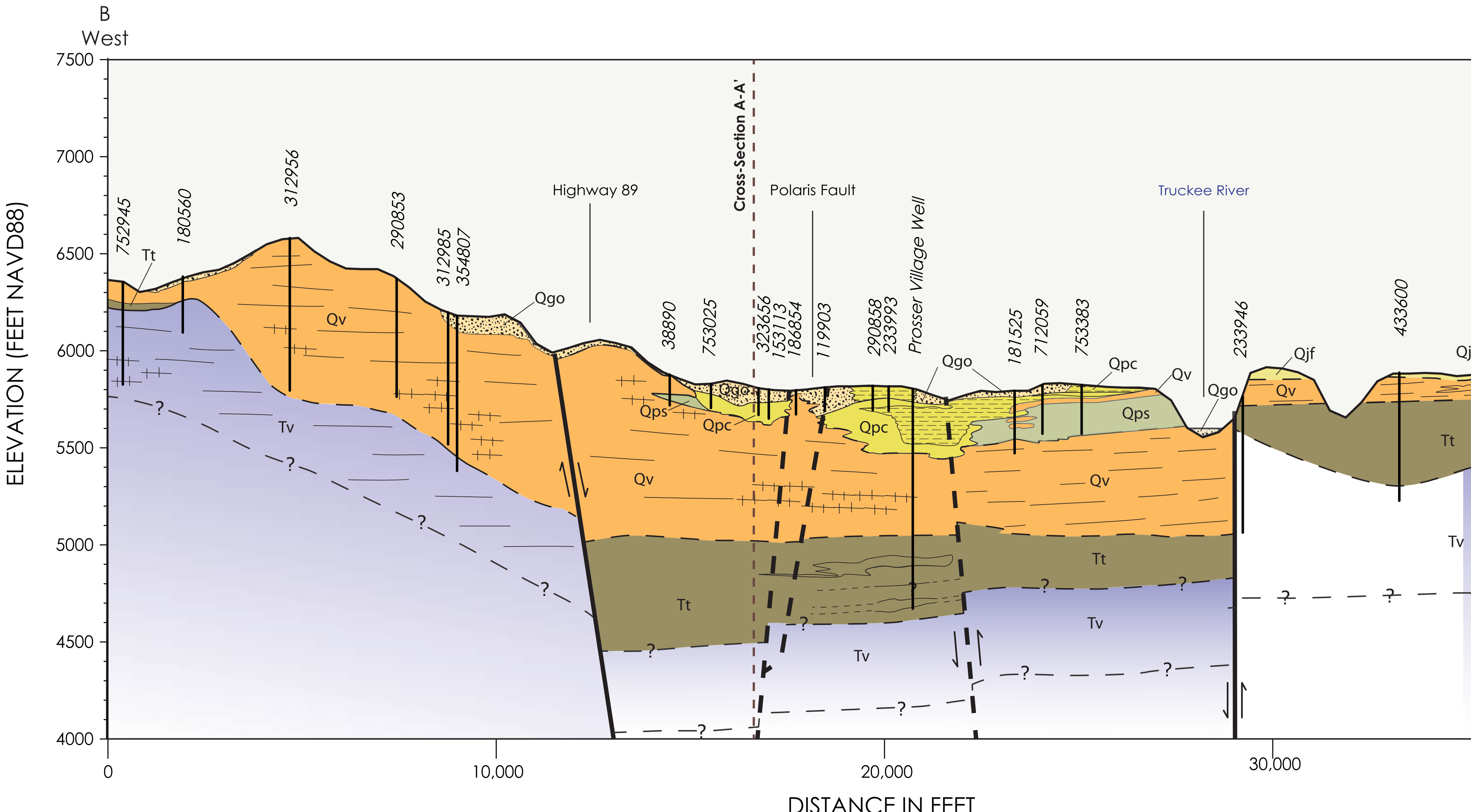
Updated in June 2025



NOTES:
1. Approximate vertical exaggeration = 5x.
2. Elevation profile developed from 30-meter digital elevation model, downloaded from National Elevation Dataset (http://seamless.usgs.gov/index.php).
3. Well log locations are approximate within 600 feet.
4. Fault locations are approximate, based on Saucedo, "Geologic Map of Lake Tahoe Basin," 2005 and Hunter and others, 2011.
5. Surficial geology inferred from Saucedo, 2005.
6. Significant sand, gravel, and clay beds shown where noted in well logs.
7. Fracture zones shown where noted in well logs.

References:

Birkeland, P.W., 1963 Pleistocene History of the Truckee area, no
Bulletin, v. 64, p. 1453-1464.
Hunter, L.E., Howle, J.F., Rose, R.S., and Bawden, G.W., 2011,
California, Bulletin of the Seismological Society of America
Latham, T.S., 1985, Stratigraphy, structure, and geochemistry of
Province, near Truckee, California, unpublished doctoral dis
Melody, A., 2009, Active faulting and Quaternary paleohydrology
Thesis, Humboldt State University, Humboldt, CA 71 p.
Saucedo, G.J., 2005, Geologic Map of Lake Tahoe Basin, Califor
Geological Survey Regional Geologic Map Series, Map No



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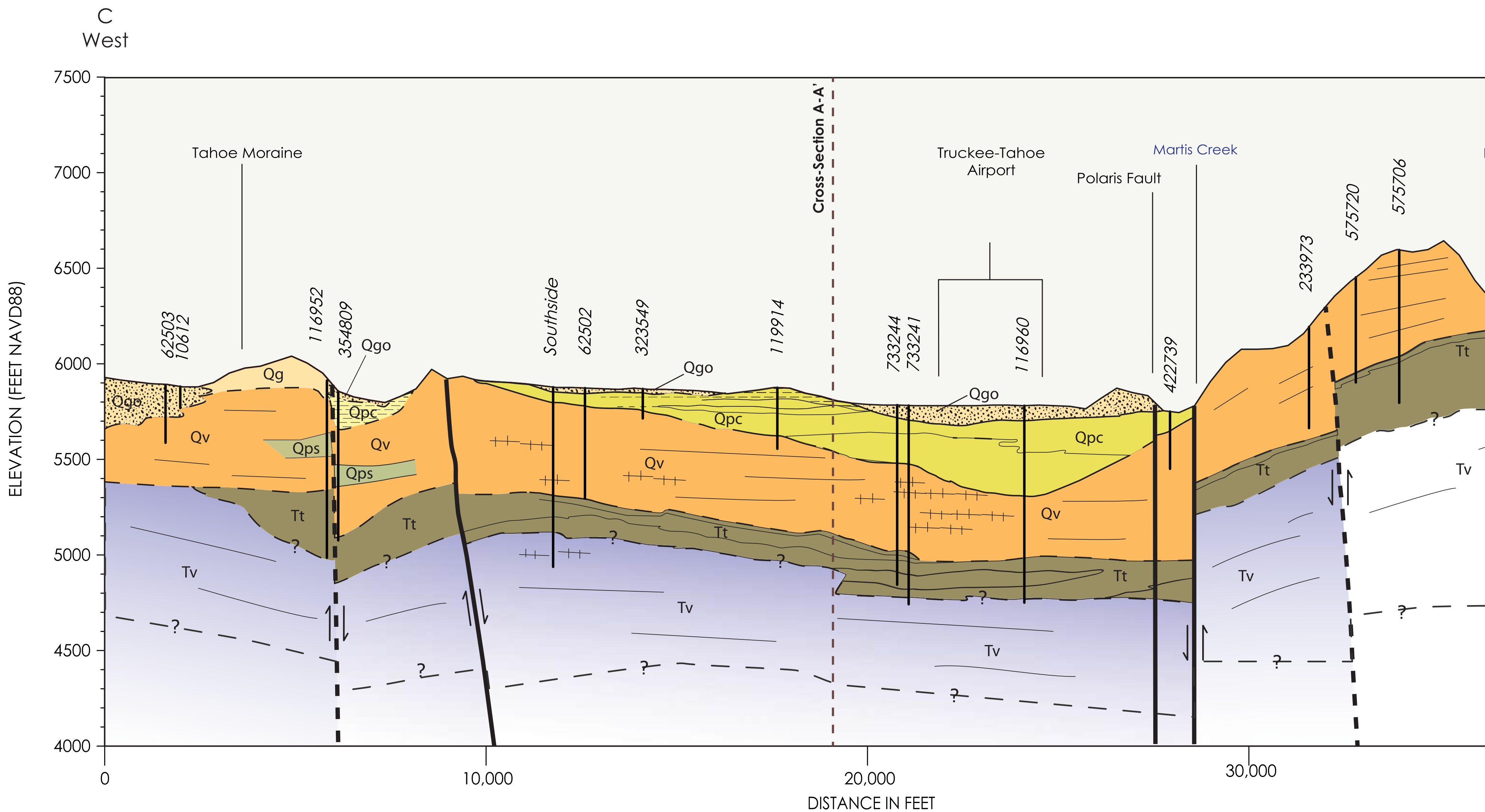

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California, Bulletin of the Seismological Society of A
Latham, T.S., 1985, Stratigraphy, structure, and geochemis
Province, near Truckee, California, unpublished docto

3.0 MONITORING NETWORK

The following sections describe the rationale for selection of monitoring wells to be included in the monitoring network. Because surface water and groundwater may interact, the monitoring network may need to be expanded at some future date to include data available from surface water monitoring of major rivers and local streams. The partners involved in this Monitoring Program are also underway in preparing an updated Groundwater Management Plan (GMP) and groundwater model. It is anticipated that knowledge gained from that effort will help inform the partners and the State on where additional monitoring points, in the ground and at the surface, should be located. If existing wells are not available at such locations, the partners will seek opportunities to construct new ones in data gap areas.

3.1 RATIONALE OF MONITORING NETWORK

In order to manage groundwater resources for long-term sustainability, key issues in the basin that need to be documented include:

- Identification of sources of recharge and the protection of recharge areas
- Changes in groundwater elevations that affect groundwater storage
- Groundwater quality and changes over time

The following sections describe the rationale for selecting the MV monitoring network well sites. MV groundwater monitoring wells will be selected to provide regional coverage that can be economically accomplished yet provide high quality, reliable data that adequately characterizes basin conditions over time. The location and spacing of the MV monitoring wells are expected to vary, dependent upon a group of selected characteristics (i.e., geographic location, accessibility, age, well construction, well log availability, etc.). The approach described herein is intended to assist in the selection of monitoring locations that are sufficiently distinct from each other and address the issues bulleted above.

3.2 GROUNDWATER WELL NETWORK DEVELOPMENT PROCESS

A database of wells in Martis Valley was developed as part of the GMP and modeling effort. The State well logs provided more than 700 wells; however, these were filtered to omit wells that had limited information available, shallow depths, and other factors that rendered them not useful for hydrogeologic evaluation. The database includes 197 wells that are presented in **Figure 3-1**, in which wells owned and operated by the three partners are distinguished from the others. These wells include municipal and private, monitoring and production, and are generally concentrated in the lowland areas of the basin surrounding the Truckee River and other surface waters. In addition to these wells, wells currently monitored by the State Department of Water Resources (DWR) are presented.

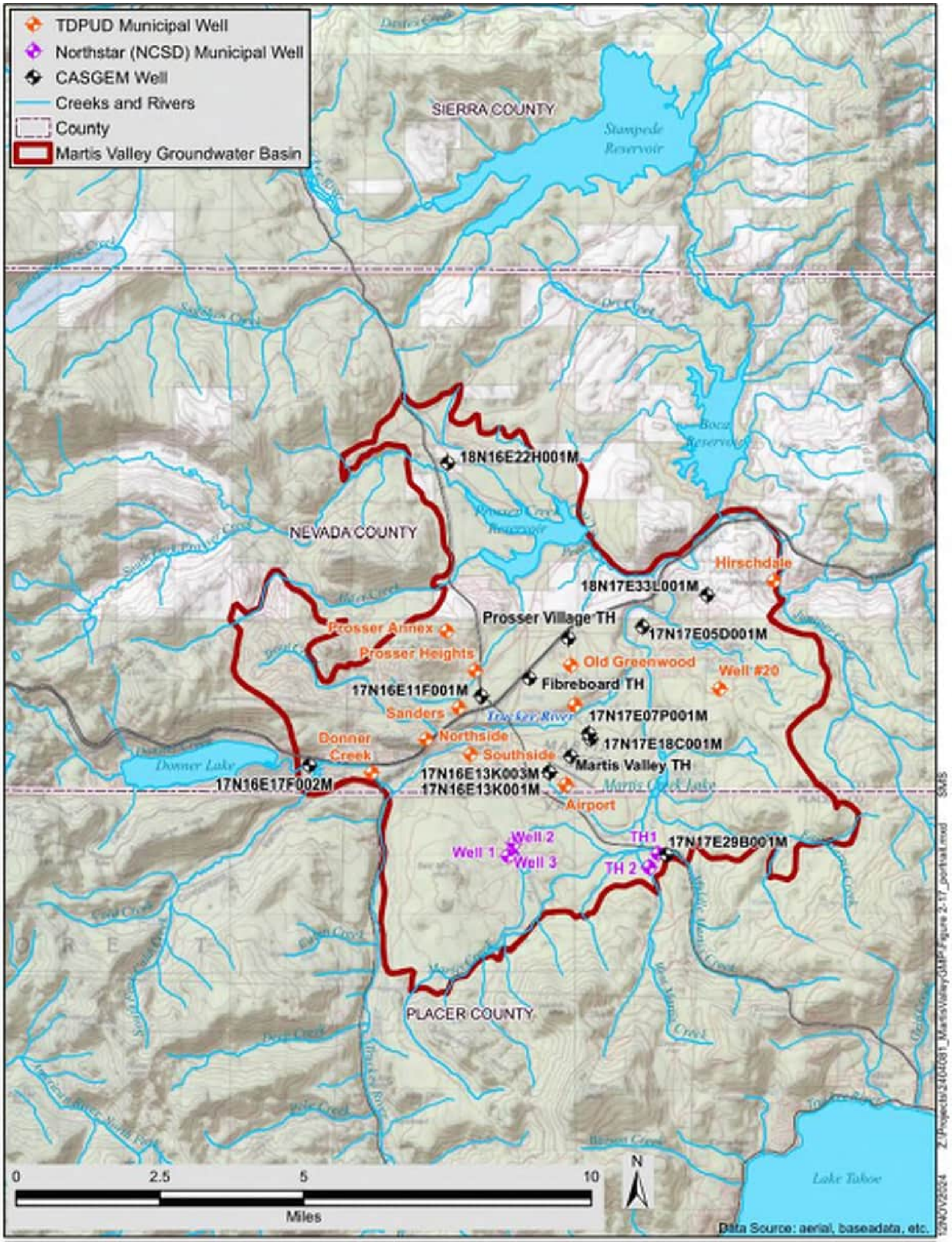


FIGURE 3-1. EXISTING WELLS IN MARTIS VALLEY

Development of a full well monitoring network will be a long-term process that is based on the scientific knowledge gained from the GMP and modeling effort that is currently underway. The network is currently limited to monitoring wells owned by TDPUD. This network includes a total of three wells that are presented in **Table 3-1** along with pertinent well information. It is expected that ideal monitoring locations as related to the issues bulleted above will be scientifically resolved in the next few years. If existing wells, such as those shown in Figure 3-1, meet the monitoring well requirements described below and can be made available, they will be used. If existing wells cannot be used, the partners will seek funding and property rights to construct designated monitoring wells in these locations. It is anticipated that desired new monitoring sites will be prioritized based on value, availability of existing wells, feasibility of installing new wells, and cost. This prioritization will ensure optimal value relative to these constraints in establishing new monitoring locations until the full network is established.

3.3 MONITORING WELL REQUIREMENTS

The following are criteria for selecting monitoring wells in the MV groundwater basin. Wells selected for monitoring should have:

- A State Well Driller Log that describes the well construction details and a description of the sediments encountered
- A detailed description of the well's location
- A brief description of the well's use (i.e. irrigation, residential)
- A relatively short screen interval in only one aquifer
- A sanitary seal to prevent surface water from entering the well
- Wells cannot be municipal (public) production wells for water supply

The most desirable wells to be included in the monitoring network are wells with short screen intervals completed within a specified aquifer. However, some wells with longer screen intervals may need to be initially included in the network when no others are available. Wells with long screen intervals may also be designated for monitoring because their long historic records provide valuable trending information. Data obtained from the longer screen wells usually represents an average of groundwater elevations across the unconfined and semi-confined aquifers.

Table 3-1 Selected Information for current Monitoring Wells in MVGB

State Well Number	Reference Point Elevation (Top of Casing)	Ground Surface Elevation (ft msl)	Well Use	Well Status	Latitude	Longitude	Completion Type	Casing Diameter (in.)	Total Depth (ft)	Screen Intervals	WCR Number	Year Drilled
Prosser Village TH	5843	5839	Monitoring	Active	39.354541	-120.143770	Single	8	1197	360-620, 760-1160	733242	2000
Fibreboard TH	5904	5900	Monitoring	Active	39.344834	-120.156033	Single	6	1220	120-160, 200-240	E008043	2003
Martis Valley TH	5796	5792	Monitoring	Active	39.325769	-120.143471	Single	8	1040	315-633, 707-978	733241	2000
17N17E19K001M	5866.84	5864.04	Observation	Inactive	39.3072	-120.1315	Single	2	201	187-197	12318	1990
18N17E33L001M	5922.5	5920	Observation	Active	39.3653	-120.0990	Single	2	200	180-190	365669	1990
17N16E11F001M	5957.74	5958.322	Observation	Active	39.3401	-120.1724	Single	2	227	210-220	9866	1990
17N16E13K001M	5901.303	5901.003	Observation	Active	39.3212	-120.1502	Multi	2	500	475-485	10488	1990
17N16E13K003M	5901.483	5901.003	Observation	Active	39.3212	-120.1502	Multi	2	274	264-274	11933	1990
17N17E05D001M	5682.510	5678.854	Observation	Active	39.3575	-120.1200	Single	2	109	99-109	9807	1990
17N17E29B001M	5889.113	5886.219	Observation	Active	39.3006	-120.1122	Single	2	100	90-100	35737	1990
18N16E22H001M	5871.86	5869.243	Observation	Active	39.3983	-120.1835	Single	2	200	170-180	9864	1990
18N17E33L001M	5946.524	5946.629	Observation	Active	39.3653	-120.0990	Single	2	195	180-190	9865	1990
17N16E17F002M	5934.337	5930.978	Unknown	Active	39.3227	-120.2283	Single	N/A	N/A	N/A	22746	1990
17N17E18C001M	5775.809	5773.911	Unknown	Active	39.3295	-120.1368	Single	N/A	64	N/A	N/A	1991

3.4 REQUIRED STEPS IN SELECTING A NEW MV MONITORING WELL

Upon selection of any new well, that is not currently a MV monitoring well, to be potentially included in the monitoring network, a site visit will be necessary to assess the field conditions. The conditions necessary for a well to be used in the network include:

- A well owner (and tenant) who will allow access for monitoring.
- All-weather access, key to locked gates or fences, and no guard dogs.
- Ability to survey the ground elevation and reference point elevation of the well. See Page 9 of the DWR Groundwater Elevation Monitoring Guidelines for details establishing the reference point.
- A clear access point through the pump or well casing for water-level sounders. Figure 3-2 shows a typical well sounding location detail.
- An assessment to determine if lubrication oil from a turbine pump has accumulated in the well or if there are obstructions in the well that would prevent obtaining repeat and reliable measurements.
- If currently in use, to have access in shutting a well down for a minimum 2-hour period (24-hous preferred) for reaching quasi-equilibrium.
- For wells that are owned by others, private or public, the protocols discussed below shall be followed for explaining the project purpose and establishing rights for access.
- If a new monitoring well is to be installed, appropriate hydrogeologic investigation shall be made, a design that considers the specific needs of monitoring shall be prepared, and the well shall be drilled under the observation and direction of a hydrogeologist.

Photo: A domestic well showing the well casing, cover, and conveyance system.
The well is located inside a shed with a concrete floor.

FIGURE 3-2. ACCESS POINT ON A WELL

Before knocking on the door of potential well owners, every effort should be made to justify the need for the owner's well in the network. Staff shall coordinate with Right-of-Way personnel to arrange a field visit if the owner allows it. The reason for monitoring and the benefits to long-term sustainability shall be described. Additionally, practical details about site access and how measurements are made shall be discussed. If the owner is interested in allowing their well into the network, the well shall be inspected for adequacy based on the bulleted criteria above. If the well is adequate, formal rights of entry shall be prepared by Right-of-Way personnel before proceeding. Any special contact information to perform the monitoring should also be noted along with information related to sites where a tenant is renting from the property owner. These steps will ensure consistent monitoring even though monitoring staff, tenants and well site access may change over time.

4.0 MONITORING EQUIPMENT AND PREPARATION

This section provides the MV monitoring entities with a "how to" manual for accessing monitoring wells and, taking depth-to-groundwater measurements and water quality samples. The range of equipment and protocols covered in this section will assist monitoring staff with the challenges that exist in the field. Each time a well is accessed as part of a monitoring event, staff needs to conduct themselves in a professional manner by being prepared with the right equipment and looking prepared with the correctly labeled vehicle and clothing, and pertinent staff identification. Staff should also strive to maintain a good relationship with the well owners and demonstrate genuine courtesy.

This section also provides relevant portions of the CASGEM Groundwater Elevation Monitoring Guidelines (Guidelines) handbook attached as Appendix A. The CASGEM handbook is intended for the following purpose:

> *…Guidelines were developed to assist DWR by establishing criteria for the selection and measurement of monitoring wells in the event that DWR is required to perform the groundwater monitoring functions in lieu of a local monitoring agency pursuant to Water Code Section 10933.5(a).*

The Guidelines also imply that a local agency that wishes to take over an existing monitoring well or create a new monitoring well should follow a documented consistent approach for each well over the life of the well. Given the unique location, construction technique, and down-hole equipment installation, measurement of each well should endeavor to follow the Guidelines knowing that field conditions may require slight deviations. This endeavor leads to the need of having a specialized documented procedure for each monitoring well that ensures a consistent measurement technique over time (some wells dating back to the 1930s). Changes in the well setting, use, and equipment may change over time, requiring changes in monitoring techniques. Wells constructed for and devoted to monitoring the groundwater can also change depending on activities around the well that may artificially change the static condition of groundwater levels (e.g., construction and use of a nearby high-production municipal well) or the elevation of the well head (e.g., well is located in proposed paved area where the well head will be cut below grade with a sealed and locked access chamber flush to pavement).

4.1 PERSONNEL TRAINING

All well monitoring programs are subject to turnover in agency staff. The best and most effective way of transitioning and training new staff is to have new staff work alongside the experienced staff during a transition period. Absent this on-the-job-training, thorough record keeping, periodic updating of the monitoring plan, and review of this document will expose new staff to the wells and the protocols followed from previous measurements.

4.2 WELL MONITORING LOG BOOK (WMLB)

The WMLB is the definitive field document that contains the following:

- Well owner and contact information
- Special entrance instructions (e.g., call at gate, honk horn, or dog off leash)
- A schematic identifying the location of the well (high-resolution aerial imagery can also be used if the monitoring well can be clearly identified)
- Pictures of the well including reference point and access port (See **Figure 4-1**)
- Checklist of special instructions based on well owner requirements or special conditions (i.e. – closed gates, protected wetlands, electrical power shut off, etc.)
- Equipment needed for measurement (i.e., some wells require walking a fair distance into the field, wrench to remove access plug)
- Ground and reference point elevations and source of measurement
- List of historical measurements and codes identifying questionable measurements or field conditions making measurements impossible

Multiple wells can be in the same WMLB for convenience out in the field. This will likely be the case if multiple agencies will be making measurements within their respective jurisdiction. An example of the minimum data form and information kept for each well is taken from the CASGEM Guidelines, as shown on Figure 4-1.

4.2.1 Required Equipment

The monitoring agency will need to compile a set of tools and have them stored in a designated location at the monitoring agency's premises. The equipment should be in a locked toolbox that can easily be carried by one person, if needed. The CASGEM Guidelines include a list of field equipment needed for the initial well measurements, as shown on **Figure 4-2**. Once all wells have established reference points and measurement conditions, a shorter list of supplies can be assembled for field measurements as follows:

- Digital camera
- Crescent wrench (large and small)
- Channel lock pliers (large and small)
- Small hammer and rubber mallet

State of California — DEPARTMENT OF WATER RESOURCES — California Natural Resources Agency

WELL DATA

State No. ______________

District ______________

OWNER		STATE NO.	
ADDRESS		OTHER NO.	
TENANT			
ADDRESS			
TYPE OF WELL ☐ SPECIAL STUDIES	☐ MONTHLY	☐ SEMI ANNUAL	☐ WATER QUALITY
LOCATION: COUNTY	BASIN	NO.	
U.S.G.S. QUAD.		QUAD NO.	
1/4 — 1/4 SECTION	TWP	RGE	MD ☐ SB ☐ H ☐ BASE & MERIDIAN
COORDINATES X:	Y:	SOURCE:	
DESCRIPTION			
REFERENCE POINT DESCRIPTION			
WHICH IS FT. ABOVE ☐ BELOW ☐	LAND SURFACE.	GROUND ELEVATION FT	
REFERENCE POINT ELEVATION FT.	DETERMINED FROM		
WELL: USE	CONDITION	DEPTH FT	
CASING, SIZE IN.,	PERFORATIONS		
MEASUREMENTS BY: ☐ DWR ☐ USGS ☐ USBR	☐ COUNTY ☐ IRR. DIST.	☐ WATER DIST.	☐ CONS. DIST.
CHIEF AQUIFER: NAME	DEPTH TO TOP AQ.	DEPTH TO BOT. AQ.	
TYPE OF MATERIAL	PERM. RATING	THICKNESS	
GRAVEL PACKED? ☐ YES ☐ NO	DEPTH TO TOP GR.	DEPTH TO BOT GR.	
SUPP. AQUIFER	DEPTH TO TOP AQ.	DEPTH TO BOT. AQ	
DRILLER	DATE DRILLED:	LOG NUMBER:	
EQUIPMENT: PUMP, TYPE		MAKE	
SERIAL NO.	SIZE OF DISCHARGE PIPE IN.	WATER ANALYSIS: MIN. (1)	SAN. (2) H.M. (3)
POWER, KIND	MAKE	WATER LEVELS AVAILABLE: YES (1) NO	
H.P.	MOTOR SERIAL NO	PERIOD OF RECORD: BEGIN	END
ELEC. METER NO	TRANSFORMER NO.	COLLECTING AGENCY:	
YIELD	G.P.M. PUMPING LEVEL FT.	PROD. REC. (1) PUMP TEST (2)	YIELD (3)
SKETCH (N)		REMARKS	
		RECORDED BY:	
		DATE:	

DWR 429 (Rev. 1/09)

Source: Table 3. General Well Data Form, CASGEM Guidelines, DWR, December 2010

FIGURE 4-1. GENERAL WELL DATA FORM (DWR FORM 429)

FIGURE 4-2. CASGEM FIELD EQUIPMENT LIST

Equipment and supplies needed for (a) all measurements, (b) establishing permanent RP, (c) steel tape method, (d) electric sounding tape method, (e) sonic water-level meter, and (f) automated measurements with pressure transducer.
(a) All measurements
GPS instrument, digital camera, watch, calculator, and maps
General well data form (DWR Form 429; see Table 3)
Pens, ballpoint with non-erasable blue or black ink, for writing on field forms and equipment log books
Well file with previous measurements
Measuring tape, graduated in feet, tenths, and hundredths of feet
Two wrenches with adjustable jaws and other tools for removing well cap
Key(s) for opening locks and clean rags
(b) Establishing a permanent reference point
Steel tape, graduated in feet, tenths, and hundredths of feet
Calibration and maintenance log book for steel tape
Paint (bright color), permanent marker, chisel, punch, and(or) casing-notching tool
(c) Steel tape method
DWR field form 1213 (see Table 5)
Steel tape, graduated in feet, tenths, and hundredths of feet
Calibration and maintenance log book for steel tape
Weight (stainless steel, iron, or other noncontaminating material – do not use lead)
Strong ring and wire, for attaching weight to end of tape. Wire should be strong enough to hold weight securely, but not as strong as the tape, so that if the weight becomes lodged in the well the tape can still be pulled free.
Carpenters' chalk (blue) or sidewalk chalk
Disinfectant wipes, and deionized or tap water for cleaning tape.
(d) Electric sounding tape method
DWR field form 1213 (see Table 5)
Steel tape, graduated in feet, tenths, and hundredths of feet
An electric tape, double-wired and graduated in feet, tenths, and hundredths of feet, accurate to 0.01 ft. Electric sounding tapes commonly are mounted on a hand-cranked and powered supply reel that contains space for the batteries and some device ("indicator") for signaling when the circuit is closed.
Electric-tape calibration and maintenance log book; manufacturer's instructions.
Disinfectant wipes, and deionized or tap water for cleaning tape
Replacement batteries, charged.
(e) Sonic water-level meter method
DWR field form 1213 (see Table 5)
Temperature probe with readout and cable
Sonic water-level meter with factory cover plate
Custom sized cover plates for larger well diameters
Replacement batteries
(f) Automated measurements with pressure transducer
Transducer field form (see Figures 1 and 2 in Drost, 2005; http://pubs.usgs.gov/of/2005/1126/pdf/ofr20051126.pdf)
Transducer, data logger, cables, suspension system, and power supply.
Data readout device (i.e., laptop computer loaded with correct software) and data storage modules.
Spare desiccant, and replacement batteries.
Well cover or recorder shelter with key
Steel tape (with blue carpenters' chalk or sidewalk chalk) or electric sounding tape, both graduated in hundredths of feet
Tools, including high-impedance (digital) multimeter, connectors, crimping tool, and contact-burnishing tool or artist's eraser.

Source: Table 4- Equipment and Supply List, CASGEM Guidelines, DWR, December 2010

- Keys for gates and monitoring well covers
- Stop watch
- Wasp or hornet nest spray
- Twelve-foot tape measure
- Pencil and graph paper
- First aid kit

Minimum Tools needed for actual in the field depth-to-groundwater measurements include:

- 200-foot well sounding steel tape measure
- Blue chalk for metal tape
- 200-foot electronic well sounding probe (See **Figure 4-3**)
- Soap, high-purity water, and spray bottle for cleaning tape and probe
- Sterilizer solution for tape and probe to prevent introducing contaminants to a the well

FIGURE 4-3. WELL SOUNDING PROBE AND TAPE

4.3 CHALLENGES TO BE PREPARED FOR

The steps necessary to complete a measurement of depth to groundwater are different for each monitoring well. See Pages 14 through 28 of the DWR Groundwater Elevation Monitoring guidelines for details on measuring water levels. Monitoring staff will need to understand these steps before accessing the well's property location. The WMLB will include a written and graphical stepwise illustration to fully inform monitoring staff. Consideration of how diversified the steps could be are illustrated in the following real-life examples:

- **Well is located on hilly terrain with no defined access trail or markers** – This type of well benefits from training new staff for at least two monitoring events. Absent the on-the-job experience the WMLB should be detailed enough in its descriptions and images to find the well. Steeper terrain may also require several trips to the vehicle for equipment to ensure free hands are available in case of a fall.

- **Well has no access port or casing bolt** – Many of the older wells and private domestic wells were not designed for dropping a tape measure or probe into the well. In these cases, the monitoring staff should clearly identify the access point by using orange utility marking spray paint while being careful to not get paint overspray into the well itself. Absent the paint identifier, the tape chalk can be used as well, but it may disappear over time due to rain and wind. Wells with only a small slit at the base of the concrete casing interface will require a tape measurement.

- **Well can only be accessed when owner is home** – This occurs in many cases where the well owner has to unlock a gate or simply wants to be home when the monitoring event occurs. In this case, an appointment is made by phone providing owner with a 1 hour or less window when monitoring staff will show up. In cases where this is needed to open a locked gate, the owner may allow access and then request that the gate be closed and locked when finished. Review the checklist in the WMLB before leaving the monitoring well.

