

HOMWOOD MOUNTAIN RESORT

WATER SUPPLY ASSESSMENT



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1.0 INTRODUCTION

The purpose of the Homewood Mountain Resort Water Supply Assessment (Assessment) is to determine the existing water supply and demand, the projected water demand of the Homewood Mountain Resort (HMR) Master Plan Project (project), and the ability of the supply to meet the projected water demand. This Assessment will be utilized in the preparation of the joint Environmental Impact Report (EIR)/ Environmental Impact Statement (EIS) being prepared by Placer County and the Tahoe Regional Planning Agency (TRPA) for the HMR project. This Assessment was not prepared to act as a formal Senate Bill (SB) 610 Water Supply Assessment, but it does comply with the requirements of a SB 610 Water Supply Assessment.

There are two water supply alternatives analyzed in this water supply assessment for the proposed project. This Assessment will present water supply and demand projections separately for each alternative. Under Alternative 1, a hypothetical scenario is analyzed wherein the Tahoe City Public Utility District (TCPUD) would be the sole water provider for the entire project area. Note that such a scenario has not been presented to the TCPUD nor approved by the TCPUD Board of Directors, however, it is included in this Assessment for purposes of analyzing a range of alternatives in terms of water supply. In Alternative 2, Madden Creek Water Company (Madden Creek) and TCPUD would supply water to certain portions of the project area as is currently the case. A further explanation of these alternatives can be found in Section 3.0.

The Truckee River Operating Agreement (TROA) governs diversions of surface water from the Truckee River Basin and the Lake Tahoe Basin as the result of the settlement of litigation among various parties. The TROA was executed by the State of Nevada and State of California in September 2008, but has not yet been implemented. The TROA provides for a quantified allocation for each state. The State Water Resources Control Board (SWRCB) has held processing of applications for water rights in the Lake Tahoe Basin in abeyance pending the implementation of the TROA. The amount of water available for appropriation will be determined pursuant to the TROA. Once the allocations are finalized, it can be expected that the SWRCB will resume processing water rights applications in the Lake Tahoe Basin. The water use of the proposed project will comply with the TROA.

2.0 PROJECT DESCRIPTION

2.1 Project Location

The proposed project area is located in Placer County, California on the Homewood (Township 14 North/Range 16 East, Sections 1, 2, 11, and 12) 7.5-minute United States Geological Survey (USGS) quadrangle and is located in the Madden Creek and Homewood Creek Watersheds.

Vegetation communities in this region include annual grasslands and forbs, upper montane mixed chaparral, Jeffrey pine, and mixed conifer. Elevation ranges from approximately 6,230 to 7,400 feet within the proposed project area. Slopes in the proposed project areas range from 1 to 30%.

Long, relatively mild winters and short, dry summers characterize the climate of the region. Precipitation normally falls in the form of snow during the winter months. During the summer, there are infrequent thunderstorms. The western side of the Lake Tahoe Basin receives about 32 inches of average annual total precipitation. Climate characteristics that can affect water supply and management in the proposed project area are provided in Table 1.

Table 1. Climatic Data

Data Description	Jan	Feb	Mar	Apr	May	June
Average Max. Temperature (Fahrenheit) ⁽²⁾	38.6	40.3	44.0	50.6	59.7	68.8
Average Min. Temperature (Fahrenheit) ⁽²⁾	19.0	20.1	22.9	27.0	32.8	38.7
Average Total Precipitation (inches) ⁽²⁾	6.01	5.41	4.06	2.14	1.16	0.67
Average Total Snowfall (inches) ⁽²⁾	43.1	37.6	34.6	15.8	3.6	0.2
Estimated Evapotranspiration (acre-inch/month) ⁽³⁾	0.37	0.33	0.86	3.1	4.48	2.72
Data Description	July	Aug	Sept	Oct	Nov	Dec
Average Max. Temperature (Fahrenheit) ⁽²⁾	77.8	77.2	69.9	59.0	46.7	40.4
Average Min. Temperature (Fahrenheit) ⁽²⁾	44.3	43.9	39.1	32.4	25.7	21.0
Average Total Precipitation (inches) ⁽²⁾	0.25	0.32	0.62	1.81	3.71	5.55
Average Total Snowfall (inches) ⁽²⁾	0.0	0.0	0.3	2.6	16.1	35.7
Estimated Evapotranspiration (acre-inch/month) ⁽³⁾	0.27	0.37	0.67	1.47	0.87	0.31
Notes: 1.) UWMP = Urban Water Management Plan 2.) Period of Record Monthly Climate Summary for Tahoe City, Period of Record: January 1, 1914 – March 31, 2005, Western Regional Climate Center. 3.) West Yost & Associates, 1994, "Groundwater Resources Investigation of the Tahoe City Sub-regional Service Area," pp. 42, Table 4-1 (Estimated Actual Evapotranspiration).						

Source: TCPUD UWMP (2006)

2.2 Project Description

The proposed project includes a mixed-use base area to the north, a residential base area to the south, a mid-mountain lodge and beginner ski area, irrigated landscape, and snowmaking operations (Appendix A – Figure A1: Preliminary Conceptual Master Plan). These development areas are described in further detail below.

North Base Area. This area is approximately 16 acres and will include up to 36 residential condominiums, up to 20 fractional ownership units, up to 30 penthouse condominium units, and up to 75 traditional hotel rooms. Additionally, up to 40 two-bedroom for sale condominiums, up to 13 workforce housing units, and up to 25,000 square feet (sf) of commercial floor area (CFA) and 30,000 sf skier services will be included.

South Base Area. This area is approximately 6 acres and will include up to 99 residential condominiums. The residential condominiums will be spread throughout the South Base area in three buildings that will not exceed three stories. The residential units will replace the current children's facilities, ski school, and day lodge buildings.

APN 097-060-022 (located between North and South Base Areas). Plans propose to develop up to 16 townhomes above Sacramento Road on a 2.5 acre Planned Development lot located on a portion of APN 097-060-022.

Mid-Mountain. The Mid-Mountain will include: a new approximately 15,000 sf day lodge with a gondola terminal; a new "learn to ski" lift; a food and beverage facility with outdoor dining; small sundry outlet; and an outdoor swimming facility for use during the summer months. Additionally, a rubber tire vehicle maintenance facility will replace the existing full vehicle shop/maintenance facility.

Irrigation. The irrigation area consists of approximately 7.83 acres of irrigated landscape located throughout the project site. The north base and south base areas will include 5.36 acres and 2.22 acres respectively of low, medium and high water use landscape. The mid mountain area will include 0.25 acres of medium water use landscape.

Snowmaking Operations. The water supply for snowmaking is a separate, non-potable source. The water supply for snowmaking will be supplied by the TCPUD-owned McKinney Well (this well is not part of the public, potable water system) for the South Base region, and the HMR-owned North Base Well for the North Base region. Based on the current snowmaking evaluation, the on-site wells appear to have sufficient capacity for the proposed snowmaking plan, although there may be a periodic need to access public water supply during optimal weather conditions to enable higher efficiency snowmaking productivity. Since the main water supply source is not part of the public potable water system, and would not place a demand on the potable water supply, it will not be further discussed in this Assessment.

2.3 Project Land Use Summary

The proposed project lies within TRPA Plan Area Statement (PAS) 157- Homewood/Tahoe Ski Bowl and PAS 159 – Homewood/Commercial. TRPA PASs serve as the General and Community Plan for this region. Currently, the property is exclusively used for ski and concessions operation. Seasonal summer uses include wedding receptions, concerts, farmers market, and other events.

PAS 157 land use is classified as "recreation." This area currently contains existing facilities that support downhill skiing. The PAS encourages continual "opportunities for downhill skiing within guidelines prepared through ski area master plans and scenic restoration plans." The proposed improvements are permissible uses pursuant to TRPA Code of Ordinances Chapters 18 and 51, and are permitted in PAS 157.

PAS 159 land use is classified as "tourist." This area is a mixture of small commercial services, two marinas, a sea plane base, motel facilities, and some residential use. The area is 90% built out and the land coverage and disturbance is high. The proposed improvements are permissible uses pursuant to TRPA Code of Ordinances Chapters 18 and 51, and are permitted in PAS 159.

3.0 WATER SUPPLY ALTERNATIVES

There are two water supply alternatives for the proposed project. This Assessment will present water supply and demand projections separately for each alternative.

Alternative 1

In Alternative 1, TCPUD would be the sole water provider for the entire project area, which includes the development areas of the North Base, South Base, APN 097-060-022, and Mid-Mountain as well as the irrigation operations. Note that Alternative 1 does not have the concurrence of the TCPUD at this time but is included in this Assessment in order to provide a range of water supply alternatives. Based on the project description (Section 2), Alternative 1 will create the following connections for the TCPUD:

North Base:

- 36 residential condominiums
- 20 fractional ownership units
- 30 penthouse condominium units
- 75 traditional hotel rooms
- 40 two-bedroom for sale condominiums
- 13 workforce housing units
- 25,000 sf retail/commercial (CFA)
- 30,000 sf skier services

South Base:

- 99 residential condominiums

APN 097-060-022 (located between North and South Base Areas):

- 16 townhomes

Mid-Mountain:

- 15,000 sf day lodge (CFA)
- Maintenance Facility (equivalent to 1 dwelling unit)

Irrigation Operations:

- 7.83 acres of low, medium and high water use landscape plants.

Alternative 1 - Project Totals:

7.83 acres irrigated landscape
330 dwelling units
70,000 sf CFA

Alternative 2

In Alternative 2, MCWC and TCPUD would supply water to portions of the project area (Appendix A – Figure A2: Service Boundary Exhibit). MCWC would provide water to the North Base as is currently the case. TCPUD would provide water to the South Base, APN 097-060-022, and Mid-Mountain (collectively referred to as the South Base herein). Based on the project description (Section 2), Alternative 2 will create the following connections for MCWC and TCPUD:

MCWC Service ConnectionsNorth Base:

- 36 residential condominiums
- 20 fractional ownership units
- 30 penthouse condominium units
- 75 traditional hotel rooms
- 40 two-bedroom for sale condominiums
- 13 workforce housing units
- 25,000 sf retail/commercial (CFA)
- 30,000 sf skier services

Irrigation Operations:

- North Base includes 5.36 acres of low, medium and high water use landscape plants.

Alternative 2 - Project Totals for MCWC:

**5.36 acres irrigated landscape
214 dwelling units
55,000 sf CFA**

TCPUD Service ConnectionsSouth Base:

- 99 residential condominiums

APN 097-060-022 (located between North and South Base Areas):

- 16 townhomes

Mid-Mountain:

- 15,000 sf day lodge (CFA)
- Maintenance Facility (equivalent to 1 dwelling unit)

Irrigation Operations:

- South Base & Mid Mountain include 2.47 acres of low, medium and high use landscape plants.

Alternative 2 - Project Totals for TCPUD:

**2.47 acres irrigated landscape
116 dwelling units
15,000 sf CFA**

4.0 WATER SUPPLY

Pursuant to Water Code section 10910(d), this section of the Assessment identifies and quantifies the existing and planned sources of water available to the water supplier in 5-year increments for the 20-year projection period.