- **Well is running when monitoring staff arrive** – If the well is a municipal production well or large agricultural well, it is best to work with the well owner to allow a 24-hour period of off-time before taking a measurement. If the well owner is not responsive to this request, ask to turn off the well upon arrival and monitor recovery. If the well is a private domestic well, ask if the water use can be turned off (typically a hydropneumatic tank will allow small quantities of water use without the well turning on) and monitor recovery as explained in next chapter.

- **Well casing is set flush to the ground** – This occurs when a well uses a submersible pump or no pump and no onsite hydropneumatic tank– in most cases this is a private well that may be abandoned or the tank is located away from well. In addition, wells with no visible casing can become covered with vegetation or debris and be difficult to find. In both cases, monitoring staff should stake the well and paint the wood stake orange.

- **Reference point is missing or the wellhead has been replaced** – This occurs if the reference point is not a permanent mark such as a cut or welded steel marker. This will also occur when a well is deepened or redrilled and the upper casing has been replaced. Monitoring staff will need to select a permanent mark (e.g., top of casing, monitoring hole) where the depth to groundwater can be measured. Monitoring staff should also measure the distance between the new reference point and the ground elevation at the base of the well. This measurement should be noted in the logbook.[2]

[2] The elevation of the new reference point will be calculated by the assigned data entry personnel using the ground elevation from the original survey and the reference point distance measured by field staff. The data entry personnel will need to be careful if the groundwater elevation is an automated calculation (i.e., past measurements will need to keep the old reference point) in a spreadsheet or DMS.

5.0 DEPTH-TO-GROUNDWATER PROCEDURES AND FREQUENCY OF MONITORING AND REPORTING

The following section describes the frequency for monitoring and reporting and describes the depth-to-groundwater measurement during each of the designated monitoring periods. **Figure 5-1** provides a form for documenting these described field measurements. An alternate form can be used if desired as long as the salient information is included. See also Pages 5 through 7 of the DWR Groundwater Elevation Monitoring Guidelines for additional details.

5.1 SEMIANNUAL GROUNDWATER-LEVEL MONITORING

Groundwater levels from all designated monitoring wells listed in Table 3-1 will be measured in the spring and fall (semiannually). Spring is generally considered to be the first week in May. Fall is generally considered to be the first week of November. If possible, all groundwater-level measurements should be taken within a 2-week period and, if possible, coordinate groundwater-level monitoring with DWR and its semiannual measurements.

5.2 DEPTH-TO-GROUNDWATER MONITORING PROCEDURES

DWR's Groundwater Elevation Monitoring Guidelines (see Appendix A) provide a complete set of procedures for measuring the depth to groundwater. The following procedures are included to supplement the CASGEM's broader guidelines. Over time, as monitoring staff become familiar with the well sites, a customized list can be documented. Staff will find that steps and monitoring equipment identified in the Guidelines do not apply to the wells being measured in the MV region or additional steps are required. The one exception to the MV monitoring wells is those that are measured through a continuous data logger. It is expected that the agency owning these wells will be downloading data collected by these devices separately from the MV Monitoring Program. This section focuses on measuring the depth to groundwater at designated MV monitoring well sites using a sounding probe or metal tape. Water-level measurements will be collected semiannually to assess the groundwater flow direction and to detect trends that can lead to improved management of the groundwater resources.

Each well has been assigned a unique Well Log identification (ID) number. The numbers and pertinent information for each well are listed in Table 3-1. Figure 6-1 (DWR Form 429, Page 11) extracted from the DWR's CASGEM Monitoring Guideline Handbook, along with the time and date of the measurement is recorded with groundwater-level measurements during the semiannual monitoring event.

GROUNDWATER LEVEL DATA FORM
MANUAL MEASUREMENTS

WELL ID NUMBER	WELL NAME	STATE WELL NUMBER	COUNTY	B-118 BASIN OR SUBBASIN	MEASURING AGENCY	LAND SURFACE DATUM (LSD) ELEV.	RP TO LAND SURFACE DATUM (LSD), IN FT	REFERENCE POINT (RP) ELEV.

NO MEASUREMENT (NM)
0. Measurement discontinued
1. Pumping
2. Pump house locked
3. Tape hung up
4. Can't get tape in casing
5. Unable to locate well
6. Well has been destroyed
7. Special
8. Casing leaky or wet
9. Temporarily inaccessible

QUESTIONABLE MEASUREMENT (QM)
0. Caved or deepened
1. Pumping
2. Nearby pump operating
3. Casing leaky or wet
4. Pumped recently
5. Air or pressure gauge measurement
6. Other
7. Recharge operation at or nearby well
8. Oil in casing

MEASUREMENT METHOD (MM)
0. Steel tape
1. Electric sounding tape
2. Other

DATE	TIME	N M	Q M	MM	TAPE at RP	TAPE at WS	RP to WS	LSD to WS	OBS	COMMENTS

[For explanation of terms, see figure 1.]

DWR Form 1213 (modified 6/28/2010) (data for Water Data Library)

FIGURE 5-1. GROUNDWATER-LEVEL DATA FORM FOR MANUAL MEASUREMENTS

The depth-to-static-groundwater level will be obtained at each well using an electric water-level sounder with a cable graduated in increments of 0.01 foot. Before measurement, monitoring staff will need to review the WMLB for the location of the reference point and measurement access port. A crescent wrench may be needed to access the well casing for measurement. Monitoring staff will need to also review past measurements in the WMLB to allow for careful lowering of the probe or tape.[3] To obtain a depth-to-water measurement, the electric sounder cable or tape will be lowered into the well to within 20 feet short of past measurements taken in the same season of the year, spring or fall.

Monitoring staff will continue to slowly lower the probe through the access port until the sounder indicates submergence by either a beeping sound or a light, depending on the type of signal installed for that particular model. At this point, the sampling personnel will note the depth to water (to the nearest 0.01 foot) from the reference point. The depth will be confirmed by lifting the sounder above the water surface by about 2 to 3 feet and then remeasuring the depth to water. If the depth remains constant, the depth to water will be recorded on Figure 6-1 (DWR Form 1213, Page 18). If measurements are showing change with each measurement, the monitoring staff will indicate the issue on the form and, with it, attach a graphic curve of the variable nature of the measurement, and its possible cause (e.g., bouncing, recovering water level).

5.3 QUALITY CONTROL

After completing their field work, the monitoring staff will enter the data into an electronic database management system. The monitoring staff will review the groundwater-level and water quality data for accuracy within 5 days of obtaining the measurements. Should a measurement appear suspicious, a groundwater level confirmation reading will be obtained.

[3] Tape measurements will require chalking of the tape and repeated measurements as per the CASGEM Guidelines (Page 15).

6.0 RECORDING OF MONITORING DATA, DATA MANAGEMENT AND THE CASGEM REQUIREMENTS

Once data is brought back from the field it will need to be digitized and loaded onto the CASGEM website. The partners will be collecting data from their respective wells and distributing it to the plan administrator, which is currently Placer County Water Agency. The Agency will function as the clearinghouse of all data that is relevant to the MV groundwater basin. In addition, the Agency will be the primary point of contact for the CASGEM Program and will upload all relevant data in a timely manner. The steps laid out currently for CASGEM participation are described as follows (see Appendix C, On-line Submittal System Manual):

> *Phase 1 of the CASGEM System was released in December, 2010, and allows prospective Monitoring Entities to do the following:*
>
> - *Create, edit, and submit notifications to become a Monitoring Entity*
> - *Create and manage user accounts*
> - *Create and manage agency information*
> - *Submit GIS shapefiles of mapped monitoring areas*
>
> *Phase 2 of the CASGEM System, released in May, 2011, makes the following additional functions available to prospective Monitoring Entities:*
>
> - *Submittal of groundwater monitoring plans*
> - *Submittal of well construction and location information on monitoring wells proposed to be monitored*
> - *Allow corrections to initial Monitoring Entity notifications or submittal of additional information requested by DWR*
> - *Ability to view and query maps of groundwater basins, proposed monitoring areas, monitored wells, and other geographic information associated with the CASGEM Program Phase 3 of the CASGEM System, scheduled for release in late fall, 2011, will allow designated Monitoring Entities to do the following:*

> - *Submit groundwater elevation measurement data*
> - *View and update their CASGEM data, as needed*
>
> *With Phase 3 of the CASGEM System, public access to the Statewide CASGEM data will be available. Users will be able to download data and view spatial and temporal groundwater elevation trends in the GIS viewer application.*

(URL: http://www.water.ca.gov/groundwater/casgem/submittal_system.cfm, On-line Submittal System, DWR)

The Agency has already completed Phase 1 of the CASGEM Program. The next step requires entry of data for each of the monitoring wells included as part of this Monitoring Program. **Figure 6-1** is taken from the CASGEM On-line System manual. The manual states that "Data may be entered on a well-by-well basis on a system data entry screen, or users can do a batch upload of information from multiple wells (using a spreadsheet template available for download within the system)." The latter will likely be the best method for entering the data given that most of the well information is already captured in an Excel Workbook.

Data entry for groundwater elevations is not fully described but will likely be similar to the well inventory where a spreadsheet template can be uploaded for all groundwater-elevation data. The conversion of groundwater-elevation data from a database (including GIS) platform is typically straight forward with a copy-and-paste step or a small routine that outputs the data in the desired format.

The inventory of Martis Valley well data will be based on DWR's CASGEM Monitoring Plan Summary attached as **Appendix B**. The set of data fields used for each well will require a decision on its need based on Appendix B requirements.

FIGURE 6-1. CASGEM'S WELL INVENTORY INPUT FORM

Appendix A

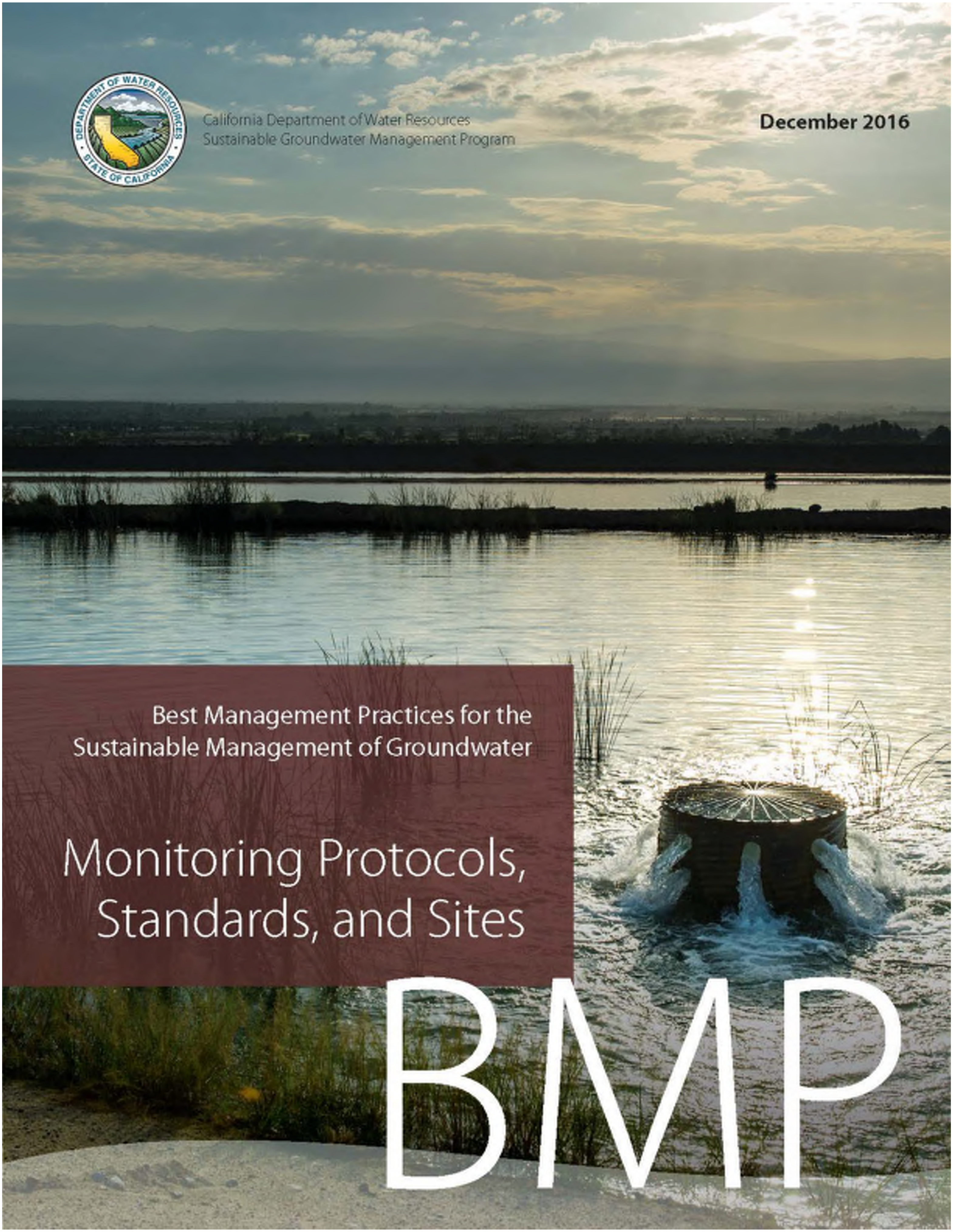
CASGEM Guidelines

Department of Water Resources

Groundwater Elevation Monitoring

Guidelines

December 2010



California Department of Water Resources
Sustainable Groundwater Management Program

December 2016

Best Management Practices for the Sustainable Management of Groundwater

Monitoring Protocols, Standards, and Sites

BMP

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Groundwater Monitoring Protocols, Standards, and Sites Best Management Practice

1. Objective

The objective of this *Best Management Practice* (BMP) is to assist in the development of Monitoring Protocols. The California Department of Water Resources (the Department or DWR) has developed this document as part of the obligation in the Technical Assistance chapter (Chapter 7) of the Sustainable Groundwater Management Act (SGMA) to support the long-term sustainability of California's groundwater *basins*. Information provided in this BMP provides technical assistance to Groundwater Sustainability Agencies (GSAs) and other stakeholders to aid in the establishment of consistent data collection processes and procedures. In addition, this BMP can be used by GSAs to adopt a set of sampling and measuring procedures that will yield similar data regardless of the monitoring personnel. Finally, this BMP identifies available resources to support the development of monitoring protocols.

This BMP includes the following sections:

1. Objective. A brief description of how and where monitoring protocols are required under SGMA and the overall objective of this BMP.
2. Use and Limitations. A brief description of the use and limitations of this BMP.
3. Monitoring Protocol Fundamentals. A description of the general approach and background of groundwater monitoring protocols.
4. Relationship of Monitoring Protocols to other BMPs. A description of how this BMP is connected with other BMPS.
5. Technical Assistance. Technical content providing guidance for regulatory sections.
6. Key Definitions. Descriptions of definitions identified in the GSP Regulations or SGMA.
7. Related Materials. References and other materials that provide supporting information related to the development of Groundwater Monitoring Protocols.

2. USE AND LIMITATIONS

BMPs developed by the Department provide technical guidance to GSAs and other stakeholders. Practices described in these BMPs do not replace the GSP Regulations, nor do they create new requirements or obligations for GSAs or other stakeholders. In addition, using this BMP to develop a GSP does not equate to an approval determination by the Department. All references to GSP Regulations relate to Title 23 of the California Code of Regulations (CCR), Division 2, Chapter 1.5, and Subchapter 2. All references to SGMA relate to California Water Code sections in Division 6, Part 2.74.

3. MONITORING PROTOCOL FUNDAMENTALS

Establishing data collection protocols that are based on best available scientific methods is essential. Protocols that can be applied consistently across all basins will likely yield comparable data. Consistency of data collection methods reduces uncertainty in the comparison of data and facilitates more accurate communication within basins as well as between basins.

Basic minimum technical standards of accuracy lead to quality data that will better support implementation of GSPs.

4. RELATIONSHIP OF MONITORING PROTOCOL TO OTHER BMPS

Groundwater monitoring is a fundamental component of SGMA, as each GSP must include a sufficient network of data that demonstrates measured progress toward the achievement of the sustainability goal for each basin. For this reason, a standard set of protocols need to be developed and utilized.

It is important that data is developed in a manner consistent with the basin setting, planning, and projects/management actions steps identified on **Figure 1** and the GSP Regulations. The inclusion of monitoring protocols in the GSP Regulations also emphasizes the importance of quality empirical data to support GSPs and provide comparable information from basin to basin.

Figure 1 provides a logical progression for the development of a GSP and illustrates how monitoring protocols are linked to other related BMPs. This figure also shows the context of the BMPs as they relate to various steps to sustainability as outlined in the GSP Regulations. The monitoring protocol BMP is part of the Monitoring step identified in **Figure 1**.

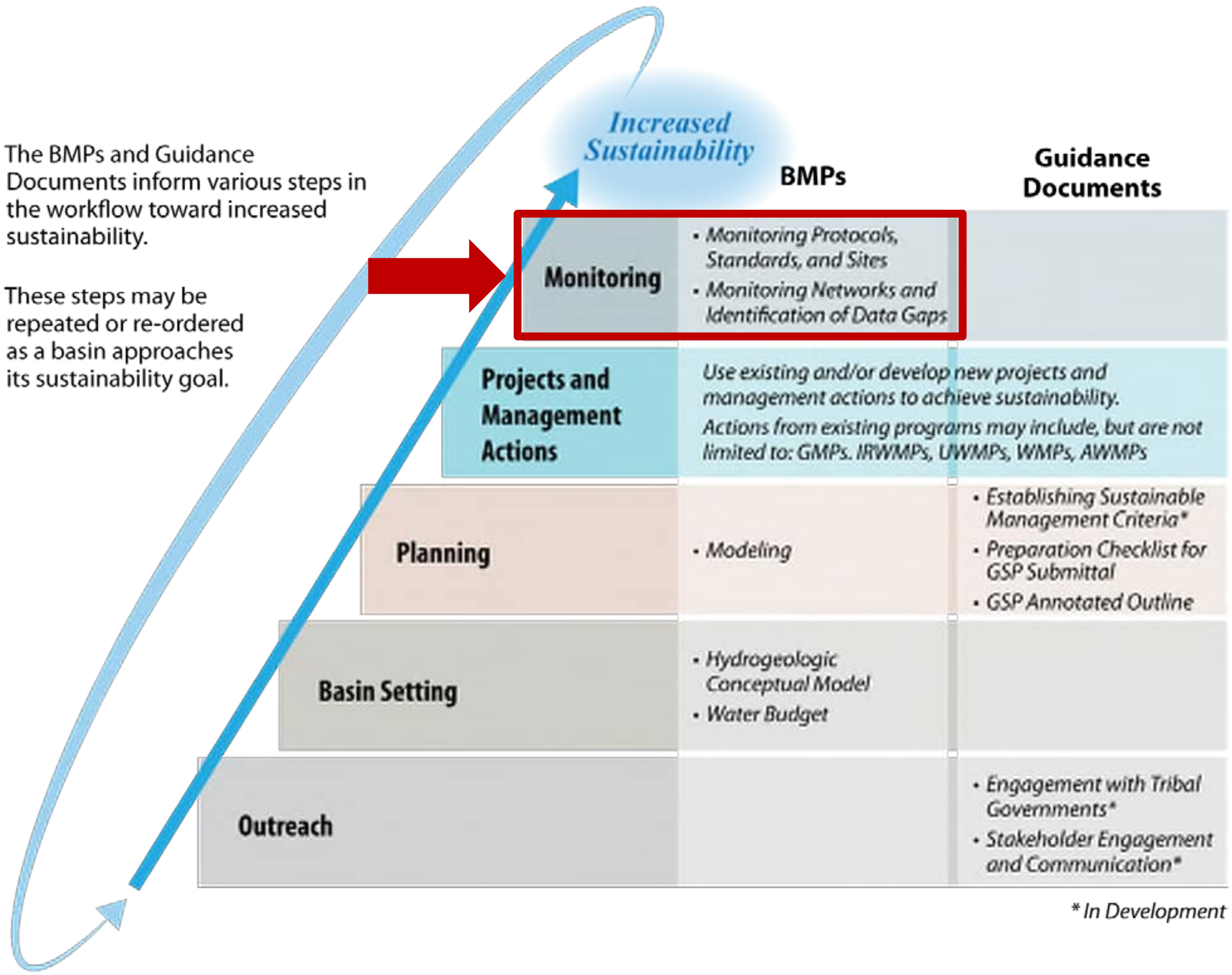

Figure 1 – Logical Progression of Basin Activities Needed to Increase Basin Sustainability

5. TECHNICAL ASSISTANCE

23 CCR §352.2. Monitoring Protocols. Each Plan shall include monitoring protocols adopted by the Agency for data collection and management, as follows:
(a) Monitoring protocols shall be developed according to best management practices.
(b) The Agency may rely on monitoring protocols included as part of the best management practices developed by the Department, or may adopt similar monitoring protocols that will yield comparable data.
(c) Monitoring protocols shall be reviewed at least every five years as part of the periodic evaluation of the Plan, and modified as necessary.

The GSP Regulations specifically call out the need to utilize protocols identified in this BMP, or develop similar protocols. The following technical protocols provide guidance based upon existing professional standards and are commonly adopted in various groundwater-related programs. They provide clear techniques that yield quality data for use in the various components of the GSP. They can be further elaborated on by individual GSAs in the form of standard operating procedures which reflect specific local requirements and conditions. While many methodologies are suggested in this BMP, it should be understood that qualified professional judgment should be used to meet the specific monitoring needs.

The following BMPs may be incorporated into a GSP's monitoring protocols section for collecting groundwater elevation data. A GSP that adopts protocols that deviate from these BMPs must demonstrate that they will yield comparable data.

PROTOCOLS FOR ESTABLISHING A MONITORING PROGRAM

The protocol for establishment of a monitoring program should be evaluated in conjunction with the *Monitoring Network and Identification of Data Gaps* BMP and other BMPs. Monitoring protocols must take into consideration the *Hydrogeologic Conceptual Model, Water Budget, and Modeling* BMPs when considering the data needs to meet GSP objectives and the sustainability goal.

It is suggested that each GSP incorporate the Data Quality Objective (DQO) process following the U.S. EPA *Guidance on Systematic Planning Using the Data Quality Objectives Process* (EPA, 2006). Although strict adherence to this method is not required, it does provide a robust approach to consider and assures that data is collected with a specific purpose in mind, and efforts for monitoring are as efficient as possible to achieve the objectives of the GSP and compliance with the GSP Regulations.

The DQO process presents a method that can be applied directly to the sustainability criteria quantitative requirements through the following steps.

1. State the problem – Define sustainability indicators and planning considerations of the GSP and sustainability goal.
2. Identify the goal – Describe the quantitative measurable objectives and minimum thresholds for each of the sustainability indicators.
3. Identify the inputs – Describe the data necessary to evaluate the sustainability indicators and other GSP requirements (i.e. water budget).
4. Define the boundaries of the study – This is commonly the extent of the Bulletin 118 groundwater basin or subbasin, unless multiple GSPs are prepared for a given basin. In that case, evaluation of the coordination plan and specifically how the monitoring will be comparable and meet the sustainability goals for the entire basin.
5. Develop an analytical approach – Determine how the quantitative sustainability indicators will be evaluated (i.e. are special analytical methods required that have specific data needs).
6. Specify performance or acceptance criteria – Determine what quality the data must have to achieve the objective and provide some assurance that the analysis is accurate and reliable.
7. Develop a plan for obtaining data – Once the objectives are known determine how these data should be collected. Existing data sources should be used to the greatest extent possible.

These steps of the DQO process should be used to guide GSAs to develop the most efficient monitoring process to meet the measurable objectives of the GSP and the sustainability goal. The DQO process is an iterative process and should be evaluated regularly to improve monitoring efficiencies and meet changing planning and project needs. Following the DQO process, GSAs should also include a data quality control and quality assurance plan to guide the collection of data.

Many monitoring programs already exist as part of ongoing groundwater management or other programs. To the extent possible, the use of existing monitoring data and programs should be utilized to meet the needs for characterization, historical record documentation, and continued monitoring for the SGMA program. However, an evaluation of the existing monitoring data should be performed to assure the data being collected meets the DQOs, regulatory requirements, and data collection protocol described in this BMP. While this BMP provides guidance for collection of various regulatory based requirements, there is flexibility among the various methodologies available to meet the DQOs based upon professional judgment (local conditions or project needs).

At a minimum, for each monitoring site, the following information or procedure should be collected and documented:

- Long-term access agreements. Access agreements should include year-round site access to allow for increased monitoring frequency.
- A unique identifier that includes a general written description of the site location, date established, access instructions and point of contact (if necessary), type of information to be collected, latitude, longitude, and elevation. Each monitoring location should also track all modifications to the site in a modification log.

PROTOCOLS FOR MEASURING GROUNDWATER LEVELS

This section presents considerations for the methodology of collection of groundwater level data such that it meets the requirements of the GSP Regulations and the DQOs of the specific GSP. Groundwater levels are a fundamental measure of the status of groundwater conditions within a basin. In many cases, relationships of the sustainability indicators may be able to be correlated with groundwater levels. The quality of this data must consider the specific aquifer being monitored and the methodology for collecting these levels.

The following considerations for groundwater level measuring protocols should ensure the following:

- Groundwater level data are taken from the correct location, well ID, and screen interval depth
- Groundwater level data are accurate and reproducible
- Groundwater level data represent conditions that inform appropriate basin management DQOs
- All salient information is recorded to correct, if necessary, and compare data
- Data are handled in a way that ensures data integrity

General Well Monitoring Information

The following presents considerations for collection of water level data that include regulatory required components as well as those which are recommended.

- Groundwater elevation data will form the basis of basin-wide water-table and piezometric maps, and should approximate conditions at a discrete period in time. Therefore, all groundwater levels in a basin should be collected within as short a time as possible, preferably within a 1 to 2 week period.
- Depth to groundwater must be measured relative to an established Reference Point (RP) on the well casing. The RP is usually identified with a permanent marker, paint spot, or a notch in the lip of the well casing. By convention in open casing monitoring wells, the RP reference point is located on the north side of the well casing. If no mark is apparent, the person performing the measurement should measure the depth to groundwater from the north side of the top of the well casing.
- The elevation of the RP of each well must be surveyed to the North American Vertical Datum of 1988 (NAVD88), or a local datum that can be converted to NAVD88. The elevation of the RP must be accurate to within 0.5 foot. It is preferable for the RP elevation to be accurate to 0.1 foot or less. Survey grade global navigation satellite system (GNSS) global positioning system (GPS) equipment can achieve similar vertical accuracy when corrected. Guidance for use of GPS can be found at USGS http://water.usgs.gov/osw/gps/. Hand-held GPS units likely will not produce reliable vertical elevation measurement accurate enough for the casing elevation consistent with the DQOs and regulatory requirements.
- The sampler should remove the appropriate cap, lid, or plug that covers the monitoring access point listening for pressure release. If a release is observed, the measurement should follow a period of time to allow the water level to equilibrate.
- Depth to groundwater must be measured to an accuracy of 0.1 foot below the RP. It is preferable to measure depth to groundwater to an accuracy of 0.01 foot. Air lines and acoustic sounders may not provide the required accuracy of 0.1 foot.
- The water level meter should be decontaminated after measuring each well.

Where existing wells do not meet the base standard as described in the GSP Regulations or the considerations provided above, new monitoring wells may need to be constructed to meet the DQOs of the GSP. The design, installation, and documentation of new monitoring wells must consider the following:

- Construction consistent with California Well Standards as described in Bulletins 74-81 and 74-90, and local permitting agency standards of practice.
- Logging of borehole cuttings under the supervision of a California Professional Geologist and described consistent with the Unified Soil Classification System methods according to ASTM standard D2487-11.
- Written criteria for logging of borehole cuttings for comparison to known geologic formations, principal aquifers and aquitards/aquicludes, or specific marker beds to aid in consistent stratigraphic correlation within and across basins.
- Geophysical surveys of boreholes to aid in consistency of logging practices. Methodologies should include resistivity, spontaneous potential, spectral gamma, or other methods as appropriate for the conditions. Selection of geophysical methods should be based upon the opinion of a professional geologist or professional engineer, and address the DQOs for the specific borehole and characterization needs.
- Prepare and submit State well completion reports according to the requirements of §13752. Well completion report documentation should include geophysical logs, detailed geologic log, and formation identification as attachments. An example well completion as-built log is illustrated in **Figure 2.** DWR well completion reports can be filed directly at the Online System for Well Completion Reports (OSWCR) http://water.ca.gov/oswcr/index.cfm.

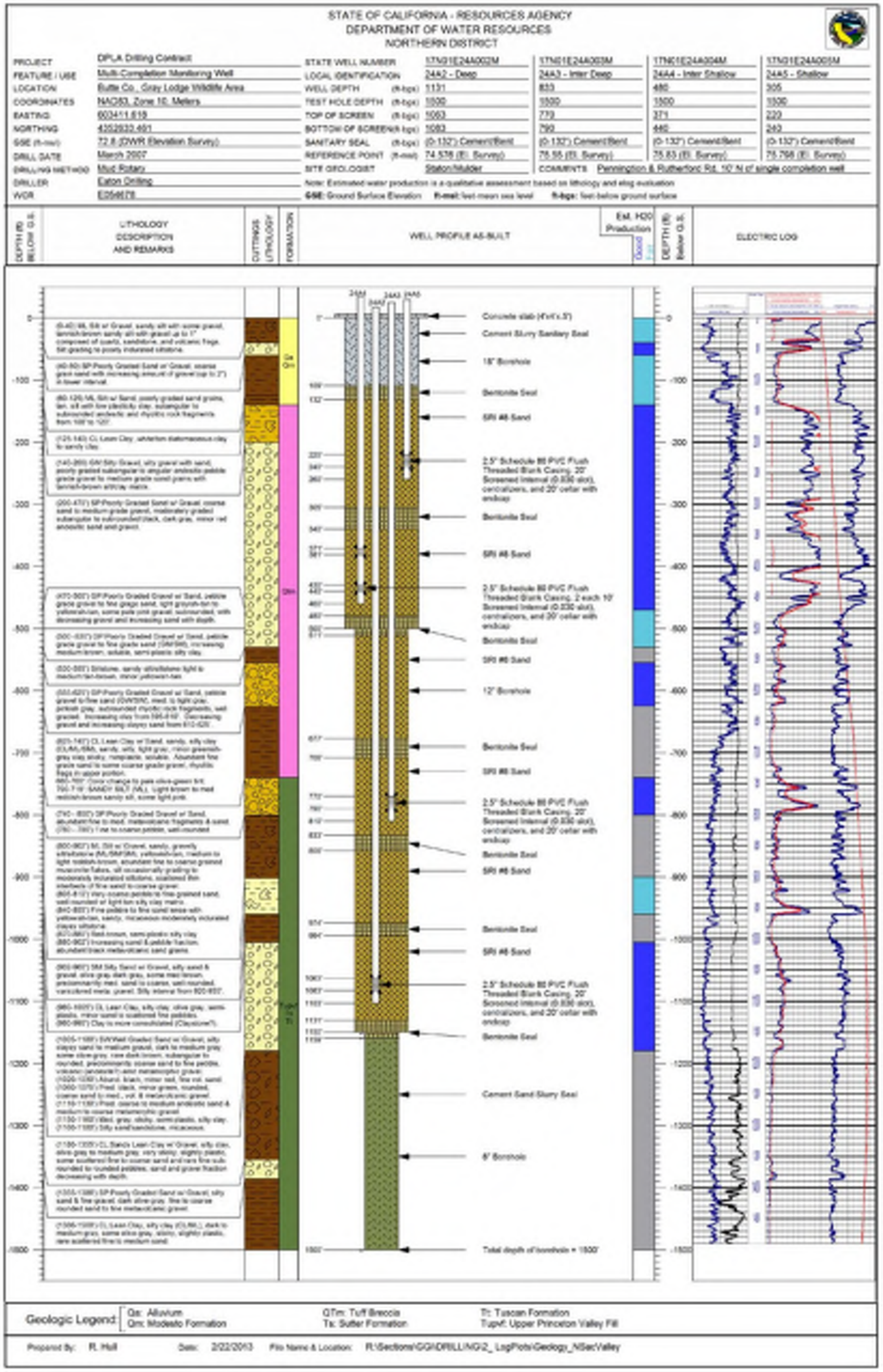

Figure 2 – Example As-Built Multi-Completion Monitoring Well Log

Measuring Groundwater Levels

Well construction, anticipated groundwater level, groundwater level measuring equipment, field conditions, and well operations should be considered prior collection of the groundwater level measurement. The USGS *Groundwater Technical Procedures* (Cunningham and Schalk, 2011) provide a thorough set of procedures which can be used to establish specific Standard Operating Procedures (SOPs) for a local agency. **Figure 3** illustrates a typical groundwater level measuring event and simultaneous pressure transducer download.