- (1) The assessment required by this section shall include an identification of any existing water supply entitlements, water rights, or water service contracts relevant to the identified water supply for the proposed project, and a description of the quantities of water received in prior years by the public water system, or the city or county if either is required to comply with this part pursuant to subdivision (b), under the existing water supply entitlements, water rights, or water service contracts.*
- (2) An identification of existing water supply entitlements, water rights, or water service contracts held by the public water system, or the city or county if either is required to comply with this part pursuant to subdivision (b), shall be demonstrated by providing information related to all of the following:*
 - (A) Written contracts or other proof of entitlement to an identified water supply.*
 - (B) Copies of a capital outlay program for financing the delivery of a water supply that has been adopted by the public water system.*
 - (C) Federal, state, and local permits for construction of necessary infrastructure associated with delivering the water supply.*
 - (D) Any necessary regulatory approvals that are required in order to be able to convey or deliver the water supply.*

4.1 Surface Water Supply

TCPUD Supply

Up until the late 1980's, the TCPUD diverted most of its domestic water directly from Lake Tahoe. In response to stricter water quality requirements for surface water diversions that came about in the late 1980's (i.e. the Surface Water Treatment Rule), the TCPUD chose to reduce its dependence on surface diversions and begin a program to develop groundwater sources. With the exception of seasonal diversions from Lake Tahoe to augment supply for the McKinney/Quail Sub-district, the TCPUD now relies on groundwater to meet normal demands.

In 1995, West Yost & Associates and Luhdorff and Scalmanini prepared a report titled, "Groundwater Resources Investigation of the Tahoe City Subregional Service Area," hereinafter referred to as Groundwater Resources Investigation. The existing TCPUD wells were found to be adequate to provide sufficient pumping capacity to satisfy the ultimate build-out annual demands for the McKinney/Quail Sub-district (TCPUD 2006). The TCPUD has, however, experienced problems in meeting summer peak water demands in this area. This sub-district was served exclusively from the Crystal Way Well until the summer of 2004. The well was installed in 1996 and put online in 1997. Since placed into service, the well experienced a continual drop in both static and dynamic pumping levels until 2003 when air became entrained during pump operation (TCPUD 2006).

To provide additional supply, in late 2004 the TCPUD installed and operated an interim surface water treatment system for the treatment of surface water from Lake Tahoe. Currently, the Crystal Way Well is sufficient to meet demands through the winter season. The TCPUD operated the interim surface water treatment plant successfully to meet summer peak demands in 2004 and 2005. The TCPUD 5-year Capital Plan earmarks funds for planning, design, and construction of a permanent surface water treatment plant by 2010. TCPUD plans on running the interim surface water treatment system as necessary to meet peak summer demands until a permanent treatment facility is brought online

(TCPUD 2006). Once created, this surface treatment facility will have regulated flows based on Public Law 101-618 (Settlement Act), and the TROA (TCPUD 2006). Section 204 of the Settlement Act would limit California's total gross diversions in the Lake Tahoe Basin to 23,000 AF/Y. The particular water rights for each California water supplier that would draw on Lake Tahoe surface waters are currently being evaluated. At this time, the TCPUD is granted Lake Tahoe surface water diversions, and does operate in accordance with the Settlement Act; however, the portion of diverted California waters (23,000 AF/Y) to be allocated specifically to TCPUD has not been finalized (Lalotis 2009). TCPUD expects to receive a sufficient amount of diversions to meet their projected demands (Lalotis 2009).

MCWC Supply

MCWC does not utilize surface water. Groundwater is the sole water source for MCWC.

4.2 Groundwater Supply

Water Code 10910 limits groundwater discussion to the basin or basins that will serve the proposed project. Additional requirements are found in:

Water Code 10631(b):

- (1) A copy of 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.*
- (2) A description of any groundwater basin or basins from which the urban water supplier pumps groundwater.*
- (3) A detailed description and analysis of the location, amount, and sufficiency of groundwater that is projected to be pumped by the urban water supplier for the past 5 years.*
- (4) A detailed description and analysis of the amount and location of groundwater that is projected to be pumped by the urban water supplier.*

Water Code 10910(f)(5): An analysis of the sufficiency of the groundwater from the basin...to meet the projected water demand associated with the proposed project.

Basin Characteristics

The Tahoe Valley Groundwater Basin is located within the larger structural feature commonly referred to as the Lake Tahoe Basin. It is bounded on the east by the western shore of the Lake, and on the west by the Sierra Nevada, with an approximate north-south boundary that lies about 0.5 mile west of Dollar Point and 2 miles west of Meeks Bay. Elevations within the sub-basin range from 6,225 feet at lake level rising to above 6,400 feet in the west (DWR 2003).

Groundwater recharge in the proposed area is primarily from infiltration of precipitation into faults and fractures in bedrock, into the soil and decomposed granite that overlies much of the bedrock, and into unconsolidated basin-fill deposits. Groundwater is recharged over the entire extent of the flow path, except where the land surface is impermeable or where the groundwater table coincides with land surface (Thodal 1997).

TCPUD Supply

As required by Code Section 10631(b)(2) and (3), Table 2 provides a summary of the volume of water produced from the Crystal Way Well between 2000 and 2004, and identifies the USGS groundwater basin designations.

Table 2. TCPUD Well Production

Supply System	2000 ⁽²⁾	2001 ⁽²⁾	2002 ⁽²⁾	2003	2004
USGS Basin Designation	(AF/Y) ⁽³⁾	(AF/Y)	(AF/Y)	(AF/Y)	(AF/Y)
Water Supply					
McKinney/Quail					
North Lahontan 6-5.02					
Crystal Way Well	293	284	274	245	185
Subtotal	293	284	274	245	185
Notes: 1.) UWMP = Urban Water Management Plan. 2.) From West Yost & Associates, 2003, "Urban Water Management Plan," pp. 4-3, Table 4-1. 3.) AF/Y = acre-feet per year.					