Figure 3 – Collection of Water Level Measurement and Pressure Transducer Download

The following points provide a general approach for collecting groundwater level measurements:

- Measure depth to water in the well using procedures appropriate for the measuring device. Equipment must be operated and maintained in accordance with manufacturer's instructions. Groundwater levels should be measured to the nearest 0.01 foot relative to the RP.
- For measuring wells that are under pressure, allow a period of time for the groundwater levels to stabilize. In these cases, multiple measurements should be collected to ensure the well has reached equilibrium such that no significant changes in water level are observed. Every effort should be made to ensure that a representative stable depth to groundwater is recorded. If a well does not stabilize, the quality of the value should be appropriately qualified as a

questionable measurement. In the event that a well is artesian, site specific procedures should be developed to collect accurate information and be protective of safety conditions associated with a pressurized well. In many cases, an extension pipe may be adequate to stabilize head in the well. Record the dimension of the extension and document measurements and configuration.

- The sampler should calculate the groundwater elevation as:

$$GWE = RPE - DTW$$

Where:

GWE = Groundwater Elevation
RPE = Reference Point Elevation
DTW = Depth to Water

The sampler must ensure that all measurements are in consistent units of feet, tenths of feet, and hundredths of feet. Measurements and RPEs should not be recorded in feet and inches.

Recording Groundwater Levels

- The sampler should record the well identifier, date, time (24-hour format), RPE, height of RP above or below ground surface, DTW, GWE, and comments regarding any factors that may influence the depth to water readings such as weather, nearby irrigation, flooding, potential for tidal influence, or well condition. If there is a questionable measurement or the measurement cannot be obtained, it should be noted. An example of a field sheet with the required information is shown in **Figure 4**. It includes questionable measurement and no measurement codes that should be noted. This field sheet is provided as an example. Standardized field forms should be used for all data collection. The aforementioned USGS *Groundwater Technical Procedures* offers a number of example forms.
- The sampler should replace any well caps or plugs, and lock any well buildings or covers.
- All data should be entered into the GSA data management system (DMS) as soon as possible. Care should be taken to avoid data entry mistakes and the entries should be checked by a second person for compliance with the DQOs.

STATE OF CALIFORNA
THE RESOURCES AGENCY
DEPARTMENT OF WATER RESOURCES

WELL DATA

STATE WELL NUMBER	COUNTY	REFERENCE POINT ELEV.	MEASURING AGENCY
			DWR

NO MEASUREMENT	QUESTIONABLE MEASUREMENT
0. Measurement discontinued	0. Caved or deepened
1. Pumping	1. Pumping
2. Pump house locked	2. Nearby pump operating
3. Tape hung up	3. Casing leaky or wet
4. Can't get tape in casing	4. Pumped recently
5. Unable to locate well	5. Air or pressure gauge measurement
6. Well has been destroyed	6. Other
7. Special	7. Recharge operation at or nearby well
8. Casing leaky or wet	8. Oil in casing
9. Temporarily inaccessible	

DATE	N M	Q M	TAPE AT RP	TAPE AT WS	RP to WS	OBSR VR	COMMENTS

DWR 1213

Figure 4 – Example of Water Level Well Data Field Collection Form

Pressure Transducers

Groundwater levels and/or calculated groundwater elevations may be recorded using pressure transducers equipped with data loggers installed in monitoring wells. When installing pressure transducers, care must be exercised to ensure that the data recorded by the transducers is confirmed with hand measurements.

The following general protocols must be followed when installing a pressure transducer in a monitoring well:

- The sampler must use an electronic sounder or chalked steel tape and follow the protocols listed above to measure the groundwater level and calculate the groundwater elevation in the monitoring well to properly program and reference the installation. It is recommended that transducers record measured groundwater level to conserve data capacity; groundwater elevations can be calculated at a later time after downloading.
- The sampler must note the well identifier, the associated transducer serial number, transducer range, transducer accuracy, and cable serial number.
- Transducers must be able to record groundwater levels with an accuracy of at least 0.1 foot. Professional judgment should be exercised to ensure that the data being collected is meeting the DQO and that the instrument is capable. Consideration of the battery life, data storage capacity, range of groundwater level fluctuations, and natural pressure drift of the transducers should be included in the evaluation.
- The sampler must note whether the pressure transducer uses a vented or non-vented cable for barometric compensation. Vented cables are preferred, but non-vented units provide accurate data if properly corrected for natural barometric pressure changes. This requires the consistent logging of barometric pressures to coincide with measurement intervals.
- Follow manufacturer specifications for installation, calibration, data logging intervals, battery life, correction procedure (if non-vented cables used), and anticipated life expectancy to assure that DQOs are being met for the GSP.
- Secure the cable to the well head with a well dock or another reliable method. Mark the cable at the elevation of the reference point with tape or an indelible marker. This will allow estimates of future cable slippage.
- The transducer data should periodically be checked against hand measured groundwater levels to monitor electronic drift or cable movement. This should happen during routine site visits, at least annually or as necessary to maintain data integrity.

- The data should be downloaded as necessary to ensure no data is lost and entered into the basin's DMS following the QA/QC program established for the GSP. Data collected with non-vented data logger cables should be corrected for atmospheric barometric pressure changes, as appropriate. After the sampler is confident that the transducer data have been safely downloaded and stored, the data should be deleted from the data logger to ensure that adequate data logger memory remains.

PROTOCOLS FOR SAMPLING GROUNDWATER QUALITY

The following protocols can be incorporated into a GSP's monitoring protocols for collecting groundwater quality data. More detailed sampling procedures and protocols are included in the standards and guidance documents listed at the end of this BMP. A GSP that adopts protocols that deviate from these BMPs must demonstrate that the adopted protocols will yield comparable data.

In general, the use of existing water quality data within the basin should be done to the greatest extent possible if it achieves the DQOs for the GSP. In some cases it may be necessary to collect additional water quality data to support monitoring programs or evaluate specific projects. The USGS *National Field Manual for the Collection of Water Quality Data* (Wilde, 2005) should be used to guide the collection of reliable data. **Figure 5** illustrates a typical groundwater quality sampling setup.

Figure 5 – Typical Groundwater Quality Sampling Event

All analyses should be performed by a laboratory certified under the State Environmental Laboratory Accreditation Program. The specific analytical methods are beyond the scope of this BMP, but should be commiserate with other programs evaluating water quality within the basin for comparative purposes.

Groundwater quality sampling protocols should ensure that:

- Groundwater quality data are taken from the correct location
- Groundwater quality data are accurate and reproducible
- Groundwater quality data represent conditions that inform appropriate basin management and are consistent with the DQOs
- All salient information is recorded to normalize, if necessary, and compare data
- Data are handled in a way that ensures data integrity

The following points are general guidance in addition to the techniques presented in the previously mentioned USGS *National Field Manual for the Collection of Water Quality Data.*

Standardized protocols include the following:

- Prior to sampling, the sampler must contact the laboratory to schedule laboratory time, obtain appropriate sample containers, and clarify any sample holding times or sample preservation requirements.
- Each well used for groundwater quality monitoring must have a unique identifier. This identifier must appear on the well housing or the well casing to avoid confusion.
- In the case of wells with dedicated pumps, samples should be collected at or near the wellhead. Samples should not be collected from storage tanks, at the end of long pipe runs, or after any water treatment.
- The sampler should clean the sampling port and/or sampling equipment and the sampling port and/or sampling equipment must be free of any contaminants. The sampler must decontaminate sampling equipment between sampling locations or wells to avoid cross-contamination between samples.
- The groundwater elevation in the well should be measured following appropriate protocols described above in the groundwater level measuring protocols.
- For any well not equipped with low-flow or passive sampling equipment, an adequate volume of water should be purged from the well to ensure that the groundwater sample is representative of ambient groundwater and not stagnant water in the well casing. Purging three well casing volumes is generally

considered adequate. Professional judgment should be used to determine the proper configuration of the sampling equipment with respect to well construction such that a representative ambient groundwater sample is collected. If pumping causes a well to be evacuated (go dry), document the condition and allow well to recover to within 90% of original level prior to sampling. Professional judgment should be exercised as to whether the sample will meet the DQOs and adjusted as necessary.

- Field parameters of pH, electrical conductivity, and temperature should be collected for each sample. Field parameters should be evaluated during the purging of the well and should stabilize prior to sampling. Measurements of pH should only be measured in the field, lab pH analysis are typically unachievable due to short hold times. Other parameters, such as oxidation-reduction potential (ORP), dissolved oxygen (DO) (in situ measurements preferable), or turbidity, may also be useful for meeting DQOs of GSP and assessing purge conditions. All field instruments should be calibrated daily and evaluated for drift throughout the day.
- Sample containers should be labeled prior to sample collection. The sample label must include: sample ID (often well ID), sample date and time, sample personnel, sample location, preservative used, and analytes and analytical method.
- Samples should be collected under laminar flow conditions. This may require reducing pumping rates prior to sample collection.
- Samples should be collected according to appropriate standards such as those listed in the *Standard Methods for the Examination of Water and Wastewater*, USGS *National Field Manual for the Collection of Water Quality Data,* or other appropriate guidance. The specific sample collection procedure should reflect the type of analysis to be performed and DQOs.
- All samples requiring preservation must be preserved as soon as practically possible, ideally at the time of sample collection. Ensure that samples are appropriately filtered as recommended for the specific analyte. Entrained solids can be dissolved by preservative leading to inconsistent results of dissolve analytes. Specifically, samples to be analyzed for metals should be field-filtered prior to preservation; do not collect an unfiltered sample in a preserved container.
- Samples should be chilled and maintained at 4 °C to prevent degradation of the sample. The laboratory's Quality Assurance Management Plan should detail appropriate chilling and shipping requirements.

- Samples must be shipped under chain of custody documentation to the appropriate laboratory promptly to avoid violating holding time restrictions.
- Instruct the laboratory to use reporting limits that are equal to or less than the applicable DQOs or regional water quality objectives/screening levels.

Special protocols for low-flow sampling equipment

In addition to the protocols listed above, sampling using low-flow sample equipment should adopt the following protocols derived from EPA's *Low-flow (minimal drawdown) ground-water sampling procedures* (Puls and Barcelona, 1996). These protocols apply to low-flow sampling equipment that generally pumps between 0.1 and 0.5 liters per minute. These protocols are not intended for bailers.

Special protocols for passive sampling equipment

In addition to the protocols listed above, passive diffusion samplers should follow protocols set forth in USGS Fact Sheet 088-00.

PROTOCOLS FOR MONITORING SEAWATER INTRUSION

Monitoring seawater intrusion requires analysis of the chloride concentrations within groundwater of each principal aquifer subject to seawater intrusion. While no significant standardized approach exists, the methodologies described above for degraded water quality can be applied for the collection of groundwater samples. In addition to the protocol described above, the following protocols should be followed:

- Water quality samples should be collected and analyzed at least semi-annually. Samples will be analyzed for dissolved chloride at a minimum. It may be beneficial to include analyses of iodide and bromide to aid in determination of salinity source. More frequent sampling may be necessary to meet DQOs of GSP. The development of surrogate measures of chloride concentration may facilitate cost-effective means to monitor more frequently to observe the range of conditions and variability of the flow dynamics controlling seawater intrusion.
- Groundwater levels will be collected at a frequency adequate to characterize changes in head in the vicinity of the leading edge of degraded water quality in each principal aquifer. Frequency may need to be increased in areas of known preferential pathways, groundwater pumping, or efficacy evaluation of mitigation projects.
- The use of geophysical surveys, electrical resistivity, or other methods may provide for identification of preferential pathways and optimize monitoring well placement and evaluation of the seawater intrusion front. Professional judgment

should be exercised to determine the appropriate methodology and whether the DQOs for the GSP would be met.

PROTOCOLS FOR MEASURING STREAMFLOW

Monitoring of streamflow is necessary for incorporation into water budget analysis and for use in evaluation of stream depletions associated with groundwater extractions. The use of existing monitoring locations should be incorporated to the greatest extent possible. Many of these streamflow monitoring locations currently follow the protocol described below.

Establishment of new streamflow discharge sites should consider the existing network and the objectives of the new location. Professional judgment should be used to determine the appropriate permitting that may be necessary for the installation of any monitoring locations along surface water bodies. Regular frequent access will be necessary to these sites for the development of ratings curves and maintenance of equipment.

To establish a new streamflow monitoring station special consideration must be made in the field to select an appropriate location for measuring discharge. Once a site is selected, development of a relationship of stream stage to discharge will be necessary to provide continuous estimates of streamflow. Several measurements of discharge at a variety of stream stages will be necessary to develop the ratings curve correlating stage to discharge. The use of Acoustic Doppler Current Profilers (ADCPs) can provide accurate estimates of discharge in the correct settings. Professional judgment must be exercised to determine the appropriate methodology. Following development of the ratings curve a simple stilling well and pressure transducer with data logger can be used to evaluate stage on a frequent basis. A simple stilling well and staff gage is illustrated in **Figure 6**.

Streamflow measurements should be collected, analyzed, and reported in accordance with the procedures outlined in USGS Water Supply Paper 2175, *Volume 1. – Measurement of Stage Discharge* and *Volume 2. – Computation of Discharge.* This methodology is currently being used by both the USGS and DWR for existing streamflow monitoring throughout the State.

Figure 6 – Simple Stilling Well and Staff Gage Setup

PROTOCOLS FOR MEASURING SUBSIDENCE

Evaluating and monitoring inelastic land subsidence can utilize multiple data sources to evaluate the specific conditions and associated causes. To the extent possible, the use of existing data should be utilized. Subsidence can be estimated from numerous techniques, they include: level surveying tied to known stable benchmarks or benchmarks located outside the area being studied for possible subsidence; installing and tracking changes in borehole extensometers; obtaining data from continuous GPS (CGPS) locations, static GPS surveys or Real-Time-Kinematic (RTK) surveys; or analyzing Interferometric Synthetic Aperture Radar (InSAR) data. No standard procedures exist for collecting data from the potential subsidence monitoring approaches. However, an approach may include:

- Identification of land subsidence conditions.
    - Evaluate existing regional long-term leveling surveys of regional infrastructure, i.e. roadways, railroads, canals, and levees.
    - Inspect existing county and State well records where collapse has been noted for well repairs or replacement.
    - Determine if significant fine-grained layers are present such that the potential for collapse of the units could occur should there be significant depressurization of the aquifer system.

- Inspect geologic logs and the hydrogeologic conceptual model to aid in identification of specific units of concern.
- Collect regional remote-sensing information such as InSAR, commonly provided by USGS and NASA. Data availability is currently limited, but future resources are being developed.

- Monitor regions of suspected subsidence where potential exists.
  - Establish CGPS network to evaluate changes in land surface elevation.
  - Establish leveling surveys transects to observe changes in land surface elevation.
  - Establish extensometer network to observe land subsidence. An example of a typical extensometer design is illustrated in **Figure 7**. There are a variety of extensometer designs and they should be selected based on the specific DQOs.

Various standards and guidance documents for collecting data include:

- Leveling surveys must follow surveying standards set out in the California Department of Transportation's Caltrans Surveys Manual.
- GPS surveys must follow surveying standards set out in the California Department of Transportation's Caltrans Surveys Manual.
- USGS has been performing subsidence surveys within several areas of California. These studies are sound examples for appropriate methods and should be utilized to the extent possible and where available:
  - http://ca.water.usgs.gov/land_subsidence/california-subsidence-measuring.html
- Instruments installed in borehole extensometers must follow the manufacturer's instructions for installation, care, and calibration.
- Availability of InSAR data is improving and will increase as programs are developed. This method requires expertise in analysis of the raw data and will likely be made available as an interpretative report for specific regions.

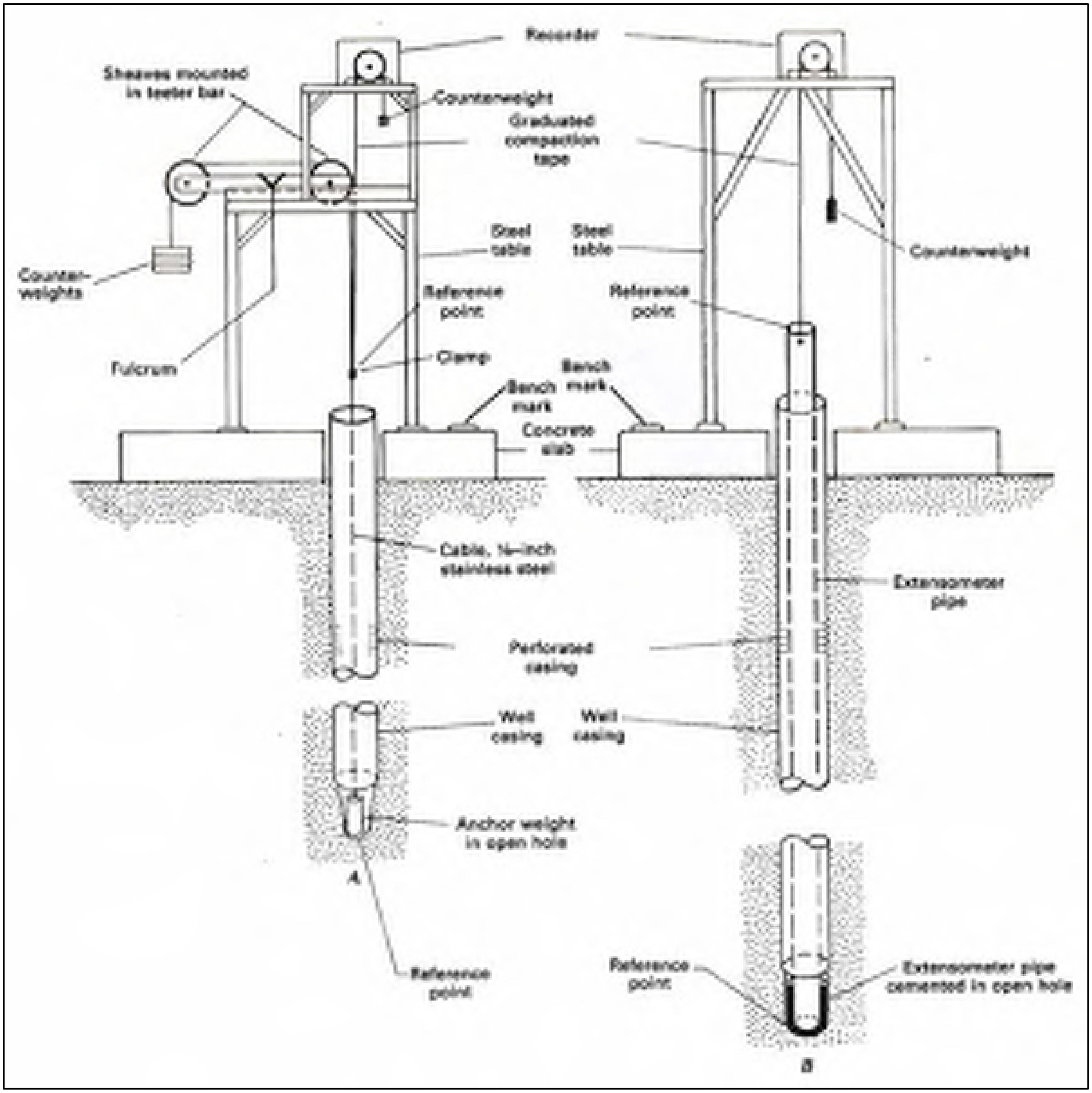

Figure 7 – Simplified Extensometer Diagram

6. KEY DEFINITIONS

The key definitions and sections related to Groundwater Monitoring Protocols, Standards, and Sites outlined in applicable SGMA code and regulations are provided below for reference.

Groundwater Sustainability Plan Regulations (California Code of Regulations §351)

- §351(h) "Best available science" refers to the use of sufficient and credible information and data, specific to the decision being made and the time frame available for making that decision, that is consistent with scientific and engineering professional standards of practice.
- §351(i) "Best management practice" refers to a practice, or combination of practices, that are designed to achieve sustainable groundwater management and have been determined to be technologically and economically effective, practicable, and based on best available science.

Monitoring Protocols Reference

§352.2. Monitoring Protocols

Each Plan shall include monitoring protocols adopted by the Agency for data collection and management, as follows:

(a) Monitoring protocols shall be developed according to best management practices.

(b) The Agency may rely on monitoring protocols included as part of the best management practices developed by the Department, or may adopt similar monitoring protocols that will yield comparable data.

(c) Monitoring protocols shall be reviewed at least every five years as part of the periodic evaluation of the Plan, and modified as necessary.

SGMA Reference

§10727.2. Required Plan Elements

(f) Monitoring protocols that are designed to detect changes in groundwater levels, groundwater quality, inelastic surface subsidence for basins for which subsidence has been identified as a potential problem, and flow and quality of surface water that directly affect groundwater levels or quality or are caused by groundwater extraction in the basin. The monitoring protocols shall be designed to generate information that promotes efficient and effective groundwater management.

7. RELATED MATERIALS

CASE STUDIES

Luhdorff & Scalmanini Consulting Engineers, J.W. Borchers, M. Carpenter. 2014. *Land Subsidence from Groundwater Use in California*. Full Report of Findings prepared for California Water Foundation. April 2014. 151 p. http://ca.water.usgs.gov/land_subsidence/california-subsidence-cause-effect.html

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Poland, J.F., B.E. Lofgren, R.L. Ireland, and R.G. Pugh, 1975. *Land subsidence in the San Joaquin Valley, California, as of 1972*; US Geological Survey Professional Paper 437-H; prepared in cooperation with the California Department of Water Resources, 87 p.
http://pubs.usgs.gov/pp/0437h/report.pdf

Sneed, M., J.T. Brandt, and M. Solt, 2013. *Land subsidence along the Delta-Mendota Canal in the northern part of the San Joaquin Valley, California, 2003-10*; USGS Scientific Investigations Report 2013-5142, prepared in cooperation with U.S. Bureau of Reclamation and the San Luis and Delta-Mendota Water Authority.
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STANDARDS

California Department of Transportation, various dates. *Caltrans Surveys Manual*. http://www.dot.ca.gov/hq/row/landsurveys/SurveysManual/Manual_TOC.html

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GUIDANCE

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Holmes, R.R. Jr., P.J. Terrio, M.A. Harris, and P.C. Mills, 2001. *Introduction to field methods for hydrologic and environmental studies*, open-file report 01-50, USGS, Urbana, Illinois, 241 p. https://pubs.er.usgs.gov/publication/ofr0150

Puls, R.W., and Barcelona, M.J., 1996, *Low-Flow (Minimal Drawdown) Ground-Water Sampling Procedures*; US EPA, Ground Water Issue EPA/540/S-95/504. https://www.epa.gov/sites/production/files/2015-06/documents/lwflw2a.pdf

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ONLINE RESOURCES

Online System for Well Completion Reports (OSWCR). California Department of Water Resources. http://water.ca.gov/oswcr/index.cfm

Measuring Land Subsidence web page. U.S. Geological Survey. http://ca.water.usgs.gov/land_subsidence/california-subsidence-measuring.html

USGS Global Positioning Application and Practice web page. U.S. Geological Survey. http://water.usgs.gov/osw/gps/

Appendix D – Groundwater Quality Reports

TRUCKEE DONNER
Public Utility District

General Manager
Brian C. Wright

Executive
Leadership Team
Chad J. Reed
Water Utility Director

Jared Carpenter
Electric Utility Director

Scott Crow
IT Director/CIO

Steven Poncelet
PIO & Strategic Affairs Director

Michael Salmon
Chief Financial Officer

Jillian Steward
Director of Human Resources and Risk Management

Board of Directors
Joseph Aguera
Jeff Bender
Christa Finn
Kim Harris
Tony Laliotis

TRUCKEE DONNER PUBLIC UTILITY DISTRICT
2024 PUBLIC HEALTH GOALS REPORT

Background

Provisions of the California Health and Safety Code specify that larger (>10,000 service connections) water utilities prepare a special report by July 1, 2024 if water quality measurements have exceeded any Public Health Goals (PHGs). PHGs are non-enforceable goals established by the California Environmental Protection Agency's (Cal-EPA) Office of Environmental Health Hazard Assessment (OEHHA). The regulation also requires that where OEHHA has not adopted a PHG for a constituent, the water suppliers are to use the Maximum Contaminant Level Goals (MCLG) adopted by the United States Environmental Protection Agency (USEPA). Only constituents which have a California primary drinking water standard and for which either a PHG or MCLG has been set are to be addressed.

There are a few constituents that are routinely detected in water systems at levels usually well below the drinking water standards for which no PHG nor MCLG have been adopted by OEHHA or USEPA including Total Trihalomethanes. These will be addressed in a future required report after a PHG has been adopted.

The regulation specifies what information is to be provided in the report. If a constituent was detected in the Truckee Donner Public Utility District's (TDPUD) water supply between 2021 and 2024, at a level exceeding an applicable PHG or MCLG, this report provides the information required under the regulation. Included is the numerical public health risk associated with the Maximum Contaminant Level (MCL) and the PHG or MCLG, the category or type of risk to health that could be associated with each constituent, the best treatment technology available that could be used to reduce the constituent level, and an estimate of the cost to install that treatment if it is appropriate and feasible.

What Are PHGs?

PHGs are set by the California Office of Environmental Health Hazard Assessment (OEHHA) which is part of Cal-EPA and are based solely on public health risk considerations. None of the practical risk-management factors that are considered by the USEPA or the California Department of Health Services (CDHS) in setting drinking water standards are considered in setting the PHGs.

These factors include analytical detection capability, treatment technology available, benefits and costs. The PHGs are not enforceable and are not required to be met by any public water system. MCLGs are the federal equivalent to PHGs.

Water Quality Data Considered

All of the water quality data collected by the TDPUD water utility between 2021 and 2024, for purposes of determining compliance with drinking water standards was considered. This data was all summarized in our 2021, 2022, and 2023 Annual Water Consumer Confidence Reports which were posted on the TDPUD website for customers to review by July 1st of each subsequent year.

Guidelines Followed

The Association of California Water Agencies (ACWA) formed a workgroup which prepared guidelines for water utilities to use in preparing these newly required reports. The ACWA and California Department of Public Health guidelines were used in the preparation of this report.

Best Available Treatment Technology and Cost Estimates

Both the USEPA and CDHS adopt what are known as BATs or Best Available Technologies which are the best known methods of reducing contaminant levels to the MCL. Costs can be estimated for such technologies. However, since many PHGs and all MCLGs are set much lower than the MCL, it is not always possible nor feasible to determine what treatment is needed to further reduce a constituent downward to or near the PHG or MCLG, many of which are set at or close to zero. Estimating the costs to reduce a constituent to zero is difficult, if not impossible because it is not possible to verify by analytical means that the level has been lowered to zero. In some cases, installing treatment to try and further reduce very low levels of one constituent may have adverse effects on other aspects of water quality.

Constituents Detected That Exceed a PHG or a MCLG

The following is a discussion of constituents that were detected in one or more of the TDPUD's drinking water sources at levels above the PHG, or if no PHG, above the MCLG.

Arsenic: The MCL for arsenic is 10 parts per billion (ppb), the PHG and MCLG for arsenic is 0.004ppb. We have detected arsenic in 6 of our 10 wells, Martis Valley Well 9.8, Glenshire Dr Well 9.0, Airport Well 7.3, Prosser Village Well 2.4, Sanders Well 8.8, and Old Greenwood Well 10. It is important to note that the Glenshire Drive Well, Old Greenwood Well and Prosser Village Well are delivered through a California State Water Resources Control Board (SWRCB) approved blending permit maintaining post blend water deliveries with arsenic concentrations below the MCL.

The category of health risk associated with arsenic, and the reason that a drinking water standard was adopted for it, is that continuous long-term exposures to drinking water containing arsenic levels above the MCL may increase the risk of cancer. The California Office of Environmental Health Hazard Assessment (OEHHA) has set the PHG at 0.004ppb. The PHG is based on a level that will result in not more than 1 excess cancer in 1 million people who drink 2 liters daily of this water for 70 years. The actual cancer risk may be lower or zero. The BAT that we are using for this report to lower the level below the MCL to .004ppb is fixed bed adsorption system. The estimated cost to install and operate such a treatment system on all 6 Wells that would reliably reduce the Arsenic level to .004ppb would be approximately $8,505,000 initial construction cost with additional estimated O&M cost of an $7,245,000 per year. This would result in an assumed increased cost for each customer of approximately $528 per year.

Lead: The MCL for Lead in drinking water is 15ppb, while the PHG and MCLG is 0.2ppb. The current PHG for Lead was established in 2009, lowered from the previous PHG of 2.0ppb established in 1997, based upon calculated carcinogenic health effects and neurobehavioral deficits. The District conducts sampling for the presence of lead every three years in accordance with the Lead and Copper Rule (LCR). Action levels for lead is based on 90th percentile concentration levels from first draw residential sample taps. The District's last LCR monitoring period and sample collection was in 2016, in which sample testing results indicated a 90th percentile level of 7.0ppb.

Levels of lead in surface and groundwater throughout the United States typically range between 5 and 30 ppb (OEHHA, 2009). In drinking water, the major source of lead is due to the leaching from residential plumbing and solder used in pipe joints. The leaching of lead from residential plumbing is of particular concern in circumstance where older plumbing infrastructure is exposed to aggressive water quality conditions.

Lead is listed as a carcinogen and as a reproductive and developmental toxic chemical under the Safe Drinking Water and Toxic Enforcement Act of 1986 (California Health and Safety Code). The calculated health risk for lead at the MCL (15ppb) is two per million. The calculated health risk at the PHG (0.2ppb) is not available.

BAT for drinking water systems exceeding the 90th percentile for the action level of lead concentrations (15ppb) is "optimized corrosion control". For systems in which the lead concentration levels are above the PHG of 0.2ppb, it is not clear what additional steps could be considered, particularly without causing other potential water quality problems. Without further comprehensive study, it is uncertain if a true assessment of the cost of mitigation for lead concentrations well below the action level can be determined with any degree of accuracy.

RECOMMENDATIONS FOR FURTHER ACTION

The drinking water quality of the Truckee Donner Public Utility District at this time meets all California State Water Resources Control Board and USEPA drinking water standards set to protect public health. To further reduce the levels of the constituents identified in this report that are already below the health-based MCLs established to provide "safe drinking water", additional costly treatment processes would be required. The effectiveness of the treatment processes to provide any significant reductions in constituent levels at these already low values is uncertain. The health protection benefits of these further hypothetical reductions are not at all clear and may not be quantifiable. Therefore, no action is proposed.

The money that would be required for these additional treatment processes might provide greater public health protection benefits if spent on other water system operation, surveillance, and monitoring programs.

TRUCKEE DONNER
Public Utility District

2024 WATER QUALITY REPORT

Truckee Main System PWS# 2910003

Customer Views Are Welcome

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For More Information:

◊ About this report or the water treatment process, contact Truckee Donner Public Utility District's Senior Water Quality Technician, Clay Walker at (530)582-3926.

◊ About water conservation and efficiency, the TDPUD has water conservation programs that will help customers save water and save money. Information can be found on our website or by calling (530) 587-3896.

For more information about us, please visit our website at www.tdpud.org .

In This Document

Este informe contiene información muy importante sobre su agua potable. Tradúzcalo o hable con alguien que lo entienda bien.

Water Quality

Truckee Donner Public Utility District (TDPUD) is dedicated to providing its customers with the highest quality drinking water. Our water quality team works diligently to exceed State and U.S. Environmental Protection Agency (USEPA) standards. Each year, we collect and analyze 520 routine bac-t samples, along with additional monitoring required under Title 22. All samples are tested by a certified Environmental Laboratory Accreditation Program (ELAP) laboratory using methodologies mandated by State and Federal regulations. This report provides a snapshot of the water quality delivered to TDPUD customers in 2024. It includes details about your local water sources, water monitoring data, and how it compares to State and USEPA standards. We believe that well-informed customers play a vital role in maintaining high drinking water standards. That's why we are committed to transparency about your water supply and ongoing efforts to improve its quality. It is important to note, that while the TDPUD meets all State and Federal drinking water standards, certain individuals may be more vulnerable to contaminants than the general population. People with weakened immune systems such as those undergoing cancer treatment, individuals who have received organ transplants, people with HIV/AIDS or other immune disorders, some elderly individuals, and infants, may be at a higher risk of infection. These individuals should consult their healthcare providers for guidance on drinking water safety. For more information on reducing the risk of infection from Cryptosporidium and other microbiological contaminants, refer to guidelines from the USEPA and the Centers for Disease Control (CDC). You can access this information by calling the Safe Drinking Water Hotline at (800) 426-4791 or visiting https://www.epa.gov/ground-water-and-drinking-water/safe-drinking-water-hotline.

Lead in Residential Plumbing

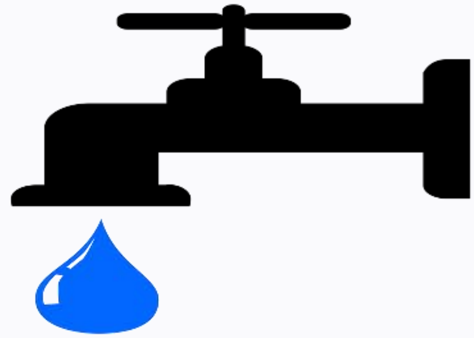
If present, elevated levels of lead in drinking water can pose serious health risks, particularly for pregnant women and young children. When lead is detected, it typically originates from materials and components in service lines and residential plumbing rather than from the water source itself. While TDPUD ensures the delivery of high-quality water, we cannot control the plumbing materials used in private properties. If water has been sitting in your pipes for an extended period, you can reduce potential lead exposure by flushing your tap for 30 seconds to 2 minutes before using water for drinking or cooking. TDPUD conducts routine lead sampling every three years. The most recent testing, performed in 2022, confirmed that all sampled sites were below the Federal action level for lead. The next round of testing is scheduled for summer 2025. More information about lead in drinking water, testing methods, and steps you can take to minimize exposure visit www.epa.gov /lead.

Where Our Water Comes From

The drinking water supplied to Truckee Donner Public Utility District (TDPUD) customers in the Truckee system comes from 10 deep groundwater wells. Thanks to natural filtration, the underlying aquifer is well-protected from surface water contamination, ensuring a high-quality drinking water supply.

Cryptosporidium and Giardia

Recognizing that our potable water sources are exclusively deep groundwater wells, the presence of microscopic organisms such as Cryptosporidium and Giardia in our water is highly unlikely. If ingested, Cryptosporidium and Giardia can cause diarrhea, fever, and other gastrointestinal symptoms.



Source Water Assessment

A source water assessment was prepared in 2002 for the wells serving the Truckee area. The wells are located throughout the town of Truckee and Glenshire. The District owns and operates 10 wells varying in depth from 120ft to 500ft. The complete source water assessment and known vulnerabilities may be viewed at the Truckee Donner Public Utility District office, located at 11570 Donner Pass Road, Truckee, California, or by calling Chad Reed at (530)582-3984.

Lead Line Service Inventory

A lead service line material inventory was conducted and prepared in 2024 . There are no lead lines in the distribution system. A detailed inventory is available here.

https://www.tdpud.org/departments/water/water-quality

Arsenic

In 2001 the United States Environmental Protection Agency (USEPA) implemented stricter standards for arsenic in drinking water, reducing the maximum contaminant level (MCL) from 50 parts per billion (ppb) to 10 ppb To put this into perspective, 1 ppb is equivalent to 1 second in 32 years—an extremely small measurement. The drinking water provided by Truckee Donner Public Utility District (TDPUD) meets all current Federal and State standards for arsenic. However, the USEPA continues to research the potential health effects of prolonged exposure to low levels of arsenic, a naturally occurring mineral linked to an increased risk of cancer, as well as potential skin and circulatory issues.

Water Source Blending: The TDPUD operates the Glenshire Drive Well, Prosser Village Well and Old Greenwood Well under a State Water Resources Control Board (SWRCB) approved blending permit. This blending process helps reduce detectable arsenic concentrations before the water enters the distribution system Recent arsenic monitoring results from the blending point ranged from 4.6 ppb to 9.4 ppb, with an average of 7.1 ppb—well below the 10 ppb MCL set by the USEPA.

Radon

Radon is a radioactive gas that is colorless, tasteless, and odorless. It is found throughout the United States and can enter homes through cracks and openings in foundations, accumulating indoors regardless of a home's age or construction type. Radon can also be released into indoor air from household water use, such as showering, washing dishes, or other activities. However, compared to radon entering through the ground, exposure from drinking water is far less common and occurs at much lower levels.   Radon is a known human carcinogen, and long-term exposure to airborne radon has been linked to lung cancer. Drinking water containing radon may also increase the risk of stomach cancer. If you are concerned about radon levels in your home, testing is recommended. It is generally affordable and easy to perform, and mitigation is advised for concentrations exceeding 4 picocuries per liter (pCi/L) of air. Many radon issues can be resolved with cost-effective solutions. For more information, contact:

Your State Radon Program (1-800-745-7236)

USEPA Safe Drinking Water Hotline (1-800-426-4791)

National Safety Council Radon Hotline (1-800-SOS-RADON).

Water Hardness

Occasionally, a water user will need to adjust an appliance, such as a dishwasher or water   softener, to a particular setting based upon the hardness of the   water served to their home or business.

Please use the information provided below to help with water hardness questions.

Water Softener / Appliance Setting

In 2022 testing, TDPUD had an average hardness result of 71.0 mg/L. That translates to an average of 4.1 grains per gallon. One grain per gallon equals 17.1 mg/L.

Degree of Hardness	Grains per Gallon (gpg)	ppm (or mg/L)
Soft	< 1.0	< 17.0
Slightly Hard	1.0 - 3.5	17.1 - 60
Moderately Hard	3.5 - 7.0	60 - 120
Hard	7.0 - 10.5	120 - 180
Very Hard	> 10.5	> 180

Substances That Could Be In Water

Drinking water—whether from tap or bottled sources—comes from rivers, lakes, streams, ponds, reservoirs, springs, and wells. As water moves across the land or through the ground, it can dissolve naturally occurring minerals and radioactive materials and may also pick up substances from human activities or animal presence.

To ensure the safety of tap water, the U.S. Environmental Protection Agency (USEPA) and the State Water Resources Control Board (State Board) establish regulations that limit the presence of certain contaminants in public water systems. Similarly, State Board regulations set contaminant limits for bottled water to provide the same level of public health protection.

It is important to note that all drinking water, including bottled water, may contain small amounts of contaminants. However, their presence does not necessarily indicate a health risk.

__Contaminants that may be present in source water include__:

Microbial Contaminants, such as viruses and bacteria, that may come from sewage treatment plants, septic systems, agricultural livestock operations, and wildlife;

Inorganic Contaminants, such as salts and metals, that can be naturally occurring or can result from urban stormwater runoff, industrial or domestic wastewater discharges, oil and gas production, mining, or farming;

Pesticides and Herbicides, that 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, which are by-products of industrial processes and petroleum production, and which can also come from gas stations, urban stormwater runoff, agricultural applications, and septic systems;

Radioactive Contaminants, that can be naturally occurring or can be the result of oil and gas production and mining activities.

More information about contaminants and potential health effects can be obtained by calling the USEPA's Safe Drinking Water Hotline at (800) 426-4791.

__Table Key__

N/A: not applicable

N/D: not detectable at testing limit

ppm: parts per million or milligrams per liter (mg/L)

ppb: parts per billion or micrograms per liter (µg/l)

ppt: parts per trillion or nanograms per liter (ng/L)

pCi/L: picocuries per liter (a measure of radiation)

(µS/cm): micro Siemens per centimeter

Definitions

Maximum Contaminant Level (MCL): The highest level of a contaminant that is allowed in drinking water. Primary MCLs are set as close to the PHGs (or MCLGs) as is economically and technologically feasible. Secondary MCLs are set to protect the odor, taste, and appearance of drinking water.

Maximum Contaminant Level Goal (MCLG): The level of a contaminant in drinking water below which there is no known or expected risk to health. MCLGs are set by the U.S. Environmental Protection Agency (USEPA).

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

Maximum Residual Disinfectant Level (MRDL): 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.

Maximum Residual Disinfectant Level Goal (MRDLG): 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.

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

Secondary Drinking Water Standards (SDWS): MCLs for contaminants that affect taste, odor, or appearance of the drinking water. Contaminants with SDWSs do not affect the health at the MCL levels.

Regulatory Action Level (AL): The concentration of a contaminant which, if exceeded, triggers treatment or other requirements that a water system must follow.

The data in the following tables is from the most recent monitoring done in compliance with Federal and California drinking water regulations. Some data may be more than one year old. Based upon Federal and State requirements, the monitoring interval for each constituent varies, and can be any one of the following: weekly, monthly, semi-annually, annually, biennially, or once every three, six, or nine years, or as deemed necessary by regulatory agencies.

TABLE 1 – SAMPLING RESULTS SHOWING THE DETECTION OF COLIFORM BACTERIA					
Microbiological Contaminants	**Highest No. of Detections**	**No. of months in violation**	**MCL**	**MCLG**	**Typical Source of Bacteria**
Total Coliform Bacteria	0	0	More than 5% of samples in a month with a detection	0	Naturally present in the environment

TABLE 2 – DISINFECTION BYPRODUCTS						
Contaminant	**# Samples, Frequency**	**Average Level**	**Range**	**MCL (MDRL)**	**MCLG (MDRLG)**	**Typical Source of Contaminant**
Chlorine Residual (ppm)	40-50 per month	0.38	.36-.42	4	4	Drinking water disinfectant added for treatment
Haloacetic Acids (ppb)	2 on 8/21/24	1.1	0-2..2	60	N/A	By-product of drinking water disinfection
Total Trihalomethanes (ppb)	2 on 8/21/24	12.05	7.1-17	80	N/A	By-product of drinking water disinfection

TABLE 3 – DISTRIBUTION CUSTOMER TAP SAMPLING FOR LEAD AND COPPER							
Lead and Copper	**Date Last Sampled**	**No. of samples collected**	**90th percentile level detected**	**No. sites exceeding AL**	**AL**	**PHG**	**Typical Source of Contaminant**
Lead (ppb)	August 2022	32	7.0	0	15	0.2	Internal corrosion of household plumbing systems; discharges from industrial manufactures,erosion of natural deposits
Copper (ppm)	August 2022	32	0.180	0	1.3	0.3	Internal corrosion of household plumbing systems; erosion of natural deposits; leaching from wood preservatives

TABLE 4- LEAD SAMPLING FOR SCHOOL DISTRICT							
Contaminant	**Date sampled**	**No. of Schools Requesting Lead Sampling**	**Range**	**No. sites exceeding AL**	**AL**	**PHG**	**Typical Source of Contaminant**
Lead (ppb)	Dec-18	8	< 0.2	0	15.0	0.2	Internal corrosion of household plumbing systems; erosion of natural deposits; leaching from wood preservatives

TABLE 5- UNREGULATED COMPOUNDS						
Chemical or Constituent (reporting units)	**Date Last Sampled**	**Average Level Detected**	**Range of Detections**	**MCL**	**PHG (MCLG)**	**Typical Source of Contaminant**
Alkalinity (as CaCO3) (ppm)	2022	77	69-88	N/A	N/A	Naturally present in water
Bicarbonate Alkalinity (as HCO3) (ppm)	2022	77	69-88	N/A	N/A	Naturally present in water
Calcium (ppm)	2022	15	11-33	N/A	N/A	Naturally occurring
Potassium (ppm)	2022	3.3	2.1-8.3	N/A	N/A	Leaching of natural depo

TABLE 6 – DETECTION OF CONTAMINANTS PRIMARY DRINKING WATER STANDARD						
Chemical or Constituent (reporting units)	**Date Last Sampled**	**Average Level Detected**	**Range of Detections**	**MCL**	**PHG (MCLG)**	**Typical Source of Contaminant**
Arsenic (ppb)	2022	4.70	N/D - 10	10	0.004	Erosion of natural deposits
Barium (ppb)	2022	17.70	7.1-29	1000	2000	Erosion of natural deposits
Chromium, Total (ppb)	2022	0.50	N/D - 1.4	100	100	Erosion of natural deposits
Chromium, Hexavalent (ppb)	2023	.8	.29-1.4	10	.1	Erosion of natural deposits
Fluoride (ppm)	2022	0.01	N/D - 0.63	2	1	Erosion of natural deposits
Nitrate as N (ppm)	2024	0.30	N/D - 0.50	10	10	Runoff and leaching from fertilizer use; leaching from septic tanks and sewage; erosion of natural deposits
Turbidity (NTU)	2022	0.20	N/D - 0.45	5	5	Soil runoff
Gross Alpha Particle Activity (pCi/L)	2007-2018	0.7	N/D - 4.6	15	0	Erosion of natural deposits
Radon (pCi/L)	2004	90.8	N/D -560	N/A*	N/A*	Erosion of natural deposits
*Note	The State of California does not have an MCL for Radon. The EPA has an advisory MCL of 4000					

TABLE 7 – DETECTION OF CONTAMINANTS <u>SECONDARY</u> DRINKING WATER STANDARD						
Chemical or Constituent (reporting units)	**Date Last Sampled**	**Level Detected**	**Range of Detections**	**MCL**	**PHG (MCLG)**	**Typical Source of Contaminant**
Chloride (ppm)	2022	11.7	1-62	250	N/A	Leaching of natural deposits
Odor-Threshold (TON)	2022	0.4	N/D - 1	3	N/A	Naturally-occurring organic materials
pH	2022	8.1	8-8.2	6.5 - 8.5	6.5 - 8.5	Leaching of natural deposits
Specific Conductance (µS/cm)	2019	182	110 - 380	1600	N/A	Substances that form ions when in water.
Total Dissolved Solids (ppm)	2019	122	110 - 230	500	N/A	Leaching of natural deposits

TABLE 8 – Fifth Unregualted Contaminant Monitoring Rule (UCMR 5)						
Chemical or Constituent (reporting units)	**Date Last Sampled**	**Level Detected**	**Range of Detections**	**MCL**	**PHG (MCLG)**	**Typical Source of Contaminant**
PFHxA	2023	.0006	N/D-.0044	N/A	.003	Leaching of anthropogenic substance
PFPeA	2023	.0007	N/D-.0046	N/A	.003	Leaching of anthropogenic substance
PFNA	2023	.0004	N/D-.0046	N/A	.004	Leaching of anthropogenic substance
Lithium	2023	7.7	N/D-32	N/A	9	Naturally-occurring elements

FREQUENTLY ASKED QUESTIONS

Q. Why does my water smell and taste like chlorine?

A. Chlorine is regularly injected into the water at the source as a disinfectant that aids in eliminating potentially harmful bacteria present in water. In high demand summer month's chlorine taste may be more noticeable because the water is "fresh" or "newer" and has not had time to dissipate through the system. Chlorine can also gas off in warm/hot water which produces a smell stronger than normal. Some people are more sensitive than others to the taste and smell of chlorine and may become aware of occasional changes. This is normal and safe. Chlorine levels are continually monitored.

Q. Why does my water taste like metal?

A. The source water is ground water, which has a mineral content that might give off a metal taste some are not used too. Sometimes plumbing can cause a metal taste, especially if water has been sitting in pipes for several hours. It's best to flush the lines for of couple minutes if water has sat in pipes for an extending period of time, however, this does not indicate a higher or lower degree of water quality.

Q. Why is there white crust on my shower head?

A. The minerals in water may leave white spots on glasses, coffeepots, shower heads and shower doors. These spots are calcium deposits and are not harmful to health.

Q. Why is there a black ring around my toilet?

A. This black ring some may find after returning home when water has sat in the bowl for extending period of time is mold. Mold will grow in dark, wet, cool places making the toilet bowl a perfect place for that. If this accrues adding bleach to the bowl and letting it sit works best. To avoid this, leave a small amount of bleach in the bowl before leaving for more than a couple days.

Q. What clauses cloudy water?

A. Cloudy or milky water is usually caused by trapped air picked up from an air pocket in the water main or internal plumbing. Sometimes flows or water cascading within the aqueduct can also trap air, similar to a waterfall. If water sits in a glass or pitcher for a few minutes the air will dissipate and become clear.

TRUCKEE DONNER Public Utility District

2024 WATER QUALITY REPORT

Hirschdale Water System PWS# 2910010

Customer Views Are Welcome

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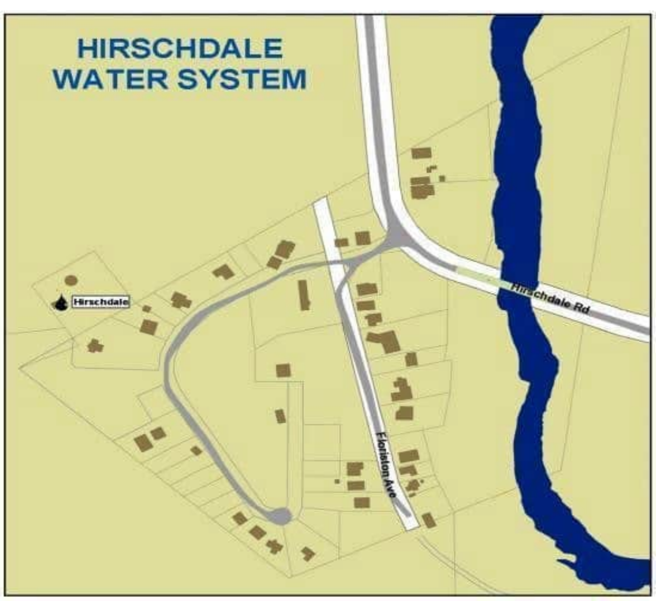

In This Document

Este informe contiene información muy importante sobre su agua potable. Tradúzcalo o hable con alguien que lo entienda bien.

Water Quality

Truckee Donner Public Utility District (TDPUD) is committed to delivering high-quality drinking water to its customers. Our water quality team strives to exceed State and U.S. Environmental Protection Agency (USEPA) standards by conducting 12 routine bacteriological samples annually, along with additional monitoring required under Title 22. All samples are analyzed by a certified Environmental Laboratory Accreditation Program (ELAP) laboratory using methodologies mandated by State and Federal regulations. This report provides a snapshot of the water quality delivered to TDPUD customers in 2024. It includes details about local water sources, annual water quality sampling data, and how our water compares to State and USEPA standards. We believe that well-informed customers play a crucial role in maintaining high drinking water standards. That's why TDPUD is dedicated to transparency and communication about your water supply. It is important to note that while TDPUD meets all State and Federal drinking water standards, some individuals may be more vulnerable to contaminants than the general population. Those at higher risk include immunocompromised individuals—such as cancer patients undergoing chemotherapy, organ transplant recipients, people with HIV/AIDS or other immune disorders, some elderly individuals, and infants. These individuals should consult their healthcare providers for guidance on drinking water safety.

For more information on reducing the risk of infection from Cryptosporidium and other microbiological contaminants, refer to guidelines from the USEPA and the Centers for Disease Control (CDC). You can access this information by calling the Safe Drinking Water Hotline at (800) 426-4791 or visiting **https://www.epa.gov/ground-water-and-drinking-water/safe-drinking-water-hotline**.

Lead in Residential Plumbing

Elevated levels of lead in drinking water can pose serious health risks, particularly for pregnant women and young children. When lead is detected, it typically originates from service lines and residential plumbing materials, rather than from the water source itself. While Truckee Donner Public Utility District (TDPUD) provides high-quality water, we cannot control the plumbing materials used in private properties. If water has been sitting in your pipes for an extended period, you can reduce potential lead exposure by flushing your tap for 30 seconds to 2 minutes before using it for drinking or cooking. TDPUD conducts lead testing every three years. The most recent sampling, performed in 2022, confirmed that all tested sites were below the Federal action level for lead. For more information on lead in drinking water, testing methods, and ways to minimize exposure, visit **www.epa.gov/lead**.

Where Our Water Comes From

The drinking water supplied to our Hirschdale customers comes from a deep aquifer well. Before reaching your home, this water is filtered to remove iron, manganese, and arsenic, ensuring its safety and quality. Thanks to natural filtration, the groundwater aquifer is well-protected from surface water contamination, providing a high-quality drinking water supply.

Cryptosporidium and Giardia

Recognizing that our potable water sources are exclusively drawn from a deep groundwater well, the presence of microscopic organisms such as Cryptosporidium and Giardia in our water is highly unlikely. If ingested, Cryptosporidium and Giardia can cause diarrhea, fever, and other gastrointestinal symptoms.

Source Water Assessment

A source water assessment has been completed for the well serving the Hirschdale area. The well is located in the town of Hirschdale. The District owns and operates the single well which is 270ft in depth. A copy of the complete assessment may be viewed at the Truckee Donner Public Utility District office, located at 11570 Donner Pass Road, Truckee, California, or by calling Chad Reed at (530)582-3984.

Lead Line Service Inventory

A lead service line material inventory was conducted and prepared in 2024 . There are no lead lines in the distribution system. A detailed inventory is available here.

https://www.tdpud.org/departments/water/water-quality

Substances That May Be Found In Water

Drinking water sources—both tap and bottled—include rivers, lakes, streams, ponds, reservoirs, springs, and wells. As water moves over land or through the ground, it dissolves naturally occurring minerals and, in some cases, radioactive materials, and can also pick up substances from animals or human activities.

To ensure the safety of tap water, the U.S. Environmental Protection Agency (USEPA) and the State Water Resources Control Board (State Board) establish regulations that limit the amount of certain contaminants in water provided by public systems. While drinking water, including bottled water, may contain small amounts of some contaminants, the presence of many contaminants does not necessarily mean the water poses a health risk.

Examples of contaminants that may be present in source water include:

Microbial Contaminants, such as viruses and bacteria, that may come from stormwater or wastewater, septic systems, agricultural livestock operations, and wildlife;

Inorganic Contaminants, such as salts and metals, that can be naturally occurring or can result from erosion, urban stormwater runoff, industrial or domestic wastewater discharges, oil and gas production, mining, or farming;

Pesticides and Herbicides, that 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, which are by-products of industrial processes and petroleum production, and which can also come from gas stations, urban stormwater runoff, agricultural applications, and septic systems;

Radioactive Contaminants, that can be naturally occurring or can be the result of oil and gas production and mining activities.

More information about contaminants and potential health effects can be obtained by calling the U.S. EPA's Safe Drinking Water Hotline at (800) 426-4791.

Definitions

Maximum Contaminant Level (MCL): The highest level of a contaminant that is allowed in drinking water. Primary MCLs are set as close to the PHGs (or MCLGs) as is economically and technologically feasible. Secondary MCLs are set to protect the odor, taste, and appearance of drinking water.

Maximum Contaminant Level Goal (MCLG): The level of a contaminant in drinking water below which there is no known or expected risk to health. MCLGs are set by the U.S. Environmental Protection Agency (USEPA).

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

Maximum Residual Disinfectant Level (MRDL): 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.

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Secondary Drinking Water Standards (SDWS): MCLs for contaminants that affect taste, odor, or appearance of the drinking water. Contaminants with SDWSs do not affect the health at the MCL levels.

Regulatory Action Level (AL): The concentration of a contaminant which, if exceeded, triggers treatment or other requirements that a water system must follow.

Table Key

N/A: not applicable

N/D: not detectable at testing limit

ppm: parts per million or milligrams per liter (mg/L)

ppb: parts per billion or micrograms per liter (µg/L)

ppt: parts per trillion or nanograms per liter (ng/L)

pCi/L: picocuries per liter (a measure of radiation)

(µS/cm): micro Siemens per centimeter

(NTU): nephelometric turbidity unit (measures water cloudiness)

The data in the following tables is from the most recent monitoring done in compliance with Federal and California drinking water regulations. Some data may be more than one year old. Based upon Federal and State requirements, the monitoring interval for each constituent varies, and can be any one of the following: weekly, monthly, semi-annually, annually, biennially, or once every three, six, or nine years, or as deemed necessary by regulatory agencies.

TABLE 1 – SAMPLING RESULTS SHOWING THE DETECTION OF COLIFORM BACTERIA

Microbiological Contaminants	Highest No. of Detections	No. of months in violation	MCL	MCLG	Typical Source of Bacteria
Total Coliform Bacteria	0	0	More than 5% of samples in a month with a detection	0	Naturally present in the environment

TABLE 2 – DISINFECTION BY-PRODUCTS

Contaminant	# Samples, Frequency	Average Level	Range	MCL (MRDL)	MCLG (MRDLG)	Typical Source of Contaminant
Chlorine Residual (ppm)	1 per month	0.48	.40-.56	4	4	Drinking water disinfectant added for treatment
Total Trihalomethanes (ppb)	1 on 8/21/24	24	N/A	80	N/A	By-product of drinking water disinfection
Haloacectic Acids (ppb)	1 on 8/21/24	3.2	N/A	60	N/A	By-product of drinking water disinfection

TABLE 3 – DISTRIBUTION SYSTEM CUSTOMER TAP SAMPLING FOR LEAD AND COPPER

Lead and Copper	Date Last Sampled	No. of samples collected	90th percentile level detected	No. sites exceeding AL	AL	PHG	Typical Source of Contaminant
Lead (ppb)	8/11/22	5	.02	0	15	0.2	Internal corrosion of household water plumbing systems; discharges from industrial manufacturers; erosion of natural deposits
Copper (ppm)	8/11/22	5	0.046	0	1.3	0.3	Internal corrosion of household plumbing systems; erosion of natural deposits; leaching from wood preservatives

TABLE 4 – SAMPLING RESULTS FOR SODIUM AND HARDNESS

Chemical or Constituent (reporting units)	Date Last Sampled	Level Detected	Range of Detections	MCL	PHG (MCLG)	Typical Source of Contaminant
Sodium (ppm)	2022	40	N/A	N/A	N/A	Salt present in the water and is generally naturally occurring
Hardness (as CaCO3) (ppm)	2022	91	N/A	N/A	N/A	Sum of polyvalent cations present in the water, generally magnesium and calcium, and are usually naturally occurring

TABLE 5- UNREGULATED COMPOUNDS

Chemical or Constituent (reporting units)	Date Last Sampled	Level Detected	Range of Detections	MCL	PHG (MCLG)	Typical Source of Contaminant
Alkalinity (as CaCO3) (ppm)	2022	150	N/A	N/A	N/A	Erosion of natural deposits
Bicarbonate Alkalinity (as HCO3) (ppm)	2022	180	N/A	N/A	N/A	Leaching of natural deposits
Calcium (ppm)	2022	15	N/A	N/A	N/A	Erosion of natural deposits
Magnesium (ppm)	2022	13	N/A	N/A	N/A	Erosion of natural deposits
Potassium (ppm)	2022	7.1	N/A	N/A	N/A	Erosion of natural deposits

TABLE 6 – DETECTION OF CONTAMINANTS WITH A PRIMARY DRINKING WATER STANDARD						
Chemical or Constituent (reporting units)	**Date Last Sampled**	**Level Detected**	**Range of Detections**	**MCL**	**PHG (MCLG)**	**Typical Source of Contaminant**
Inorganic Contaminants						
Arsenic (ppb)	2023	.63	N/D-1.8	10	0.004	Erosion of natural deposits
Barium (ppm)	2022	87	N/A	1000	2000	Erosion of natural deposits
Fluoride (ppm)	2022	0.096	N/A	2	1	Erosion of natural deposits
Turbidity (NTU)	2022	3	N/A	5	5	Soil runoff
Radioactive Contaminants						
Gross Alpha Particle Activity (pCi/L)	2018	N/D	3	15	0	Erosion of natural deposits
Radon (pCi/L)	2005	570	N/A	N/A*	N/A*	Erosion of natural deposits
*Note	The State of California does not have an MCL for Radon. The EPA has an advisory MCL of 4000 pCi/L for Radon.					

TABLE 7 – DETECTION OF CONTAMINANTS WITH A SECONDARY DRINKING WATER STANDARD						
Chemical or Constituent (reporting units)	**Date Last Sampled**	**Level Detected**	**Range of Detections**	**MCL**	**PHG (MCLG)**	**Typical Source of Contaminant**
Chloride (ppm)	2022	7.6	N/A	250	N/A	Leaching of natural deposits
Iron (ppb)	2022	9.5	N/A	300	N/A	Leaching of natural deposits
Manganese (ppb)	2022	13	N/A	50	N/A	Leaching of natural deposits
pH	2022	7.9	7.7 - 8.0	6.5 - 8.5	N/A	Erosion of natural deposits
Specific Conductance (µS/cm)	2022	350	N/A	1600	N/A	Substances that form ions when in water.
Sulfate	2022	14	N/A	250	N/A	Leaching of natural deposits
Total Dissolved Solids (ppm)	2022	250	N/A	500	N/A	Leaching of natural deposits

FREQUENTLY ASKED QUESTIONS

Q. Why does my water smell and taste like chlorine?

A. Chlorine is regularly injected into the water at the source as a disinfectant that aids in eliminating potentially harmful bacteria present in water. In high demand summer month's chlorine taste may be more noticeable because the water is "fresh" or "newer" and has not had time to dissipate through the system. Chlorine can also gas off in warm/hot water which produces a smell stronger than normal. Some people are more sensitive than others to the taste and smell of chlorine and may become aware of occasional changes. This is normal and safe. Chlorine levels are continually monitored.

Q. Why does my water taste like metal?

A. The source water is ground water, which has a mineral content that might give off a metal taste some are not used too. Sometimes plumbing can cause a metal taste, especially if water has been sitting in pipes for several hours. It's best to flush the lines for of couple minutes if water has sat in pipes for an extending period of time, however, this does not indicate a higher or lower degree of water quality.

Q. Why is there white crust on my shower head?

A. The minerals in water may leave white spots on glasses, coffeepots, shower heads and shower doors. These spots are calcium deposits and are not harmful to health.

Q. Why is there a black ring around my toilet?

A. This black ring some may find after returning home when water has sat in the bowl for extending period of time is mold. Mold will grow in dark, wet, cool places making the toilet bowl a perfect place for that. If this accrues adding bleach to the bowl and letting it sit works best. To avoid this, leave a small amount of bleach in the bowl before leaving for more than a couple days.

Q. What clauses cloudy water?

A. Cloudy or milky water is usually caused by trapped air picked up from an air pocket in the water main or internal plumbing. Sometimes flows or water cascading within the aqueduct can also trap air, similar to a waterfall. If water sits in a glass or pitcher for a few minutes the air will dissipate and become clear.

SAMPLING RESULTS SHOWING TREATMENT OF SURFACE WATER SOURCES	
Treatment Technique (Type of approved filtration technology used)	Pall membrane microfiltration with chlorination.
Turbidity Performance Standards [a] (that must be met through the water treatment process)	Turbidity of the filtered water must: 1 – Be less than or equal to 0.3 NTU in 95% of measurements in a month. 2 – Not exceed 1.0 NTU for more than eight consecutive hours. 3 – Not exceed 1 NTU at any time.
Lowest monthly percentage of samples that met Turbidity Performance Standard No. 1.	100%
Highest single turbidity measurement during the year	0.051
Number of violations of any surface water treatment requirements	0

(a) Turbidity (measured in NTU) is a measurement of the cloudiness of water and is a good indicator of water quality and filtration performance. Turbidity results which meet performance standards are considered to be in compliance with filtration requirements.

Measurements reported here were collected in 2023 (unless otherwise noted). In accordance with federal regulations, data is from the most recent tests. The District is allowed to monitor for certain contaminants less than once per year because concentrations of these contaminants do not change frequently.

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 the water poses a health risk. More information about contaminants and potential health effects can be obtained by calling the USEPA's Safe Drinking Water Hotline (1-800-426-4791).

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. USEPA/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 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.