Source: TCPUD UWMP (2006)

As shown in Table 2, all TCPUD groundwater is pumped from the Crystal Way Well, which draws from the North Lahontan USGS Groundwater Basin. The North Lahontan USGS Groundwater Basin is not an Adjudicated Groundwater Basin. According to Bulletin 118-80, "No basins in the Northern Lahontan Hydrologic Study Area are identified as subject to critical conditions of overdraft." Bulletins 160-93 and 160-98, California's Water Plan Update, reiterated the statement of no evidence of overdraft. Bulletin 160-98 added that no overdrafts are expected in the North Lahontan Hydrologic Study Area, even in drought years, by 2020 (TCPUD 2006). The TCPUD Water Master Plan projects the annual demand to be 750 gallons per day (GPD), or 0.84 AF/Y per connection (TCPUD 2002).

MCWC Supply

Based on the information provided by MCWC on December 21, 2007 and the fact that the MCWC currently meets the water demand of their customers (160 connections), it can be concluded that their water supply is sufficient to produce 134 AF/Y (based on the TCPUD projected annual demand per connection of 0.84 AF/Y).

4.2.1 Groundwater Management Plan

TCPUD

The TCPUD completed a Water Master Plan Update in April 2002 (TCPUD 2002). The 2002 Water Master Plan serves as the primary guidance document for managing TCPUD water systems, including its groundwater supplies.

MCWC

Based on available information, MCWC has not produced a Groundwater Management Plan.

4.3 Water Supply Entitlements, Rights, or Service Contracts

All water rights in California are subject to a constitutional and statutory requirement of both beneficial use and reasonable method of use. Riparian rights are water rights associated with land that is bordered or crossed by a natural watercourse. HMR has the right to use water from two surface streams on riparian land (Madden Creek, an unnamed west to east running watercourse (terminal near Grandview Avenue), and/or Homewood Creek). The HMR property also adjoins Lake Louise. The project could use water from these surface water sources for beneficial uses (such as irrigation and snowmaking).

An appropriative water right is a right to divert surface water either for direct use on property that is not riparian to the surface water source or to storage for later use on non-riparian property. Priority of appropriative rights is based on the basic adage, "first in time, first in right." HMR is the owner of Application No. 18934/Permit No. 14398, which would divert from Madden Creek for direct beneficial use in the amount of 1.5 cubic feet per second (cfs) from January 1 to December 31 of each year. The application also requested 30 AF/Y for storage to be collected between January 1 and June 15 of each season. The proposed use was domestic and recreational.

The TROA governs diversions of surface water from the Truckee River Basin and the Lake Tahoe Basin as the result of the settlement of litigation among various parties. The TROA was executed by the State of Nevada and State of California in September 2008, but has not yet been implemented. The TROA provides for a quantified allocation for each state. The State Water Resources Control Board (SWRCB) has held processing of applications for surface water rights in the Lake Tahoe Basin in abeyance pending the implementation of the TROA. The amount of water available for appropriation will be determined pursuant to the TROA. Once the allocations are finalized, it can be expected that the SWRCB will resume processing water rights applications in the Lake Tahoe Basin.

5.0 PROJECT DEMAND ANALYSIS

This section documents the water demand for existing uses and planned future uses for the proposed project. Water Code 10910(2) states that if the projected water demand associated with the proposed project was accounted for in the most recently adopted Urban Water Management Plan (UWMP), the water supplier may incorporate the requested information from the UWMP in the assessment. The TCPUD UWMP accounts for the McKinney/Quail Sub-district, but it does not include projections for the proposed project. To calculate the future water demand in this area, the proposed project's projected annual demand will be added to the McKinney/Quail Sub-district projected annual demand found in the TCPUD UWMP.

The projections for the McKinney/Quail Sub-district are based on the projected annual demand values presented in the TCPUD Water Master Plan, which is 750 gallons per day (GPD), or 0.84 AF/Y per connection (TCPUD 2002).

To determine the projected water demand, per dwelling unit and per 1,000 sf of CFA, for the HMR project, an analysis of three similar resort projects (The First Ascent, 22 Station, and the Resort at Squaw Creek Midrise projects) located in Squaw Valley (6.5 miles north of the project area) was performed. This analysis used meter data from 2005 to 2009 to calculate the annual demands for domestic and commercial use. Through this analysis, it was determined that a domestic water demand of 0.14 AF/Y per dwelling unit, and a commercial water demand of 0.07 AF/Y per 1,000 sf CFA would be appropriate demand rates for a resort in the Tahoe Basin with a similar magnitude of development.

The number of water service connections in the proposed project area correlates well with the number of developed parcels. Parcel development is strictly regulated and limited by TRPA. As stated in the California State Water Plan Update, Bulletin 160-98, "Future development in the Lake Tahoe Basin is strictly limited by the bi-state Tahoe Regional Planning Agency to protect the basin's environmental quality." In addition, parcel acquisition and ownership by governmental agencies (e.g. California Tahoe Conservancy and the United States Forest Service) limits the number of parcels available for development. The proposed project's connections were not included in the TCPUD UWMP because the project was not yet proposed at the time the TCPUD UWMP was created.

Landscape irrigation demands were estimated for each area by the project landscape architect, L+P Design Works, using the State of California Department of Water Resources Statewide Integrated Water Management Program Water Budget Workbook.

Alternative 1

Based on the annual water demand in this region calculated by TCPUD in their Water Master Plan (0.84 AF/Y)(TCPUD 2002), the projected water demand for the McKinney/Quail Sub-district is 385 AF/Y. The projected values for the proposed project, shown in Table 3, were calculated using the demand rates described above (Residential – 0.14 AF/Y per unit and Commercial – 0.07 AF/Y per 1,000 sf CFA). In addition to residential and commercial water demand for the proposed project, water will be used for irrigation operations. Based on schematic design (as discussed in Section 2.2), 10.8 AF/Y of water will be required for irrigation. This value is included in the projected water demand shown in Table 3.

Table 3. Projected Annual Demand for the McKinney/Quail Sub-district

Service Area	Annual Demand (AF/Y)		
	2009	2010	2011
McKinney/Quail Sub-district	381	385	385
Proposed Project (residential)	n/a	n/a	46
Proposed Project (commercial)	n/a	n/a	5
Proposed Project (irrigation)	n/a	n/a	11
Proposed Project Subtotal	n/a	n/a	62
Total Annual Demand (AF/Y)			447

Based on the information presented in Table 3, the proposed project will require 62 AF/Y. When added to the future projected annual demand for the McKinney/Quail Sub-district (385 AF/Y), the total projected annual water demand for the McKinney/Quail Sub-district, including the proposed project and associated irrigation operations, is 447 AF/Y.

Alternative 2

North Base - MCWC Service Area.

Based on the annual water demand in this region calculated by TCPUD in their Water Master (0.84 AF/Y)(TCPUD 2002), the projected water demand for the MCWC Service Area is 134 AF/Y. The projected values for the proposed project, shown in Table 4, were calculated using the demand rates described above (Residential – 0.14 AF/Y per unit and Commercial – 0.07 AF/Y per 1,000 sf CFA). In addition to residential and commercial water demand for the proposed project, water will be used for irrigation operations. Based on schematic design (as discussed in Section 2.2), 8.3 AF/Y of water will be required for irrigation. This value is included in the projected water demand shown in Table 4.

Table 4. Projected Annual Demand for MCWC Service Area

Service Area	Annual Demand (AF/Y)		
	2009	2010	2011
MCWC	134	134	134
Proposed Project - North Base (residential)	n/a	n/a	30
Proposed Project - North Base (commercial)	n/a	n/a	4
Proposed Project - North Base (irrigation)	n/a	n/a	8
Proposed Project - North Base Subtotal	n/a	n/a	42
Total Annual Demand (AF/Y)			176

Based on information presented in Table 4, the proposed project (North Base Area) will require 42 AF/Y. When added to the future projected annual demand for the MCWC Service Area (134 AF/Y), the total projected annual water demand for the MCWC Service Area is 176 AF/Y.

South Base & Mid Mountain - TCPUD Service Area (McKinney/Quail Sub-district).

Based on the annual water demand in this region calculated by TCPUD in their Water Master Plan (0.84 AF/Y)(TCPUD 2002), the projected water demand for the McKinney/Quail Sub-district is 385 AF/Y. The projected values for the proposed project, shown in Table 5, were calculated using the demand rates described above (Residential – 0.14 AF/Y per unit and Commercial – 0.07 AF/Y per 1,000 sf CFA). In addition to residential and commercial water demand for the proposed project, water will be used for irrigation operations. Based on schematic design (as discussed in Section 2.2), 2.45 AF/Y of water will be required for irrigation. This value is included in the projected water demand shown in Table 5.

Table 5. Projected Annual Demand for the McKinney/Quail Sub-district

Service Area	Annual Demand (AF/Y)		
	2009	2010	2011
McKinney/Quail Sub-district	381	385	385
Proposed Project - South Base (residential)	n/a	n/a	16
Proposed Project - South Base (commercial)	n/a	n/a	1
Proposed Project - South Base (irrigation)	n/a	n/a	3
Proposed Project - South Base Subtotal	n/a	n/a	20
Total Annual Demand (AF/Y)			405

Based on information presented in Table 5, the proposed project (South Base & Mid Mountain Areas) will require 20 AF/Y. When added to the future projected annual demand for the McKinney/Quail Sub-district (385 AF/Y), the total projected annual water demand for the McKinney/Quail Sub-district, including the proposed project (South Base Area and irrigation operations), is 405 AF/Y.

5.1 Dry Year Demands***5.1.1 Contingency Plans and Water Conservation*****TCPUD**

The TCPUD intends to continue the practice of augmenting groundwater supply with surface water diversions. The TCPUD 5-year Capital Plan (see Section 7 of the 2005 UWMP) includes funding for a permanent treatment system for surface water diversions. The permanent treatment system will be designed to increase reliability to meet projected demands during a normal water year, a single dry water year, and multiple dry water years.

Additionally, TCPUD has included the following water conservation measures in their UWMP:

- Water survey programs for single-family residential and multi-family residential customers
- Residential plumbing retrofit
- All plumbing fixtures for new construction shall meet the following low flow requirements as per Water Conservation Ordinance No. 106:
 - Toilets: 1.6 gallons/flush
 - Showers: 3.5 gallons/minute
 - Faucets: 4 gallons/minute
 - Water pressure shall not exceed 60 psi at ground floor level
- System water audits, leak detection, and repair
- Metering with commodity rates for all new connections and retrofit of existing connections

- Large landscape conservation programs and incentives
- High-efficiency washing machine rebate programs
- Public information programs
- School education programs
- Conservation programs for commercial, industrial, and institutional accounts
- Conservation pricing
- Water conservation coordinator
- Water waste prohibitions
- Residential ultra-low-flush toilet replacement programs

In 1981, due to low surface flows and groundwater conditions, TCPUD adopted Resolution No. 81-51 (Appendix B) declaring water shortages in two of its service areas and enforcing restrictions on water use. TCPUD also follows a Contingency Plan (Appendix C). Table 6 lists the phases of water restrictions that TCPUD adopted to deal with a water shortage.