In order to ensure that tap water is safe to drink, the USEPA and the State Water Resources Control Board (State Board) prescribe regulations that limit the amount of certain contaminants in water provided by public water systems. State Board regulations also establish limits for contaminants in bottled water that provide the same protection for public health.

Contaminants that may be present in source water include:

- *Microbial contaminants,* such as viruses and bacteria, that may come from sewage treatment plants, septic systems, agricultural livestock operations, pets and wildlife.
- *Inorganic contaminants*, such as salts and metals that 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* that 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, that are byproducts of industrial processes and petroleum production, and can also come from gas stations, urban stormwater runoff, agricultural application, and septic systems.
- *Radioactive contaminants* that can be naturally-occurring or be the result of oil and gas production and mining activities.

If present, elevated levels of lead can cause serious health problems, especially for pregnant women and young children. Lead in drinking water is primarily from materials and components associated with service lines and home plumbing. The NCSD is responsible for providing high quality drinking water, but cannot control the variety of materials used in plumbing components. When your water has been sitting for several hours, you can minimize the potential for lead exposure by flushing your tap for 30 seconds to 2 minutes before using water for drinking or cooking. If you are concerned about lead in your water, you may wish to have your water tested. Information on lead in drinking water, testing methods, and steps you can take to minimize exposure is available from the Safe Drinking Water Hotline or at http://www.epa.gov/safewater/lead.

While your drinking water meets the federal and state standard for arsenic, it does contain low levels of arsenic. The arsenic standard balances the current understanding of arsenic's possible health effects against the cost of removing arsenic from drinking water. The U.S. Environmental Protection Agency continues to research the health effects of low levels of arsenic, which is a mineral known to cause cancer in humans at high concentrations and is linked to other health effects such as skin damage and circulatory problems.

Northstar Community Services District
Northstar Water System
Annual Water Quality Report
2023

This state-mandated annual report contains important information about the quality of your drinking water.

Northstar Community Services District
900 Northstar Drive
Truckee, CA 96161

Our Mission Statement: The Northstar Community Services District delivers core public services to enhance the quality of life in the community.

Dear Customer:

The Northstar Community Services District (NCSD) is proud to provide some of the nation's cleanest drinking water. In 2023, as in years past, our water met or exceeded all federal and state standards for drinking water. The State of California mandates that we send this Annual Water Quality Report to you, which includes important information about your drinking water.

The NCSD draws its source water from four locations. Two sources are natural mountain springs located in the mid-mountain region of the Northstar California Resort. The water is collected in the Big Springs collection system and Sawmill Flat Springs collection system and then treated at the District's state-of-the-art Water Treatment Facility prior to being delivered to the customers' tap. The other two sources are wells (TH-1 and TH-2) located in the Martis Valley that were developed in 2013 and 2007, respectively, to help meet future water demands as the community continues to expand.

We are committed to delivering the highest quality drinking water, ensuring that our customers receive clean, safe water from their taps. In 2023, the District delivered roughly 160 million gallons of drinking water through 30 miles of pipeline to over 950 residential and commercial services throughout the Northstar community.

Should you have any questions or would like to obtain additional information, please contact the Northstar Community Services District or go to our website at www.northstarcsd.org

In case of a water or sewer emergency, please call
530-562-0747

Want More Information?

The NCSD Board of Directors meets regularly each month. Please feel free to participate in these meetings. For meeting dates, times and locations please contact our main office at (530) 562-0747. You may also find more information by visiting our website:
www.northstarcsd.org

Este informe contiene información muy importante sobre su agua potable.

Tradúzcalo o habla con alguien que lo en-

DEFINITIONS: Understanding Your Water Quality Report

MCL: Maximum Contaminant Level. The highest level of a contaminant that is allowed in drinking water. Primary MCL's are set as close to the PHG's (or MCLG's) as is economically and technologically feasible. Secondary MCL's are set to protect the odor, taste and appearance of drinking water.
MCLG: Maximum Contaminant Level Goal. The level of a contaminant in drinking water below which there is no known or expected risk to health. Set by the U.S. Environmental Protection Agency.
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 Disinfectant Level Goal. The level of a drinking water disinfectant below which there is no known or expected risk to health. MRDLG's do not reflect the benefits of the use of disinfectants to control microbial contaminants.
AL: Action Level. The concentration of a contaminant, which if exceeded, triggers treatment or other requirements which a water system must follow.
TT: Treatment Technique. A required process intended to reduce the level of a contaminant in drinking water.
Primary Drinking Water Standard. MCL's and MRDL's for contaminants that affect health along with their monitoring and reporting requirements, and water treatment requirements.
PHG: Public Health Goal. The level of a contaminant in drinking water below which there is no known or expected risk to health. PHG's are set by the California Environmental Protection Agency.
AL: Action Level. The concentration of a contaminant, which if exceeded, triggers treatment or other requirements which a water system must follow.
NTU: Nephelometric Turbidity Units. A measure of the clarity of water. Turbidity is monitored because it is a good indicator of water quality. High turbidity can hinder the effectiveness of disinfectants.
pCi/L: picocuries per liter. A measure of radiation.
mg/L: milligrams per liter or parts per million (ppm)
ug/L: micrograms per liter or parts per billion (ppb)
uS/cm: MicroSiemens per centimeter
ND: ND or Non-Detected: An analysis result below detectable levels.
NA: Non-Applicable

NCSD WATER QUALITY TEST RESULTS THROUGH DECEMBER 31, 2023

SAMPLING RESULTS FOR COLIFORM BACTERIA

Microbiological Contaminant	Number of detections	Number of months in violation	MCL	MCLG	Typical Source of Bacteria
Total Coliform Bacteria	(In a mo.) 0	0	More than 1 sample in a month with a detection	0	Naturally present in the environment
Fecal Coliform or *E. coli*	(In the year) 0	0	A routine sample and a repeat sample detect total coliform and either sample also detects fecal coliform or *E. coli*	0	Human and animal fecal waste

SAMPLING RESULTS FOR LEAD AND COPPER

Constituent	Units	Sample Source	Year	Level Detected	AL	PHG	Typical Source of Contaminant
Lead	ug/L	Distribution	2021	4.40	15	0.2	Internal corrosion of household plumbing
Copper	mg/L	Distribution	2021	0.238	1.3	0.3	Internal corrosion of household plumbing

SAMPLING RESULTS FOR UNREGULATED SUBSTANCES

Constituent	Units	Sample Source	Year	Level Detected	MCL	PHG	Typical Source of Contaminant
Sodium	mg/L	Big Springs TH1 / TH2	2017 2018 / 2017	3.8 22 / 14	none	none	Runoff / leaching from natural deposits
Hardness	mg/L	Big Springs TH1 / TH2	2017 2018 / 2017	57 59 / 93	none	none	Runoff / leaching from natural deposits

DETECTION OF CONTAMINANTS WITH A PRIMARY DRINKING WATER STANDARD

Constituent	Units	Sample Source	Year	Level Detected	MCL	PHG	Typical Source of Contaminant
Arsenic	ug/L	Big Springs TH1 / TH2	2017 2023 / 2023	ND 5.3 / 2.2	10	0	Erosion of natural deposits
Gross Alpha	pCi/L	Big Springs TH1 / TH2	2023 N/A / 2023	0.047 N/A / 1.53	15	0	Erosion of natural deposits
Radium 228	pCi/L	Big Springs TH1 / TH2	2017 N/A / 2023	0.099 N/A / 0.34	5	0	Erosion of natural deposits

DETECTION OF CONTAMINANTS WITH A SECONDARY DRINKING WATER STANDARD

Constituent	Units	Sample Source	Year	Level Detected	MCL	PHG	Typical Source of Contaminant
Chloride	mg/L	Big Springs TH1 / TH2	2017 2018 / 2017	0.7 8.2 / 4.0	500	none	Runoff / leaching from natural deposits
Specific Conductance	μS/cm	Big Springs TH1 / TH2	2017 2018 / 2017	134 259 / 266	1600	none	Substances that form ions when in water
Sulfate	mg/L	Big Springs TH1 / TH2	2017 2018 / 2017	0.4 11 / 17.2	500	none	Runoff / leaching from natural deposits
Total Dissolved Solids	mg/L	Big Springs TH1 / TH2	2017 2018 / 2017	91 180 / 197	1000	none	Runoff / leaching from natural deposits

DISINFECTANTS & DISINFECTION BYPRODUCTS IN THE DISTRIBUTION SYSTEM

Constituent	Units	Sample Source	Year	Level Detected	MRDL (MCL)	MRDLG (MCLG)	Typical Source of Contaminant
Chlorine	mg/L	Distribution	2023	0.43-0.73	4.0	4	Water additive used to control microbes
Trihalomethanes	ug/L	Distribution	2023	ND-2.8	(80)	(N/A)	Byproduct of drinking water disinfection
Haloacetic Acids	ug/L	Distribution	2023	ND-2.7	(60)	(N/A)	Byproduct of drinking water disinfection

Appendix E – DRI Technical Note

Technical Note

To: Tony Firenzi, Placer County Water Agency; Tina Bauer, Brown and Caldwell

From: Seshadri Rajagopal, Donald M. Reeves, Justin Huntington, Greg Pohll (Desert Research Institute)

Date: September 10, 2012

Re: Estimates of Ground Water Recharge in the Martis Valley Ground Water Basin

Purpose and Scope

This technical note provides spatially-distributed estimates of annual ground water recharge in the Martis Valley Ground Water Basin using a physically-based hydrologic model: Precipitation Runoff Modeling System (PRMS). PRMS simulates land surface hydrologic processes of evapotranspiration, runoff, infiltration, and interflow by balancing energy and mass budgets of the plant canopy, snowpack, and soil zone on the basis of distributed climate information (Leavesley et al., 1983), and has been used in several other basins to estimate ground water recharge (e.g., Lichty and McKinley, 1995; Vaccaro and Olsen, 2007; Cherkauer and Ansari, 2005; Cherkauer, 2004). Recharge in the current study is defined as the infiltration of water to the subsurface beyond the root zone (where present) or the soil zone, in case of bare soil absent of vegetation (Figure 1). Thus, the recharge estimates contained within this report represent total annual recharge within the delineated Martis Valley Ground Water Basin. The Martis Valley Ground Water Basin was first delineated by Hydro-Search, Inc. and was later adopted by the California DWR as the official ground water basin. In this report we refer to this region as the HSI ground water basin or Martis Valley Ground Water Basin (Figure 2). Total recharge consists of both recharge to the deep ground water system and shallow recharge that ultimately discharges into streams. The technical note describes the use of climate data in PRMS, the PRMS method used to compute recharge, and recharge estimates. Recharge estimates from previous studies and an additional method are provided to place the PRMS computed results in the context of other estimates.

Previous Estimates of Recharge for Martis Valley

Past studies primarily relied on empirical and water balance methods to estimate recharge within the Martis Valley Ground Water Basin (Figure 2). One of the earliest recharge studies was conducted by Hydro-Search, Inc. (1974) which was subsequently updated in 1980 and 1995. Hydro-Search Inc. (HSI) utilized a water balance method to estimate ground water recharge to the Martis Valley Ground Water Basin of approximately 18,000 ac-ft/yr. In 2001 Nimbus Engineers used a water balance approach to compute a recharge value of 24,700 ac-ft/yr to the ground water basin. Kennedy/Jenks Consultants in 2001 published a report titled "Independent Appraisal of Martis Valley Ground Water Availability, Nevada and Placer Counties, California" where they concluded that the earlier studies by Hydro-Search, Inc (1974 and updates) and Nimbus Engineers (2001) were conservative, as the total amount of ground water discharge to streams was considered under predicted; however, updated recharge estimates were not provided in this report. Interflow Hydrology, Inc. and Cordilleran Hydrology, Inc. prepared a 2003 report indicating that ground water discharge to tributary Truckee River streams in the Martis Valley Ground Water Basin is 34,560 ac-ft/yr, of which approximately 24,240 ac-ft/yr is contributed by high altitude areas of the basin (e.g., in the vicinity of Northstar) and the remaining 10,320 ac-ft/yr occurs in lower elevation areas. In summary, previous recharge estimates based on water balance approaches range from 18,000 to 34,560 ac-ft/yr.

Description of PRMS Recharge Method

The PRMS model (Leavesley et al., 1983) is driven by daily values of precipitation and maximum and minimum air temperature, and simulates snow accumulation, ablation, canopy interception, evapotranspiration, surface runoff, infiltration, water storage in the soil zone and deep percolation through the bottom of the root or soil zone – PRMS recharge is defined as the model computed excess water leaving the root or soil zone after abstractions for surface runoff and evapotranspiration are accounted for (Figure 1). The system is modeled in its natural transient state from 1981 to 2011. Reservoir operations, irrigation within the basin, septic drainfields, and diversion of effluent to the Truckee Tahoe Sanitation Agency and subsequent release of treated effluent to the Truckee River are not explicitly simulated in the model. However, the Martis Valley PRMS model utilizes naturalized flows that remove the effects of reservoir operations during model calibration.

The current PRMS model developed for Martis Valley encompasses the entire Martis Valley hydrologic basin (Figure 2), and is subdivided into 14 watersheds for model calibration to internal stream gauges. Computation of recharge for the Martis Valley Ground Water Basin requires aggregation of the PRMS results for all cells within the delineated ground water basin (Figure 3). The model domain was discretized into square grid cells of 300 m resolution; each of these cells represents a hydrologic response unit (HRU). The model is parameterized from the National Elevation Dataset (NED), STATSGO soils database, and USGS land use land cover (LULC) dataset. The depth of the root or soil zone is determined by the LULC of the HRU. Five categories of LULC are used to assign these depths viz. bare soils, grasses, shrubs, trees, and water. For the category water, recharge is assumed zero.

Daily weather data from the Truckee #2 SNOTEL site is used to drive the PRMS model. This station is used to develop monthly ratios based on PRISM maps to distribute precipitation over the entire basin. To account for days when temperature inversions within the valley occur, an additional weather station, Mt. Rose SNOTEL, is implemented.

PRMS Recharge Estimates

The estimated mean annual ground water recharge for the Martis Valley Ground Water Basin computed from PRMS is presented in Figure 4. PRMS simulated recharge varies from year to year based on annual cycles of precipitation (Figure 5). The annual average recharge estimate from the PRMS model is 32,745 ac-ft, which is slightly lower than the Interflow Hydrology 2003 estimate of 34,560 ac-ft.

We also applied a modified Maxey-Eakin (1949) method to estimate recharge which relates mean annual precipitation to recharge using recharge coefficients applied to precipitation amounts (Figure 3) (Epstein et al., 2010). Epstein et al., 2010 computed revised Maxey-Eakin coefficients that are based on the PRISM precipitation distribution (Daly et al., 1994), which was used in this study. As shown in Figure 3, the modified Maxey-Eakin estimate of 35,168 ac-ft/yr is very close to the Interflow Hydrology estimate. Figure 6 shows the ratio of recharge computed by the PRMS model to annual precipitation. This ratio, which we term as 'recharge efficiency', can be used to describe the fraction (or percentage) of precipitation that is converted to recharge. Computed recharge efficiencies for the Martis Valley ground water basin varies annually within a range of 18-26%.

Discussion of Recharge Estimates

PRMS computed recharge presented in Figures 4, 6 and 8 show that recharge to the Martis Valley Ground Water Basin varies both spatially and temporally. The spatial variability in recharge is primarily driven by precipitation trends (Figures 7 and 8). This is clearly observed in Figure 7 where the higher elevation areas, in general, receive greater amounts of precipitation than the rest of the basin. Note that the PRMS recharge shown in Figure 8 represents infiltrated water given the processes presented in Figure 1. The PRMS model neglects the influence of low permeable bedrock areas on the potential reduced rate of infiltration of precipitation. For example, the highest infiltration rates correspond to areas with the most precipitation. In reality, the highest elevation areas within the basin that receive the greatest amount of precipitation are located in the low-permeability mountain block. The low-permeability of the mountain block restricts the amount of infiltrating water, and forces water to redistribute as run-off and infiltrate downslope near the 'bench' areas of the slope with deposits of higher permeability alluvium. This redistribution has been simulated in integrated models (e.g., Huntington et al. 2012, in press) and inferred from ground water isotopes (Singleton et al., 2010). Thus, the spatial distribution of recharge, as shown in Figure 8, will change once the PRMS modeled recharge is combined with MODFLOW. This spatial redistribution will primarily change the pattern of recharge in the mountain block watersheds with only minimal changes to the lower elevation areas, and minimal changes in the total volume of recharge.

Previous recharge estimates by Interflow Hydrology (34,560 ac-ft/yr), the Maxey-Eakin method (35,168 ac-ft/yr), and mean annual PRMS (32,745 ac-ft/yr) estimates are very similar and in agreement. Only the PRMS estimates provide insight as to annual variability in recharge with a range between 12,143 and 56,792 ac-ft/yr (Figure 4). These fluctuations in annual ground water recharge estimates are natural and primarily based on fluctuations in annual precipitation (Figure 5). Perhaps most importantly are the water years when the amount of recharge is lower than the mean (~33,000 ac-ft). As shown in Figure 4, this variability can be significant with 'wet' and 'dry' year-end members. Pumpage during dry years may deplete the ground water basin as water is extracted from storage, whereas wet years increase the storage of water in the basin. If the number of wet and dry years and the amount of recharge oscillates evenly, then the mean recharge estimates from Interflow, modified Maxey-Eakin and PRMS methods are suitable for mean annual water budget analysis. However, future changes in temperature and/or precipitation (both timing and annual quantity) can disrupt the balance between pumping and basin storage.

The PRMS computed recharge consists of the sum of shallow infiltrated water that discharges into the Truckee River and its tributaries as well as deep percolation of ground water to deeper aquifers with water supply wells. Perennial basin yield, defined by the State of Nevada as the maximum amount of groundwater that can be salvaged each year over the long term without depleting the ground water reservoir, is not an appropriate metric to determine sustainable basin pumpage as values of perennial yield for a basin are usually limited to the maximum amount of natural discharge. Natural discharge from Martis Valley Basin consists of groundwater evapotranspiration, groundwater discharge to the Truckee River, along with a small quantity of groundwater outflow. As an alternative, we suggest that an analysis that utilizes the Martis Valley ground water model to define the 'capturable' amount of streamflow by pumping within the basin (e.g., Leake and Haney, 2010) would better quantify the relationship between sustainable pumpage and natural discharge.

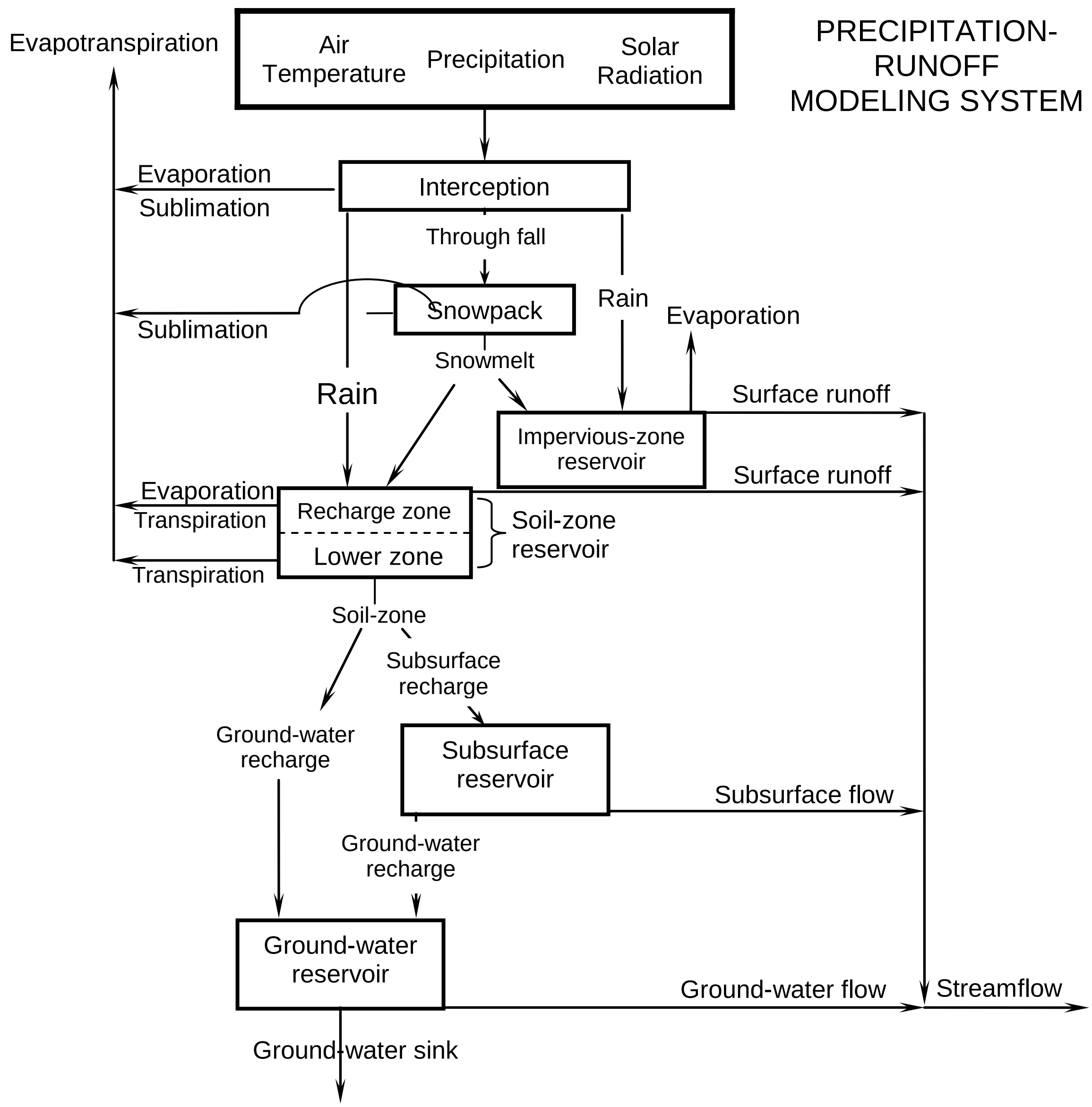

Figure 1. PRMS conceptual model schematic highlighting all simulated hydrologic processes and how ground water recharge is computed in the model (based on Leavesley et al., 1983).

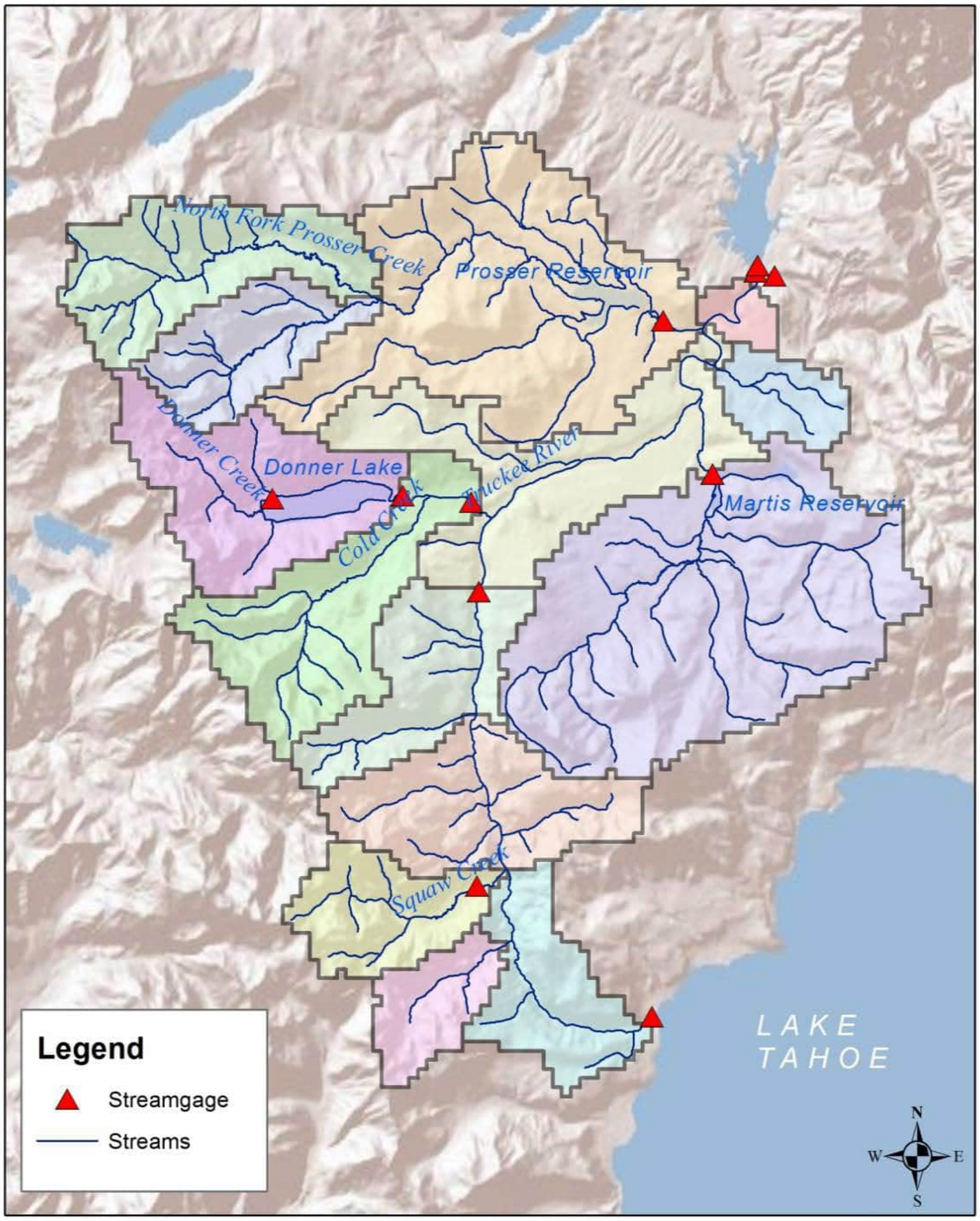

Figure 2. PRMS model domain with 14 sub-watersheds denoted by color. Stream gauges used in the PRMS calibration are denoted by triangles.

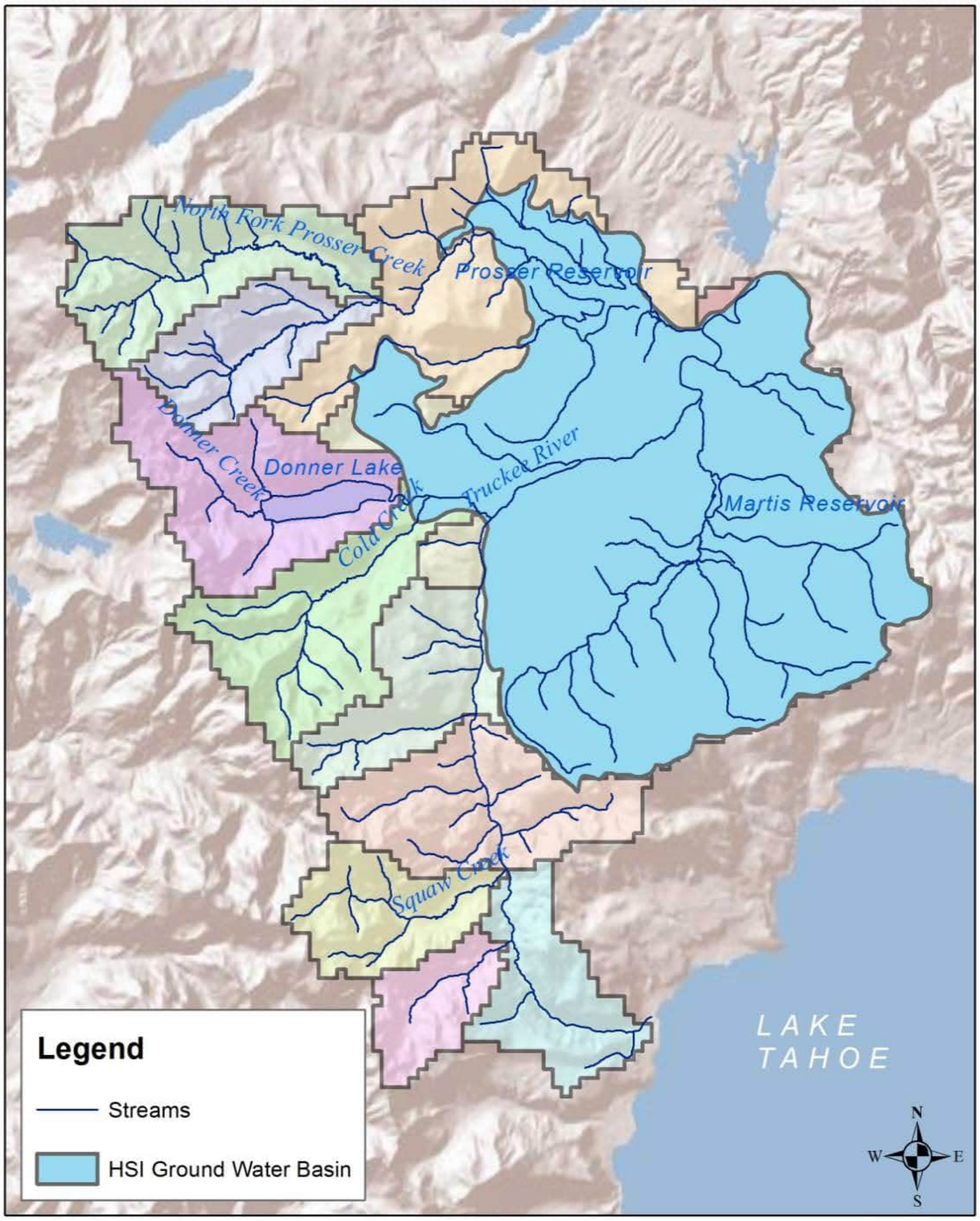

Figure 3. PRMS model domain with a portion of the sub-watersheds combined to adhere to the delineated Martis Valley Ground Water Basin inset (blue). All recharge estimates in this study are computed over the blue area. The Martis Valley Ground Water Basin area was delineated by Hydro Search Inc. (HSI).

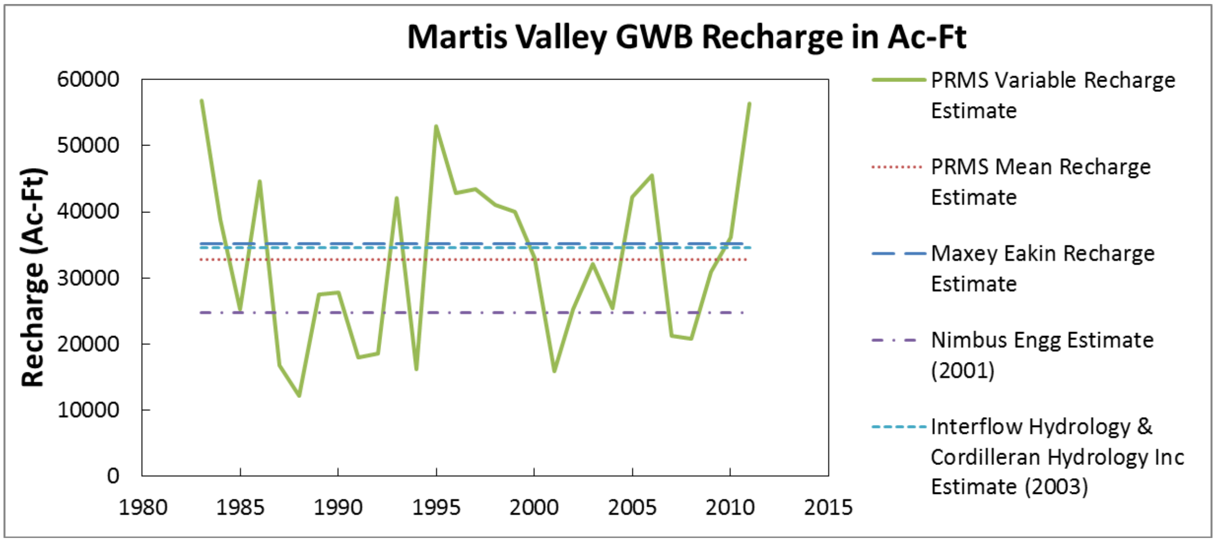

Figure 4. Annual recharge volumes computed by PRMS with comparison to recharge estimates from other methods and past studies.