Table 6. Regulations and Restrictions on Water Use in the Event of a Water Shortage

Phase	Action
General	All Phases - Discontinue Water Service to chronic water wasters, subject to standard shut-off/turn on fee
I	<p>Strict Inside Water Conservation such as:</p> <ul style="list-style-type: none"> • Washing only full loads of dishes and laundry • Avoid use of garbage disposal • Don't run water while brushing teeth • Check plumbing and repair leaking toilets, faucets <p>Limit Outside Watering, don't water during peak hours, no flooding or ponding.</p> <p>No watering of native shrubs, growth.</p>
II	<p>No Outside Watering</p> <p>Depending on service area, TCPUD may have to install a temporary lake pump.</p> <p>Truck potable water to storage tanks if lake intakes are not adequate.</p>
III	Water Rationing (rolling outages).
Notes: 1.) UWMP = Urban Water Management Plan.	

Source: TCPUD UWMP (2006)

In the event that Phase II is enforced or the shortage is expected to last longer than a few days, TCPUD would install temporary lake pumps. An emergency operations agreement has been established with the Department of Health Services (DHS) to allow the existing lake diversions to be used. Chlorination equipment with metering pumps would be installed on each of the intakes to meet DHS requirements. TCPUD keeps this equipment and hypochlorite solution in stock at all times. The lake intakes with the chlorination equipment can be activated in one day, if needed.

MCWC

Based on available information, MCWC has not identified a Water Conservation or Contingency Plan.

6.0 COMPARISON OF PROJECTED WATER SUPPLIES AND DEMANDS

Alternative 1

Based on operating history, and without implementation of water conservation measures, the existing McKinney/Quail groundwater supply system is inadequate to meet current peak demands during the summer. During the summer months, the TCPUD augments water supply in the McKinney/Quail Sub-district with surface water diversions from Lake Tahoe. The TCPUD intends to continue the practice of augmenting groundwater supply with surface water diversions. The TCPUD 5-year Capital Plan includes funding for a permanent treatment system for surface water diversions. The permanent treatment system will be designed to increase reliability to meet projected demands during a normal water year, a single dry water year, and multiple dry water years. Table 7 shows the water supply and demand comparison for the McKinney/Quail Sub-district.

Table 7. Water Supply and Demand Comparison for McKinney/Quail Sub-district

	2009 (AF/Y)	2010 (AF/Y)	2011 (AF/Y)
Current Supply Total	185	185	185
Demand Total (including the proposed project)	381	385	447
Difference (deficiency compensated by surface water)	196	200	262

The projected annual water demand (2011 and beyond) for the McKinney/Quail Sub-district (which includes the proposed project) is 447 AF/Y. The TCPUD Crystal Way Well production in 2004 was 185 AF/Y (TCPUD 2006). Treated surface water from Lake Tahoe augments supply to meet the current demand. TCPUD plans to continue utilizing surface water from Lake Tahoe to meet the demands of the proposed project. The particular water rights for each California water supplier that would draw on Lake Tahoe surface waters are currently being evaluated. At this time, the TCPUD is granted Lake Tahoe surface water diversions, and does operate in accordance with the Settlement Act; however, the portion of diverted California waters (23,000 AF/Y) to be allocated specifically to TCPUD has not been finalized (Lalotis 2009). TCPUD expects to receive a sufficient amount of diversions to meet their projected demands (Lalotis 2009). This amount will be adequate in meeting the required 447 AF/Y. Therefore, based on available information, the TCPUD would be capable of supplying water to the McKinney/Quail Sub-district (including the proposed project).

Alternative 2

MCWC Service Area

Table 8 shows the water supply and demand comparison for the MCWC Service Area.

Table 8. Water Supply and Demand Comparison for MCWC Service Area

	2009 (AF/Y)	2010 (AF/Y)	2011 (AF/Y)
Current Supply Total	134	134	134
Demand Total (including the proposed project)	134	134	176
Difference	0	0	42

The projected annual water demand for the MCWC Service Area (which includes the proposed project - North Base Area) is 176 AF/Y. MCWC utilizes groundwater to supply their service area. Based on available information, MCWC has not disclosed the details of groundwater supply in their service area; however, based on the fact that they are currently meeting the water demand of their customers (160 connections), it can be assumed that their supply is 134 AF/Y. To meet the water demand for the proposed project (North Base Area), MCWC will need additional production capacity and storage to meet demand and be capable of supplying the additional water to the proposed project area (increase of 42 AF/Y). Based on available information, MCWC should be able to add production capacity and storage to meet the demand of the MCWC Service Area (including the proposed project).

TCPUD Service Area – McKinney/Quail Sub-district

Based on operating history, and without implementation of water conservation measures, the existing McKinney/Quail groundwater supply system is inadequate to meet current peak demands during the summer. During the summer months, the TCPUD augments water supply in the McKinney/Quail Sub-district with surface water diversions from Lake Tahoe. The TCPUD intends to continue the practice of augmenting groundwater supply with surface water diversions. The TCPUD 5-year Capital Plan includes funding for a permanent treatment system for surface water diversions. The permanent treatment system will be designed to increase reliability to meet projected demands during a normal water year, a single dry water year, and multiple dry water years. Table 9 shows the water supply and demand comparison for McKinney/Quail Sub-district for Alternative 2.