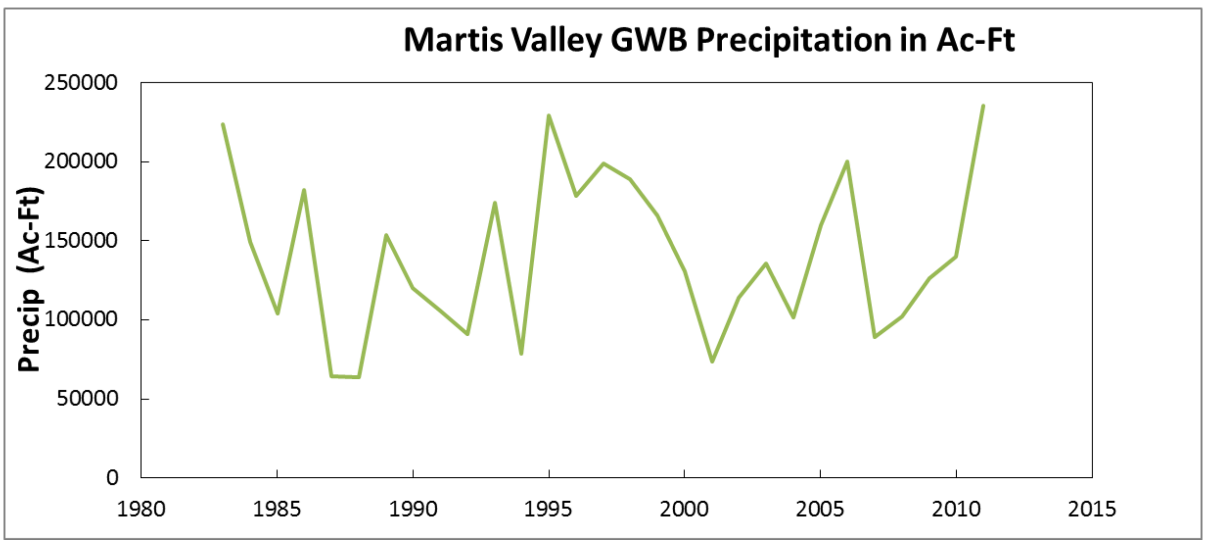

Figure 5. Annual precipitation volume over the Martis Valley Ground Water Basin

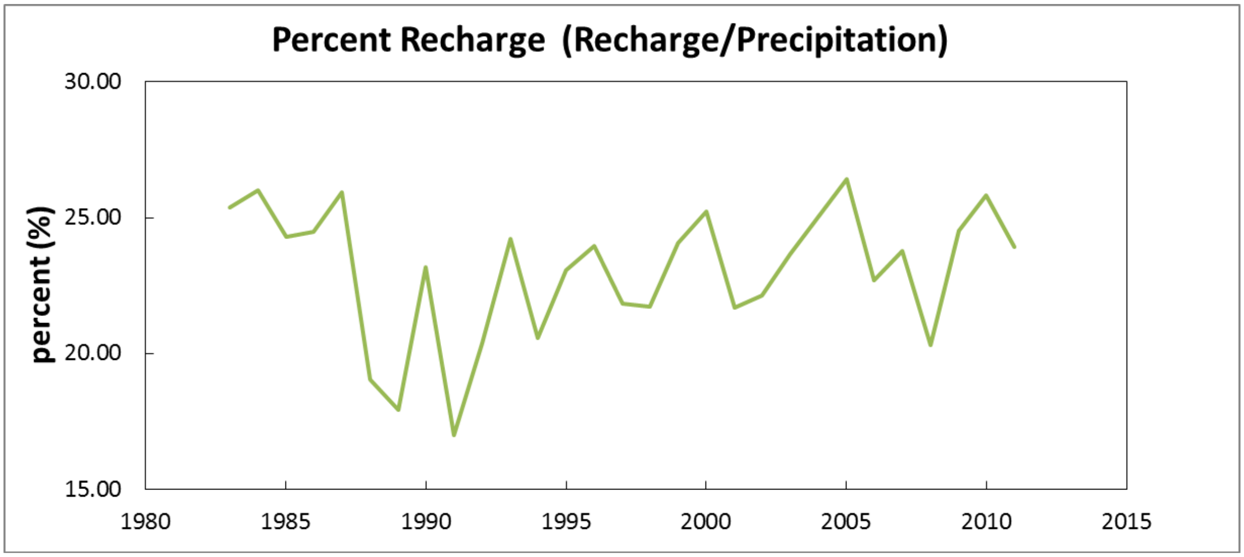

Figure 6. Value of recharge efficiency computed as the ratio of annual recharge to annual precipitation. The mean recharge efficiency value is 23%.

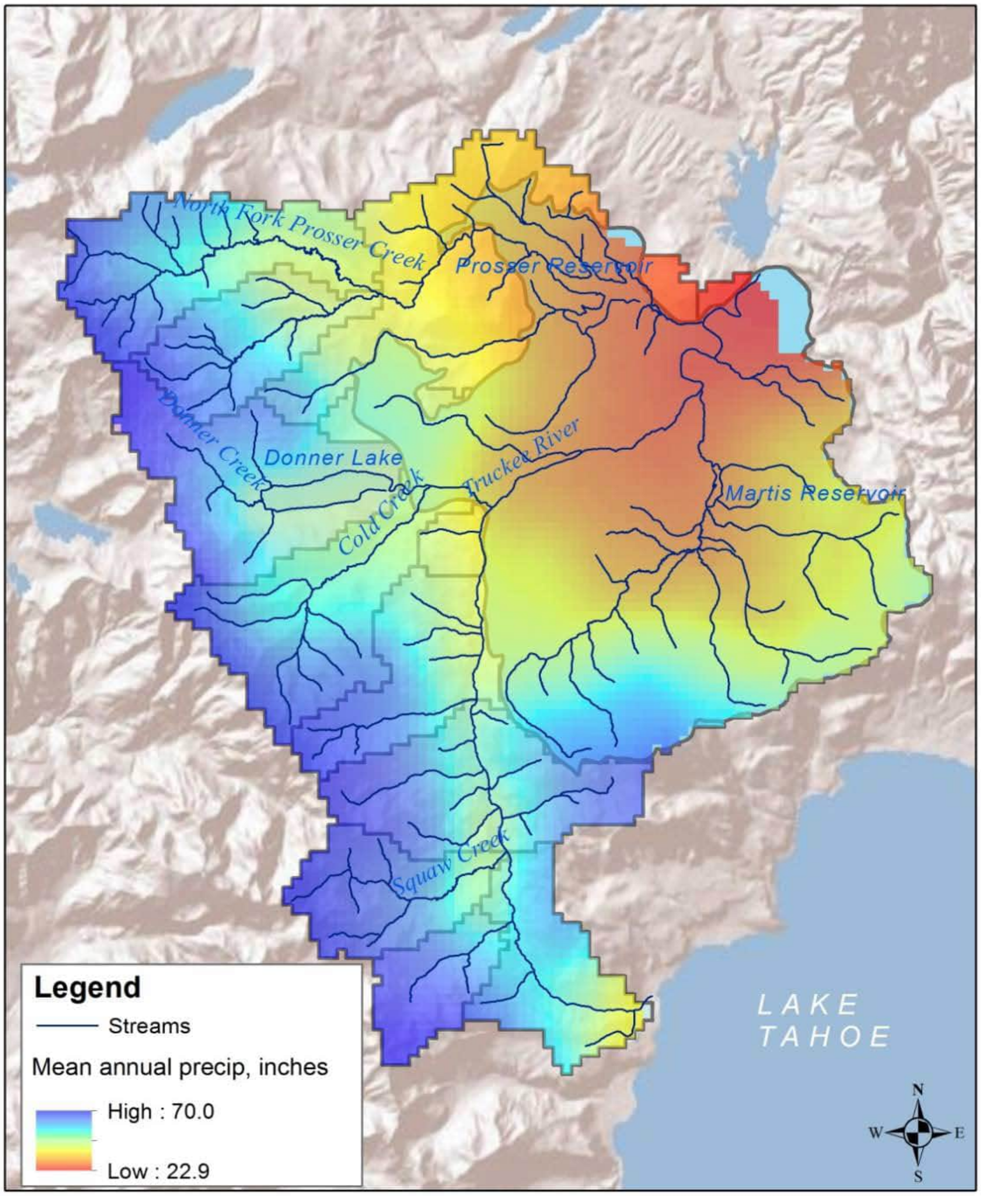

Figure 7. Mean annual precipitation (inches) in the Martis Valley PRMS model domain from PRISM (Daly et al., 1994).

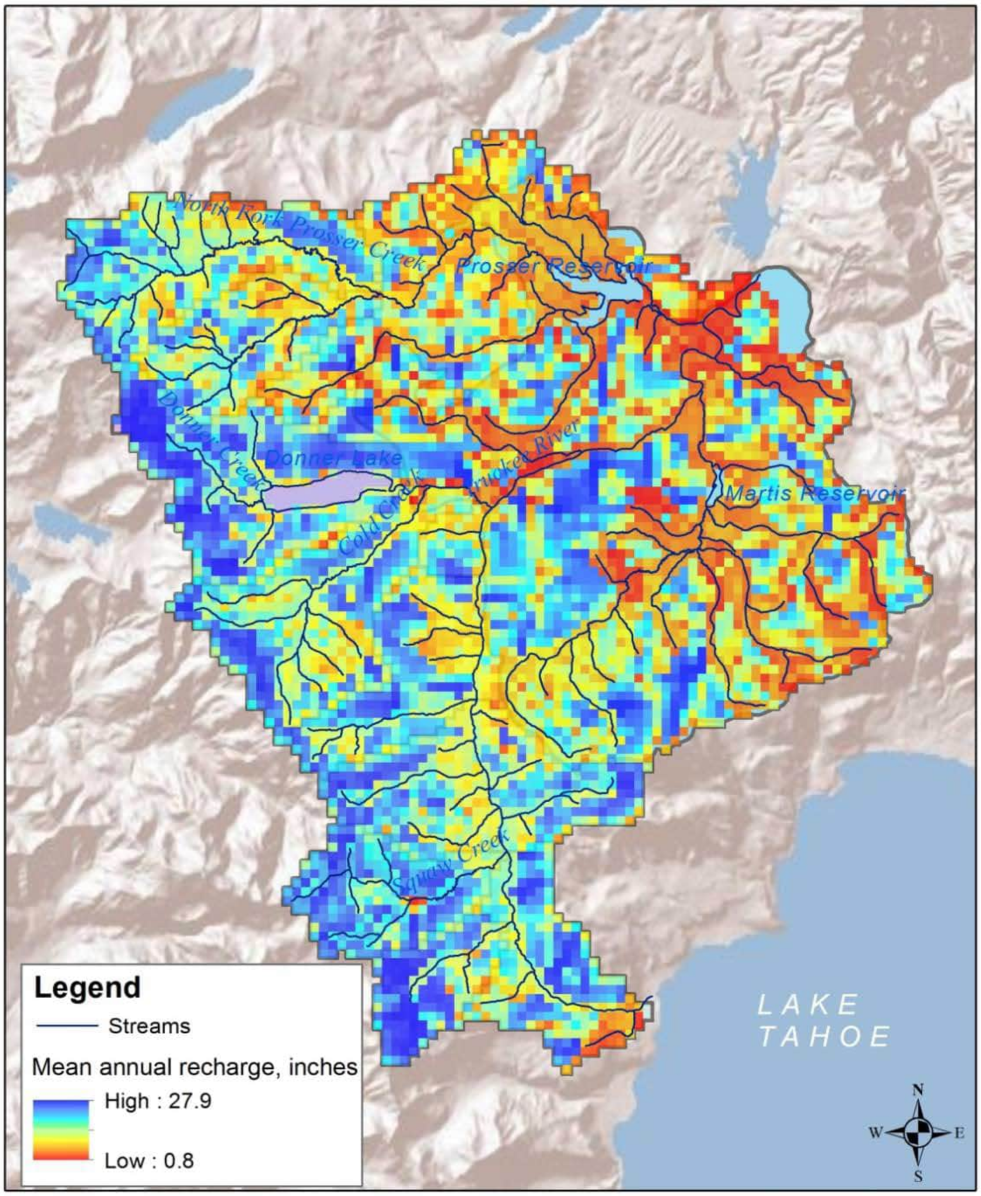

Figure 8. Mean annual recharge (inches) in the Martis Valley PRMS model domain. Note that the greatest quantities of recharge occurs in the high elevation areas which receive more precipitation (Figure 7).

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APPENDIX D

ORDINANCE 2021-01 FINDING THE NECESSITY FOR AND ADOPTING A WATER SHORTAGE CONTINGENCY PLAN

TRUCKEE DONNER
Public Utility District

Ordinance No. 2021 - 01

FINDING THE NECESSITY FOR AND ADOPTING A WATER SHORTAGE CONTINGENCY PLAN

WHEREAS, California Water Code Sections 375 et. seq. permit public entities which supply water at retail to adopt and enforce a water conservation program to reduce the quantity of water used by the people therein for the purpose of conserving the water supplies of such public entity;

WHEREAS, California Water Code Section 10632 requires an urban water supplier to describe the actions to be undertaken in the event of a water supply shortage;

WHEREAS, the Board of Directors of Directors of the Truckee Donner Public Utility District has determined that it is necessary to establish a Water Shortage Contingency Plan in the event of any future water supply shortage or drought emergency;

WHEREAS, the Board of Directors finds and determines that a water shortage could exist in the event of major failure of one or more components of the water system or drought;

WHEREAS, the Board of Directors also finds and determines that the water sources available be put to maximum beneficial use to the extent to which they are capable, and that the waste or unreasonable use, or unreasonable method of use, of water be prevented and that the conservation of such water be encouraged with a view to the maximum reasonable and beneficial use thereof in the interest of the people of the District and for the public welfare.

NOW THEREFORE BE IT ENACTED by the Board of Directors of the Truckee Donner Public Utility District as follows:

1. The General Manager is hereby authorized and directed to implement the provisions of this ordinance. Additionally, the General Manager is hereby charged with interpretation, regulation and enforcement of the provisions of this ordinance, and authorized to make exceptions to prevent undue hardship or unreasonable restrictions, provided that water shall not be wasted or used unreasonably and the purpose of this ordinance can be accomplished.

2. To the extent that any of the existing and prior ordinances of the District applicable to its water system are inconsistent herewith, all such prior water ordinances shall be deemed revoked upon this ordinance becoming effective to the extent that they are inconsistent.

3. The provisions of this ordinance shall apply to all water served to persons, customers, and property by the District. The District shall declare which portions of the service area are subject to a water supply emergency and the requirements of this ordinance.

4. The provisions of this ordinance are not applicable to the uses of water which are necessary to protect public health and safety or for essential governmental services, such as police, fire and other similar emergency services.

5. No person shall knowingly use water or permit the use of water supplied by the District for commercial, industrial, agricultural, governmental, or any other purpose in a manner contrary to any provision of this ordinance, in an amount in excess of the amounts authorized by this ordinance or during any period of time other than the periods of time specified in this ordinance. At no time shall water be wasted or used unreasonably.

6. During the first quarter of each calendar year, the Water Department Shall conduct an annual assessment of water supply and demand as required by the California Water Code. The assessment shall follow the procedure outlined in the District's ***Water Shortage Contingency Plan***.

7. **WATER SUPPLY SHORTAGE LEVELS**
   The following water supply shortage levels shall take effect upon declaration as herein provided:

   (a) Level 1 – Targeted 10% Reduction in Water Usage - Voluntary Compliance: Level 1 applies during periods that the District determines that water usage should be reduced approximately 10% in order to meet all of the water demands of its customers. Specific mandated restrictions in water use for Level 1 are as follows:

      1. Irrigation with potable water of ornamental landscapes and turf shall be limited to every other day.

      2. The application of potable water to driveways and sidewalks shall be prohibited unless for driveway sealing or construction.

      3. The use of a hose that dispenses potable water to wash a motor vehicle, except where the hose is fitted with a shut-off nozzle, shall be prohibited

   (b) Level 2 – Targeted 20% Reduction in Water Usage - Mandatory Compliance: Level 2 applies during periods that the District determines that water usage should be reduced approximately 20% in order to meet all of the water demands of its customers. Specific mandated restrictions in water use for Level 2 are as follows:

      1. Irrigation with potable water of ornamental landscapes and turf shall be limited to every other day.

      2. The application of potable water to driveways and sidewalks shall be prohibited unless for driveway sealing or construction.

      3. The use of a hose that dispenses potable water to wash a motor vehicle, except where the hose is fitted with a shut-off nozzle, shall be prohibited.

      4. Customers may be subject to penalties for failure to comply with this requirement.

   (c) Level 3 – Targeted 30% Reduction in Water Usage - Mandatory Compliance: Level 3 applies during periods that the District determines that water usage should be reduced approximately 30% in order to meet all of the water demands of its customers. Specific mandated restrictions in water use for Level 3 are as follows:

      1. Irrigation of ornamental landscapes and turf shall be limited to three days per week.

      2. The application of potable water to driveways and sidewalks shall be prohibited.

      3. The use of a hose that dispenses potable water to wash a motor vehicle, except where the hose is fitted with a shut-off nozzle, shall be prohibited.

      4. The District may install flow restricting devices on a customer's service.

5. Customers may be subject to penalties for failure to comply with this requirement.

(d) Level 4 – Targeted 40% Reduction in Water Usage - Mandatory Compliance: Level 4 applies during periods that the District determines that water usage should be reduced approximately 40% in order to meet all of the water demands of its customers. Specific mandated restrictions in water use for Level 4 are as follows:

1. Irrigation of ornamental landscapes and turf shall be limited to two days per week.

2. The application of potable water to driveways and sidewalks shall be prohibited.

3. The use of potable water to wash a motor vehicle, except where the hose is fitted with a shut-off nozzle, shall be prohibited.

4. Any customer leak in plumbing and / or irrigation systems shall be repaired when found, but in any case within ten days of notice by the District to repair. The District may perform the repair or hire a contractor to perform the repair, and then invoice the customer for those costs.

5. The District may install flow restricting devices on a customer's service.

6. Customers may be subject to penalties for failure to comply with this requirement.

(e) Level 5 – Targeted 50% Reduction in Water Usage - Mandatory Compliance: Level 5 applies during periods that the District determines that water usage should be reduced approximately 50% in order to meet all of the water demands of its customers. Specific additional mandated restrictions in water use for Level 5 are as follows:

1. All outdoor water uses are prohibited in the area affected by the water conservation requirement. The District may discontinue service to irrigation services.

2. Any customer leak in plumbing system shall be repaired when found, but in any case within ten days of notice by the District to repair. The District may perform the repair or hire a contractor to perform the repair, and then invoice the customer for those costs.

3. The District may install flow restricting devices on a customer's service.

4. The District may implement mandatory water rationing through the use of rolling outages.

5. Customers may be subject to penalties for failure to comply with this requirement.

(f) Level 6 – Targeted Greater Than 50% Reduction in Water Usage - Mandatory Compliance: Level 6 applies during periods that the District determines that water usage should be reduced approximately 50% in order to meet all of the water demands of its customers. Specific additional mandated restrictions in water use for Level 6 are as follows:

1. All outdoor water uses are prohibited in the area affected by the water conservation requirement. The District may discontinue service to irrigation services.

2. Any customer leak in plumbing system shall be repaired when found, but in any case within ten days of notice by the District to repair. The District may perform the repair or hire a contractor to perform the repair, and then invoice the customer for those costs.

3. The District may install flow restricting devices on a customer's service.

4. The District may implement mandatory water rationing through the use of rolling outages.

5. Customers may be subject to penalties for failure to comply with this requirement.

8. **IMPLEMENTATION OF WATER SHORTAGE LEVELS**
The District shall monitor the projected supply and demand for water by its customers on a daily basis. In the event of an emergency, the General Manager shall determine the extent of water conservation required through the implementation and/or termination of particular water shortage levels in order for the District to prudently plan for and supply water to its customers. Thereafter, the General Manager may order that the appropriate level of water conservation be implemented or terminated in accordance with the applicable provision of this ordinance. Water system customers shall be notified of water conservation stages in accordance with the communication protocols outlined in the District's ***Water Shortage Contingency Plan***.

The designated water shortage level shall become effective immediately upon announcement. The declaration of any water shortage shall be reported to the Board of Directors as soon as practicable and convene a special meeting as soon as possible. The Board of Directors shall thereupon declare a water shortage emergency, if necessary.

9. **VIOLATIONS**
In order to protect the health, safety and welfare of the community, the District shall serve any customer found to be violating any provision of this ordinance with written notice, in accordance with Section 12, stating the nature of the violation and providing a reasonable time limit for the satisfactory correction. If a violation is not corrected within the time limit prescribed, the General Manager may exercise his authority to disconnect the water service from the District's system based upon the severity of the violation. Disconnection and reconnection fees shall be assessed per the District's fee schedule.

10. **REQUESTS FOR EXEMPTION OR DEVIATION**
All requests for exemption or deviation from these standards shall be submitted, in writing, by the customer to the General Manager. The customer must obtain written permission and not assume that permission will be forthcoming for exemptions or deviations. The General Manager may temporarily or permanently exempt customers from the provisions of this Ordinance, or impose reasonable conditions in lieu of compliance, if the General Manager finds that any of the following conditions exist:

10.1 Serious Economic Hardship
The requirements would cause an unnecessary and undue economic hardship upon the customer, threatening the customer's primary source of income as an individual or a business.

10.2 Adverse Impact on Health and Safety
Strict compliance would create an emergency condition, as determined by the General Manager, adversely affecting the health, protection or safety of the customer or the public.

11. **APPEALS**
Any person who is dissatisfied with any determination made under this ordinance may at any time within 30 days after such determination make an appeal. The first appeal will be made to the General Manager in writing. Should the applicant be dissatisfied with the decision of the General Manager, a subsequent appeal may be made to the Board of Directors of Directors within 30 days of the General Manager's decision.

11.1 Appeal to General Manager
Any person who is dissatisfied with any determination made under this ordinance may at any time within 30 days after such determination, appeal to the General Manager by giving written notice to the General Manager. The appeal shall set forth the events and circumstances leading to the appeal, the nature of the ruling or interpretation from which relief is sought, the nature of the impact of the ruling on the appellant's property or business, together with any other reasons for the appeal.

The General Manager shall investigate the matter appealed and shall make a written decision, which shall be mailed to the appellant within 30 days of receipt of the appeal. If the dispute involves an amount of charges, the appellant shall pay the amount disputed in full when the charges are due. Any charge paid under protest will be refunded to the appellant should the General Manager determine that the charges were wrongfully made.

11.2 Appeal to Board of Directors of Directors

Any person who is dissatisfied with any determination made by the General Manager may at any time within 30 days after such determination, appeal to the Board of Directors of Directors by giving written notice to the General Manager and to the Clerk of the Board of Directors of Directors. The appeal shall set forth the events and circumstances leading to the appeal, the nature of the ruling or interpretation from which relief is sought, the nature of the impact of the ruling on the appellant's property or business, together with any other reasons for the appeal.

The General Manager shall transmit to the Board of Directors of Directors a report upon the matter appealed. The Board of Directors of Directors may request that the appeal be agendized and consider all testimony and make a decision, which shall be mailed to the appellant within 30 days of the date of the Board of Directors action. The Board of Directors of Directors may, at any time, upon its own motion, revise any determination made by the General Manager.

If the dispute involves an amount of charges, the appellant shall pay the amount disputed in full when the charges are due. Any charge paid under protest will be refunded to the appellant should the Board of Directors of Directors determine that the charges were wrongfully made.

12. NOTICE OF VIOLATION

If any person fails or refuses to comply with the provisions of this ordinance, the General Manager or the manager's designee shall provide the person with a written notice of the violation and an opportunity to correct the non-compliance. The written notice will:

(a) Be posted or presented at the site of the noncompliance

(b) Be mailed to the customer

(c) State the time, date and place of the violation

(d) Provide a general description of the violation

(e) State the means to correct the violation

(f) State a date by which correction is required

(g) State the possible consequences of failing to correct the violation

If the violation is not corrected to the District's satisfaction within the time frame specified, the District may restrict the water service to the property or disconnect the service. In addition to correcting the violation, the customer may be billed administrative fees on their account.

12.1 PROCEDURES

12.1.1 First Violation

Following adoption of this ordinance, first violations will result in a friendly reminder in the form of a notice posted on or near the front door, personal contact with the customer, a phone call and/or a letter advising the customer of the violation, in accordance with Section 12 a through g.

12.1.2 Second Violation

For a second violation within one calendar year, the customer will be notified in writing in accordance with Section 12 a through g. If the correction is not made within thirty (30) days of the

District's notice to the customer, the customer may be assessed a penalty of $100. The penalty shall be added to the customer's water service charges at the property where the violation occurred.

12.1.3 Third Violation
For a third violation within one calendar year, the customer will be notified in writing in accordance with Section 12 a through g. The customer may be assessed a penalty of $200. The penalty shall be added to the customer's water service charges at the property where the violation occurred. If not corrected within ten days of written notice, a flow-restricting device may be installed on the customer's service connection, and the costs associated with the installation and removal will be billed on the customer's monthly water billing.

12.1.4 Fourth Violation
For the fourth and subsequent violations within one calendar year, the customer will be notified in writing in accordance with Section 12 a through g and the customer may be assessed a penalty of $500. The penalty shall be added to the customer's water service charges at the property where the violation occurred. In addition, a flow-restricting device may be installed on the customer's service connection, and the costs associated with the installation and removal will be billed to the customer.

If not corrected within ten days of written notice, the District may discontinue the customer's water service at the property where the violation occurred in accordance with District procedures. Reconnection shall only be permitted when there is reasonable protection against future violations, as determined by the General Manager.

12.2 ENFORCEMENT COSTS
The District may correct any violation of this ordinance and bill the customer for costs and expenses in enforcing the provisions of this ordinance, including staff time for investigation and monitoring for compliance, if the customer refuses to comply. Charges shall be added to the customer's bill for the property where the enforcement costs were incurred. The District may also take such action as may be allowed by statute.

12.3 TERMINATION OF SERVICE
Failure to correct the violation may result in termination of water service to the parcel on which the violation occurred.

13. SEVERABILITY
If any section, paragraph, sentence, clause or phrase of this ordinance or any part thereof is for any reason held to be invalid, such decision shall not affect the validity of the remaining portions of this ordinance or any part thereof. The Board of Directors hereby declares that it would have passed each section, paragraph, sentence, clause or phrase thereof, irrespective of the fact that any one or more sections, paragraphs, sentences, clauses or phrases be declared invalid.

PASSED AND ADOPTED by the Board of Directors of Directors at a meeting duly called and held within the District on the second day of June 2021 by the following roll call vote:

AYES:	Directors: Aguera, Bender, Harris, Vice President Laliotis, and President Finn.
NOES:	None.
ABSTAIN:	None.
ABSENT:	None.

TRUCKEE DONNER PUBLIC UTILITY DISTRICT

DocuSigned by:

By President Finn

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Christa Finn, President of the Board

ATTEST:

DocuSigned by:

Shanna Kuhlemier

1B96FB6A12C4487...

Shanna D. Kuhlemier, CMC, District Clerk

WATER SHORTAGE CONTINGENCY PLAN

Adopted June 2, 2021

Board of Directors
Joseph Aguera
Jeff Bender
Christa Finn
Kim Harris
Tony Laliotis

Prepared by:
Neil Kaufman
Water System Engineer

EXECUTIVE SUMMARY

The mission statement of the Truckee Donner Public Utility District (District) is:

> "The Mission of Truckee Donner Public Utility District is to provide reliable, high quality water and electrical power services while meeting customer demand, and to manage District resources in a safe, open, responsible, environmentally sound manner at the lowest practical cost."

As such, this Water Shortage Contingency Plan (WSCP) has been prepared to further the intent of providing a reliable, high quality water supply and to comply with the requirements the California Water Code. The WSCP consists of twelve sections:

1) Water Supply Reliability Analysis
2) Annual Water Supply and Demand Assessment Procedures
3) Six Standard Water Shortage Stages
4) Shortage Response Actions
5) Communication Protocols
6) Compliance and Enforcement
7) Legal Authorities
8) Financial Consequences of WSCP
9) Monitoring and Reporting
10) WSCP Refinement Procedures
11) Special Water Feature Distinction
12) Plan Adoption, Submittal, and Availability

The WSCP is a stand-alone document created separately from the District's Urban Water Management Plan (UWMP). The WSCP can be amended, as needed, without amending the UWMP.

SECTION 1 - WATER SUPPLY RELIABILITY ANALYSIS

The District obtains its all of its water supply through the pumping of groundwater from the Martis Valley Groundwater Basin (MVGB). The MVGB is a multiple aquifer system consisting of basin-fill sedimentary units and interlayered basin-fill volcanic units with a storage volume of about 484,000 acre feet.

A number of studies regarding the recharge of the MVGB have been conducted and it has been determined that the sustainable yield of the basin is at least 22,000 acre-feet per year (AFY). Current pumping by all users of the MVGB is about 8,300 AFY, which is about 38 percent of the estimated annual recharge and less than 2 percent of the total storage volume of the basin. Therefore, the overall MVGB supply is more than sufficient to supply the needs of all water users and the basin can withstand a five-year drought with below average groundwater recharge.

SECTION 2 - ANNUAL WATER SUPPLY AND DEMAND ASSESSMENT PROCEDURES

During the first quarter of each calendar year, the District shall undertake an annual assessment of water supply and demand as required by the California Water Code. The following information shall be gathered and reviewed:

- Volume of water produced by the District's water supply sources for the past three years, including identification of the maximum day demands
- Total volume of water delivered to customers for the past three years, including identification of the maximum day sales
- A listing of expected new development projects to be constructed during the calendar year
- The current production capacity of the District's water supply wells
- The three most recent ***Annual Report for the Martis Valley Groundwater Basin***

Based upon this information, an estimate of unconstrained customer water demand for the calendar year shall be prepared. The estimate shall include both average day and maximum day demands. This estimate of water demand shall be compared to the water production capacity.

In the event that projected maximum day demand will exceed the firm production capacity of the District's water supply wells, the estimated exceedence shall be quantified and the following actions shall be taken:

1) District's General Manager shall be informed that a failure of one water supply well during the period of peak demand may require implementation of the Water Shortage Contingency Plan (WSCP).

2) The Water Department Operations Staff shall identify any additional preventative maintenance measures that could be implemented in order to further improve reliability of the water supply wells.

3) The Water Utility Director shall meet with the Public Information Officer and the Chief Financial Officer to review the WSCP.

4) The Public Information Officer shall prepare draft communications releases (press releases, radio advertisements, e-mail messages, etc) to be sent if necessary.

5) The Chief Financial Officer shall prepare information packages to be given to customer service representatives for communications with customers if necessary.

6) The Water Utility Director shall meet with Water Department staff and review the operational modifications to be implemented.

7) The General Manager shall present the above information to the Board of Directors along with any recommendations regarding the declaration of a water supply shortage. The Board of Directors shall declare a water shortage emergency if appropriate. The District will coordinate with the Town of Truckee, Nevada County and Placer County regarding the possible declaration of a water shortage emergency.

The Annual Reports shall be reviewed to identify if there exists a downward trend in groundwater levels and storage volume within the groundwater basin. If an annual downward trend is detected, the procedures identified in the ***Martis Valley Groundwater Basin Management Plan*** shall be implemented.

SECTION 3 - WATER SUPPLY SHORTAGE LEVELS

The State of California has defined six water supply shortage levels:

Level	Water Supply Level
1	Up to 10% Reduction in Available Water Supply
2	Between 11% and 20% Reduction in Available Water Supply
3	Between 21% and 30% Reduction in Available Water Supply
4	Between 31% and 40% Reduction in Available Water Supply
5	Between 41% and 50% Reduction in Available Water Supply
6	Greater than 50% Reduction in Available Water Supply

As noted in Section 1, the overall MVGB supply is more than sufficient to supply the needs of all water users and the basin can withstand multiple years with below average groundwater recharge.

The most likely cause of a water supply shortage would be the failure of a major water supply facility such as a well, pump station or transmission pipeline. Such an occurrence could be caused by a number of factors including earthquake, fire or major equipment failure. As a result, water supply shortages are expected to be somewhat short in duration (days or possibly weeks), but may occur without any warning.

Given these conditions, it is quite possible that the District could move directly from Level 0 (normal water supply) to a Level 3 or 4 shortage, bypassing the intervening levels in the event of a catastrophic facility failure. It is also possible that a portion of the service area could be under a significant water supply reduction, while other portions of the service area are under normal conditions.

The District's Water Department maintains an ***Emergency Response Plan***. This document was originally prepared in 2004 and is reviewed periodically. The main topics addressed in the plan include: chain of command and responsibilities; emergency contact lists; response actions; public notice information and mutual aid contact information. District will be undertaking an update of the ***Emergency Response Plan*** to ensure that it meets the requirements of the America's Water Infrastructure Act of 2018.

The District is a participant in the ***Nevada County Local Hazard Mitigation Plan***, which was most recently updated in August 2017. Action items identified for the District involved forest fuel reductions to be undertaken by the District's Electric Department. These items are an acknowledgement of the community's vulnerability to a wildfire.

SECTION 4 - WATER SUPPLY SHORTAGE RESPONSE ACTIONS

Listed below are potential response actions to be implemented in the event of a water supply shortage.

Level 1 Water Supply Reduction

Applicable during periods where up to 10 percent of the water supply is unavailable. A corresponding reduction in water usage is required. This would be achieved through voluntary measures such as:

- Irrigation with potable water of ornamental landscapes and turf would be limited to every other day
- The application of potable water to driveways and sidewalks would be prohibited unless for driveway sealing or construction
- The use of a hose that dispenses potable water to wash a motor vehicle, except where the hose is fitted with a shut-off nozzle, would be prohibited

Level 2 Water Supply Reduction

Applicable during periods where up to 20 percent of the water supply is unavailable. A corresponding reduction in water usage would be required. Compliance with water conservation requirements is mandatory for Level 2 and above. Water conservation measures in Level 2 include:

- Irrigation with potable water of ornamental landscapes and turf would be limited to every other day
- The application of potable water to driveways and sidewalks would be prohibited unless for driveway sealing or construction

- The use of a hose that dispenses potable water to wash a motor vehicle, except where the hose is fitted with a shut-off nozzle, would be prohibited
- Customers may be subject to fines and penalties for failure to comply with these requirements

Level 3 Water Supply Reduction
Level 3 would apply during periods where up to 30 percent of the water supply is unavailable. A corresponding reduction in water usage would be required. Compliance is mandatory. Water conservation measures in Level 3 include:

- Irrigation of ornamental landscapes and turf (using either potable or non-potable water) would be limited to 3-days per week
- The application of potable water to driveways and sidewalks would be prohibited
- The use of a hose that dispenses potable water to wash a motor vehicle, except where the hose is fitted with a shut-off nozzle, would be prohibited
- The District may install flow restricting devices on a customer's service
- Customers may be subject to fines and penalties for failure to comply with these requirements
- Contact Northstar Community Services District (NCSD) regarding the feasibility of obtaining water through the existing emergency interconnections. Purchase water from NCSD if water is available and surplus to NCSD needs.

Level 4 Water Supply Reduction
Level 4 would apply during periods where up to 40 percent of the water supply is unavailable. A corresponding reduction in water usage would be required. Compliance is mandatory. Water conservation measures in Level 4 include:

- Irrigation of ornamental landscapes and turf (using either potable or non-potable water) would be limited to 2-days per week
- The application of potable water to driveways and sidewalks would be prohibited
- The use of potable water to wash a motor vehicle, except where the hose is fitted with a shut-off nozzle, would be prohibited
- Any customer leak in plumbing and / or irrigation systems would be repaired when found, but in any case within ten (10) days of notice by the District to repair. The District may perform the repair or hire a contractor to perform the repair, and then invoice the customer for those costs
- The District may install flow restricting devices on a customer's service
- Customers may be subject to fines and penalties for failure to comply with this requirement
- Contact NCSD regarding the feasibility of obtaining water through the existing emergency

interconnections. Purchase water from NCSD if water is available and surplus to NCSD needs.

Level 5 Water Supply Reduction
Level 5 would apply during periods where up to 50 percent of the water supply is unavailable. A corresponding reduction in water usage would be required. Compliance is mandatory. Water conservation measures in Level 5 include:

- All outdoor water uses would be prohibited in the area affected by the water conservation requirement. The District may discontinue service to irrigation services
- Any customer leak in plumbing and / or irrigation systems would be repaired when found, but in any case within ten (10) days of notice by the District to repair. The District may perform the repair or hire a contractor to perform the repair, and then invoice the customer for those costs
- The District may install flow restricting devices on a customer's service
- The District may implement mandatory water rationing through the use of forced rolling outages
- Customers may be subject to fines and penalties for failure to comply with this requirement
- Contact NCSD regarding the feasibility of obtaining water through the existing emergency interconnections. Purchase water from NCSD if water is available and surplus to NCSD needs.

Level 6 Water Supply Reduction
Level 6 would apply during periods where more than 50 percent of the water supply is unavailable. A corresponding reduction in water usage would be required. Compliance is mandatory. Water conservation measures in Level 5 include:

- All outdoor water uses would be prohibited in the area affected by the water conservation requirement. The District may discontinue service to irrigation services
- Any customer leak in plumbing and / or irrigation systems would be repaired when found, but in any case within ten (10) days of notice by the District to repair. The District may perform the repair or hire a contractor to perform the repair, and then invoice the customer for those costs
- The District may install flow restricting devices on a customer's service
- The District may implement mandatory water rationing through the use of forced rolling outages
- Customers may be subject to fines and penalties for failure to comply with this requirement
- Contact NCSD regarding the feasibility of obtaining water through the existing emergency interconnections. Purchase water from NCSD if water is available and surplus to NCSD needs.

SECTION 5 - COMMUNICATION PROTOCOLS

The District has a long history of water conservation efforts. The District communicates to, and receives information from, its customers and the general public regularly regarding water issues through a variety of channels:

- Direct customer contact such as telephone calls and mailers
- Notices posted in the customer service portal on the District's website
- Traditional media such as direct mail, bill stuffers, print advertising, placards and flyers
- Digital engagement such as website, social media, digital signage, digital advertising, e-mail, text and push alerts
- Local radio and TV
- Press releases and relationships with local media such as Sierra Sun and Moonshine Ink
- Direct outreach through schools, local agencies, NGO's, large employers, business groups, and the tourism industry
- Participation in industry associations and joint-action groups such as California Municipal Utilities Association (CMUA) and Association of California Water Agencies (ACWA)
- Working closely with regional and state governments.
- The District also works with the local schools and community support resources (such as Sierra Community House) to engage with the District's disadvantaged and non-English-speaking communities.

As a part of local government in the greater Truckee area, the District works closely with sister agencies, key stakeholders, and regional, state, and Federal governments. This includes periodic meetings with the following groups:

- Town of Truckee, Nevada County, and Placer County
- Area Managers Monthly Meeting
- Emergency Managers Meeting (coordinated by Town of Truckee)
- Truckee/North Tahoe Joint Information Coordination (JIC) Group
- Truckee River Basin Working Group
- Regular meetings with other local water agencies (Northstar CSD, Placer County Water Agency, Olympic Valley PSD, Tahoe City PUD, and North Tahoe PUD)

The District is located within the greater Lake Tahoe area and has a significant transient population due to the tourism-based economy, a significant number of second homes and a major interstate highway that runs through the area. Considering the mix of full-time and transient populations, it is important to reach all of the below target audiences and to use the appropriate communications channels for each target audience. Key target audiences are listed below:

- Customers
- Disadvantaged and non-English-speaking community
- Public
- Public officials
- Business and civic leaders
- Schools
- Local agencies, NGO, and community groups
- Property managers
- Homeowners Associations
- Landscape contractors/suppliers/nurseries
- Transient populations such as tourists, travelers, and second-home owners
- High-use water customers
- Regional, state, and Federal governments.

The District will use all available communications channels available to reach the target audiences. Priority will be given to public safety (emergency response), then critical infrastructure, then basic needs, then the general use. The District will work closely with other local agencies to coordinate messaging and has the ability to leverage existing emergency communications channels, such as Nixle, reverse 911 and emergency road-side signage.

After the declaration of a water supply shortage, the Public Information Officer shall undertake the following actions to inform customers regarding the need to reduce water consumption:

Water Supply Reduction Level:	Communication Protocols:
Level 1	Engage with the appropriate target audiences depending on the specifics of the water shortage - using the available communications channels – to raise awareness, educate, and call to action. Encourage voluntary compliance and overall conservation ethic.
Level 2	As per above but communicating the mandatory restrictions. May include direct-mail to customers, targeted outreach to key stakeholders, and community-wide messaging either directly or through partners.
Level 3	As per above but communicating the increased level of water shortage and escalating mandatory restrictions and enforcement.

Level 4	As per above but includes the mandatory requirement for customers to fix leaks and the associated direct outreach to those customers.
Level 5	As per above but with community-wide support of communications efforts to ensure compliance. Consider activating local community emergency communication networks (Nixle, Reverse 911, etc).
Level 6	As per above plus preparing the community for potential water outages and the needed emergency response.

As noted earlier, Truckee is very unlikely to experience a long-term water shortage due to a lack of water supply but more likely to experience a shortage due to a natural or man-made disaster. Given the unknown nature of the event that has caused the water shortage, the District will modify our communications, outreach, and collaborative efforts to match the situation.

SECTION 6 - COMPLIANCE AND ENFORCEMENT

Once a water supply shortage has been declared, the District shall begin monitoring the water usage of customers in regards to compliance with the requirements associated with the given water supply shortage level.

The primary method of monitoring will be comparison of metered usage for the same time in prior years and with days prior to implementation of the WSCP. Other monitoring methods may involve include drive-by inspections of customers to verify irrigation practices. Customers with abnormally high usage would be contacted for notification purposes.

Notice Of Violation

If any person fails or refuses to comply with the provisions of this ordinance, the General Manager or the manager's designee shall provide the person with a written notice of the violation and an opportunity to correct the non-compliance. The written notice will:

a) Be posted or presented at the site of the noncompliance

b) Be mailed to the customer

c) State the time, date and place of the violation

d) Provide a general description of the violation

e) State the means to correct the violation

f) State a date by which correction is required

g) State the possible consequences of failing to correct the violation

If the violation is not corrected to the District's satisfaction within the time frame specified, the District may restrict the water service to the property or disconnect the service. In addition to correcting the violation, the customer may be billed administrative fees on their account. Detailed procedures are listed below:

First Violation
Following adoption of this WSCP, first violations will result in a friendly reminder in the form of a notice posted on or near the front door, personal contact with the customer, a phone call and/or a letter advising the customer of the violation,.

Second Violation
For a second violation within one calendar year, the customer will be notified in writing. If the correction is not made within thirty (30) days of the District's notice to the customer, the customer may be assessed a fine of $100. The fee shall be added to the customer's water service charges at the property where the violation occurred.

Third Violation
For a third violation within one calendar year, the customer will be notified in writing. The customer may be assessed a fine of $200. The fee shall be added to the customer's water service charges at the property where the violation occurred. If not corrected within ten (10) days of written notice, a flow-restricting device may be installed on the customer's service connection, and the costs associated with the installation and removal will be billed on the customer's monthly water billing.

Fourth Violation
For the fourth and subsequent violations within one calendar year, the customer will be notified in writing and the customer may be assessed a fine of $500. The fee shall be added to the customer's water service charges at the property where the violation occurred. In addition, a flow-restricting device may be installed on the customer's service connection, and the costs associated with the installation and removal will be billed to the customer.

If not corrected within ten (10) days of written notice, the District may discontinue the customer's water service at the property where the violation occurred in accordance with District procedures. Reconnection shall only be permitted when there is reasonable protection against future violations, as determined by the General Manager.

Enforcement Costs
The District may correct any violation of this ordinance and bill the customer for costs and expenses in enforcing the provisions of this ordinance, including staff time for investigation and monitoring for compliance, if the customer refuses to comply. Charges shall be added to the customer's bill for the property where the enforcement costs were incurred. The District may also take such action as may be allowed by statute.

Requests For Deviation or Exemption
All requests for exemption or deviation from these standards shall be submitted, in writing, by the customer to the General Manager. The customer must obtain written permission and shall not assume that permission will be forthcoming for exemptions or deviations.

The General Manager may temporarily or permanently exempt customers from the provisions of this WSCP, or impose reasonable conditions in lieu of compliance, if the General Manager finds that any of the following conditions exist:

- **Serious Economic Hardship:** The requirements would cause an unnecessary and undue economic hardship upon the customer, threatening the customer's primary source of income as an individual or a business.

- **Adverse Impact on Health and Safety:** Strict compliance would create an emergency condition, as determined by the General Manager, adversely affecting the health, protection or safety of the customer or the public.

Appeals
Any person who is dissatisfied with any determination made under this WSCP may at any time within 30 days after such determination make an appeal. The first appeal shall be made to the General Manager in writing. Should the applicant be dissatisfied with the decision of the General Manager, a subsequent appeal may be made to the Board of Directors of Directors within 30 days of the General Manager's decision.

Appeal to General Manager
Any person who is dissatisfied with any determination made under this ordinance may at any time within 30 days after such determination, appeal to the General Manager by giving written notice to the General Manager. The appeal shall set forth the events and circumstances leading to the appeal, the nature of the ruling or interpretation from which relief is sought, the nature of the impact of the ruling on the appellant's property or business, together with any other reasons for the appeal.

The General Manager shall investigate the matter appealed and shall make a written decision, which shall be mailed to the appellant within 30 days of receipt of the appeal. If the dispute involves an amount of charges, the appellant shall pay the amount disputed in full when the charges are due. Any charge paid under protest will be refunded to the appellant should the General Manager determine that the charges were wrongfully made.

Appeal to the Board of Directors of Directors
Any person who is dissatisfied with any determination made by the General Manager may at any time within 30 days after such determination, appeal to the Board of Directors of Directors by giving written notice to the General Manager and to the Clerk of the Board of Directors of Directors. The appeal shall set forth the events and circumstances leading to the appeal, the nature of the ruling or interpretation from which relief is sought, the nature of the impact of the ruling on the appellant's property or business, together with any other reasons for the appeal.

The General Manager shall transmit to the Board of Directors of Directors a report upon the matter appealed. The Board of Directors of Directors may request that the appeal be agendized and consider all testimony and make a decision, which shall be mailed to the appellant within 30 days of the date of the Board of Directors action. The Board of Directors of Directors may, at any time, upon its own motion, revise any determination made by the General Manager.

If the dispute involves an amount of charges, the appellant shall pay the amount disputed in full when the charges are due. Any charge paid under protest will be refunded to the appellant should the Board of Directors of Directors determine that the charges were wrongfully made

SECTION 7 - LEGAL AUTHORITIES

The District was established in 1927 in accordance with the provisions of the Public Utility District Act. It is governed by a Board of Directors comprised of five members elected on an at-large basis. The District has the legal authority to implement and enforce its WSCP.

Section 100 of the California Water Code reads:

"It is hereby declared that because of the conditions prevailing in this State the general welfare requires that the water resources of the State be put to beneficial use to the fullest extent of which they are capable, and that the waste or unreasonable use or unreasonable method of use of water be prevented, and that the conservation of such water is to be exercised with a view to the reasonable and beneficial use thereof in the interest of the people and for the public welfare."

Section 350 of the California Water Code reads:

"The governing body of a distributor of a public water supply, whether publicly or privately owned and including a mutual water company, shall declare a water shortage emergency condition to prevail within the area served by such distributor whenever it finds and determines that the ordinary demands and requirements of water consumers cannot be satisfied without depleting the water supply of the distributor to the extent that there would be insufficient water for human consumption, sanitation, and fire protection."

After declaration of a water shortage emergency by the District, additional sections within the California Water Code provide the District with broad powers to implement and enforce the provisions of the WSCP.

SECTION 8 - FINANCIAL CONSEQUENCES

It is the District's intent that the water rate structure closely matches the variable revenue stream with its variable expenses and the fixed revenue stream with fixed expenses. Therefore, a reduction in water usage and water sales revenue would have a corresponding decrease in operational expenses.

During the period of a water supply shortage, the General Manager shall report to the Board of Directors on a monthly basis (or more often), the financial impacts associated with the water supply shortage. In the event that the water supply shortage is causing adverse financial impacts upon the District, the General Manager, the Chief Financial Officer and the Water Utility Director shall identify potential short–term actions to address the financial impacts such as reductions in operating expenses, reductions in capital expenditures and the use of reserves.

As noted previously, the duration of a water supply shortage is most likely to be on the order of days or weeks. Given the requirements of Proposition 218, the short-term adjustment of water rates or the imposition of drought-related surcharges is likely not feasible. During the next annual budget cycle, the overall financial situation of the District shall be evaluated. At that time, the District would review whether rate adjustments were necessary to ensure the financial stability of the Water Department and to maintain compliance with the District's financial goals.

The period of late 2014 and 2015 provides an example of this process. In October 2014, the District implemented Stage 2 of its Water Shortage Contingency Plan. This was followed by the implementation of Stage 4 in June 2015. These actions were taken in response to mandates issued by the State of California. The District had adequate water supplies and was not experiencing a water shortage during this entire period. For 2015, the financial impact of these actions was a reduction in revenue o f about $172,500 for decreased water sales. This was about two percent of budgeted water sales revenue. There was corresponding reduction in operational expenses of about $197,000. This was about four percent of budgeted operational expenses. The District also incurred an additional $120,000 in expenses mainly related to increased public education efforts and increased labor for customer notification and customer service. These costs were covered by a reduction in planned capital expenditures and the use of reserves.

SECTION 9 - MONITORING AND REPORTING

The District monitors total water production for all sources on a daily basis. This monitoring would be the primary tool to gauge the effectiveness of the water conservation program. Total water production would be compared with production for the same time in prior years and with days prior to implementation of the WSCP.

Other monitoring measures include drive-by inspections of customers to verify irrigation practices and monitoring of customer usage through the District's AMR system. Customers with abnormally high usage would be contacted for notification purposes.

SECTION 10 - WSCP REFINEMENT AND MODIFICATION PROCEDURES

During implementation of the WSCP, the General Manager and the Water Utility Director shall review the effectiveness of the WSCP at least every two weeks. Customer response to required reductions in water usage shall be evaluated. Response actions that are not effective shall be analyzed and modified to improve performance. Required modifications to the WSCP shall be presented to the Board of Directors for consideration, public review and approval in accordance with the California Water Code.

Even if the WSCP has not been implemented, it shall be reviewed by the General Manager and the Water Utility Director periodically to identify any necessary changes and ensure compliance with the appropriate regulations.

SECTION 11 – WATER FEATURES AND POOLS
The California Water Code requires water purveyors to analyze water features that are not pools or spas separately from pools and spas in a WSCP.

For pools and spas, and any other water features with direct human contact, potable water is needed for health and safety considerations. Therefore, there are no additional restrictions placed on pools and spas beyond that of other potable water users.

Decorative water features not intended for direct human contact shall be considered in the same category as outdoor irrigation for the purposes of water supply reductions.

SECTION 12 – PLAN ADOPTION
The draft WSCP was made available for public review on May 10, 2021. A public hearing regarding the draft WSCP was held on June 2, 2021. Mailed notices regarding the public hearing were sent to the following local public agencies:

- Nevada County
- Northstar Community Services District
- Placer County
- Placer County Water Agency
- Tahoe-Truckee Sanitation Agency
- Town of Truckee
- Truckee Sanitary District

The WSCP was adopted by the Board of Directors on June 2, 2021. The Board of Directors also adopted Ordinance 2021-01, which codified certain elements of the WSCP.

After adoption, the WSCP was submitted to the California Department of Water Resources and the California State Library. The WSCP was also posted on the District's website. The local public agencies were also informed that the WSCP was adopted and is available on the District's website.

Copies of the WSCP will be made available for public review at the District Office and the Truckee Branch of the Nevada County Library once COVID-19 restrictions have been modified and these locations are open to the public.

APPENDIX E

RESOLUTION 2026-12
ADOPTION OF THE 2025 URBAN WATER MANAGEMENT PLAN

TRUCKEE DONNER
PUBLIC UTILITY DISTRICT

Resolution No. 2026 - 12

ADOPTION OF THE 2025 URBAN WATER MANAGEMENT PLAN

WHEREAS, the California Legislature enacted Assembly Bill 797 (Water Code Section 10610 et seq., known as the Urban Water Management Planning Act) during the 1983-1984 Regular Session, and as amended subsequently, which mandates that every supplier providing water for municipal purposes to more than 3,000 customers or supplying more than 3,000 acre feet of water, prepare an Urban Water Management Plan, the primary objective of which is to plan for the conservation and efficient use of water; and

WHEREAS, the District is an urban supplier of water providing water to over 3,000 customers; and

WHEREAS, the Plan is periodically reviewed at least once every five years, and the Truckee Donner Public Utility District last reviewed and made amendments or changes to its plan on June 1, 2016; and

WHEREAS, the District has prepared and circulated for public review a draft 2025 Urban Water Management Plan, and a properly noticed public hearing regarding said Plan was held by the Truckee Donner Public Utility District on June 3, 2026; and

WHEREAS, provided that the Plan is adopted on June 3, 2026, after the public review and hearing, and will be filed with the State of California within thirty days of adoption; and

NOW, THEREFORE, BE RESOLVED by the Board of Directors of the Truckee Donner Public Utility District as follows:

1. That the above recitations are true and correct.

2. That the 2025 Urban Water Management Plan is adopted.

3. That District staff is authorized and directed to file the 2025 Urban Water Management Plan with the State of California within thirty days of adoption.

PASSED AND ADOPTED by the Board of Directors of the Truckee Donner Public Utility District at a meeting held within said District on June 3, 2026, by the following vote:

AYES:	Bender, Finn, Murrell, Laliotis
NOES:	none
ABSENT:	Randall

TRUCKEE DONNER PUBLIC UTILITY DISTRICT

Signed by:
79D462029F9740E...

By____
Tony Laliotis, President

ATTEST:

Signed by:
Brian Wright
AABF448DE0754A8...

Brian Wright, General Manager/District Clerk

APPENDIX F

PUBLIC NOTICE DOCUMENTATION

TRUCKEE DONNER
Public Utility District

December 23, 2025

Ms. Alison Lehman
County Executive Officer, Nevada County
Eric W. Rood Administrative Center
950 Maidu Avenue
Nevada City, California 95959

Dear Ms. Lehman:

In accordance with the California Water Code (CWC), the Truckee Donner Public Utility District (District) is currently preparing its 2025 Urban Water Management Plan (UWMP).

The CWC also requires that the District hold a public hearing prior to adoption of the UWMP. The District has tentatively scheduled this public hearing for June 3, 2026. It is anticipated that the draft UWMP will be available for public review no later than May 15, 2026.

The CWC further requires that the District provide notification to appropriate local agencies regarding the preparation of the UWMP. This letter is intended to serve as the official written notification to Nevada County.

If you have any questions or require additional information regarding the UWMP or the adoption process, please contact me at 530-582-3950.

Sincerely,

Neil Kaufman, P.E.
Water System Engineer

December 23, 2025

Mr. Michael Geary, PE
General Manager
Northstar Community Services District
908 Northstar Drive
Northstar, California 96161

Dear Mr. Geary:

In accordance with the California Water Code (CWC), the Truckee Donner Public Utility District (District) is currently preparing its 2025 Urban Water Management Plan (UWMP).

The CWC also requires that the District hold a public hearing prior to adoption of the UWMP. The District has tentatively scheduled this public hearing for June 3, 2026. It is anticipated that the draft UWMP will be available for public review no later than May 15, 2026.

The CWC further requires that the District provide notification to appropriate local agencies regarding the preparation of the UWMP. This letter is intended to serve as the official written notification to the Northstar Community Services District.

If you have any questions or require additional information regarding the UWMP or the adoption process, please contact me at 530-582-3950.

Sincerely,

Neil Kaufman, P.E.
Water System Engineer

TRUCKEE DONNER
Public Utility District

December 23, 2025

Mr. Daniel J. Chatigny
County Executive Officer, Placer County
175 Fulweiler Avenue
Auburn, California 95603

Dear Mr. Chatigny:

In accordance with the California Water Code (CWC), the Truckee Donner Public Utility District (District) is currently preparing its 2025 Urban Water Management Plan (UWMP).

The CWC also requires that the District hold a public hearing prior to adoption of the UWMP. The District has tentatively scheduled this public hearing for June 3, 2026. It is anticipated that the draft UWMP will be available for public review no later than May 15, 2026.

The CWC further requires that the District provide notification to appropriate local agencies regarding the preparation of the UWMP. This letter is intended to serve as the official written notification to Placer County.

If you have any questions or require additional information regarding the UWMP or the adoption process, please contact me at 530-582-3950.

Sincerely,

Neil Kaufman, P.E.
Water System Engineer

TRUCKEE DONNER
Public Utility District

December 23, 2025

Mr. Andy Fecko
General Manager
Placer County Water Agency
PO Box 6570
Auburn, California 95604

Dear Mr. Fecko:

In accordance with the California Water Code (CWC), the Truckee Donner Public Utility District (District) is currently preparing its 2025 Urban Water Management Plan (UWMP).

The CWC also requires that the District hold a public hearing prior to adoption of the UWMP. The District has tentatively scheduled this public hearing for June 3, 2026. It is anticipated that the draft UWMP will be available for public review no later than May 15, 2026.

The CWC further requires that the District provide notification to appropriate local agencies regarding the preparation of the UWMP. This letter is intended to serve as the official written notification to the Placer County Water Agency.

If you have any questions or require additional information regarding the UWMP or the adoption process, please contact me at 530-582-3950.

Sincerely,

Neil Kaufman, P.E.
Water System Engineer

December 23, 2025

Mr. Jason Hays
General Manager
Tahoe-Truckee Sanitation Agency
13720 Joerger Drive
Truckee, California 96161

Dear Mr. Hays:

In accordance with the California Water Code (CWC), the Truckee Donner Public Utility District (District) is currently preparing its 2025 Urban Water Management Plan (UWMP).

The CWC also requires that the District hold a public hearing prior to adoption of the UWMP. The District has tentatively scheduled this public hearing for June 3, 2026. It is anticipated that the draft UWMP will be available for public review no later than May 15, 2026.

The CWC further requires that the District provide notification to appropriate local agencies regarding the preparation of the UWMP. This letter is intended to serve as the official written notification to the Tahoe-Truckee Sanitation Agency.

If you have any questions or require additional information regarding the UWMP or the adoption process, please contact me at 530-582-3950.

Sincerely,

Neil Kaufman, P.E.
Water System Engineer

December 23, 2025

Ms. Jennifer Callaway
Town Manager
Town of Truckee
10183 Truckee Airport Road
Truckee, California 96161

Dear Ms. Callaway:

In accordance with the California Water Code (CWC), the Truckee Donner Public Utility District (District) is currently preparing its 2025 Urban Water Management Plan (UWMP).

The CWC also requires that the District hold a public hearing prior to adoption of the UWMP. The District has tentatively scheduled this public hearing for June 3, 2026. It is anticipated that the draft UWMP will be available for public review no later than May 15, 2026.

The CWC further requires that the District provide notification to appropriate local agencies regarding the preparation of the UWMP. This letter is intended to serve as the official written notification to the Town of Truckee.

If you have any questions or require additional information regarding the UWMP or the adoption process, please contact me at 530-582-3950.

Sincerely,

Neil Kaufman, P.E.
Water System Engineer

TRUCKEE DONNER
Public Utility District

December 23, 2025

Ms. Sanna Schlosser, PE
General Manager
Truckee Sanitary District
12304 Joerger Drive
Truckee, California 96161

Dear Ms. Schlosser:

In accordance with the California Water Code (CWC), the Truckee Donner Public Utility District (District) is currently preparing its 2025 Urban Water Management Plan (UWMP).

The CWC also requires that the District hold a public hearing prior to adoption of the UWMP. The District has tentatively scheduled this public hearing for June 3, 2026. It is anticipated that the draft UWMP will be available for public review no later than May 15, 2026.

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If you have any questions or require additional information regarding the UWMP or the adoption process, please contact me at 530-582-3950.

Sincerely,

Neil Kaufman, P.E.
Water System Engineer

May 7, 2026

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County Executive Officer, Nevada County
Eric W. Rood Administrative Center
950 Maidu Avenue
Nevada City, California 95959

Dear Ms. Lehman:

In accordance with the California Water Code (CWC), the Truckee Donner Public Utility District (District) is currently preparing its 2025 Urban Water Management Plan. The CWC also requires that the District hold a public hearing prior to adoption of the plan.

The District has scheduled this public hearing for 6:00 pm, or soon thereafter, on Wednesday June 3, 2026, to receive comments on the draft Urban Water Management Plan. A copy of the draft document can be found on the District's website at: https://www.tdpud.org/departments/water

If you have any questions or require additional information regarding the Urban Water Management Plan or the adoption process, please contact me at 530-582-3950.

Sincerely,

Neil Kaufman, P.E.
Water System Engineer

TRUCKEE DONNER
Public Utility District

May 7, 2026

Mr. Michael Geary, PE
General Manager
Northstar Community Services District
908 Northstar Drive
Northstar, California 96161

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Water System Engineer

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Public Utility District

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Sincerely,

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Public Utility District

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Placer County Water Agency
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Sincerely,

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Public Utility District

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Neil Kaufman, P.E.
Water System Engineer

TRUCKEE DONNER
Public Utility District

May 7, 2026

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Truckee Sanitary District
12304 Joerger Drive
Truckee, California 96161

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Water System Engineer

TRUCKEE DONNER
Public Utility District

May 7, 2026

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Town Manager
Town of Truckee
10183 Truckee Airport Road
Truckee, California 96161

Dear Ms. Callaway:

In accordance with the California Water Code (CWC), the Truckee Donner Public Utility District (District) is currently preparing its 2025 Urban Water Management Plan. The CWC also requires that the District hold a public hearing prior to adoption of the plan.

The District has scheduled this public hearing for 6:00 pm, or soon thereafter, on Wednesday June 3, 2026, to receive comments on the draft Urban Water Management Plan. A copy of the draft document can be found on the District's website at: https://www.tdpud.org/departments/water

If you have any questions or require additional information regarding the Urban Water Management Plan or the adoption process, please contact me at 530-582-3950.

Sincerely,

Neil Kaufman, P.E.
Water System Engineer

Sierra Sun

See Proof on Next Page

AFFIDAVIT OF PUBLICATION

Customer Account #:
Reference: 2025 Urban Water Management Plan TDPUD
Legal Account
Allison McEneaney
11570 Donner Pass Rd

State of New Jersey, County of Camden, ss:

Edmar Corachia, being first duly sworn, deposes and says: That (s)he is a duly authorized signatory of Column Software, PBC, duly authorized agent of The Sierra Sun now is, and during all times herein named, was a corporation duly organized and existing under the laws of the State of California, and now is, and during all times herein named was the printer of **The Sierra Sun**, a newspaper of general circulation, as defined by section 6000 of the Government Code of the State of California, printed and published daily (Sundays excepted) in the City of Truckee, County of Nevada, State of California, and that affiant is the principal clerk of said Nevada County Publishing Co.
That the printed advertisement hereto annexed was published in the said The Sierra Sun, for the full required period of **2** time(s) commencing on **May. 22, 2026,** and ending on **May. 29, 2026,** all days inclusive.

PUBLICATION DATES:

May. 22, 2026

May. 29, 2026

I certify, under penalty of perjury, the forgoing is true and correct.

Edmar Corachia
(Signed)

VERIFICATION

State of New Jersey
County of Camden

SHARONN E THOMAS-POPE
NOTARY PUBLIC
STATE OF NEW JERSEY
My Commission Expires January 23, 2027

Subscribed in my presence and sworn to before me on this: 05/29/2026

Notary Public
Notarized remotely online using communication technology via Proof.