Table 9. Water Supply and Demand Comparison for TCPUD Service Area

	2009 (AF/Y)	2010 (AF/Y)	2011 (AF/Y)
Current Supply Total	185	185	185
Demand Total (including the proposed project)	381	385	405
Difference (deficiency compensated by surface water)	196	200	220

The projected annual water demand for the McKinney/Quail Sub-district (which includes the proposed project) is 405 AF/Y. The TCPUD Crystal Way Well production in 2004 was 185 AF/Y (TCPUD 2006). Treated surface water from Lake Tahoe augments supply to meet the current demand. TCPUD plans to continue utilizing surface water from Lake Tahoe to meet the demands of the proposed project. The particular water rights for each California water supplier that would draw on Lake Tahoe surface waters are currently being evaluated. At this time, the TCPUD is granted Lake Tahoe surface water diversions, and does operate in accordance with the Settlement Act; however, the portion of diverted California waters (23,000 AF/Y) to be allocated specifically to TCPUD has not been finalized (Lalotis 2009). TCPUD expects to receive a sufficient amount of diversions to meet their projected demands (Lalotis 2009). This amount is adequate in meeting the required 405 AF/Y. Therefore, based on available information, the TCPUD is capable of supplying water to the McKinney/Quail Sub-district (including the proposed project).

7.0 REFERENCES

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APPENDIX A

PROJECT MAPS

A1 – PRELIMINARY CONCEPTUAL MASTER PLAN

**A2 – TCPUD/MADDEN CREEK WATER COMPANY SERVICE
BOUNDARY EXHIBIT**

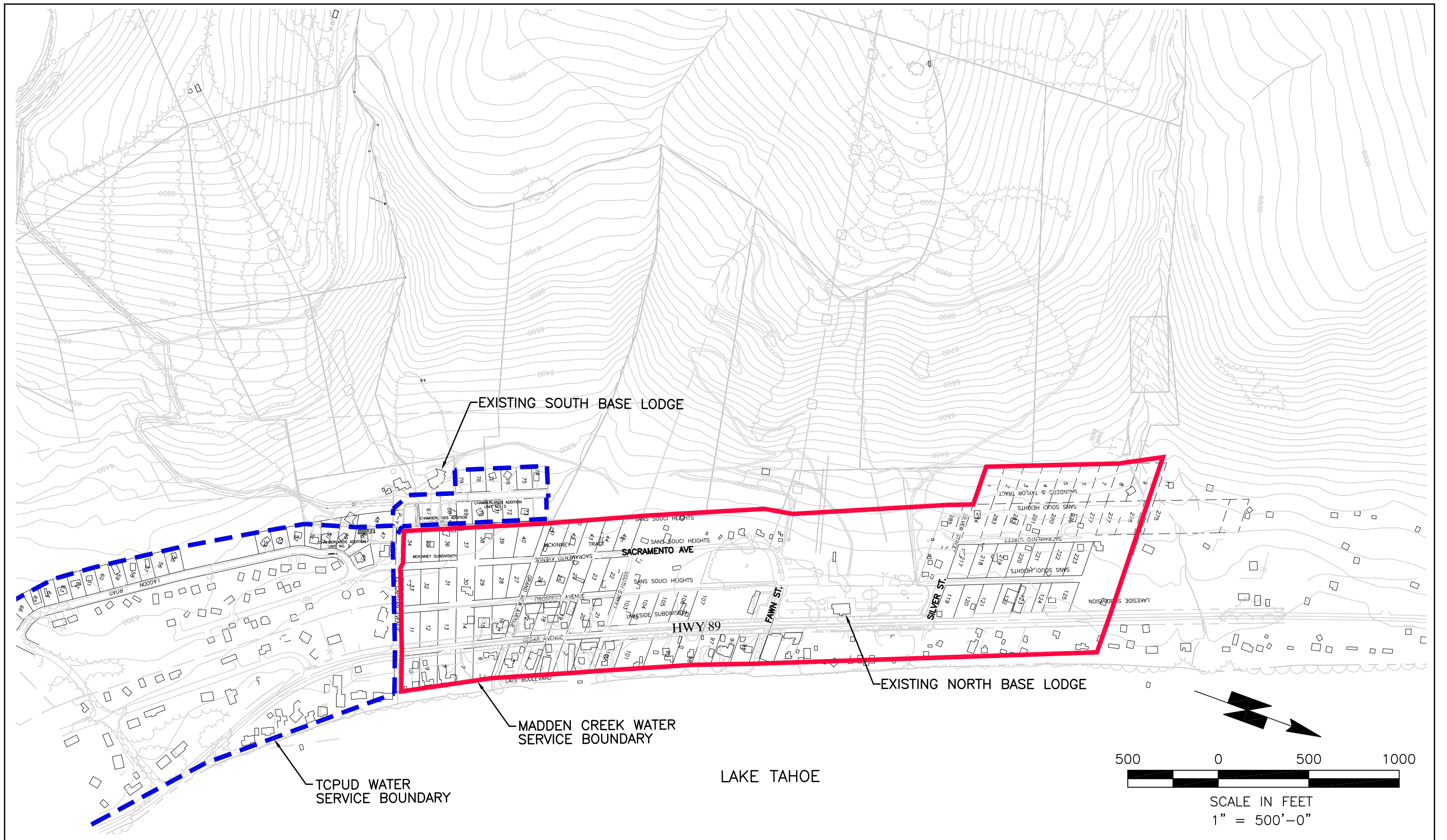


HOMWOOD
Mountain Resort

Preliminary Conceptual Master Plan

HKS
HILL GLAZIER STUDIO
DESIGNWORKSHOP

0 50 100 200 feet
*preliminary conceptual plan only, subject to change



APPENDIX B
RESOLUTION 81-51

RESOLUTION NO. 81-51

of

TAHOE CITY PUBLIC UTILITY DISTRICT

APPROVING AND AUTHORIZING INTERIM MEASURES, LIMITING AND
RESTRICTING WATER USE AND SETTING TIME AND PLACE OF HEARING ON
DECLARATION OF WATER SHORTAGE EMERGENCY CONDITION.