NOTICE OF PUBLIC HEARING
2025 URBAN WATER MANAGEMENT PLAN

Notice is hereby given that the Board of Directors of the Truckee Donner Public Utility District will hold a Public Hearing on June 3, 2026 at 6:00 PM, or as soon thereafter as possible, to receive public input regarding its intent to adopt the District's 2025 Urban Water Management Plan.

Interested parties are invited to express their views during the meeting in written or oral form or to submit written views prior to the time of the public hearing at the District office or by mail.

Notice is further given that the Board of Directors may continue the public hearing to another time.

Martina Rochefort, District Clerk
TRUCKEE DONNER PUBLIC UTILITY DISTRICT
11570 Donner Pass Road
Truckee, CA 96161
(530) 582-3923

TRUCKEE DONNER
PUBLIC UTILITY DISTRICT

Published: May 22, 29, 2026

APPENDIX G

ANNUAL WATER AUDITS

AWWA Free Water Audit Software:
System Attributes and Performance Indicators

Water Audit Report for: Truckee Donner Public Utility District
Reporting Year: 2015 | 1/2015 - 12/2015

*** YOUR WATER AUDIT DATA VALIDITY SCORE IS: 74 out of 100 ***

System Attributes:

Apparent Losses:	4.971	MG/Yr
+ Real Losses:	340.242	MG/Yr
= **Water Losses:**	**345.213**	MG/Yr
? Unavoidable Annual Real Losses (UARL):	94.91	MG/Yr
Annual cost of Apparent Losses:	$6,810	
Annual cost of Real Losses:	$371,204	Valued at **Variable Production Cost**

Return to Reporting Worksheet to change this assumpiton

Performance Indicators:

Financial:	Non-revenue water as percent by volume of Water Supplied:	30.2%	
	Non-revenue water as percent by cost of operating system:	8.3%	Real Losses valued at Variable Production Cost
Operational Efficiency:	Apparent Losses per service connection per day:	1.07	gallons/connection/day
	Real Losses per service connection per day:	72.98	gallons/connection/day
	Real Losses per length of main per day*:	N/A	
	Real Losses per service connection per day per psi pressure:	0.87	gallons/connection/day/psi

From Above, Real Losses = Current Annual Real Losses (CARL):	340.24	million gallons/year
? Infrastructure Leakage Index (ILI) [CARL/UARL]:	3.58	

* This performance indicator applies for systems with a low service connection density of less than 32 service connections/mile of pipeline

AWWA Free Water Audit Software:
System Attributes and Performance Indicators

WAS v5.0

Water Audit Report for: Truckee Donner Public Utility District
Reporting Year: 2016 | 1/2016 - 12/2016

*** YOUR WATER AUDIT DATA VALIDITY SCORE IS: 52 out of 100 ***

System Attributes:

Apparent Losses:	10.346	MG/Yr
+ Real Losses:	314.912	MG/Yr
= **Water Losses:**	**325.258**	MG/Yr
? Unavoidable Annual Real Losses (UARL):	97.51	MG/Yr
Annual cost of Apparent Losses:	$14,587	
Annual cost of Real Losses:	$265,011	Valued at **Variable Production Cost**

Return to Reporting Worksheet to change this assumpiton

Performance Indicators:

Financial:	Non-revenue water as percent by volume of Water Supplied:	25.3%	
	Non-revenue water as percent by cost of operating system:	4.1%	Real Losses valued at Variable Production Cost
Operational Efficiency:	Apparent Losses per service connection per day:	2.22	gallons/connection/day
	Real Losses per service connection per day:	67.55	gallons/connection/day
	Real Losses per length of main per day*:	N/A	
	Real Losses per service connection per day per psi pressure:	0.80	gallons/connection/day/psi
	From Above, Real Losses = Current Annual Real Losses (CARL):	314.91	million gallons/year
	? Infrastructure Leakage Index (ILI) [CARL/UARL]:	3.23	

* This performance indicator applies for systems with a low service connection density of less than 32 service connections/mile of pipeline

AWWA Free Water Audit Software:
System Attributes and Performance Indicators

Water Audit Report for: Truckee Donner Public Utility District
Reporting Year: 2017 | 1/2017 - 12/2017

*** YOUR WATER AUDIT DATA VALIDITY SCORE IS: 52 out of 100 ***

System Attributes:

Apparent Losses:	10.508	MG/Yr
+ Real Losses:	286.041	MG/Yr
= **Water Losses:**	**296.549**	MG/Yr
? Unavoidable Annual Real Losses (UARL):	98.44	MG/Yr
Annual cost of Apparent Losses:	$15,657	
Annual cost of Real Losses:	$264,588	Valued at **Variable Production Cost**

Return to Reporting Worksheet to change this assumpiton

Performance Indicators:

Financial:	Non-revenue water as percent by volume of Water Supplied:	23.0%	
	Non-revenue water as percent by cost of operating system:	2.0%	Real Losses valued at Variable Production Cost
Operational Efficiency:	Apparent Losses per service connection per day:	2.22	gallons/connection/day
	Real Losses per service connection per day:	60.41	gallons/connection/day
	Real Losses per length of main per day*:	N/A	
	Real Losses per service connection per day per psi pressure:	0.72	gallons/connection/day/psi
	From Above, Real Losses = Current Annual Real Losses (CARL):	286.04	million gallons/year
	? Infrastructure Leakage Index (ILI) [CARL/UARL]:	2.91	

* This performance indicator applies for systems with a low service connection density of less than 32 service connections/mile of pipeline

AWWA Free Water Audit Software:

System Attributes and Performance Indicators

WAS v5.0
American Water Works Association.

Water Audit Report for: Truckee Donner Public Utility District (2910003)
Reporting Year: 2018 | 1/2018 - 12/2018

*** YOUR WATER AUDIT DATA VALIDITY SCORE IS: 50 out of 100 ***

System Attributes:

Apparent Losses:	8.452	MG/Yr
+ Real Losses:	288.194	MG/Yr
= **Water Losses:**	**296.646**	MG/Yr
? Unavoidable Annual Real Losses (UARL):	97.96	MG/Yr
Annual cost of Apparent Losses:	$13,270	
Annual cost of Real Losses:	$271,928	Valued at **Variable Production Cost**

Return to Reporting Worksheet to change this assumpiton

Performance Indicators:

Financial:	Non-revenue water as percent by volume of Water Supplied:	22.2%	
	Non-revenue water as percent by cost of operating system:	1.9%	Real Losses valued at Variable Production Cost
Operational	Apparent Losses per service connection per day:	1.80	gallons/connection/day
	Real Losses per service connection per day:	61.36	gallons/connection/day
	Real Losses per length of main per day*:	N/A	
	Real Losses per service connection per day per psi pressure:	0.73	gallons/connection/day/psi
	From Above, Real Losses = Current Annual Real Losses (CARL):	288.19	million gallons/year
	? Infrastructure Leakage Index (ILI) [CARL/UARL]:	2.94	

* This performance indicator applies for systems with a low service connection density of less than 32 service connections/mile of pipeline

AWWA Free Water Audit Software:
System Attributes and Performance Indicators

Water Audit Report for: Truckee Donner Public Utility District (CA2910003)
Reporting Year: 2019 | 1/2019 - 12/2019

***** YOUR WATER AUDIT DATA VALIDITY SCORE IS: 52 out of 100 *****

System Attributes:

Apparent Losses:	10.526	MG/Yr
+ Real Losses:	306.695	MG/Yr
= **Water Losses:**	**317.221**	MG/Yr
? Unavoidable Annual Real Losses (UARL):	99.89	MG/Yr
Annual cost of Apparent Losses:	$17,053	
Annual cost of Real Losses:	$299,696	Valued at **Variable Production Cost**

Return to Reporting Worksheet to change this assumpiton

Performance Indicators:

Financial:	Non-revenue water as percent by volume of Water Supplied:	24.7%	
	Non-revenue water as percent by cost of operating system:	2.2%	Real Losses valued at Variable Production Cost
Operational Efficiency:	Apparent Losses per service connection per day:	2.20	gallons/connection/day
	Real Losses per service connection per day:	64.14	gallons/connection/day
	Real Losses per length of main per day*:	N/A	
	Real Losses per service connection per day per psi pressure:	0.76	gallons/connection/day/psi
	From Above, Real Losses = Current Annual Real Losses (CARL):	306.69	million gallons/year
	? Infrastructure Leakage Index (ILI) [CARL/UARL]:	3.07	

* This performance indicator applies for systems with a low service connection density of less than 32 service connections/mile of pipeline

AWWA Free Water Audit Software:
System Attributes and Performance Indicators

Water Audit Report for: Truckee Donner Public Utility District (CA2910003)
Reporting Year: 2020 | 1/2020 - 12/2020

*** YOUR WATER AUDIT DATA VALIDITY SCORE IS: 52 out of 100 ***

System Attributes:

Apparent Losses:	11.978	MG/Yr
+ Real Losses:	354.300	MG/Yr
= **Water Losses:**	**366.278**	MG/Yr
? Unavoidable Annual Real Losses (UARL):	100.07	MG/Yr
Annual cost of Apparent Losses:	$20,482	
Annual cost of Real Losses:	$318,974	Valued at **Variable Production Cost**

Return to Reporting Worksheet to change this assumpiton

Performance Indicators:

Financial:	Non-revenue water as percent by volume of Water Supplied:	25.0%	
	Non-revenue water as percent by cost of operating system:	2.3%	Real Losses valued at Variable Production Cost
Operational Efficiency:	Apparent Losses per service connection per day:	2.50	gallons/connection/day
	Real Losses per service connection per day:	74.09	gallons/connection/day
	Real Losses per length of main per day*:	N/A	
	Real Losses per service connection per day per psi pressure:	0.88	gallons/connection/day/psi
	From Above, Real Losses = Current Annual Real Losses (CARL):	354.30	million gallons/year
	? Infrastructure Leakage Index (ILI) [CARL/UARL]:	3.54	

* This performance indicator applies for systems with a low service connection density of less than 32 service connections/mile of pipeline

AWWA Free Water Audit Software:
System Attributes and Performance Indicators

Water Audit Report for: Truckee Donner Public Utility District (CA2910003)
Reporting Year: 2021 | 1/2021 - 12/2021

***** YOUR WATER AUDIT DATA VALIDITY SCORE IS: 58 out of 100 *****

System Attributes:

Apparent Losses:	17.113	MG/Yr
+ Real Losses:	371.080	MG/Yr
= **Water Losses:**	**388.193**	MG/Yr
? Unavoidable Annual Real Losses (UARL):	101.83	MG/Yr
Annual cost of Apparent Losses:	$32,686	
Annual cost of Real Losses:	$353,932	Valued at **Variable Production Cost**

Return to Reporting Worksheet to change this assumpiton

Performance Indicators:

Financial:	Non-revenue water as percent by volume of Water Supplied:	26.7%	
	Non-revenue water as percent by cost of operating system:	2.7%	Real Losses valued at Variable Production Cost
Operational Efficiency:	Apparent Losses per service connection per day:	3.48	gallons/connection/day
	Real Losses per service connection per day:	75.41	gallons/connection/day
	Real Losses per length of main per day*:	N/A	
	Real Losses per service connection per day per psi pressure:	0.89	gallons/connection/day/psi
	From Above, Real Losses = Current Annual Real Losses (CARL):	371.08	million gallons/year
	? Infrastructure Leakage Index (ILI) [CARL/UARL]:	3.64	

* This performance indicator applies for systems with a low service connection density of less than 32 service connections/mile of pipeline

FWAS v6.0

AWWA Free Water Audit Software: Dashboard

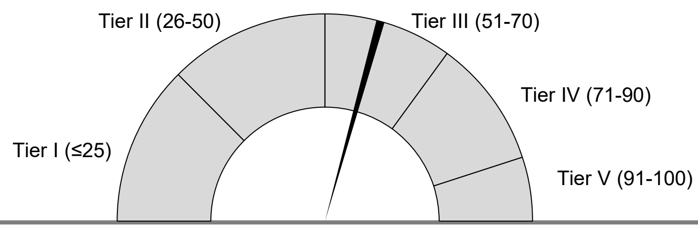
go to worksheet | go to grading | go to references

Water Audit Report for: Truckee Donner Public Utility District **Audit Year: 2022 Calendar** **Jan 01 2022 - Dec 31 2022**

Data Validity

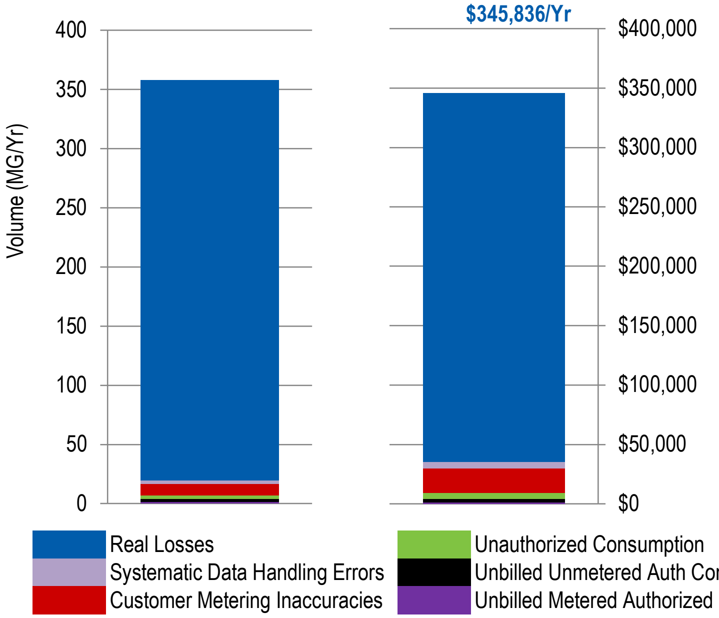
Data Validity Score: 58 **Data Validity Tier:** Tier III (51-70)

See Loss Control Planning for Tier Details



NRW Components Summary

Total Volume of NRW = 358 MG/Yr **Total Cost of NRW = $345,836/Yr**

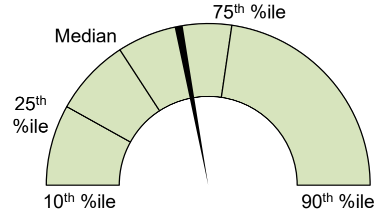


	Volume MG/Yr	Value $/Yr	Basis of Valuation
Apparent Losses	15.1	$31,631	CRUC
Real Losses	336.2	$308,433	VPC
Unbilled Authorized Cons	6.3	$5,772	VPC
Non-Revenue Water	357.6	$345,836	Blended

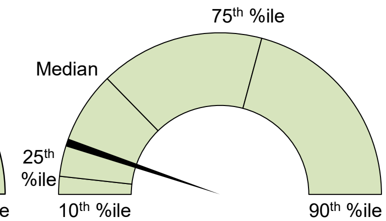
Key Performance Indicators

Actual KPI result Target (see Worksheet)

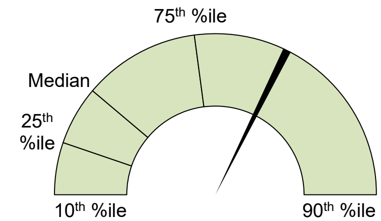
gauge %iles per validated industry ranges[2]



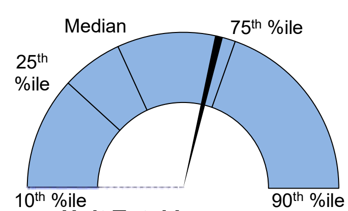
Total Loss Cost Rate
25.03 $/conn/year



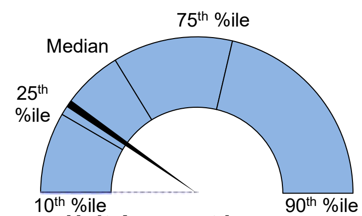
Apparent Loss Cost Rate
2.33 $/conn/year



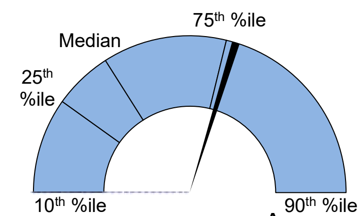
Real Loss Cost Rate
22.70 $/conn/year



Unit Total Losses
70.8 gal/conn/day

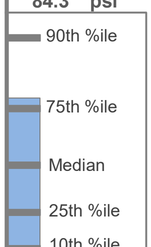


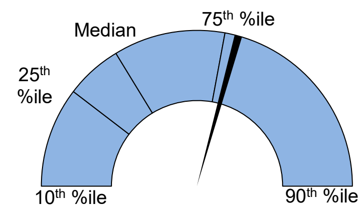
Unit Apparent Losses
3.0 gal/conn/day



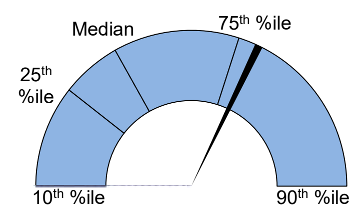
Unit Real Losses[A]
67.8 gal/conn/day

Average Operating Pressure
84.3 psi





Infrastructure Leakage Index (ILI)
3.3 dimensionless



Unit Real Losses[B]
3,854 gal/mile/day

See UARL definition for additional guidance on the ILI

(UARL) Unavoidable Annual Real Losses 102.5 MG/Yr 20.7 gal/conn/day

Guidance Information for Key Performance

- The eight indicators shown are the recommended suite per the AWWA Water Loss Control Committee 2020 Position on KPIs[1].
- A suite of KPIs is necessary, as no single KPI can holistically communicate water loss performance for a given water system.
- See Table 1 below for Uses and Limitations for each KPI, excerpted from the AWWA Water Loss Control Committee Report (2020)[1], with naming conventions updated.
- Percentiles (%iles) shown on KPI gauges come from Level 1 validated data in the AWWA WLCC Reference Water Audit Dataset (2020)[2].
- KPI %iles shown above are not segregated by cohorts. Limited KPI data by cohorts may be found in WRF 4695 Guidance Manual, Appendix B (2019)[3].
- Actual KPI results that fall below 10th %ile or above 90th %ile do not necessarily imply error, but should be viewed with scrutiny.
- Percentiles not intended to imply targets. Targets may be input by user for operational KPIs, if desired, on Worksheet.
- See UARL and ILI in Definitions tab for discussion of size and pressure limitations.
- Systems that fall on the extreme ends of size or connection density should use caution when interpreting Unit Losses KPIs.

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AWWA Free Water Audit Software: Dashboard

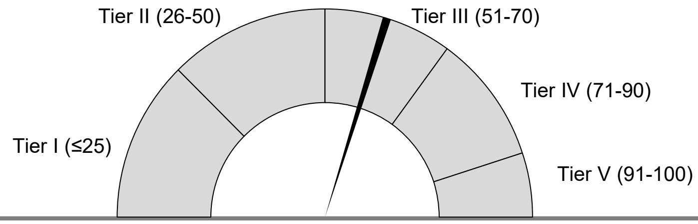
go to worksheet | go to grading | go to references

Water Audit Report for: Truckee Donner Public Utility District **Audit Year: 2023 Calendar Jan 01 2023 - Dec 31 2023**

Data Validity

Data Validity Score: 59 **Data Validity Tier:** Tier III (51-70)

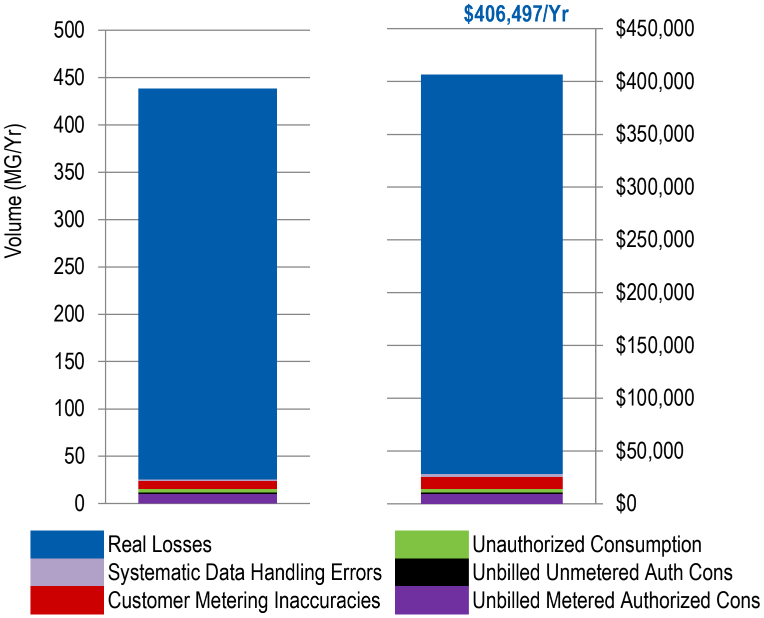
See Loss Control Planning for Tier Details



NRW Components Summary

Total Volume of NRW = 438 MG/Yr

Total Cost of NRW = $406,497/Yr



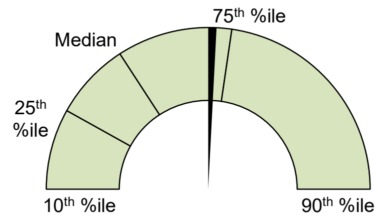
	Volume MG/Yr	Value $/Yr	Basis of Valuation
Apparent Losses	13.9	$16,384	CRUC
Real Losses	409.1	$376,234	VPC
Unbilled Authorized Cons	15.1	$13,878	VPC
Non-Revenue Water	438.1	$406,497	Blended

Key Performance Indicators

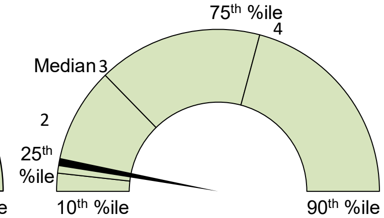
Actual KPI result

Target (see Worksheet)

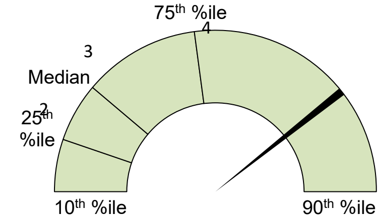
gauge %iles per validated industry ranges²



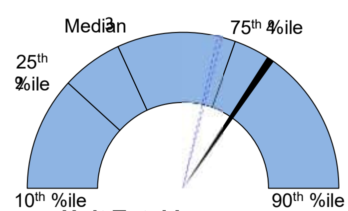
Total Loss Cost Rate
28.90 $/conn/year



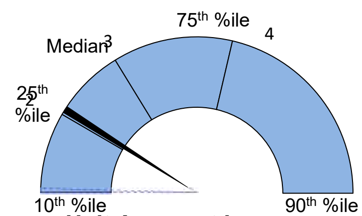
Apparent Loss Cost Rate
1.21 $/conn/year



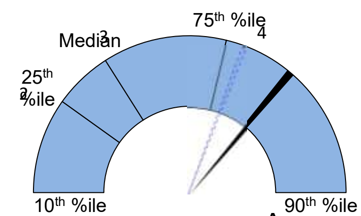
Real Loss Cost Rate
27.69 $/conn/year



Unit Total Losses
85.3 gal/conn/day

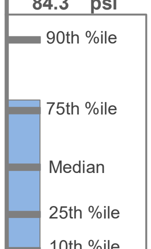


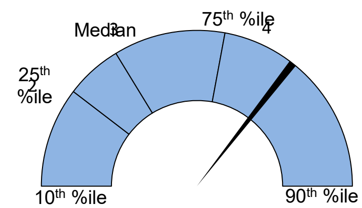
Unit Apparent Losses
2.8 gal/conn/day



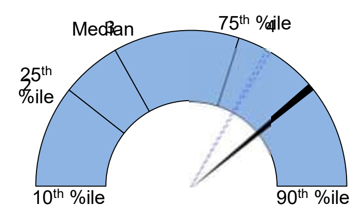
Unit Real Losses^A
82.5 gal/conn/day

Average Operating Pressure
84.3 psi





Infrastructure Leakage Index (ILI)
4.0 dimensionless



Unit Real Losses^B
4,690 gal/mile/day

See UARL definition for additional guidance on the ILI

(UARL) Unavoidable Annual Real Losses 102.5 MG/Yr 20.7 gal/conn/day

Guidance Information for Key Performance

- The eight indicators shown are the recommended suite per the AWWA Water Loss Control Committee 2020 Position on KPIs¹.
- A suite of KPIs is necessary, as no single KPI can holistically communicate water loss performance for a given water system.
- See Table 1 below for Uses and Limitations for each KPI, excerpted from the AWWA Water Loss Control Committee Report (2020)¹, with naming conventions updated.
- Percentiles (%iles) shown on KPI gauges come from Level 1 validated data in the AWWA WLCC Reference Water Audit Dataset (2020)².
- KPI %iles shown above are not segregated by cohorts. Limited KPI data by cohorts may be found in WRF 4695 Guidance Manual, Appendix B (2019)³.
- Actual KPI results that fall below 10th %ile or above 90th %ile do not necessarily imply error, but should be viewed with scrutiny.
- Percentiles not intended to imply targets. Targets may be input by user for operational KPIs, if desired, on Worksheet.
- See UARL and ILI in Definitions tab for discussion of size and pressure limitations.
- Systems that fall on the extreme ends of size or connection density should use caution when interpreting Unit Losses KPIs.

FWAS v6.0

AWWA Free Water Audit Software: Dashboard

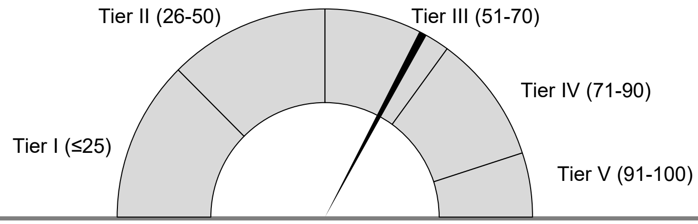
go to worksheet | go to grading | go to references

Water Audit Report for: Truckee Donner Public Utility District — **Audit Year: 2024 Calendar** — **Jan 01 2024 - Dec 31 2024**

Data Validity

Data Validity Score: 65 **Data Validity Tier:** Tier III (51-70)

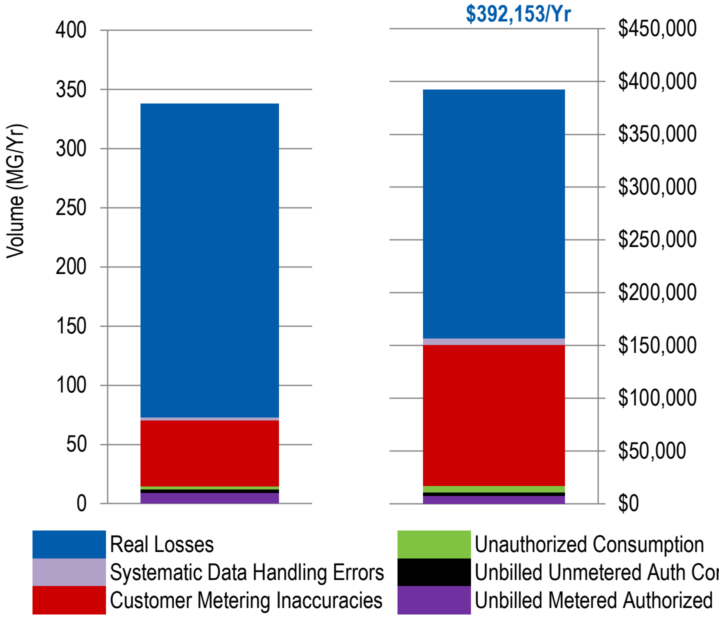
See Loss Control Planning for Tier Details



NRW Components Summary

Total Volume of NRW = 337 MG/Yr

Total Cost of NRW = $392,153/Yr

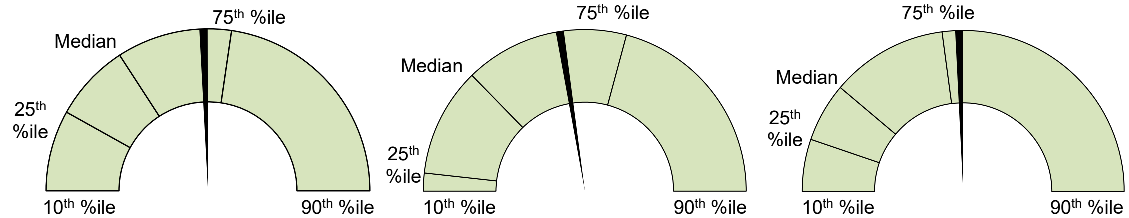


	Volume MG/Yr	Value $/Yr	Basis of Valuation
Apparent Losses	60.6	$145,669	CRUC
Real Losses	263.1	$233,722	VPC
Unbilled Authorized Cons	14.4	$12,761	VPC
Non-Revenue Water	338.1	$392,153	Blended

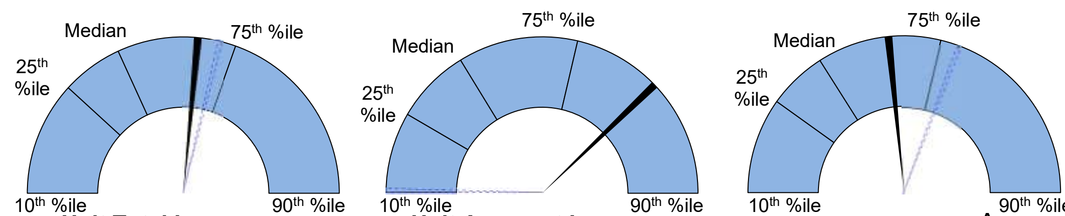
Key Performance Indicators

Actual KPI result — Target (see Worksheet)

gauge %iles per validated industry ranges²

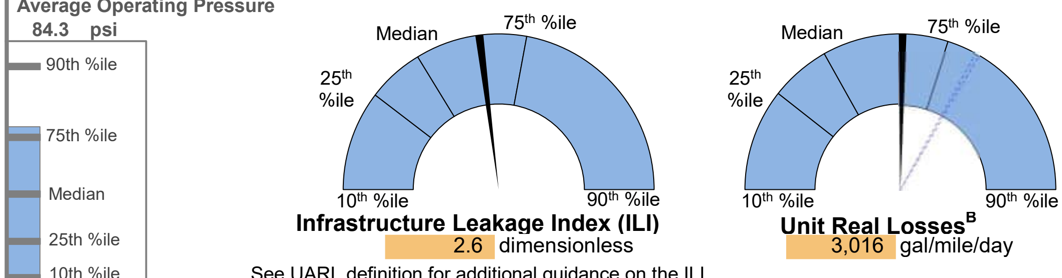


Total Loss Cost Rate	Apparent Loss Cost Rate	Real Loss Cost Rate
27.93 $/conn/year	10.72 $/conn/year	17.20 $/conn/year



Unit Total Losses	Unit Apparent Losses	Unit Real Losses^A
65.3 gal/conn/day	12.2 gal/conn/day	53.1 gal/conn/day

Average Operating Pressure
84.3 psi



Infrastructure Leakage Index (ILI)	Unit Real Losses^B
2.6 dimensionless	3,016 gal/mile/day

See UARL definition for additional guidance on the ILI

(UARL) Unavoidable Annual Real Losses 102.5 MG/Yr 20.7 gal/conn/day

Guidance Information for Key Performance

- The eight indicators shown are the recommended suite per the AWWA Water Loss Control Committee 2020 Position on KPIs[1].
- A suite of KPIs is necessary, as no single KPI can holistically communicate water loss performance for a given water system.
- See Table 1 below for Uses and Limitations for each KPI, excerpted from the AWWA Water Loss Control Committee Report (2020)[1], with naming conventions updated.
- Percentiles (%iles) shown on KPI gauges come from Level 1 validated data in the AWWA WLCC Reference Water Audit Dataset (2020)[2].
- KPI %iles shown above are not segregated by cohorts. Limited KPI data by cohorts may be found in WRF 4695 Guidance Manual, Appendix B (2019)[5].
- Actual KPI results that fall below 10th %ile or above 90th %ile do not necessarily imply error, but should be viewed with scrutiny.
- Percentiles not intended to imply targets. Targets may be input by user for operational KPIs, if desired, on Worksheet.
- See UARL and ILI in Definitions tab for discussion of size and pressure limitations.
- Systems that fall on the extreme ends of size or connection density should use caution when interpreting Unit Losses KPIs.