WHEREAS, due to below-normal precipitation and above-average consumption the DISTRICT is currently experiencing a water shortage condition, and

WHEREAS, the DISTRICT has undertaken interim measures to limit and restrict water use and consumption due to these conditions, and

WHEREAS, these interim measures may not be sufficient to avoid depleting the DISTRICT water supplies to the extent that there may be insufficient water for human consumption, sanitation and fire protection purposes, and

WHEREAS, California Water Code Section 350 and following establishes a procedure for hearing and declaration of a water shortage emergency condition and the adoption of appropriate regulations and restrictions on delivery and consumption of water in order to conserve the water supply for the greatest public good,

NOW THEREFORE, be it resolved by the Board of Directors of TAHOE CITY PUBLIC UTILITY DISTRICT as follows:

1. That the Board of Directors of this District hereby, approves and authorizes the undertaking and implementation of such interim water conservation measures as may be deemed necessary or advisable to limit and restrict the delivery and consumption of water in the District or any of the areas served thereby, including, without limitation restrictions and limitations on times of use, location, type of use, quantity, domestic use, (excluding watering of landscape, yards and vegetation) together with sanitation and fire protection to be accorded first priority.
2. That this Resolution is supplemental to all existing District ordinances, resolutions, rules or regulations applicable to and imposing limitations or restrictions upon water use or consumption, including discontinuance of service in the event of waste of water or water use practices resulting in waste, excessive or unnecessary water use.
3. That on the 6th day of August 1981 at the hour of 6:30 o'clock pm of said day at 380 N. Lake Blvd., Tahoe City, California a hearing will be held by this Board of Directors to consider the necessity of declaring a water shortage emergency condition and thereupon to adopt such regulations and restrictions on delivery and consumption of water as may be deemed necessary in the discretion of the Board in order to conserve its water supply for the greatest public benefit ~~with particular regard to domestic use, sanitation and fire~~

APPENDIX C
TCPUD CONTINGENCY PLAN

The purpose of a contingency plan for the District is to be prepared to take actions to protect public health and minimize further contamination should the aquifer directly tapped by a District well become contaminated.

When contamination is discovered in or very near a District well, the first step will be to evaluate the risk to public health from the level of contaminants discovered. If the contamination levels are sufficient to pose acute health risks, the public and medical authorities should be notified immediately and the well should be shut down. If the levels of contamination are higher than regulatory MCL's, but there is no danger of acute health risk, repeat sampling and analysis should be performed according to the requirements of Title 22, Chapter 15 of the State Water Code. If contamination is verified by repeat analysis, the well must remain off-line until remediation is complete. Sufficient backup well capacity and storage should be maintained in the water system to enable service to continue without interruption in the event that a well has to be removed from service.

Contamination of an aquifer means that a contaminant has been found in the groundwater at or above the standards permitted in the Safe Drinking Water Act and Title 22 of the California Administrative Code. If contamination of an aquifer occurs, the contingency plan will be implemented. The contingency plan may also be implemented if monitoring data indicate that a standard will likely be exceeded in the future. The contingency plan consists of the following elements:

A. Establishment of Standby Capacity

One or more of the following measures should be put in place to provide for an emergency water supply should it become necessary to shut down one of the District's production wells.

1. Establish standby well capacity for emergency use if certain District well(s) have to be temporarily shut down, or facilities constructed to allow transfer of water from one District area or aquifer to another while contamination is being eliminated.
2. Establish an emergency operations agreement with the DHS for emergency use of a District surface water supply source.
3. Develop a Memorandum of Understanding (MOU) and physical system connection to an adjoining water utility distribution system to receive emergency supply for an interim period.

B. Assessment of Contamination

For any contamination at levels above or even near state or EPA MCL's, steps should be taken to assess the extent of contamination and protect the aquifer from further contamination.

1. The first step would be to evaluate historical monitoring data and the known potential contamination sources. Compare the characteristics of contaminants from the potential contamination sources to the contaminants detected in the monitoring or production well. Also evaluate historical groundwater level data and aquifer property data to estimate the gradient and rate of movement of contamination from potential sources to the well.
2. If the analysis results indicate that the contamination may be coming from a known source, monitoring wells should be installed along the expected flow path to confirm the source and the continuity and extent of the contamination plume.
3. If the contamination does not appear to be coming from a known source, a stepwise expanding grid of monitoring wells should be installed to determine the direction and location of the contamination source.
4. Once the contamination source has been located, wells, impoundments, or anything else that could be increasing the spread of the contaminants should be identified and shut down or modified as necessary. Then the source of the contamination should be contained as prescribed by the Lahontan Regional Water Quality Control Board (Regional Board) in as timely a manner as possible.
5. If the source of contamination cannot be determined with a reasonable amount of effort and expense, it may be necessary to abandon the affected well and replace that production capacity with a new well located away from the affected aquifer.

C. Remediation

Once a contamination source has been identified, the District should notify the Regional Board and request a prompt remediation by the party responsible for the source of the contamination.

1. Work with the Regional Board, DHS, and County Environmental Health Department and the party responsible for the contamination to quickly develop a satisfactory remediation plan.
 2. Install additional monitoring facilities as needed to continue monitoring the extent of contamination.
 3. If the contamination is from non-point sources, work with the Regional Board and other agencies to establish additional special programs in affected areas to mitigate impacts on water quality.
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